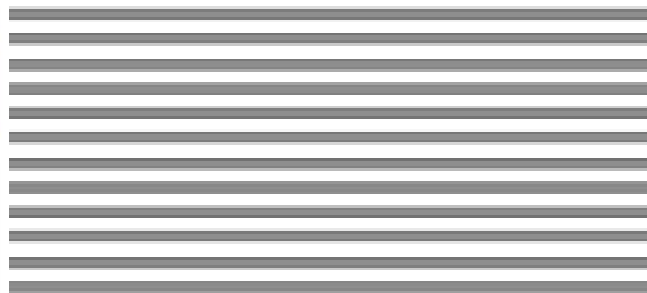


GEOTECHNICAL DATA REPORT
US 95/CC-215 INTERCHANGE
and VICINITY
CLARK COUNTY
June 2016



MATERIALS DIVISION

**STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION
GEOTECHNICAL SECTION**

**GEOTECHNICAL DATA REPORT
US 95/CC-215 INTERCHANGE and VICINITY
CLARK COUNTY**

June 2016

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INTRODUCTION

General

This data report has been prepared for the proposed interchange at US 95 and CC-215 and surrounding vicinity in Las Vegas, Nevada. A site plan for the project is presented as the Project Location Area Map in Appendix A.

Purpose and Scope

The purpose of this report is to provide information regarding the subsurface soil conditions at the proposed project site. It is intended to provide a description of the project site, with emphasis placed on extensive subsurface investigation. The scope of this report consists primarily of geotechnical investigation, testing, analysis, and discussion of the geotechnical conditions of the area. The investigation included gathering information obtained from previous subsurface explorations, soil sampling, load testing two sacrificial drilled shafts, and analysis of field and laboratory testing data. This report includes boring logs and locations, test results from both the laboratory and field testing, and summaries of the test results. These may be found in appendices B, C, D and E.

This report provides no specific geotechnical design recommendations for any structures, features, or locations found in any of the future phases of this project.

PROJECT DESCRIPTION

The project site is located in northwest Las Vegas in Clark County. US 95 runs southeast to northwest at the location of the proposed interchange; CC-215 runs east-west. Future phases of this project will continue the design and construction of ramps, bridge structures, retaining structures, soundwalls, and other features necessary for a complete interchange at US 95 and CC-215.

GEOLOGIC CONDITIONS and SEISMICITY

The site is founded primarily in quaternary deposits of alluvium (Qal)^{1,2}. These deposits are generally tan and light to medium brown clayey sands and sandy clays with some gravel (See Photos 1 and 2). The project site lies between approximately 2365 and 2450 feet of elevation and slopes gently downward to the southeast. The site is located approximately 6 miles southwest of the Las Vegas Valley Shear Zone and 6 miles east-northeast of the Keystone thrust fault.² These faults are no longer considered active. There are several small compaction fault scarps approximately 4 miles southeast of the site³.



Photos 1 and 2. Soil Samples from Boreholes BI-25 (Clayey Sand with Gravel) and BI-68 (Sandy Lean Clay with Gravel)

FIELD INVESTIGATION

Subsurface Investigation

The Geotechnical Section conducted subsurface investigations at the proposed project site starting in February of 2013, running through May of 2015. Subsurface soil conditions were explored in the investigation by drilling 89 boreholes placed throughout the project area. The approximate location of each borehole is shown on the Borehole Location sheets in Appendix A. The majority of the drilling was accomplished with a Diedrich D-120 drill rig equipped for soil sampling, using either 6-inch hollow stem auger or wet rotary methods with bentonite slurry (See Photo 3). Boreholes B-39 and BI-40 were drilled using CME 75 and CME 85 drill rigs using 6-inch hollow stem auger. Soil samples obtained while drilling with wet rotary methods may show higher moisture contents, as well as higher plasticity indexes (PI) due to contamination from the bentonite slurry.



Photo 3. Drill Rig Set Up on Borehole BI-29 (with Carpenter fire in background)

The predominant method of obtaining soil samples in this investigation involved driving Standard Penetration (SPT) and California Modified (CMS) samplers with a 140-lb automatic hammer. This method has a tendency to disintegrate weakly to moderately cemented soils into their constituent sand and/or gravel makeup, occasionally leaving intact cemented soil in the sampler shoe. The SPT sampler has an inside diameter of 1-3/8"; the CMS has an inside diameter of 2-7/16". These measurements limit the size of materials that comprise the sample. Attempting to drive the sampler through cobbles larger than the sampler diameter generally results in refusal with no sample recovery. 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.

Approximately 25% of the boreholes were drilled using wet rotary methods with bentonite slurry. In 15 of 22 boreholes drilled using the wet method, circulation was lost during drilling (See Table 1 below). The loss of circulation varied between boreholes, occurring

gradually in some, and extremely rapid in others. In several of these rapid losses of circulation, the initial loss was quite audible.

BOREHOLES DRILLED USING WET ROTARY METHOD				
BOREHOLE	Loss of Circulation	No Loss of Circulation	DEPTH	
			To Loss of Circulation	To Bottom of Borehole
BI-5	X		33.5'	42.2'
BI-6	X		59.0'	75.5'
BI-8	X		61.5'	97.2'
BI-9A		X		120.9'
BI-10	X		56.5'	65.1'
BI-10A	X		56.5'	56.5'
BI-19	X		12.0'	12.0'
BI-20	X		13.0'	13.0'
BI-21	X		50.9'	54.9'
BI-22		X		57.6'
BI-23A	X		50.9'	122.4'
BI-24	X		58.2'	63.8'
BI-27	X		58.6'	64.5'
BI-35	X		33.0'	140.9'
BI-38	X		52.0'	64.5'
BI-64		X		121.3'
BI-65	X		47.5'	103.0'
BI-67	X		47.3'	118.8'
BI-69		X		91.6'
BI-71		X		19.3' *
TS-2		X		127.4'
TS3-A		X		127.5'

* - Abandoned borehole.

Table 1 – Boreholes Drilled Using Wet Rotary Method

Boreholes were drilled to depths between 12.0 feet and 140.9 feet. Approximate surface elevations were obtained for the borehole locations by using an optical level with a Philadelphia rod from a known elevation point and the borehole location. Groundwater was encountered at various elevations during drilling in many of the boreholes. When conditions allowed, some of these boreholes were left open in order to return and check the water levels after the water levels had stabilized. The Las Vegas valley frequently has perched water tables comprised of a variety of differing water levels overlying impermeable layers. This is expressed around the project site with water elevations varying as much as 64 feet between different boreholes within the project limits, at depths ranging between 53.5 feet and 90 feet below the ground surface.

Some cohesive soil samples were tested in the field using either a pocket penetrometer or Torvane, or both to determine soil shear strengths. Results from these tests can be found on the boring logs.

Osterberg Load Cell Testing

Two five-foot diameter, 95-foot long drilled shafts were constructed with Osterberg Load Cells (See Photo 4) to a depth of 100 feet. Test shaft TS-1 was placed approximately 225 feet northeast of northbound US 95, and approximately 300 feet south of eastbound CC-215. Test shaft TS-2 was placed approximately 300 feet southwest of southbound US 95, and approximately 225 feet south of eastbound CC-215. The locations are shown in Appendix A.



Photo 4. Osterberg Load Cell

The boring logs TS-1-2 and TS-3 were compiled from two borings at each location. All test result information attributed to either TS-1 or TS-2, along with Boring Log TS-1-2,

apply to the Test Shaft TS-1. All test result information attributed to either TS-3 or TS3-A, along with Boring Log TS-3A, apply to the Test Shaft TS-2.

Each shaft was constructed with a 6000 kip Osterberg load cell (O-cell) approximately 63 feet below ground surface. The shafts were instrumented with four strain gauges at seven elevations in TS-1, and eight elevations in TS-2. Each shaft had also had additional instrumentation which included: both upper compression telltales and embedded toe telltales within each shaft, and linear vibrating wire displacement transducers located within the O-cell.

Further information may be found in the Loadtest Data Reports located in Appendix E.

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, chemical analysis, consolidation tests, and direct and triaxial shear tests. The results of this testing program show that the soils consist primarily of clayey and silty sands and gravels (See Photo 5) in the upper areas of the boreholes (\approx above 50 feet in depth).



Photo 5. Soil Sample BI-7 G (Clayey Gravel with Sand)

Below the clayey and silty sands and gravels, the soils are generally lean and fat clays (See Photo 6). Dry unit weights ranged from 72.5 pounds per cubic foot (pcf) for sample BI-58 A2 (silt) to 132.5 pcf for sample BI-57 N1 (poorly graded gravel with silty clay and sand).



Photo 6. Soil Sample BI-10B C (Lean Clay)

DISCUSSION

The boring logs and sampling results represent only the areas that were explored; other soil types may be encountered during construction. The boring logs graphically separate differing soil types using two types of lines. Solid lines are used to show known elevations of material change; dashed lines indicate an unknown elevation of material change between two known samples. 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. Further information is presented in the summaries of test results in Appendix C.

During drilling of the 89 boreholes, 1582 samples were attempted. Of these 1582 attempted samples, 362 or 23% of them met with refusal, with little or no sample recovery. This indicates very hard, very dense soils, as well as the presence of cobbles and cemented soils, which are known to exist in the area. The degree of cementation occurring in the soil is highly variable, both in strength and location. Samples were obtained that showed no

cementation, weak cementation, moderate cementation and strong cementation (caliche) throughout the proposed interchange footprint. Cementation was found to occur in the area in nodules, thin lenses, or thicker layers.

Following the field investigation and laboratory testing, the soils were identified as primarily medium stiff to very hard clays and medium dense to very dense clayey sands and gravels, with some silty clays and sands.

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.

APPENDIX A

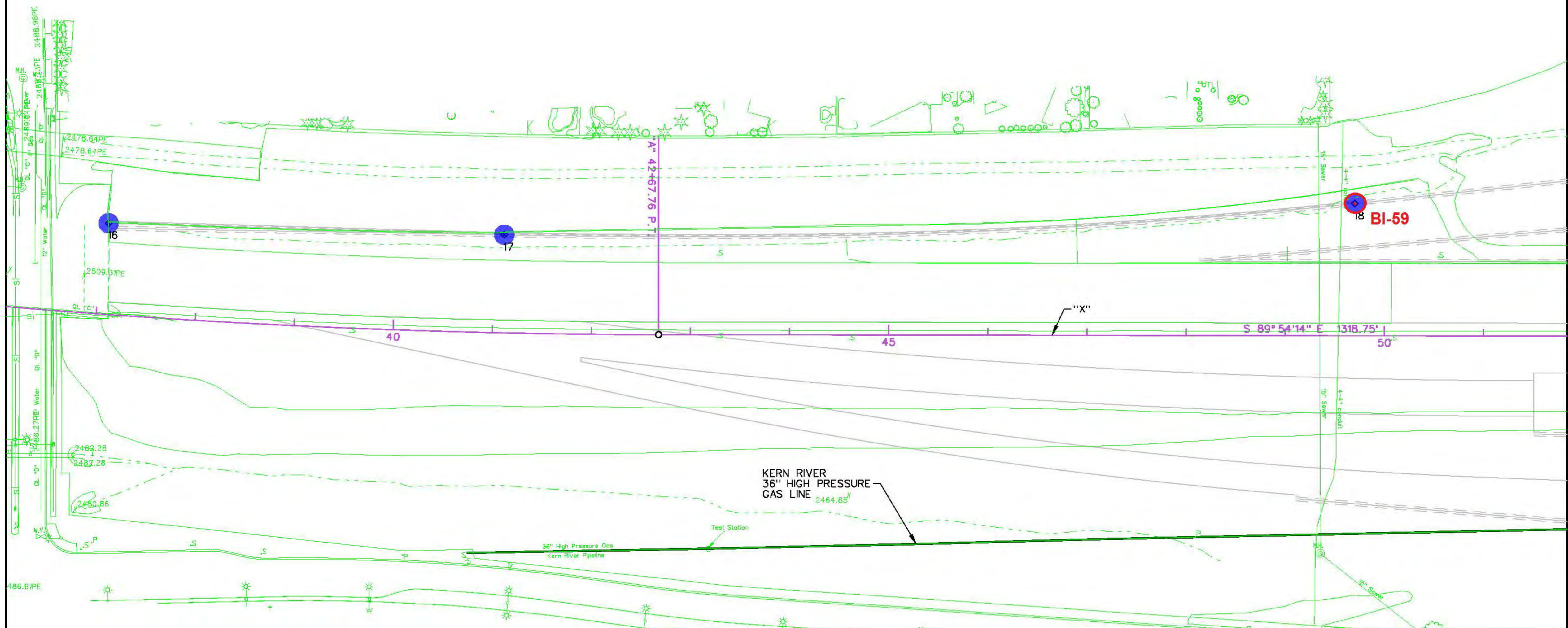
Project Location Area Map Borehole Location Sheets



PROJECT LOCATION AREA MAP

**BOREHOLE LOCATION SHEET
TO BE USED FOR BOREHOLE
LOCATION ONLY**

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	DE-NH095-2(057)	CLARK	GEO1



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

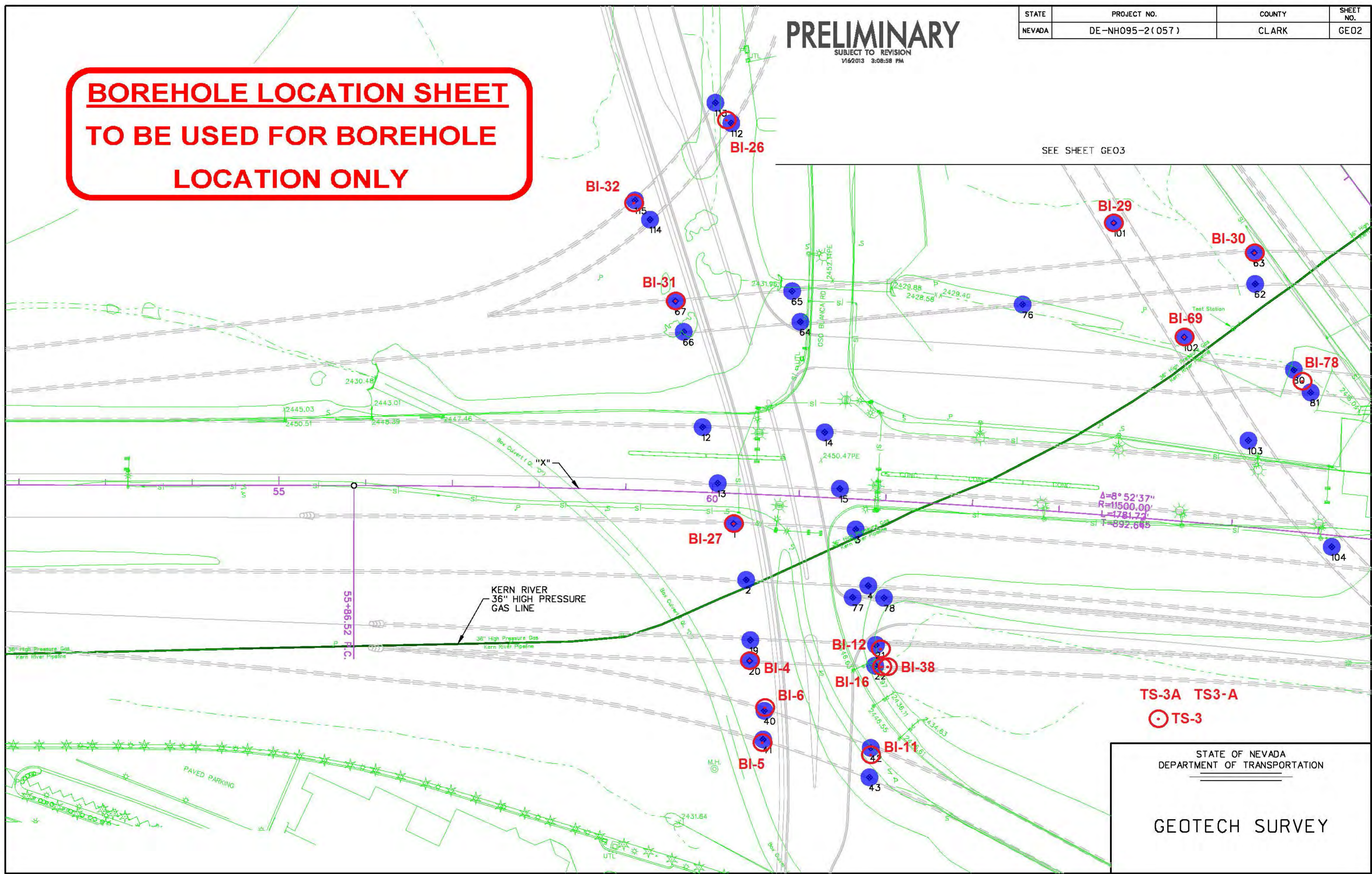
GEOTECH SURVEY

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	DE-NH095-2(057)	CLARK	GEO2

PRELIMINARY
 SUBJECT TO REVISION
 1/6/2013 3:08:58 PM

**BOREHOLE LOCATION SHEET
 TO BE USED FOR BOREHOLE
 LOCATION ONLY**

SEE SHEET GEO3

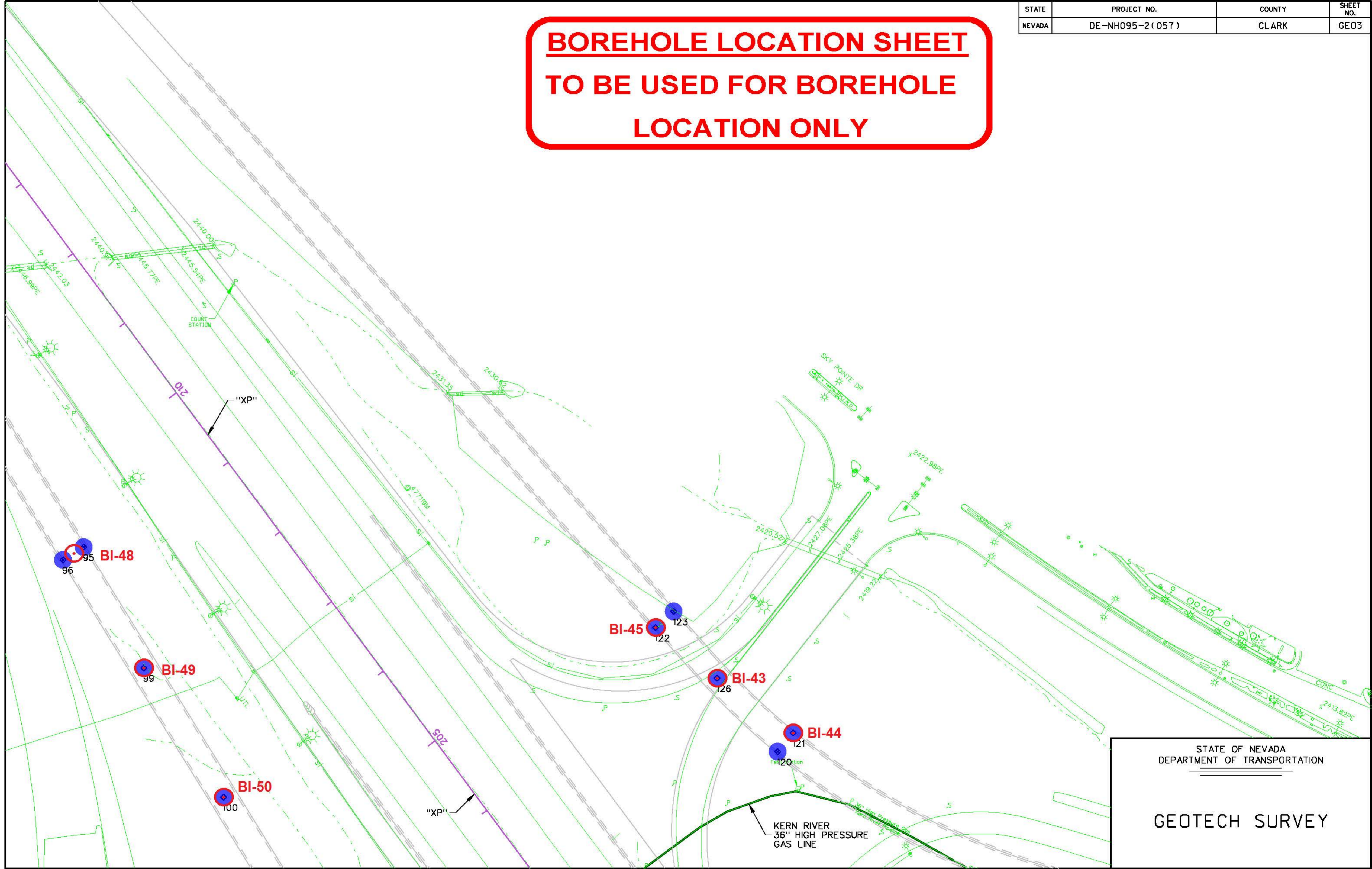


STATE OF NEVADA
 DEPARTMENT OF TRANSPORTATION

GEOTECH SURVEY

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	DE-NH095-2(057)	CLARK	GE03

**BOREHOLE LOCATION SHEET
TO BE USED FOR BOREHOLE
LOCATION ONLY**



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

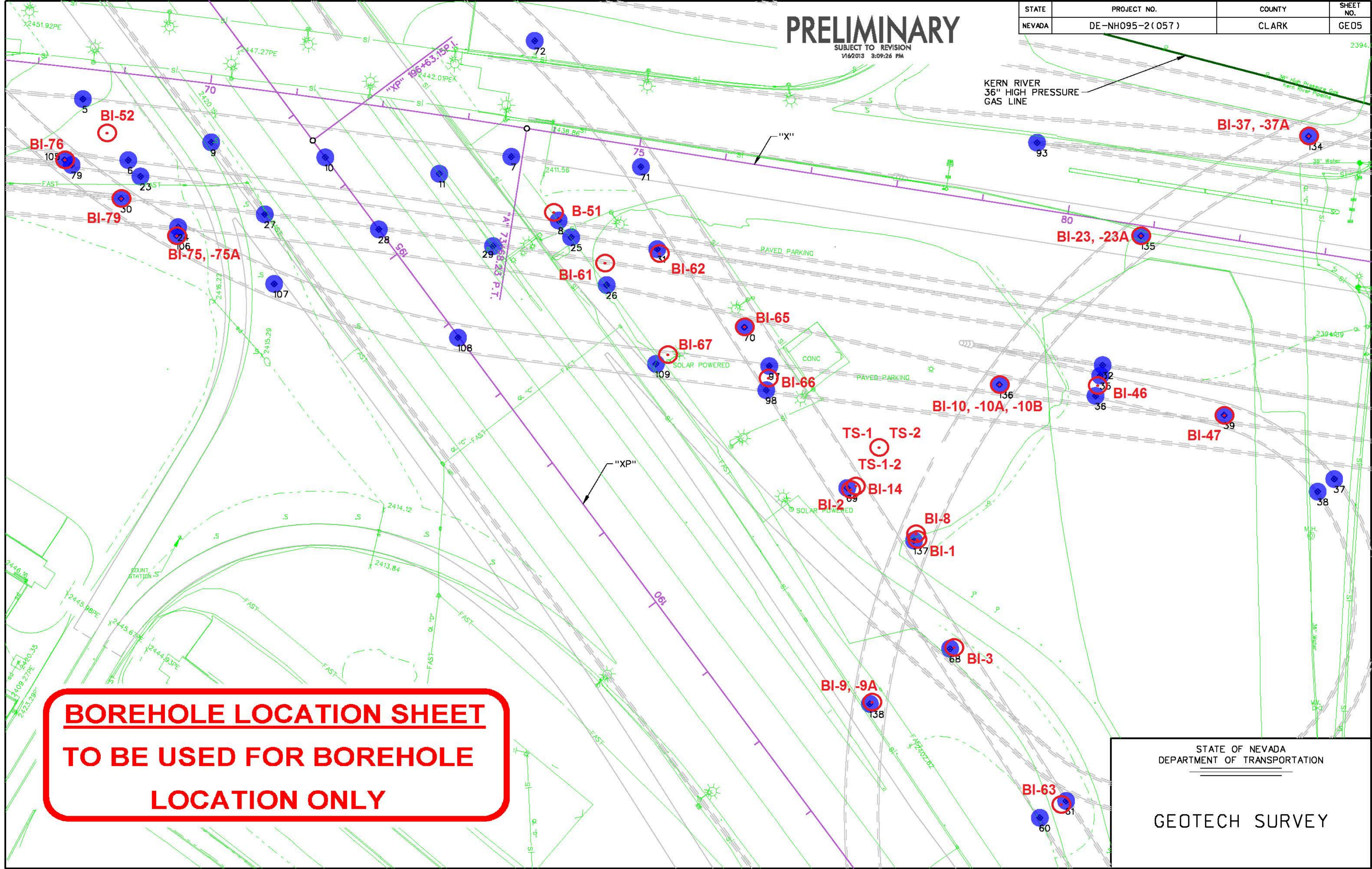
GEOTECH SURVEY

PRELIMINARY

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NEVADA	DE-NH095-2(057)	CLARK	GE05

KERN RIVER
36" HIGH PRESSURE
GAS LINE

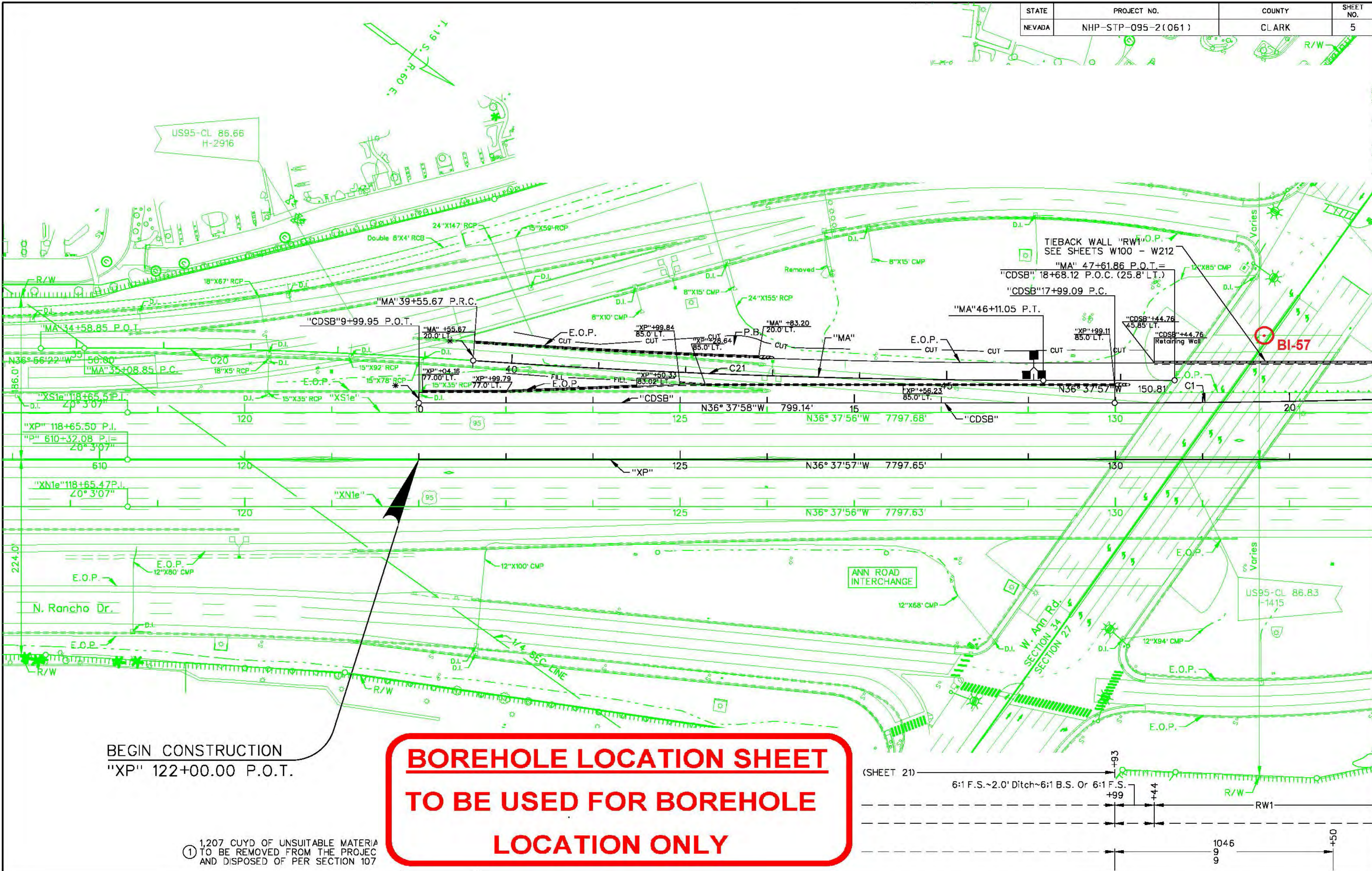


**BOREHOLE LOCATION SHEET
TO BE USED FOR BOREHOLE
LOCATION ONLY**

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

GEOTECH SURVEY

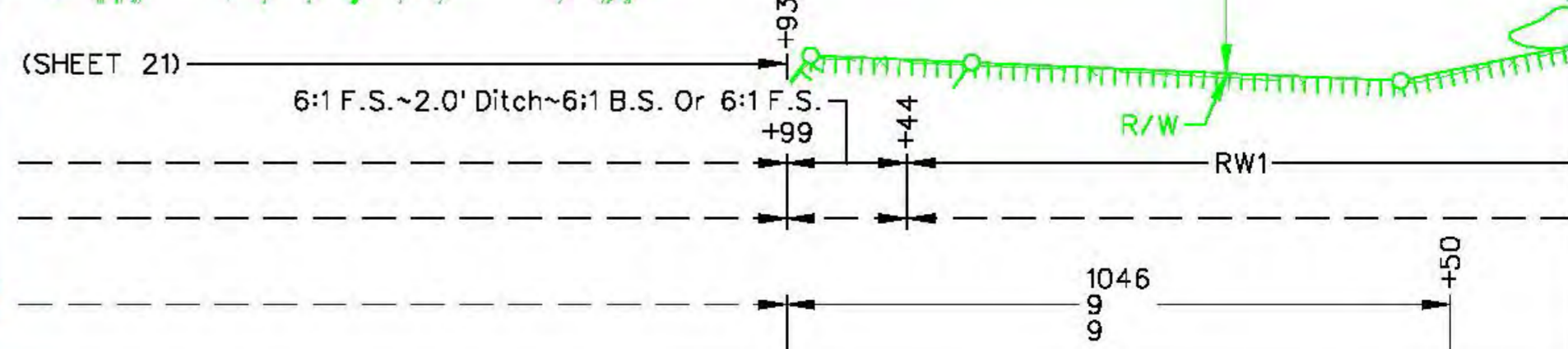
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NEVADA	NHP-STP-095-2(061)	CLARK	5



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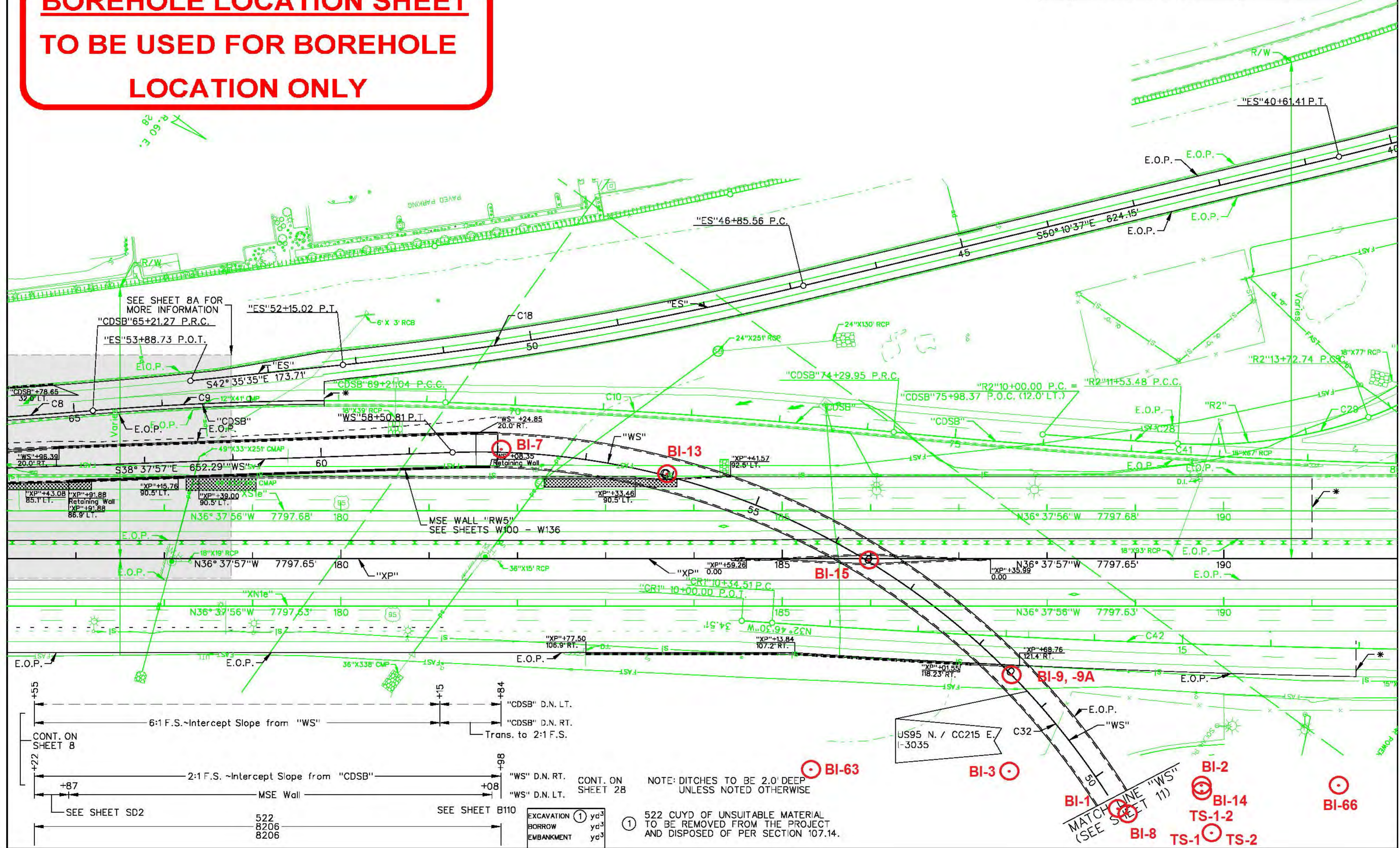
**BOREHOLE LOCATION SHEET
 TO BE USED FOR BOREHOLE
 LOCATION ONLY**

① 1,207 CUYD OF UNSUITABLE MATERIAL TO BE REMOVED FROM THE PROJECT AND DISPOSED OF PER SECTION 107



BOREHOLE LOCATION SHEET TO BE USED FOR BOREHOLE LOCATION ONLY

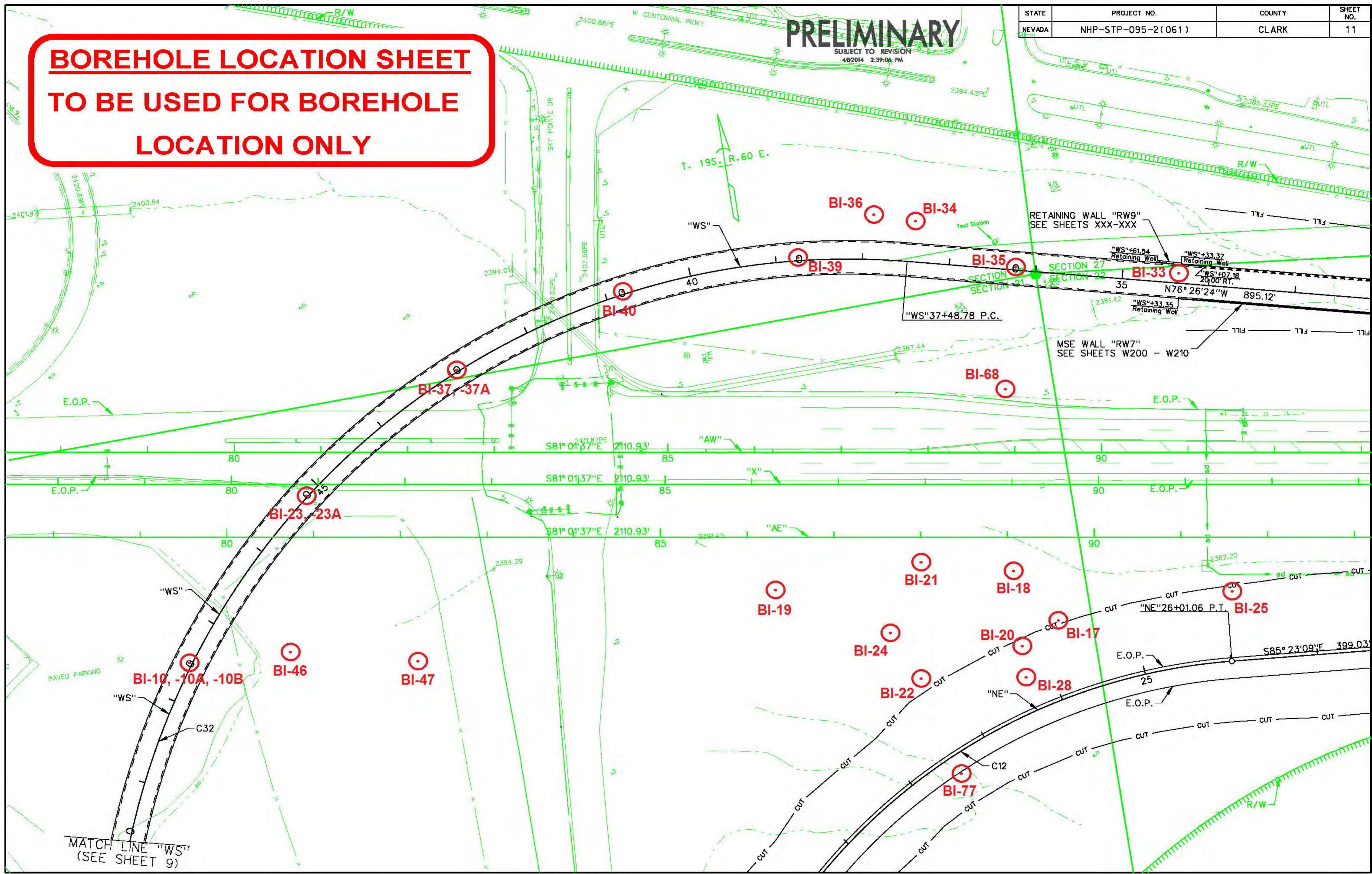
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NEVADA	NHP-STP-095-2(061)	CLARK	9



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-STP-095-2(061)	CLARK	11

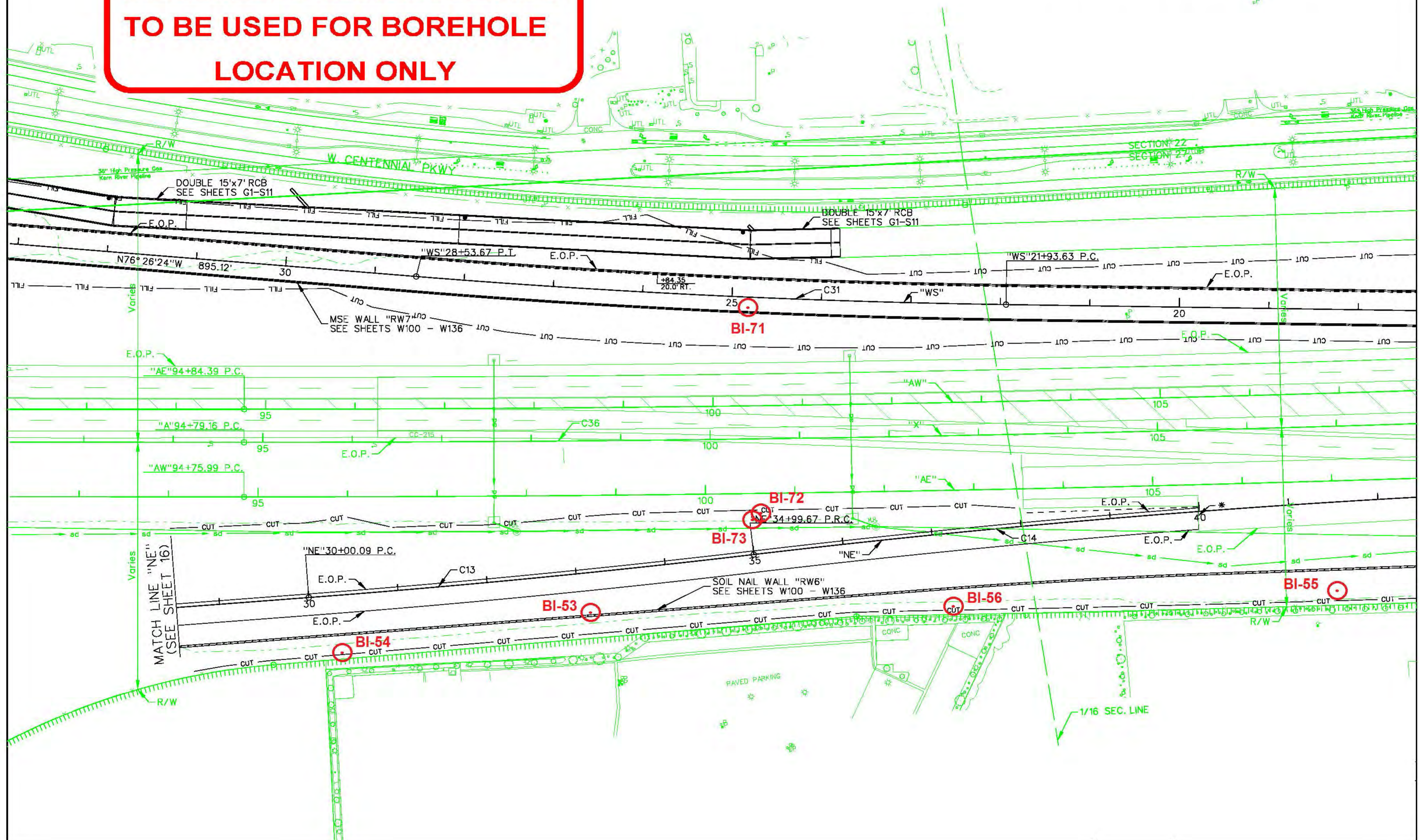
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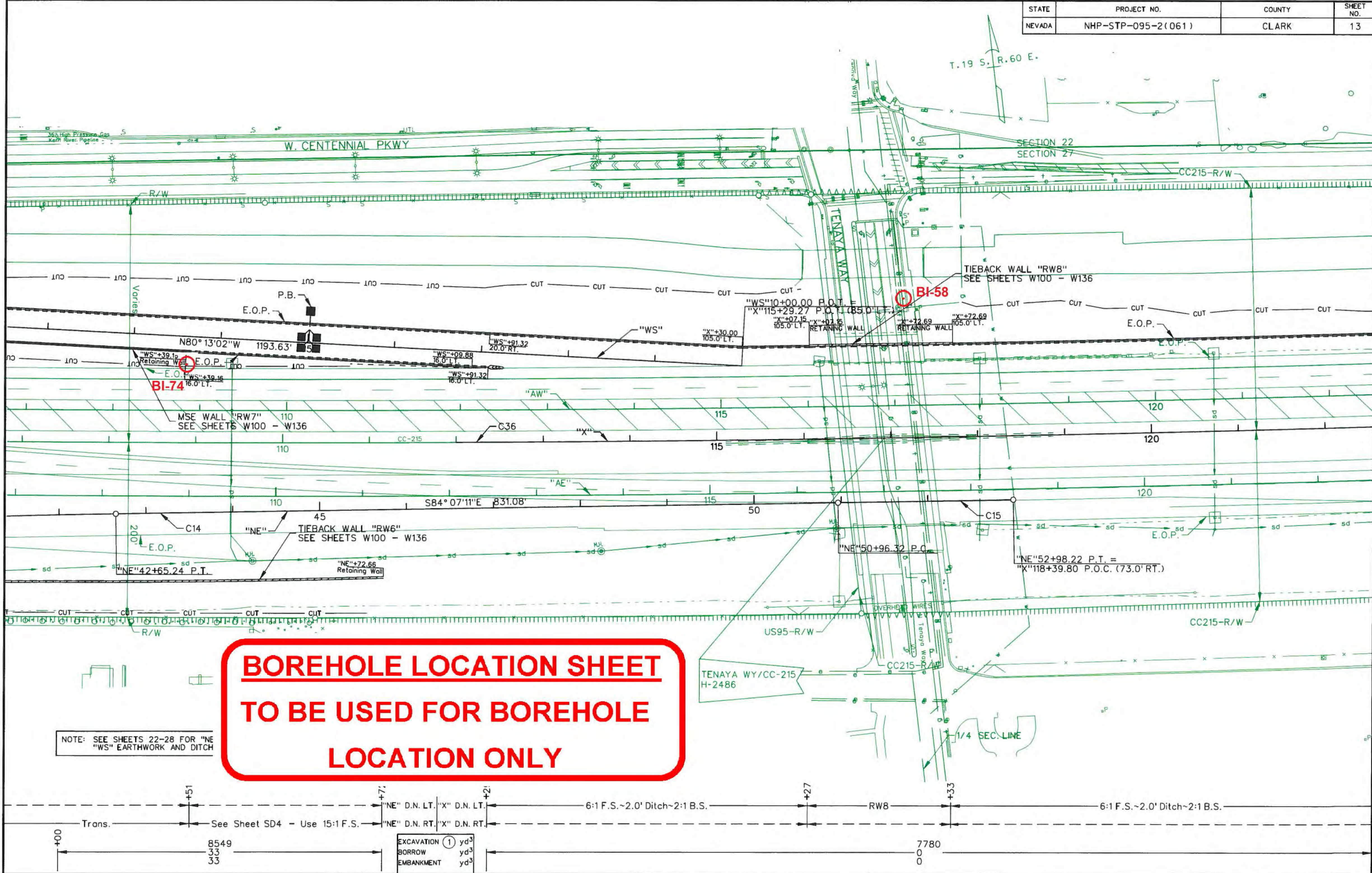


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TO BE USED FOR BOREHOLE
LOCATION ONLY**

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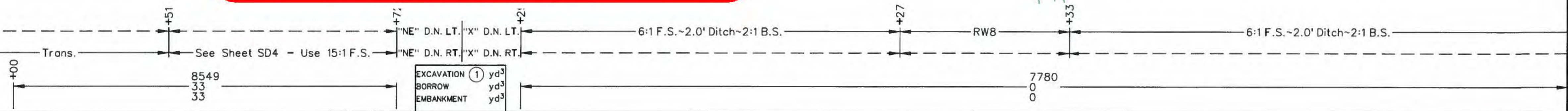


STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-STP-095-2(061)	CLARK	13



**BOREHOLE LOCATION SHEET
TO BE USED FOR BOREHOLE
LOCATION ONLY**

NOTE: SEE SHEETS 22-28 FOR "NE" "WS" EARTHWORK AND DITCH

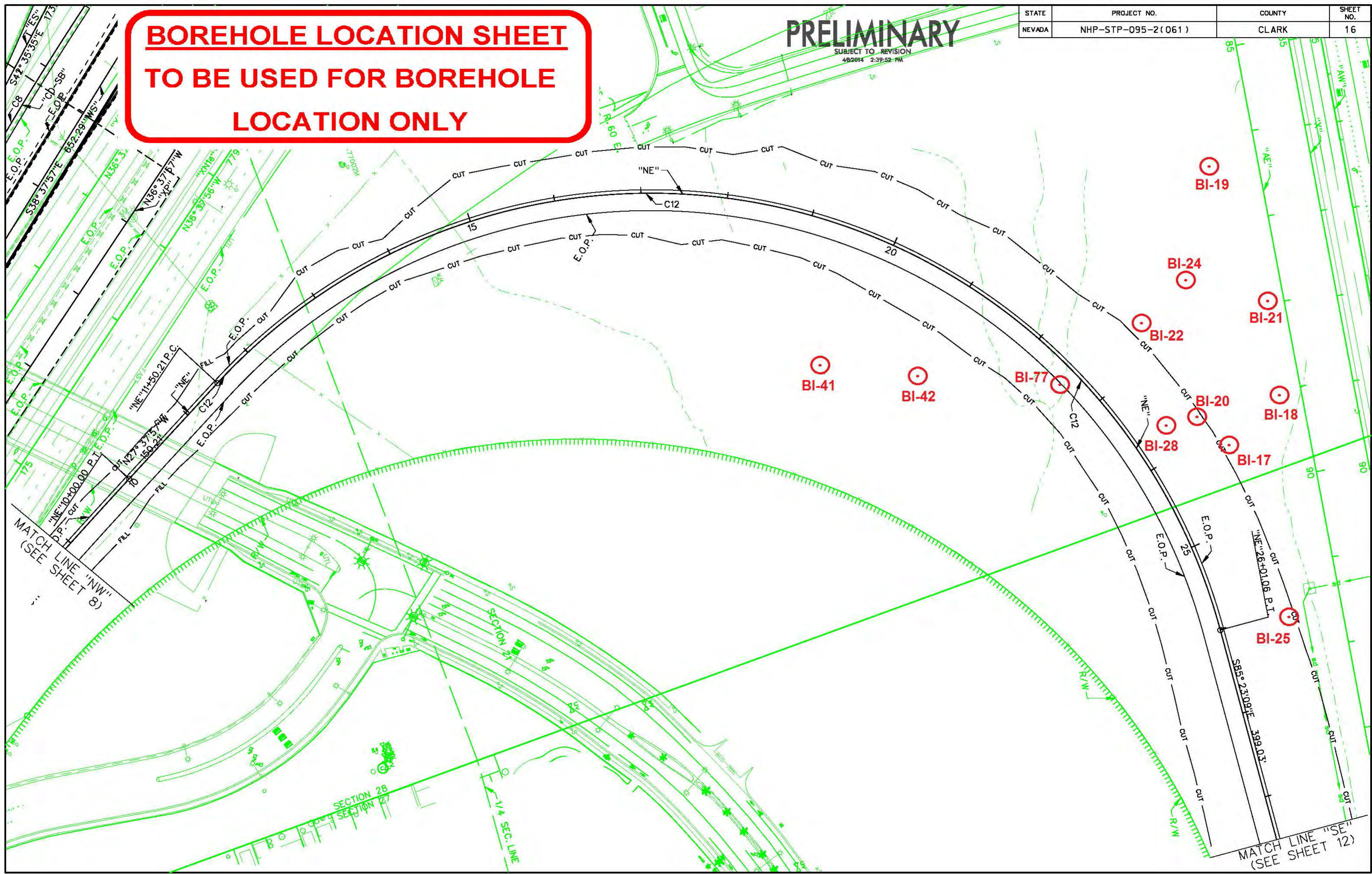


**BOREHOLE LOCATION SHEET
TO BE USED FOR BOREHOLE
LOCATION ONLY**

PRELIMINARY

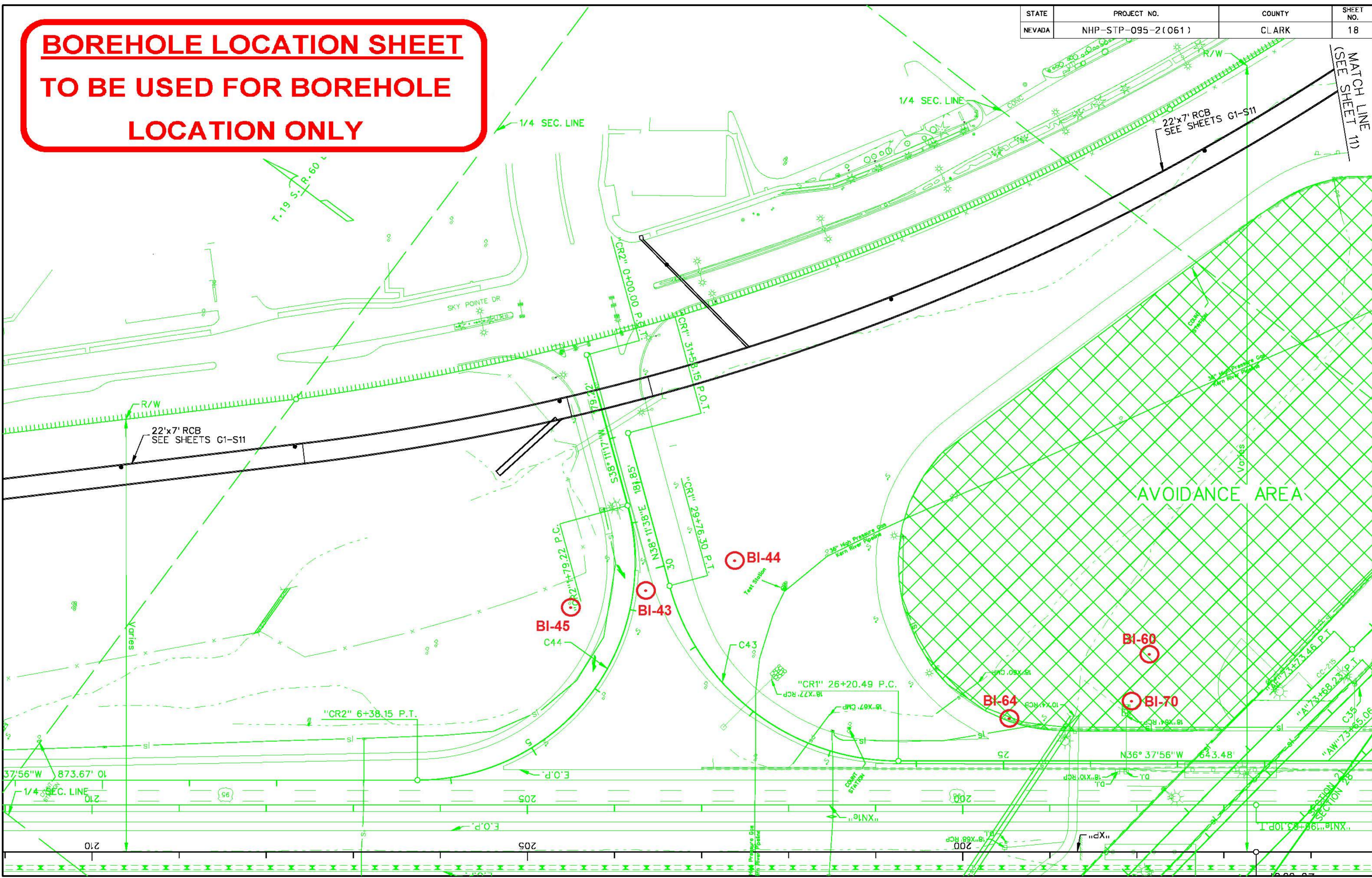
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NEVADA	NHP-STP-095-2(061)	CLARK	16



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-STP-095-2(061)	CLARK	18

**BOREHOLE LOCATION SHEET
TO BE USED FOR BOREHOLE
LOCATION ONLY**



MATCH LINE (1)
(SEE SHEET 11)

22'x7' RCB
SEE SHEETS G1-S11

AVOIDANCE AREA

BI-45
C44

BI-43

BI-44
Tran Station

BI-64

BI-60

BI-70

10' 873.67' 01
W 89° 37' 56"

"CR2" 6+38.15 P.T.

"CR1" 26+20.49 P.C.

W 95° 37' 36" 843.48

210

205

200

"XN16" 198+85.10 P.T.

APPENDIX B

Boring Log Key Boring Logs

KEY TO EXPLORATION 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

<u>Description</u>	<u>Criteria</u>
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

<u>Description</u>	<u>Criteria</u>
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*			
GRANULAR SOIL		CLAYEY SOIL	
BLOWS/FT	DENSITY	BLOWS/FT	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

*Standard Penetration Test (N) 140 lb hammer
30 inch free fall on 2 inch O.D. x 1.4 inch I.D. sampler.

Field Blow counts on California Modified Sampler (NCMS) can be converted to NSPT field by:
(NCMS field)(0.62) = NSPT field

Blow counts from Automatic Hammer can be converted to Standard SPT N₆₀ by:
Rig #1627: (NsPT field)(1.2) = N₆₀
Rig #1082: (NsPT field)(1.45) = N₆₀

<u>TEST ABBREVIATIONS</u>	<u>SAMPLER NOTATION</u>																						
<table border="0" style="width: 100%;"> <tr> <td>CD CONSOLIDATED DRAINED</td> <td>OC ORGANIC CONTENT</td> </tr> <tr> <td>CH CHEMICAL (CORROSIVENESS)</td> <td>C CONSOLIDATION</td> </tr> <tr> <td>CM COMPACTION</td> <td>PI PLASTICITY INDEX</td> </tr> <tr> <td>CU CONSOLIDATED UNDRAINED</td> <td>RQD ROCK QUALITY DESIGNATION</td> </tr> <tr> <td>D DISPERSIVE SOILS</td> <td>RV R-VALUE</td> </tr> <tr> <td>DS DIRECT SHEAR</td> <td>S SIEVE ANALYSIS</td> </tr> <tr> <td>E EXPANSIVE SOIL</td> <td>SL SHRINKAGE LIMIT</td> </tr> <tr> <td>G SPECIFIC GRAVITY</td> <td>U UNCONFINED COMPRESSION</td> </tr> <tr> <td>H HYDROMETER</td> <td>UU UNCONSOLIDATED UNDRAINED</td> </tr> <tr> <td>HC HYDRO-COLLAPSE</td> <td>UW UNIT WEIGHT</td> </tr> <tr> <td>K PERMEABILITY</td> <td>W MOISTURE CONTENT</td> </tr> </table>	CD CONSOLIDATED DRAINED	OC ORGANIC CONTENT	CH CHEMICAL (CORROSIVENESS)	C 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	<p>CMS CALIF. MODIFIED SAMPLER¹</p> <p>CPT CONE PENETRATION TEST</p> <p>CS CONTINUOUS SAMPLER²</p> <p>PB PITCHER BARREL</p> <p>RC ROCK CORE³</p> <p>SH SHELBY TUBE⁴</p> <p>SPT STANDARD PENETRATION TEST</p> <p>TP TEST PIT</p>
CD CONSOLIDATED DRAINED	OC ORGANIC CONTENT																						
CH CHEMICAL (CORROSIVENESS)	C CONSOLIDATION																						
CM COMPACTION	PI PLASTICITY INDEX																						
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H HYDROMETER	UU UNCONSOLIDATED UNDRAINED																						
HC HYDRO-COLLAPSE	UW UNIT WEIGHT																						
K PERMEABILITY	W MOISTURE CONTENT																						
<p>SOIL COLOR DESIGNATIONS ARE FROM THE MUNSELL SOIL/ROCK COLOR CHARTS.</p> <p>EXAMPLE: (7.5 YR 5/3) BROWN</p>																							

- 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

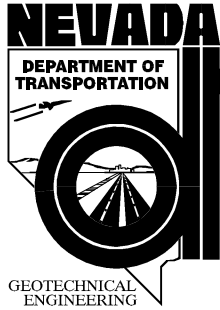


EXPLORATION LOG
 START DATE 2/11/13
 END DATE 2/12/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-1
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 188+79
 OFFSET 283' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2401.1	1.20								SANDY GRAVEL Dry, tan	
	2.50									
	4.00	A	SPT	6 6 7	13	80			LEAN CLAY Dry, medium dense, light brownish gray (10 YR 6/2)	
	5.00									
	6.50	B	SPT	6 6 6	12	60		CL	LEAN CLAY Dry, medium dense, brown (10 YR 5/3)	
2396.1	7.50									
	9.00	C	SPT	9 10 15	25	80			LEAN CLAY with GRAVEL Dry, very stiff, brown (10 YR 5/3) to light brownish gray (10 YR 6/2)	
	10.00									
2391.1	11.50	D	CMS	11 15 19	34	85			LEAN CLAY Dry, very stiff, pale brown (10 YR 6/3)	
	13.00	E	SPT	10 10 13	23	80		CL ML	SILTY CLAY Dry, very stiff, very pale brown (10 YR 7/3)	
	15.00									
2386.1	16.50	F	SPT	20 27 36	63	75		GC GM	SILTY CLAYEY GRAVEL with SAND Dry, very dense, pale brown (10 YR 6/3) to white (10 YR 8/1)	
	20.00									
2381.1	21.50	G	SPT	8 8 9	17	80		CL	SANDY LEAN CLAY Dry, very stiff, light yellowish brown (2.5 Y 6/4)	
	22.50									
2381.1	24.00	H	CMS	20 34 48	82	85			CLAYEY SAND with GRAVEL Dry, very hard, mottled white (10 YR 8/1) to light brownish gray (10 YR 6/2)	
	25.50	I	SPT	23 23 27	50	75		SC	CLAYEY SAND with GRAVEL Dry, very hard, mottled white (10 YR 8/1) to light brownish gray (10 YR 6/2)	
	27.50									
	29.00	J	SPT	9 13 19	32	60		CH	SANDY FAT CLAY Dry, hard, light brownish gray (10 YR 6/2) to white (10 YR 8/1)	(J) Moderately to strongly cemented lens @ 27.8' - 27.9'.
	30.00									



EXPLORATION LOG
 START DATE 2/11/13
 END DATE 2/12/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-1
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 188+79
 OFFSET 283' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2371.1	31.50	K	SPT	7 6 8	14	55		CH	SANDY FAT CLAY Dry, stiff, light brownish gray (10 YR 6/2) to white (10 YR 8/1)	(K) Strongly cemented nodules in sample.
	33.20									
2366.1	35.00	L	SPT	13 13 16	29	60		CL	SANDY LEAN CLAY Dry, very stiff, white (10 YR 8/1) to light brownish gray (10 YR 6/2)	(M) Sample weakly to moderately cemented.
	36.50									
2361.1	40.00	M	SPT	11 18 40	58	80		CL	SANDY LEAN CLAY Dry, hard, light brownish gray (10 YR 6/2)	(N) Sample weakly to moderately cemented.
	41.50									
2356.1	45.00	N	SPT	9 17 29	46	60		GC	SANDY LEAN CLAY Dry, hard, mottled gray (7.5 YR 6/1) to light gray (10 YR 7/1) to white (10 YR 8/1)	(N) Sample weakly to moderately cemented.
	46.50									
2351.1	50.00	O	SPT	12 14 20	34	60		MH	CLAYEY GRAVEL with SAND Dry to moist, hard, mottled very pale brown (10 YR 8/2) to brown (10 YR 5/3)	Harder drilling 48.0' - 50.0'. No water in hole @ 50.0' - day 2. Progress 3.0'/45 minutes @ 50.0' - 53.0' @ 350 psi down pressure. Moderately cemented lens @ 50.3' - 50.4'. End day 1 drilling @ 51.5'. (P) No sample recovered. 350 psi down pressure; progress 0.3'/5 minutes; 0.2'/5 minutes; 0.6'/5 minutes.
	51.50									
2351.1	53.10	P	SPT	20/0.1'	20/0.1'	0		MH	ELASTIC SILT with SAND Moist, very hard, pinkish white (7.5 YR 8/2) to pinkish gray (7.5 YR 7/2)	
	55.00	Q	SPT	32 30 33	63	75				
	56.50									
	60.00									



GEOTECHNICAL ENGINEERING

EXPLORATION LOG

START DATE 2/11/13
 END DATE 2/12/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-1
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 188+79
 OFFSET 283' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
		R	SPT	10/0.0'	10/0.0'	0			61.00 END BI-1 @ 61.0'	Progress 2.0'/20 minutes @ 53.0' - 55.0' @ 350 psi down pressure. Progress 5.0'/30 minutes @ 55.0' - 60.0' @ 350 psi down pressure. (R) No sample recovered. Progress 1.0'/45 minutes @ 60.0' - 61.0' @ 350 psi down pressure; terminate borehole. No groundwater encountered.
2341.1	65									
2336.1	70									
2331.1	75									
2326.1	80									
2321.1	85									



EXPLORATION LOG
 START DATE 2/12/13
 END DATE 2/13/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-2
 E.A. # 73518
 GROUND ELEV. 2406.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+74
 OFFSET 257' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2401.6	0.50							CL ML	Asphaltic Concrete	
	2.50							CL ML	SILTY CLAY with SAND Dry to moist, medium dense, very pale brown (10 YR 7/3)	
	4.00	A	SPT	5 7 5	12	60				
	5.00							CL	LEAN CLAY Dry to moist, very stiff, light gray (10 YR 7/2)	
	6.50	B	SPT	8 9 8	17	80				
	7.00							CL ML	SILTY CLAY with SAND Dry to moist, stiff to very stiff, light gray (10 YR 7/2)	
	8.50	C	CMS	9 11 14	25	100				
	10.00	D	SPT	8 8 12	20	100				
	11.50							CL ML	SILTY CLAY with SAND Dry to moist, stiff to very stiff, light gray (10 YR 7/2)	
	12.00	E	SPT	8 9 9	18	80				
13.50							SM	SILTY SAND Dry, dense, light gray (10 YR 7/2)		
15.00	F	CMS	16 20 28	48	95					
16.50							CL	SANDY LEAN CLAY Dry, dense, light gray (10 YR 7/2)		
15.00	G	SPT	10 13 17	30	65					
18.20							SM	SILTY SAND Dry, very dense, light gray (10 YR 7/1)		
16.50	H	SPT	16 23 33	56	65					
20.00							CH	SANDY FAT CLAY Dry to moist, dense, mottled white (10 YR 8/1) to light yellowish brown (10 YR 6/4) CLAYEY SAND with GRAVEL Dry, very dense, white (10 YR 8/1) to light gray (10 YR 7/1)	(I) Strongly cemented nodules in sample.	
21.50	I	CMS	18 22 27	49	95					
23.00	J	SPT	22 28 34	62	80					
25.00							SC	CLAYEY SAND with GRAVEL Dry to moist, very stiff, light gray (10 YR 7/1)	(K) Sample weakly to moderately cemented.	
26.50	K	SPT	23 14 13	27	60					
30.00										



EXPLORATION LOG
 START DATE 2/12/13
 END DATE 2/13/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-2
 E.A. # 73518
 GROUND ELEV. 2406.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+74
 OFFSET 257' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2371.6	30.90	L	SPT	23 50/0.4'	50/0.4'	60		CL	GRAVELLY LEAN CLAY with SAND. Dry, very hard, white (10 YR 8/1) to light gray (10 YR 7/1)	(L) Sample weakly to moderately cemented. End day 1 drilling @ 30.9'.
	35.00									
	35.80	M	CMS	18 20 28	48	95			FAT CLAY with SAND. Dry to moist, very stiff to hard, light gray (5 Y 7/2)	
2366.6	36.50									
	38.00	N	SPT	9 13 16	29	65		CH	FAT CLAY. Moist, very stiff, light olive gray (5 Y 6/2) to olive gray (5 Y 5/2)	
	40.00									
2361.6	41.50	O	CMS	11 18 27	45	100			FAT CLAY with SAND. Moist, very stiff, light yellowish brown (10 YR 6/4) to light gray (2.5 Y 7/2)	
	43.00	P	SPT	15 14 40	54	95		CL	SANDY LEAN CLAY. Dry to moist, very stiff to hard, light gray (5 Y 7/2)	(P) Strongly cemented lens @ 42.9' - 43.0'.
	44.00									
2356.6	45.00									
	46.50	Q	SPT	8 14 28	42	80		SC	CLAYEY SAND with GRAVEL. Dry to moist, hard, light gray (2.5 Y 7/2) to light brownish gray (2.5 Y 6/2)	
	48.20									
2351.6	50.00									
	50.90	R	SPT	45 50/0.4'	50/0.4'	55		GC GM	SILTY CLAYEY GRAVEL with SAND. Dry, very dense, multi-colored gravel in pinkish gray sand (7.5 YR 7/2)	
	53.00									
2351.6	55.00									
	55.20	S	SPT	24 21 15	36	100		GC	CLAYEY GRAVEL with SAND. Moist, very stiff to hard, pink (7.5 YR 7/3) to light brown (7.5 YR 6/4)	Progress 1.0'/15 minutes @ 57.0' - 58.0' @ 450 psi down pressure. Progress 1.0'/15 minutes @ 58.0' - 59.0' @ 450 psi down pressure. (T) No sample recovered.
	59.00									
	59.20	T	SPT	50/0.2'	50/0.2'	0			END BI-2 @ 59.2'	No groundwater encountered.



EXPLORATION LOG
 START DATE 2/13/13
 END DATE 2/14/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-3
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 187+57
 OFFSET 242' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski/Beus
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2401.1	2.50							CL ML	SANDY GRAVEL Dry, tan 1.20	
	4.00	A	SPT	3 4 5	9	75			<u>SILTY CLAY with SAND</u> Dry, loose to medium dense, very pale brown (10 YR 7/3) 4.50	
	5.00							CL	<u>LEAN CLAY with GRAVEL</u> Dry, medium dense to very dense, very pale brown (10 YR 7/3) 7.50	(B) Sample moderately to strongly cemented @ 6.2' - 6.3'.
	6.30	B	SPT	8 37 50/0.3'	50/0.3'	60			<u>LEAN CLAY with SAND</u> Dry, very dense, very pale brown (10 YR 7/3) 9.00	(C) Sample moderately to strongly cemented @ 8.9' - 9.0'.
	7.50	C	SPT	11 23 37	60	60			9.50	
2396.1	10.00							SC SM	<u>SILTY CLAYEY SAND</u> Dry, very dense, very pale brown (10 YR 7/3) 10.40	(D) Sample moderately to strongly cemented @ 10.3' - 10.4'.
	10.40	D	SPT	50/0.4'	50/0.4'	35				
2391.1	15.00							GM	<u>SILTY CLAYEY SAND with GRAVEL</u> Dry, very dense, very pale brown (10 YR 7/3) 17.00	
	16.50	E	SPT	18 32 45	77	85				
	17.50							GM	<u>SILTY GRAVEL with SAND</u> Dry, very dense, very pale brown (10 YR 7/3) 19.50	
19.00	F	SPT	33 35 43	78	85					
2386.1	20.00							SC SM	<u>SILTY CLAYEY SAND with GRAVEL</u> Dry, dense, very pale brown (10 YR 7/3) 23.20	
	21.50	G	SPT	25 15 25	40	75				
2381.1	25.00							CL	<u>SANDY LEAN CLAY</u> Dry, very dense, very pale brown (10 YR 7/3) 28.20	
	26.50	H	SPT	14 23 29	52	85				
	30.00							ML	<u>SANDY SILT</u> Dry, dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	End day 1 drilling @ 26.5'.



EXPLORATION LOG
 START DATE 2/13/13
 END DATE 2/14/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-3
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 187+57
 OFFSET 242' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski/Beus
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2371.1	31.50	I	CMS	18	60	100		ML	30.80	SANDY SILT Dry, dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	
				26							
				34							
2371.1	33.00	J	SPT	15	32	80		CL	31.50	SANDY SILTY CLAY with GRAVEL Dry, very hard, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	
				15							
				17							
2371.1	35.00	K	SPT	14	29	75		SC	34.00	CLAYEY SAND Dry to moist, very stiff, mottled pink (7.5 YR 7/3) and light gray (10 YR 7/2)	(K) Strongly cemented nodules in sample.
				15							
				14							
2366.1	40.00	L	CMS	12	48	95		CL	40.00	LEAN CLAY with SAND Dry to moist, dense, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1)	(L) Strongly cemented nodules in sample.
				17							
				31							
2366.1	41.50	M	SPT	12	39	75		CL	43.00	LEAN CLAY with SAND Moist, very stiff to hard, mottled light brownish gray (10 YR 6/2) to white (10 YR 8/1)	(N) Strongly cemented nodules in sample.
				20							
				19							
2361.1	45.00	N	CMS	18	65	95		CL	45.00	SANDY LEAN CLAY Moist, hard, mottled light yellowish brown (2.5 Y 6/3) to white (2.5 Y 8/1)	(O) Strongly cemented nodules in sample.
				28							
				37							
2361.1	46.50	O	SPT	12	41	80		CL	48.00	SANDY LEAN CLAY Moist, hard, mottled yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2)	(O) Strongly cemented nodules in sample.
				16							
				25							
2356.1	50.00	P	CMS	27	50	95		GC	51.50	CLAYEY GRAVEL with SAND Dry to moist, very stiff to hard, mottled light brown (7.5 YR 6/3) to brown (7.5 YR 4/3)	(P) Strongly cemented nodules in sample.
				22							
				28							
2351.1	55.00	Q	SPT	14	46	80		GC	55.00	CLAYEY GRAVEL with SAND Dry to moist, hard, mottled pale yellow (2.5 Y 7/3) to light gray (2.5 Y 7/2) to strong brown (7.5 YR 5/6)	(P) Strongly cemented nodules in sample.
				20							
				26							
2351.1	56.50			27	50	95		GC	56.50	CLAYEY GRAVEL with SAND Dry to moist, very stiff to hard, mottled light brown (7.5 YR 6/3) to brown (7.5 YR 4/3)	(P) Strongly cemented nodules in sample.
				22							
				28							
2351.1	58.00			14	46	80		GC	58.00	CLAYEY GRAVEL with SAND Dry to moist, hard, mottled pale yellow (2.5 Y 7/3) to light gray (2.5 Y 7/2) to strong brown (7.5 YR 5/6)	(P) Strongly cemented nodules in sample.
				20							
				26							
									60.00		



GEOTECHNICAL ENGINEERING

EXPLORATION LOG
 START DATE 2/13/13
 END DATE 2/14/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-3
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 187+57
 OFFSET 242' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski/Beus
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2341.1	65.00	R	SPT	16	90	105		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, hard, mottled pale yellow (2.5 Y 7/3) to light gray (2.5 Y 7/2) to strong brown (7.5 YR 5/6)	No groundwater encountered.
	66.50			53						
	66.50			37					END BI-3 @ 66.5'	
2336.1	70									
2331.1	75									
2326.1	80									
2321.1	85									



EXPLORATION LOG
 START DATE 3/4/13
 END DATE 3/5/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-4
 E.A. # 73518
 GROUND ELEV. 2441.40 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 60+50
 OFFSET 192' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2436.4	1.20								SANDY GRAVEL Dry, tan	
	2.50									
	4.00	A	SPT	6 6 8	14	75		CL	SANDY LEAN CLAY Dry, stiff, light gray (10 YR 7/2) to white (7.5 YR 8/1)	(A) Fill; asphalt present.
	5.00									
	6.50	B	SPT	8 7 9	16	80		CL ML	SILTY CLAY Dry, very stiff, pale brown (10 YR 6/3)	
2431.4	7.50									
	9.00	C	SPT	5 9 11	20	85		ML	SILT Dry, very stiff, pale brown (10 YR 6/3)	
	10.00									
	11.50	D	CMS	21 25 21	46	100		CL ML	SILTY CLAY with SAND Dry, very stiff, pale brown (10 YR 6/3)	
	13.00	E	SPT	6 22 29	51	85		GM	SILTY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2)	
2426.4	14.00									
	15.00									
	16.50	F	CMS	16 23 35	58	95		ML	SILT with SAND Dry, very stiff, pale brown (10 YR 6/3)	
2421.4	18.00	G	SPT	19 25 34	59	85		CL	GRAVELLY LEAN CLAY with SAND Dry, hard, light gray (10 YR 7/2)	(G) Gravel from 17.7' - 18.0'.
	20.00									
	21.30	H	CMS	30 30 35/0.3'	35/0.3'	90		GC	CLAYEY GRAVEL with SAND Dry, very hard, light gray (10 YR 7/2)	(H) Last 10 blows; no progress.
2416.4	23.00									
	25.00									
	26.50	I	SPT	5 8 10	18	75		CH	SANDY FAT CLAY Dry, stiff to very stiff, light gray (10 YR 7/2)	
	28.20									
	30.00							SC	CLAYEY SAND with GRAVEL Dry, very dense to hard, light gray (10 YR 7/2) to pink (7.5 YR 7/4)	



EXPLORATION LOG
 START DATE 3/4/13
 END DATE 3/5/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-4
 E.A. # 73518
 GROUND ELEV. 2441.40 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 60+50
 OFFSET 192' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2406.4	31.50	J	CMS	30 29 30	59	95		SC	<u>CLAYEY SAND with GRAVEL</u> Dry, very dense to hard, light gray (10 YR 7/2) to pink (7.5 YR 7/4)	
	33.00	K	SPT	8 9 13	22	60		CH	<u>FAT CLAY with SAND</u> Dry to moist, very stiff, light yellowish brown (10 YR 6/4) to yellowish brown (10 YR 5/4)	
	35.00									
2401.4	36.50	L	SPT	10 7 13	20	80		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very stiff, light gray (10 YR 7/2) to mottled white (10 YR 8/1) to yellowish brown (10 YR 5/4)	
	40.00									
2396.4	41.50	M	SPT	11 17 19	36	80		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, light gray (10 YR 7/1)	
	45.00									
2391.4	46.50	N	SPT	7 13 16	29	95		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very stiff, light gray (10 YR 7/2) to mottled white (10 YR 8/1) to yellowish brown (10 YR 5/4)	
	50.00									
2386.4	51.50	O	SPT	9 14 10	24	85		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, very stiff, light gray (10 YR 7/2) to mottled white (10 YR 8/1) to yellowish brown (10 YR 5/4)	
	55.00									
2386.4	55.30	P	SPT	20/0.3'	20/0.3'	0		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, stiff to very stiff, yellowish brown (10 YR 5/6)	(P) Last 10 blows; no progress. No sample recovered.
	60.00									Progress 0.1/5 minutes @ 55.5' @ 350 psi down pressure. Progress 0.1/5 minutes @ 55.6' @ 450 psi down pressure. Hard drilling



EXPLORATION LOG
 START DATE 3/4/13
 END DATE 3/5/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-4
 E.A. # 73518
 GROUND ELEV. 2441.40 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 60+50
 OFFSET 192' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	61.50	Q	SPT	7 10 9	19	60		GC	CLAYEY GRAVEL with SAND Moist, stiff to very stiff, yellowish brown (10 YR 5/6) 62.00	from 55.5' - 57.0'. (Q) Strongly cemented nodules in sample.
	62.50									
	63.40	R	CMS	6 50/0.4'	50/0.4'	65			SANDY FAT CLAY Moist, stiff to very stiff, yellowish brown (10 YR 5/6) 69.30	(S) Last 10 blows; no progress. No sample recovered. End day 1 drilling @ 65.1'. Hard drilling from 68.5' - 69.3'. Progress 0.4'/10 minutes @ 68.5' @ 500 psi down pressure. Progress 0.2'/15 minutes @ 68.9' @ 500 psi down pressure. No groundwater encountered.
	65.00									
2376.4	65.90	S	SPT	15/0.1'	15/0.1'	0		CH		
	70								END BI-4 @ 69.3'	
2371.4										
2366.4	75									
2361.4	80									
2356.4	85									



EXPLORATION LOG
 START DATE 3/5/13
 END DATE 3/6/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-5
 E.A. # 73518
 GROUND ELEV. 2439.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 60+71
 OFFSET 283' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" HSA/4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2434.3	5.00	A	SPT	7	22	75		CL	SANDY GRAVEL Dry, tan	
	6.50			11					11	
	7.50	B	SPT	8	22	85			LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/1) to white (10 YR 8/1)	
	9.00			11					11	
2429.3	10.00	C	CMS	5	14	85	CL ML	SANDY SILTY CLAY with GRAVEL Dry, medium dense, light gray (10 YR 7/2)		
	11.50			9			11.50			
2424.3	13.00	D	SPT	19	39	80	SC	CLAYEY SAND with GRAVEL Dry, dense, pale brown (10 YR 6/3)		
	15.00			21				18		
	16.50	E	CMS	10	21	80		CLAYEY SAND with GRAVEL Dry, medium dense, pale brown (10 YR 6/3)		
	18.00			12				9		16.50
2419.3	20.00	F	SPT	4	7	45	GC	CLAYEY GRAVEL with SAND Dry, loose, pale brown (10 YR 6/3)		
	21.50			3				4		19.00
	23.00	G	CMS	9	36	85		SC SM		SILTY CLAYEY SAND with GRAVEL Dry, medium dense, pale brown (10 YR 6/3)
	25.00			20				16		21.50
2414.3	26.50	H	SPT	7	15	65	GC GM	SILTY CLAYEY GRAVEL with SAND Dry, medium dense, pale brown (10 YR 6/3)		
	28.00			5				10		24.00
	25.00	I	CMS	11	30	100		CL		LEAN CLAY Dry to moist, medium dense, light yellowish brown (10 YR 6/4)
	26.50			14				16		26.50
		J	SPT	7	22	65	CH	FAT CLAY Dry to moist, medium dense, light yellowish brown (10 YR 6/4)	End day 1 drilling @ 28.0'. Sloughed in to 13.0' depth overnight. Resumed drilling with 4" tri-cone bit and bentonite slurry.	
				8				14		30.00



EXPLORATION LOG

START DATE 3/5/13
 END DATE 3/6/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-5
 E.A. # 73518
 GROUND ELEV. 2439.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 60+71
 OFFSET 283' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" HSA/4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2404.3	33.50	K	SPT	7	27	75		CL	SANDY LEAN CLAY Moist, very stiff, mottled yellowish brown (10 YR 5/6) to yellow (10 YR 7/6) to very pale brown (10 YR 8/2)	Lost circulation @ 33.5'. Lost 250 - 300 gallons of slurry.
	35.00			12						
	36.70			15						
2399.3	38.50	L	SPT	18	41	65		GC	CLAYEY GRAVEL with SAND Dry to moist, hard, multi-colored	
	40.00			18						
	40.70			23						
	42.20	M	SPT	17 22 31	53	80			CLAYEY GRAVEL with SAND Dry to moist, very dense, multi-colored	
									END BI-5 @ 42.2'	No groundwater encountered.
2394.3	45									
2389.3	50									
2384.3	55									



EXPLORATION LOG
 START DATE 3/7/13
 END DATE 3/8/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-6
 E.A. # 73518
 GROUND ELEV. 2440.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 60+71
 OFFSET 247' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2435.0	4.70	5	A SPT	8	15	65		CL	SANDY GRAVEL Dry, tan		
	6.20			8					2.30		
	6.20			7					<u>LEAN CLAY with SAND</u> Moist, stiff to very stiff, pale yellow (2.5 Y 7/3)		
2430.0	9.70	10	B SPT	11	50/0.4'	85		GM	7.90		
	11.10			21					10.40		<u>SILTY GRAVEL with SAND</u> Dry to moist, very hard, light brown (7.5 YR 6/3) to light gray (2.5 Y 7/2)
	11.10			50/0.4'					<u>LEAN CLAY with SAND</u> Dry to moist, very hard, light brown (7.5 YR 6/3) to light gray (2.5 Y 7/2)		
2425.0	14.70	15	C SPT	14	58	75		ML	12.90		
	16.20			24					<u>SILT with SAND</u> Dry to moist, hard, light yellowish brown (10 YR 6/4) to light gray (2.5 Y 7/2)		
	16.20			34							
2420.0	19.70	20	D CMS	28	50/0.4'	65		CL ML	17.90		
	20.60			50/0.4'					20.60		<u>SANDY SILTY CLAY</u> Dry to moist, very dense, light yellowish brown (10 YR 6/4) with multi colored gravel.
	21.90			30					25/0.3'		70
21.90	32	23.20									
2415.0	24.70	25	F SPT	11	34	55		CL	28.40		
	26.20			14					<u>SANDY LEAN CLAY</u> Dry to moist, hard, light yellowish brown (10 YR 6/4) to pale yellow (2.5 Y 8/2)		
	26.20			20					30.00		<u>CLAYEY SAND</u> Dry to moist, hard, light brownish gray (2.5 Y 6/2) to light yellowish brown (10 YR 6/4)

(E) Last 10 blows; no progress.



GEOTECHNICAL ENGINEERING

START DATE 3/7/13
 END DATE 3/8/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-6
 E.A. # 73518
 GROUND ELEV. 2440.00 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 60+71
 OFFSET 247' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2405.0	30.70	G	SPT	17	33	65		SC	<u>CLAYEY SAND</u> Dry to moist, hard, light brownish gray (2.5 Y 6/2) to light yellowish brown (10 YR 6/4)		
	32.20			15							18
2400.0	34.70	H	SPT	10	31	55		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, hard, strong brown (7.5 YR 5/6)		
	35			11							20
	36.20			20							
2395.0	40	I	SPT	50/0.5'	50/0.5'	70		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, hard, strong brown (7.5 YR 5/6)	(I) Rock in sampler shoe.	
	45.20										
2385.0	50	J	SPT	23	40/0.4'	90		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 YR 5/6)	(J) Last 10 blows; no progress.	
	54.70			40							
	55.60									Hard drilling at 58.0'. Lost circulation @ 59.0'.	
	60.00										



EXPLORATION LOG

START DATE 3/7/13
 END DATE 3/8/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-6
 E.A. # 73518
 GROUND ELEV. 2440.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 60+71
 OFFSET 247' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2375.0	64.70	K	SPT	12	19	65		CH	SANDY FAT CLAY Moist, very stiff, white (10 YR 8/1) to light brown (7.5 YR 6/4)	
	65			10						
	66.20			9						
2370.0	70							CL	LEAN CLAY Moist, hard, light brown (7.5 YR 6/4)	End day 1 drilling @ 70.0'. Hard drilling from 70.0' - 71.0'. Progress 1.0'/15 minutes @ 200 psi down pressure; up to 300 psi down pressure.
	74.00									
2365.0	75	L	SPT	14					END BI-6 @ 75.5'	No groundwater encountered.
	75.50			29						
2360.0	80									
2355.0	85									



EXPLORATION LOG
 START DATE 3/18/13
 END DATE 3/19/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-7
 E.A. # 73518
 GROUND ELEV. 2402.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 181+80
 OFFSET 125' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2397.6	1.20							ML	SANDY GRAVEL Dry, tan	
	2.50							ML	SILT with SAND Dry, medium dense, yellowish brown (10 YR 5/4)	(C) Last 10 blows; no progress. (D) Moderately to strongly cemented nodules in sample. (E) Moderately to strongly cemented nodules in sample.
	4.00	A	SPT	8 9 7	16	95				
	5.00							CL	SANDY LEAN CLAY Dry, very stiff, very pale brown (10 YR 7/3)	
	6.50	B	SPT	12 12 10	22	85				
7.50 7.70	C	CMS	15/0.2'	15/0.2'	0					
2392.6	9.00							SC	LEAN CLAY with SAND Dry, hard, light gray (7.5 Y 7/2) to white (2.5 Y 8/1)	
	10.50	D	CMS	12 15 17	32	100				
	12.00							SC	LEAN CLAY with SAND Dry, very stiff, light gray (7.5 Y 7/2) to white (2.5 Y 8/1)	
	12.50	E	SPT	10 12 11	23	85				
	13.00							SC SM	CLAYEY SAND with GRAVEL Dry, very dense, yellowish brown (10 YR 5/4)	
13.00	F	CMS	12 21	30/0.4'	80					
2387.6	15.00							SC SM	SILTY CLAYEY SAND with GRAVEL Dry, dense, very pale brown (10 YR 7/3)	
	15.50	G	SPT	50 21 18	39	75				
	17.50							SC	CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)	
19.00	H	SPT	20 30 26	56	80					
2382.6	20.00							SC SM	SILTY CLAYEY SAND with GRAVEL Dry, dense, very pale brown (10 YR 8/3)	
	21.50	I	SPT	14 16 27	43	95				
2377.6	25.00							SM	SILTY SAND Dry, dense, very pale brown (10 YR 8/3)	
	26.50	J	SPT	20 30 37	67	95				
	30.00									



GEOTECHNICAL ENGINEERING

EXPLORATION LOG

START DATE 3/18/13
 END DATE 3/19/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-7
 E.A. # 73518
 GROUND ELEV. 2402.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 181+80
 OFFSET 125' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS																																																																																																																
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd																																																																																																																				
	30.20	K	CMS	20/0.2'	20/0.2'	0		SM	<p>SILTY SAND with GRAVEL Dry, very dense, pale yellow (2.5 Y 7/3)</p>	<p>(K) Last 10 blows; no progress. No sample recovered. (L) Last 10 blows; no progress. No sample recovered.</p>																																																																																																																
	32.50 32.70	L	SPT	20/0.2'	20/0.2'	0					2367.6	35.00 36.40	M	SPT	20 25 50/0.4'	50/0.4'	100														38.30		2362.6	40.00 41.50	N	CMS	8 8 16	24	95		CL	<p>LEAN CLAY with SAND Dry to moist, medium dense, pale yellow (2.5 Y 7/4)</p> <p>LEAN CLAY with SAND Dry to moist, stiff, pale yellow (2.5 Y 7/3)</p>	<p>End day 1 drilling @ 46.5'.</p>		43.00	O	SPT	6 5 6	11	95		2357.6	45.00 46.50	P	SPT	7 9 13	22	85					2352.6	50.00 51.50	Q	CMS	16 23 45	68	100		SC	<p>GRAVELLY LEAN CLAY with SAND Moist, hard to very hard, light brownish gray (2.5 Y 6/2)</p> <p>LEAN CLAY with SAND Moist, very hard, light brownish gray (2.5 Y 6/2)</p>	<p>(Q) Moderately to strongly cemented nodules in sample.</p>		52.90	R	SPT	17 28 50/0.4'	50/0.4'	85											54.00		2347.6	55.00 56.50	S	SPT	38 34 23	57	75													GC	<p>CLAYEY GRAVEL with SAND Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)</p>	<p>Hard drilling at 58.0'. Progress 1.0'/10 minutes @ 68.5' @ 250</p>		60.00						
2367.6	35.00 36.40	M	SPT	20 25 50/0.4'	50/0.4'	100																																																																																																																				
									38.30																																																																																																																	
2362.6	40.00 41.50	N	CMS	8 8 16	24	95		CL	<p>LEAN CLAY with SAND Dry to moist, medium dense, pale yellow (2.5 Y 7/4)</p> <p>LEAN CLAY with SAND Dry to moist, stiff, pale yellow (2.5 Y 7/3)</p>	<p>End day 1 drilling @ 46.5'.</p>																																																																																																																
	43.00	O	SPT	6 5 6	11	95					2357.6	45.00 46.50	P	SPT	7 9 13	22	85					2352.6	50.00 51.50	Q	CMS	16 23 45	68	100		SC	<p>GRAVELLY LEAN CLAY with SAND Moist, hard to very hard, light brownish gray (2.5 Y 6/2)</p> <p>LEAN CLAY with SAND Moist, very hard, light brownish gray (2.5 Y 6/2)</p>	<p>(Q) Moderately to strongly cemented nodules in sample.</p>		52.90	R	SPT	17 28 50/0.4'	50/0.4'	85											54.00		2347.6	55.00 56.50	S	SPT	38 34 23	57	75													GC	<p>CLAYEY GRAVEL with SAND Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)</p>	<p>Hard drilling at 58.0'. Progress 1.0'/10 minutes @ 68.5' @ 250</p>		60.00								60.00																																							
2357.6	45.00 46.50	P	SPT	7 9 13	22	85																																																																																																																				
2352.6	50.00 51.50	Q	CMS	16 23 45	68	100		SC	<p>GRAVELLY LEAN CLAY with SAND Moist, hard to very hard, light brownish gray (2.5 Y 6/2)</p> <p>LEAN CLAY with SAND Moist, very hard, light brownish gray (2.5 Y 6/2)</p>	<p>(Q) Moderately to strongly cemented nodules in sample.</p>																																																																																																																
	52.90	R	SPT	17 28 50/0.4'	50/0.4'	85														54.00		2347.6	55.00 56.50	S	SPT	38 34 23	57	75													GC	<p>CLAYEY GRAVEL with SAND Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)</p>	<p>Hard drilling at 58.0'. Progress 1.0'/10 minutes @ 68.5' @ 250</p>		60.00								60.00																																																																					
									54.00																																																																																																																	
2347.6	55.00 56.50	S	SPT	38 34 23	57	75																																																																																																																				
								GC	<p>CLAYEY GRAVEL with SAND Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)</p>	<p>Hard drilling at 58.0'. Progress 1.0'/10 minutes @ 68.5' @ 250</p>																																																																																																																
	60.00											60.00																																																																																																														



GEOTECHNICAL ENGINEERING

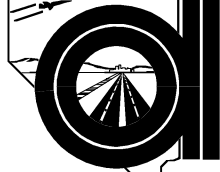
START DATE 3/18/13
 END DATE 3/19/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-7
 E.A. # 73518
 GROUND ELEV. 2402.60 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 181+80
 OFFSET 125' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	60.70	T	CMS	27 35/0.2'	35/0.2'	85		GC	CLAYEY GRAVEL with SAND Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	psi down pressure. Progress 0.5/7 minutes @ 400 psi down pressure. Easier drilling @ 59.5'. (T) Last 10 blows; no progress.
2337.6	65.90	U	SPT	10/0.1'	10/0.1'	0				(U) Last 10 blows; no progress. No sample recovered.
2332.6	70.00	V	CMS	11 11 16	27	100		CL	GRAVELLY LEAN CLAY Moist, very stiff, strong brown (7.5 YR 5/6) to pink (7.5 YR 7/4)	(V) 10 blows; no progress.
	71.50	W	SPT	8 9 25	34	100			LEAN CLAY with SAND Moist, hard, light brown (7.5 YR 6/4) to pinkish white (7.5 YR 8/2)	
	73.00									
2327.6	75.00	X	CMS	24 32 51	83	105			LEAN CLAY with SAND Moist, very hard, pink (7.5 YR 7/4)	
	76.50									
	78.00	Y	SPT	7 9 21	30	105			SILTY CLAY Moist, very stiff, brown (7.5 YR 5/4)	
2322.6	80.00	Z	CMS	38 56 43	99	115		CL ML	SANDY SILTY CLAY Moist, very hard, light brown (7.5 YR 6/3) to brownish yellow (10 YR 6/6)	
	81.50								SILTY CLAY with SAND Moist, very hard, light brown (7.5 YR 6/3) to brownish yellow (10 YR 6/6)	
	83.00	AA	SPT	14 21 27	48	85			END BI-7 @ 83.0'	No groundwater encountered.
2317.6	85									

NEVADA**DEPARTMENT OF
TRANSPORTATION**GEOTECHNICAL
ENGINEERINGSTART DATE 3/20/13END DATE 3/21/13JOB DESCRIPTION US95 / CC-215 System-to-System InterchangeLOCATION Northwest Las Vegas - Clark CountyBORING BI-8E.A. # 73518GROUND ELEV. 2405.90 (ft)HAMMER DROP SYSTEM Automatic**EXPLORATION LOG**

SHEET 1 OF 4

 STATION "XP" 188+86
 OFFSET 288' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/7/13	63.50	2342.4

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2400.9	5							SANDY GRAVEL Dry, tan		
								2.50		
2395.9	10									
2390.9	15									
2385.9	20									
2380.9	25									



EXPLORATION LOG
 START DATE 3/20/13
 END DATE 3/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-8
 E.A. # 73518
 GROUND ELEV. 2405.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 188+86
 OFFSET 288' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/7/13	63.50	2342.4

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2370.9	35	A	SPT	50/0.2'	50/0.2'	0				(A) No sample recovered.
2365.9	40								40.00	
2360.9	45	B	SPT	7 10 20	30	75		CL	LEAN CLAY with SAND Moist, very stiff, mottled pale olive (5 Y 6/3) to brown (10 YR 5/3) to light gray (10 YR 7/2)	
2355.9	50								50.00	
2350.9	55	C	SPT	18 28 38	66	65		GM	SILTY GRAVEL with SAND Moist, very hard, mottled brown (7.5 YR 5/4) to pink (7.5 YR 8/3)	
									60.00	



EXPLORATION LOG

START DATE 3/20/13
 END DATE 3/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-8
 E.A. # 73518
 GROUND ELEV. 2405.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 188+86
 OFFSET 288' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/7/13	63.50	2342.4

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2310.9	94.30							CL	<u>LEAN CLAY</u> Moist, very hard, light brown (10 YR 6/3 to 10 YR 6/4) <u>LEAN CLAY</u> Moist, very hard, light brown (10 YR 6/3 to 10 YR 6/4)	97.20
	95	K	CMS	14 20	50/0.4	100				
	95.70			5 7	16	115				
	97.20	L	SPT	9						
2305.9	100									
2300.9	105									
2295.9	110									
2290.9	115									



EXPLORATION LOG
 START DATE 4/1/13
 END DATE 4/1/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-9
 E.A. # 73518
 GROUND ELEV. 2406.80 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 187+60
 OFFSET 128' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/1/13	75.00	2331.8

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2401.8	1.20							CL	SANDY GRAVEL Dry, tan	
	2.50									
	4.00	A	SPT	3 2 3	5	45			LEAN CLAY Dry, medium stiff, yellowish brown (10 YR 5/4)	
	5.00									
	6.50	B	SPT	6 9 15	24	80			LEAN CLAY Dry, very stiff, pale brown (10 YR 6/3)	
2396.8	7.50									
	9.00	C	SPT	5 9 15	24	80		CL	LEAN CLAY Dry, very stiff, pale brown (10 YR 6/3) to pinkish gray (7.5 YR 7/2)	
	10.00									
	11.50	D	CMS	17 20 36	56	95			SANDY LEAN CLAY Dry, hard, light gray (2.5 Y 7/2) to pale yellow (2.5 Y 7/3)	
2391.8	13.00	E	SPT	22 14 14	28	65			SANDY LEAN CLAY Dry, hard, light gray (2.5 Y 7/2) to pale yellow (2.5 Y 7/3)	
	14.00									
	15.00									
	16.50	F	CMS	16 31 38	69	100			SILTY SAND with GRAVEL Dry, very dense, light gray (10 YR 7/2)	
	18.00	G	SPT	18 30 46	76	80		SM	SILTY SAND with GRAVEL Dry, very dense, light gray (10 YR 7/2)	
2386.8	20.00									
	20.80	H	SPT	25 35/0.3'	35/0.3'	100			SILTY SAND with GRAVEL Dry, very dense, light gray (10 YR 7/2)	(H) Last 10 blows; no progress.
2381.8	22.90									
	25.00									
	26.50	I	SPT	11 7 12	19	80		CL	LEAN CLAY Dry, medium dense, very pale brown (10 YR 7/3)	
	30.00									



GEOTECHNICAL ENGINEERING

START DATE 4/1/13
 END DATE 4/1/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-9
 E.A. # 73518
 GROUND ELEV. 2406.80 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 187+60
 OFFSET 128' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/1/13	75.00	2331.8

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2371.8	31.50	J	CMS	11 13 15	28	100		CL	<u>LEAN CLAY with SAND</u> Dry, very stiff, pale brown (10 YR 6/3)	
	33.00	K	SPT	10 20 20	40	80				
	35.00									
2366.8	36.50	L	SPT	7 9 10	19	95		CL ML	<u>SILTY CLAY with SAND</u> Dry, very stiff, pale brown (10 YR 6/3)	
	40.00									
	41.50	M	CMS	6 10 18	28	95				
2361.8	43.00	N	SPT	6 39 57	96	100		CL SM	<u>LEAN CLAY with SAND</u> Dry, very stiff, pale brown (10 YR 6/3)	
	45.00									
	46.50	O	SPT	5 9 13	22	85				
2356.8	50.00							CH	<u>SILTY SAND with GRAVEL</u> Dry to moist, very dense, light brownish gray (2.5 Y 6/2)	
	51.50	P	SPT	5 8 18	26	95				
	55.00									
2351.8	56.50	Q	CMS	12 22 35	57	100		GM	<u>FAT CLAY with SAND</u> Dry to moist, very stiff, dark yellowish brown (10 YR 4/4) to pale olive (5 Y 6/3)	
	58.00	R	SPT	12 8 10	18	60				
	60.00									
								GC	<u>SANDY FAT CLAY</u> Dry to moist, very stiff, dark yellowish brown (10 YR 4/4) to pale olive (5 Y 6/3)	
									<u>SILTY GRAVEL with SAND</u> Dry to moist, very dense, multi-colored	
									<u>CLAYEY GRAVEL</u> Moist, very stiff, mottled yellowish brown (10 YR 5/4) to pinkish white (7.5 YR 8/2)	



EXPLORATION LOG

START DATE 4/1/13
 END DATE 4/1/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-9
 E.A. # 73518
 GROUND ELEV. 2406.80 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 187+60
 OFFSET 128' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/1/13	75.00	2331.8

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2341.8	65.00							GC	61.50 ----- GRAVELLY LEAN CLAY Moist, medium stiff to stiff, mottled yellowish brown (10 YR 5/4) to pinkish white (7.5 YR 8/2)	
	66.50	S	SPT	3 4 7	11	75	CL			
	2336.8	70								
2331.8	75.00							CL ML	76.50 SILTY CLAY with SAND Wet, hard, brown (7.5 YR 5/4)	(T) Free water on sampler @ 75.0'.
	76.50	T	SPT	17 13 22	35	100		76.50		
2326.8	80								END BI-9 @ 76.5'	
2321.8	85									



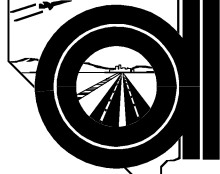
EXPLORATION LOG

START DATE 10/23/13
 END DATE 10/23/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-9A
 E.A. # 73518
 GROUND ELEV. 2406.80 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 187+60
 OFFSET 128' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/1/13	75.00	2331.8

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2401.8	5								SANDY GRAVEL Dry, tan	Continue Borehole BI-9 as BI-9A from 76.5'.
									2.50	
2396.8	10									
2391.8	15									
2386.8	20									
2381.8	25									

NEVADA**DEPARTMENT OF
TRANSPORTATION**GEOTECHNICAL
ENGINEERINGSTART DATE 10/23/13END DATE 10/23/13JOB DESCRIPTION US95 / CC-215 System-to-System InterchangeLOCATION Northwest Las Vegas - Clark CountyBORING BI-9AE.A. # 73518GROUND ELEV. 2406.80 (ft)HAMMER DROP SYSTEM Automatic**EXPLORATION LOG**

SHEET 2 OF 5

 STATION "XP" 187+60
 OFFSET 128' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/1/13	75.00	2331.8

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2371.8	35									
2366.8	40									
2361.8	45									
2356.8	50									
2351.8	55									



EXPLORATION LOG

START DATE 10/23/13
 END DATE 10/23/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-9A
 E.A. # 73518
 GROUND ELEV. 2406.80 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 187+60
 OFFSET 128' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/1/13	75.00	2331.8

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2341.8	65									
2336.8	70									
2331.8	75									
									78.00	
2326.8	80	A	CMS	11 22 29	51	100		CL	<u>LEAN CLAY with SAND</u> Moist, hard, pale brown (10 YR 6/3) to light yellowish brown (10 YR 6/4) <u>LEAN CLAY</u> Moist, very stiff, pale brown (10 YR 6/3) to light yellowish brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/8)	
	80.90			7						
	82.40	B	SPT	8 10	18	95				
	84.40									
2321.8	85	C	CMS	25 48	50/0.3'	100		ML	<u>GRAVELLY LEAN CLAY</u> Moist, very hard, pale brown (10 YR 7/4) to light yellowish brown (10 YR 6/4)	
	85.70			50/0.3'						
	86.60	D	SPT	41 50/0.4'	50/0.4'	80				
									88.00	
	89.40							CL ML	<u>SILTY CLAY with SAND</u> Moist, very hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	
				46						90.00

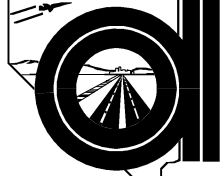


EXPLORATION LOG
 START DATE 10/23/13
 END DATE 10/23/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-9A
 E.A. # 73518
 GROUND ELEV. 2406.80 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 187+60
 OFFSET 128' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/1/13	75.00	2331.8

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2311.8	90.70	E	CMS	56	50/0.3'	100		CL ML	<u>SILTY CLAY with SAND</u> Moist, very hard, very pale brown (10 YR 7/3 to 10 YR 8/2)		
	94.40			13							
	95.90	95	F	CMS	27	82	100		95.90	<u>SILTY CLAY</u> Moist, hard, very pale brown (10 YR 8/2)	
2306.8	97.40	G	SPT	15	20	43	105	CL	<u>LEAN CLAY</u> Moist, hard, light gray (5 YR 7/2) mottled with brownish yellow (10 YR 6/8)		
	99.40			23							
	100.90	100	H	CMS	17	24	65	100	100.90	<u>SANDY LEAN CLAY</u> Moist, very hard, light gray (5 YR 7/2) mottled with brownish yellow (10 YR 6/8)	
2301.8	102.40	I	SPT	15	25	78	105	CL ML	<u>SILTY CLAY with SAND</u> Moist, very hard, light gray (5 YR 7/2) mottled with brownish yellow (10 YR 6/8)		
	105			53							
	109.40										
2296.8	110.90	110	J	CMS	15	37	80	95	110.90	<u>SILTY CLAY with SAND</u> Moist, very hard, light yellowish brown (10 YR 6/4)	
	112.40				14	14	38	115			
2291.8	115							CL	<u>LEAN CLAY</u> Moist, very stiff to hard, moist, light yellowish brown (10 YR 6/4)		
	119.40										
					12						



EXPLORATION LOG

START DATE 10/23/13
 END DATE 10/23/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-9A
 E.A. # 73518
 GROUND ELEV. 2406.80 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 187+60
 OFFSET 128' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/1/13	75.00	2331.8

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	120.90	L	CMS	17	47	20		CL	120.90 LEAN CLAY Moist, very stiff to hard, light yellowish brown (10 YR 6/4) END BI-9A @ 120.9'	Very little fluid loss, maintained circulation throughout hole. This has been uncommon among boreholes drilled in the area.
2281.8	125									
2276.8	130									
2271.8	135									
2266.8	140									
2261.8	145									



EXPLORATION LOG
 START DATE 4/2/13
 END DATE 4/2/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-10
 E.A. # 73518
 GROUND ELEV. 2403.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 79+51
 OFFSET 207' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
									0.50 Asphaltic Concrete	
2398.5	4.30 5 5.80	A	SPT	4 5 6	11	85		CL	LEAN CLAY Dry to moist, stiff, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	
2393.5	9.30 10 10.80	B	SPT	7 7 11	18	75			LEAN CLAY with SAND Dry to moist, very stiff, light brown (7.5 YR 6/4) to yellowish brown (10 YR 5/4)	
2388.5	14.30 15 15.80	C	CMS	6 16 17	33	95		SC SM	15.10 15.80 SILTY CLAYEY SAND Dry to moist, dense, mottled light gray (2.5 Y 7/1 and 5 Y 7/2) and dark grayish brown (10 YR 4/2)	
	17.30	D	SPT	10 11 16	27	60		SM	SILTY SAND Dry to moist, dense, mottled light gray (2.5 Y 7/1 and 5 Y 7/2) and dark grayish brown (10 YR 4/2)	
2383.5	19.30 20 20.80	E	SPT	13 15 16	31	75		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, light yellowish brown (2.5 Y 6/3) with multi colored gravel	
2378.5	24.30 25 25.80	F	SPT	14 13 14	27	65		CL	22.50 SANDY LEAN CLAY Dry to moist, very stiff, brown (7.5 YR 5/4) to yellowish brown (10 YR 5/4)	
	29.30								LEAN CLAY with SAND Dry to moist, very dense, mottled light gray (2.5 Y 7/2) to white (2.5 Y 8/1)	
				14					30.00	



EXPLORATION LOG
 START DATE 4/2/13
 END DATE 4/2/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-10
 E.A. # 73518
 GROUND ELEV. 2403.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 79+51
 OFFSET 207' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2368.5	30.80	G	CMS	21 39	60	100		CL	<u>LEAN CLAY with SAND</u> Dry to moist, very dense, mottled light gray (2.5 Y 7/2) to white (2.5 Y 8/1)	(H) Rock in sampler shoe. No sample recovered.
	32.30	H	SPT	11 12 14	26	0				
	34.30								<u>SANDY LEAN CLAY</u> Dry to moist, dense, mottled light yellowish brown (7.5 Y 6/4) to brownish yellow (10 YR 6/6)	
	35.80	I	CMS	17 18 22	40	100				
	37.30	J	SPT	6 7 11	18	65				
2358.5	40							CH	<u>SANDY FAT CLAY</u> Dry to moist, very stiff, mottled pale yellow (2.5 Y 8/2) to brown (10 YR 5/3)	
	44.30									
	45.80	K	CMS	12 17 22	39	100				
2353.5	47.30	L	SPT	11 16 24	40	75			<u>FAT CLAY with SAND</u> Dry to moist, hard, mottled pale yellow (2.5 Y 8/2) to light brownish gray (2.5 Y 6/2)	(K) Lightly to moderately cemented nodules in sample.
	50									
2348.5	54.30								<u>SANDY FAT CLAY</u> Dry to moist, hard, mottled pale yellow (2.5 Y 8/2) to light brownish gray (2.5 Y 6/2)	
	55.80	M	SPT	4 3 5	8	0				
	60.00									



GEOTECHNICAL
ENGINEERING

EXPLORATION LOG

START DATE 4/2/13
 END DATE 4/2/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-10
 E.A. # 73518
 GROUND ELEV. 2403.50 (ft)
 HAMMER DROP SYSTEM Automatic

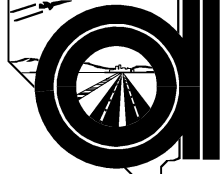
STATION "X" 79+51
 OFFSET 207' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2338.5	65.10	N	CMS	13 25/0.3'	25/0.3'	100		CL ML	<p>SILTY CLAY with SAND Moist, very stiff, pale brown (10 YR 6/3)</p> <p>END BI-10 @ 65.1'</p>	<p>Hard drilling at 60.5'. Progress 0.5/5 minutes @ 200 psi down pressure. Progress 2.5/20 minutes @ 200 psi down pressure. (N) Last 10 blows; no progress. No groundwater encountered.</p>
2333.5	70									
2328.5	75									
2323.5	80									
2318.5	85									

NEVADA

DEPARTMENT OF
TRANSPORTATION



GEOTECHNICAL
ENGINEERING

START DATE 5/9/13

END DATE 5/9/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION Northwest Las Vegas - Clark County

BORING BI-10A

E.A. # 73518

GROUND ELEV. 2403.50 (ft)

HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

SHEET 1 OF 2

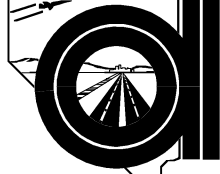
STATION "X" 79+51
 OFFSET 207' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2398.5	5							0.50 Asphaltic Concrete	Continue Borehole BI-10 as BI-10A from 65.1'.	
2393.5	10									
2388.5	15							15.00		
2383.5	19.30 20 20.80	A	SPT	12 18 22	40	65		SC	<u>CLAYEY SAND with GRAVEL</u> Wet, dense, multicolored	
2378.5	25							25.00		

NEVADA

DEPARTMENT OF
TRANSPORTATION



GEOTECHNICAL
ENGINEERING

START DATE 11/7/13

END DATE 11/7/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION Northwest Las Vegas - Clark County

BORING BI-10B

E.A. # 73518

GROUND ELEV. 2403.50 (ft)

HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

SHEET 1 OF 3

STATION "X" 79+51

OFFSET 207' Right

ENGINEER Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)

OPERATOR Pypkowski

DRILLING METHOD 6" H.S.A.

BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
11/7/13	66.00	2337.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2398.5	5							0.50 Asphaltic Concrete	Continue Borehole BI-10 as BI-10B from 65.1'.	
2393.5	10									
2388.5	15									
2383.5	20									
2378.5	25									



GEOTECHNICAL
ENGINEERING

EXPLORATION LOG

START DATE 11/7/13
 END DATE 11/7/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-10B
 E.A. # 73518
 GROUND ELEV. 2403.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 79+51
 OFFSET 207' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
11/7/13	66.00	2337.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2368.5	35									
2363.5	40									
2358.5	45									
2353.5	50									
2348.5	55									



EXPLORATION LOG
 START DATE 4/3/13
 END DATE 4/3/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-11
 E.A. # 73518
 GROUND ELEV. 2447.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 61+99
 OFFSET 291' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/3/13	90.00	2357.9

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2442.9	5.00	A	SPT	37	76	95		SC	SANDY GRAVEL Dry, tan 2.50	(A) Probable fill.
	6.50			39						
	7.50			37						
2437.9	9.00	B	SPT	15	46	85		CL	SANDY LEAN CLAY Dry, dense to very dense, brown (10 YR 5/3) 7.00	(B) Probable fill.
	10.00			15						
	11.50			31						
2432.9	13.40	C	SPT	8	23	95		CL	SANDY SILTY CLAY Dry, medium dense to dense, yellowish brown (10 YR 5/4) 9.50	(D) Last 10 blows; no progress.
	15.00			11						
	17.50			12						
2427.9	17.50	D	SPT	17	30/0.4'	90		CL ML	GRAVELLY SILTY CLAY with SAND Dry, very dense, pale brown (10 YR 6/3) to yellowish brown (10 YR 5/4) 15.00	
	19.00			5						
	20.50			5						
2422.9	20.50	E	SPT	5	11	95		CL ML	SILTY CLAY Dry, very dense, pale brown (10 YR 6/3) to yellowish brown (10 YR 5/4) 17.50	
	21.50			6						
	23.00			11						
2422.9	23.00	F	CMS	19	39	95		CL ML	SILTY CLAY Dry, dense, very pale brown (10 YR 7/4) 20.50	
	24.50			20						
	25.00			7						
2422.9	24.50	G	SPT	9	27	85		CL ML	SILTY CLAY Dry, dense, very pale brown (10 YR 7/4) to white (10 YR 8/1) 21.50	
	26.50			18						
	28.20			14						
2422.9	26.50	H	CMS	15	30	100		SM	SILTY CLAY with SAND Dry, dense, very pale brown (10 YR 7/4) 23.00	
	30.00			15						
	30.00			10						
2422.9	30.00	I	SPT	14	40	85		SM	SILTY CLAY with SAND Dry, dense, very pale brown (10 YR 7/3) to light gray (10 YR 7/2) 24.50	
	30.00			14						
	30.00			26						
2422.9	30.00	J	SPT	11	38	75		GC	SILTY SAND with GRAVEL Dry, dense, very pale brown (10 YR 7/3) to light gray (10 YR 7/2) 26.50	
	30.00			14						
	30.00			24						
2422.9	30.00							GC	CLAYEY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3) 28.20	
	30.00									



EXPLORATION LOG
 START DATE 4/3/13
 END DATE 4/3/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-11
 E.A. # 73518
 GROUND ELEV. 2447.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 61+99
 OFFSET 291' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/3/13	90.00	2357.9

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2382.9	65.00 65.60	T	CMS	44 25/0.1'	25/0.1'	85		CL	SANDY LEAN CLAY with GRAVEL Dry to moist, very hard, white (10 YR 8/1) to light gray (10 YR 7/1)	(T) Last 10 blows; no progress.
2377.9	70									
2372.9	75.00 75.90	U	CMS	15/0.1'	15/0.1'	0				(U) Last 10 blows; no progress. No sample recovered.
2367.9	80.00 80.90	V	CMS	35/0.1'	35/0.1'	0				(V) Last 10 blows; no progress. No sample recovered.
2362.9	85.00 86.40	W	CMS	7 26 50/0.4'	50/0.4'	0		CL		(W) No sample recovered.
	90.00									



EXPLORATION LOG

START DATE 4/3/13
 END DATE 4/3/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-11
 E.A. # 73518
 GROUND ELEV. 2447.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 61+99
 OFFSET 291' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/3/13	90.00	2357.9

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2352.9	91.50	X	CMS	9 13 28	41	20		CL	LEAN CLAY Moist, very stiff to hard, brown (7.5 YR 5/4)	(X) Free water on sampler @ 90.0'
	93.00	Y	SPT	8 25 32	57	140		CL ML	SILTY CLAY Moist, very stiff to hard, brown (7.5 YR 5/4)	
2347.9	95									
	100.00									
	101.50	Z	CMS	16 16 22	38	115		CL	LEAN CLAY Moist to wet, very stiff to hard, very pale brown (10 YR 7/3)	
2342.9	103.00	AA	SPT	10 14 19	33	115		CL	LEAN CLAY Moist to wet, very stiff to hard, very pale brown (10 YR 7/3)	
	105									
2337.9	110									
2332.9	115									
									END BI-11 @ 103.0'	

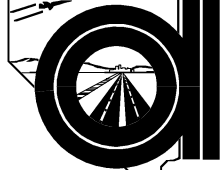


EXPLORATION LOG
 START DATE 4/4/13
 END DATE 4/4/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-12
 E.A. # 73518
 GROUND ELEV. 2436.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 62+05
 OFFSET 170' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2431.6	1.20							GM	SANDY GRAVEL Dry, tan	(A) Rock in sampler shoe.
	2.50								<u>SILTY GRAVEL with SAND</u> Dry, very dense, light gray (10 YR 7/2)	
	3.40	A	SPT	32	50/0.4'	100				
	5.00							CL ML	<u>SILTY CLAY with SAND</u> Dry, medium dense, pale brown (10 YR 6/3)	
	6.50	B	SPT	4	4	14	95			
2426.6	7.50							GM	<u>SILTY CLAY with SAND</u> Dry, medium dense, pale brown (10 YR 6/3)	(E) Last 10 blows; no progress. No sample recovered.
	9.00	C	SPT	9	8	22	85			
	10.00									
	11.50	D	SPT	16	32	62	80			
	12.60	E	SPT	25/0.1'	25/0.1'	0				
2421.6	15.00							GM	<u>SILTY GRAVEL with SAND</u> Dry, very dense, pale brown (10 YR 6/3) to white (10 YR 8/1)	
	16.50	F	SPT	33	39	85	75			
	18.20									
2416.6	20.00							SM	<u>SILTY SAND with GRAVEL</u> Dry, dense, light brown (7.5 YR 6/3)	
	21.50	G	SPT	36	45	78	80			
	25.00									
2411.6	25.00							SM	<u>SILTY SAND</u> Dry, dense, light yellowish brown (10 YR 6/4)	
	26.50	H	SPT	11	17	37	95			
	30.00									



EXPLORATION LOG
 START DATE 4/4/13
 END DATE 4/4/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-12
 E.A. # 73518
 GROUND ELEV. 2436.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 62+05
 OFFSET 170' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2401.6	31.50	I	CMS	20 24 31	55	100		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, hard, light gray (2.5 Y 7/2) to pale yellow (5 Y 8/2)	(I) Rock in sampler shoe.
		J	SPT	17 17 19	36	80				
	35.00									
	36.50	K	CMS	20 30 28	58	95			36.30	
2396.6	38.00	L	SPT	6 9 15	24	100		CH	<u>FAT CLAY with SAND</u> Dry to moist, very stiff, white (10 YR 8/1) to brownish yellow (10 YR 6/6)	
	40									
2391.6	45							45.00	END BI-12 @ 45.0'	No groundwater encountered.
2386.6	50									
2381.6	55									

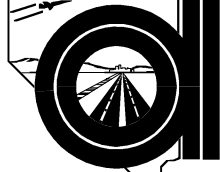


EXPLORATION LOG
 START DATE 4/16/13
 END DATE 4/16/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-13
 E.A. # 73518
 GROUND ELEV. 2404.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 183+68
 OFFSET 99' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/16/13	75.00	2329.6

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2399.6	1.20								SANDY GRAVEL Dry, tan	
	2.50							GM	<u>SILTY GRAVEL with SAND</u> Dry, medium dense, yellowish brown (10 YR 5/4)	(A) Probable fill.
	4.00	A	SPT	13 7 4	11	85				
	5.00							CL ML	<u>SILTY CLAY with SAND</u> Dry to moist, loose, yellowish brown (10 YR 5/4)	
	6.50	B	SPT	4 2 3	5	100				
7.50							CL	<u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, dense, yellowish brown (10 YR 5/4)		
9.00	C	SPT	4 8 17	25	95					
2394.6	10.00	D	SPT	25/0.2'	25/0.2'	0				(D) Last 10 blows; no progress. No sample recovered.
2389.6	12.50							CL ML	<u>SANDY SILTY CLAY</u> Dry to moist, loose to medium dense, yellowish brown (10 YR 5/4)	
	14.00	E	SPT	5 4 6	10	95				
	15.00							SC	<u>CLAYEY SAND</u> Dry, medium dense, very pale brown (10 YR 7/3)	
	16.50	F	CMS	21 23 13	36	95				
	18.00	G	SPT	11 15 24	39	85				
2384.6	20.00							GC GM	<u>CLAYEY SAND with GRAVEL</u> Dry, dense, very pale brown (10 YR 7/3)	
21.50	H	CMS	18 25 46	71	85					
2379.6	23.00	I	SPT	31 38 38	76	80			<u>SILTY CLAYEY GRAVEL with SAND</u> Dry, very dense, very pale brown (10 YR 7/3)	
	24.00									
	25.00							CH	<u>SANDY FAT CLAY with GRAVEL</u> Dry, medium dense, very pale brown (10 YR 7/3)	
	26.50	J	CMS	13 10 18	28	95				
28.00								<u>SANDY FAT CLAY with GRAVEL</u> Dry, very stiff, light gray (10 YR 7/2)		
	30.00									

NEVADA**DEPARTMENT OF
TRANSPORTATION**GEOTECHNICAL
ENGINEERINGSTART DATE 4/16/13END DATE 4/16/13JOB DESCRIPTION US95 / CC-215 System-to-System InterchangeLOCATION Northwest Las Vegas - Clark CountyBORING BI-13E.A. # 73518GROUND ELEV. 2404.60 (ft)HAMMER DROP SYSTEM Automatic**EXPLORATION LOG**

SHEET 4 OF 4

 STATION "XP" 183+68
 OFFSET 99' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/16/13	75.00	2329.6

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2309.6	95.10	Z	CMS	20/0.1'	20/0.1'	0			95.10 END BI-13 @ 95.1'	(Z) Last 10 blows; no progress. No sample recovered.
2304.6	100									
2299.6	105									
2294.6	110									
2289.6	115									



EXPLORATION LOG
 START DATE 4/17/13
 END DATE 4/17/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-14
 E.A. # 73518
 GROUND ELEV. 2406.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+74
 OFFSET 263' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/18/13	53.50	2353.1

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
									0.50 Asphaltic Concrete	
2401.6	5								5.00	
2396.6	10	A	SPT	5 3 5	8	85		CL	<u>LEAN CLAY with SAND</u> Dry, loose, light brownish gray (10 YR 6/2)	
2391.6	15								15.80	
2386.6	20	B	SPT	18 20 23	43	75		SC	<u>CLAYEY SAND with GRAVEL</u> Dry, dense, mottled light gray (2.5 Y 7/2) to white (2.5 Y 8/1)	(B) Moderately cemented.
2381.6	25									
	30.00								30.00	



GEOTECHNICAL
ENGINEERING

START DATE 4/17/13
 END DATE 4/17/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-14
 E.A. # 73518
 GROUND ELEV. 2406.60 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 189+74
 OFFSET 263' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/18/13	53.50	2353.1

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2341.6	62.50							CL	<p>LEAN CLAY Moist, very stiff, very pale brown (10 YR 7/4)</p> <p>LEAN CLAY with SAND Moist, hard to very hard, very pale brown (10 YR 7/4)</p>	<p>Hard drilling @ 60.0'. Progress 0.3/15 minutes @ 450 psi down pressure.</p> <p>0.1/15 minutes @ 450 psi down pressure.</p> <p>0.1/15 minutes @ 500 psi down pressure.</p> <p>0.1/10 minutes @ 500 psi down pressure.</p> <p>Softer drilling @ 62.5'. Moderately to strongly cemented soil from 59.0' - 62.5'.</p> <p>(l) Last 10 blows; no progress. Strongly cemented nodules present.</p> <p>Hard drilling @ 69.5'. Progress 0.1/10 minutes @ 400 psi down pressure.</p> <p>0.4/25 minutes @ 500 psi down pressure. 0.3/5 minutes @ 500 psi down pressure.</p>
	64.00	H	SPT	9 9 11	20	120				
	65.00									
	65.70	I	CMS	18 40/0.2'	40/0.2'	120				
2336.6	70								<p>70.30</p> <p>END BI-14 @ 70.3'</p>	
2331.6	75									
2326.6	80									
2321.6	85									



EXPLORATION LOG
 START DATE 4/18/13
 END DATE 4/18/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-15
 E.A. # 73518
 GROUND ELEV. 2406.20 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 185+99
 OFFSET 1' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/18/13	81.50	2324.7

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2401.2	5.00	A	SPT	3	6	80		ML	SANDY GRAVEL Dry, tan	
	6.50			3						
	7.50									
	9.00	B	SPT	3 4 3	7	95				
2396.2	10.00	C	CMS	5	11	100		CL ML	SILTY CLAY Moist, medium stiff, yellowish brown (10 YR 5/4) SILTY CLAY Moist, medium stiff, yellowish brown (10 YR 5/4)	
	11.50			5 6 3						
	13.00	D	SPT	4 4	8	95				
	15.00									
2391.2	15.00	E	CMS	10	21	100		CL	LEAN CLAY Moist, stiff, yellowish brown (10 YR 5/4) SILTY CLAY Moist, stiff, yellowish brown (10 YR 5/4)	(E) Small strongly cemented nodules in sample.
	16.50			8 13 4						
	18.00	F	SPT	5 6	11	100				
	20.00									
2386.2	20.00	G	CMS	5	25	100		CL	LEAN CLAY with SAND Moist, stiff, yellowish brown (10 YR 5/4)	
	21.50			7 18						
	23.00	H	SPT	21 28 41	69	85				
	25.00									
2381.2	25.00	I	CMS	23	49	100		SC	CLAYEY SAND Dry, dense, light yellowish brown (2.5 Y 6/4) to brownish yellow (10 YR 6/6) CLAYEY SAND Dry to moist, very stiff, pale yellow (2.5 Y 7/3) to dark yellowish brown (10 YR 3/4)	
	26.50			23 26						
	28.00	J	SPT	15 16 12	28	80				
	30.00									



EXPLORATION LOG
 START DATE 4/18/13
 END DATE 4/18/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-15
 E.A. # 73518
 GROUND ELEV. 2406.20 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 185+99
 OFFSET 1' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/18/13	81.50	2324.7

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2371.2	31.50	K	CMS	37 47 26	73	95		SM	SILTY SAND with GRAVEL. Dry, very dense, pale yellow (2.5 Y 7/3) to yellowish brown (10 YR 5/4)	
	33.00	L	SPT	10 11 13	24	75		CL	LEAN CLAY with SAND. Dry, medium dense to dense, pale yellow (2.5 Y 7/3) to yellowish brown (10 YR 5/4)	
	35.00									
2366.2	36.50	M	CMS	34 52 23	75	100		CL	SANDY LEAN CLAY with GRAVEL. Dry, very dense, pale yellow (2.5 Y 7/3) to yellowish brown (to 10 YR 5/4)	
	38.00	N	SPT	7 5 9	14	75		CH	FAT CLAY with SAND. Dry to moist, medium dense, light yellowish brown (2.5 Y 6/4) stained with olive yellow (2.5 Y 6/6)	
	40.00									
2361.2	41.50	O	CMS	6 8 19	27	100		CL	SANDY LEAN CLAY. Moist, very stiff, mottled light yellowish brown (2.5 Y 6/2) to light gray (2.5 Y 7/1)	
	43.00	P	SPT	10 12 18	30	75		CL	SANDY LEAN CLAY with GRAVEL. Moist, very stiff, mottled light yellowish brown (2.5 Y 6/2) to light gray (2.5 Y 7/1)	
	45.00									
2356.2	46.50	Q	CMS	9 18 23	41	95		CL ML	SANDY SILTY CLAY. Dry to moist, dense, very pale brown (10 YR 7/3) to yellowish brown (10 YR 5/4)	
	48.00	R	SPT	7 9 23	32	95		CL	SANDY LEAN CLAY with GRAVEL. Moist, very stiff to hard, very pale brown (10 YR 7/4) to yellowish brown (10 YR 5/4)	
	50									
2351.2	51.50							GC		
	55.00									
	56.50	S	CMS	25 27 32	59	85		CL	CLAYEY GRAVEL with SAND. Dry to moist, very dense, multi-colored	
2351.2	58.00	T	SPT	9 11 19	30	80		CH	SANDY FAT CLAY. Moist, very stiff to hard, pale yellow (2.5 Y 7/3) to light olive brown (2.5 Y 5/6)	
	60.00									



EXPLORATION LOG
 START DATE 4/18/13
 END DATE 4/18/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-15
 E.A. # 73518
 GROUND ELEV. 2406.20 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 185+99
 OFFSET 1' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/18/13	81.50	2324.7

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2341.2	65.00 65.40	U	CMS	30/0.4'	30/0.4'	125		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Moist, very stiff to hard, mottled pink (7.5 YR 7/3) to light yellowish brown (10 YR 6/4)	(U) Last 10 blows; no progress.
2336.2	70.00 71.50 73.00	V W	CMS SPT	10 12 19 56 56	41 112	115 115				
2331.2	75									
2326.2	80.00 81.50 83.00	X Y	CMS SPT	5 5 8 5 9 21	13 30	0 135			<u>LEAN CLAY with SAND</u> Moist, very stiff, yellowish brown (10 YR 5/4) <u>LEAN CLAY with SAND</u> Moist, very hard, light yellowish brown (10 YR 6/4) <u>LEAN CLAY with SAND</u> Moist to wet, hard, light gray (10 YR 7/1)	(X) No sample recovered. (Y) Probably recovered sample from (X). Free water on sampler @ 81.5'.
2321.2	85									
	90.00									



EXPLORATION LOG

START DATE 4/18/13
 END DATE 4/18/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-15
 E.A. # 73518
 GROUND ELEV. 2406.20 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 185+99
 OFFSET 1' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/18/13	81.50	2324.7

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2311.2	91.30	Z	CMS	38 60 50/0.3'	50/0.3'	85		SC SM	<u>SILTY CLAYEY SAND with GRAVEL</u> Moist to wet, very dense, pale brown (10 YR 6/3)	
	92.80	AA	SPT	23 15 37	52	100		CL ML	<u>SANDY SILTY CLAY with GRAVEL</u> Wet, hard, pale brown (10 YR 6/3)	
2306.2	100.00							CL	<u>LEAN CLAY with SAND</u> Wet, stiff to very stiff, pale brown (10 YR 6/3)	
	101.50	BB	SPT	5 10 10	20	140				
2301.2	105								END BI-15 @ 101.5'	
2296.2	110									
2291.2	115									



EXPLORATION LOG
 START DATE 4/19/13
 END DATE 4/19/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-16
 E.A. # 73518
 GROUND ELEV. 2437.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 62+06
 OFFSET 189' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2432.0	5							GC GM	SANDY GRAVEL Dry, tan	
	10.00									
2427.0	11.50	A	SPT	7 5 3	8	55		GP GC	<u>SILTY CLAYEY GRAVEL with SAND</u> Dry, loose, light yellowish brown (10 YR 6/4)	
	15									
2422.0	20.00							GP GC	<u>POORLY GRADED GRAVEL with SILTY CLAY and SAND</u> Dry, very dense, white (10 YR 8/1)	(B) Last 10 blows; no progress.
	20.80	B	SPT	36 40/0.3'	40/0.3'	65				
2417.0	25							CL		
	30.00									



GEOTECHNICAL
ENGINEERING

START DATE 4/19/13
 END DATE 4/19/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-16
 E.A. # 73518
 GROUND ELEV. 2437.00 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 62+06
 OFFSET 189' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2402.0	31.50	C	SPT	15 17 13	30	80		CL	SANDY LEAN CLAY Dry, dense, pale brown (10 YR 6/3)	
	40.00									
	41.50	D	SPT	11 8 16	24	85				
2392.0	45							CH	FAT CLAY with SAND Dry to moist, hard, yellowish brown (10 YR 5/4)	
	50.00	E	SPT	11 14 22	36	80				
2382.0	55							GC	CLAYEY GRAVEL with SAND Dry, medium dense, pale brown (10 YR 6/3)	
	56.50	F	SPT	10 13 11	24	60				
									END BI-16 @ 56.5'	No groundwater encountered.

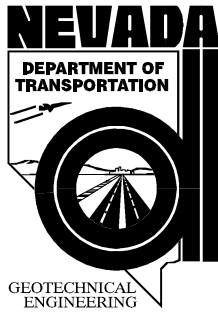


EXPLORATION LOG
 START DATE 5/7/13
 END DATE 5/8/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-17
 E.A. # 73518
 GROUND ELEV. 2398.70 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 89+47
 OFFSET 154' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
5/8/13	75.00	2323.7

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2393.7	2.50							GW GM	SANDY GRAVEL Dry, tan	(D) Thin strongly cemented lens @ 10.7'.	
	4.00	A	SPT	8 16 21	37	40			<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, dense, very pale brown (10 YR 7/3)		
	5.00							CL	4.50		<u>LEAN CLAY</u> Dry, hard, light gray (10 YR 7/2)
	6.50	B	SPT	21 27 31	58	75			<u>LEAN CLAY</u> Dry, hard, light gray (10 YR 7/2)		
	7.50										
9.00	C	SPT	8 12 20	32	85			9.50			
2388.7	10.00							SC	<u>CLAYEY SAND with GRAVEL</u> Dry, hard, light gray (10 YR 7/2)		
11.50	D	SPT	10 32 20	52	80				12.00		
2383.7	12.50							CL	<u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, very hard, grayish brown (2.5 Y 5/2)		
	14.00	E	SPT	7 14 53	67	80					14.50
	15.00							SM	<u>SILTY SAND with GRAVEL</u> Dry, very hard, very pale brown (10 YR 8/2)		
16.50	F	SPT	27 39 46	85	80				18.20		
2378.7	20.00							SC	<u>CLAYEY SAND with GRAVEL</u> Dry, very dense, very pale brown (10 YR 7/4)		
	21.20	G	CMS	29 50 35/0.2'	35/0.2'	85				23.00	
2373.7	25.00							CH	<u>SANDY FAT CLAY</u> Dry, hard, mottled light gray (2.5 Y 7/2) to white (5 Y 8/1)		
	26.50	H	SPT	33 28 31	59	75				28.20	
								CL		30.00	



EXPLORATION LOG
 START DATE 5/7/13
 END DATE 5/8/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-17
 E.A. # 73518
 GROUND ELEV. 2398.70 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 89+47
 OFFSET 154' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
5/8/13	75.00	2323.7

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2363.7	31.50	I	SPT	25 21 18	39	85		CL	LEAN CLAY with SAND Dry, hard, mottled light gray to white (2.5 Y 7/2 to 5 Y 8/1)	
	33.20									
2358.7	35.00	J	SPT	11 15 15	30	80		SC	CLAYEY SAND Dry, hard, mottled light gray (2.5 Y 7/2) to white (5 Y 8/1)	
	36.50									
2353.7	40.00	K	SPT	7 8 9	17	80		CL	LEAN CLAY Dry to moist, very stiff, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	41.50									
2348.7	45.00	L	SPT	7 8 14	22	80		CL	LEAN CLAY with SAND Dry to moist, very stiff, pale brown (10 YR 6/3)	
	46.50									
2343.7	50.00	M	CMS	10 21 24	45	100		GC	SANDY LEAN CLAY with GRAVEL Dry to moist, hard, pinkish gray (7.5 YR 7/2)	
	51.50	N	SPT	14 18 30	48	80				
	53.00									
2343.7	55.00	O	CMS	19 40	35/0.2'	100		GC	CLAYEY GRAVEL with SAND Moist, very dense, mottled light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/3)	End day 1 @ 53.0'. (O) Last 10 blows; no progress.
	56.20			35/0.2'						
	60.00									



EXPLORATION LOG
 START DATE 5/7/13
 END DATE 5/8/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-17
 E.A. # 73518
 GROUND ELEV. 2398.70 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 89+47
 OFFSET 154' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
5/8/13	75.00	2323.7

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2333.7	65.90	P	CMS	15/0.1'	15/0.1'	0				Hard drilling @ 62.0'. Progress 0.2'/10 minutes @ 300 psi down pressure. Broke through @ 63.5'. (P) Last 10 blows; no progress. No sample recovered. Hard drilling at 67.0'. Progress 0.4'/5 minutes @ 300 psi down pressure. 5.0'/2 minutes @ 300 psi down pressure from 70.0' - 75.0'.
2328.7	70									
2323.7	75.00							CL		(Q) Free water on drill bit @ 75.0'.
	76.50	Q	CMS	15 21 38	59	115			<u>GRAVELLY LEAN CLAY</u> Wet, very dense, light yellowish brown (10 YR 6/4)	
	78.00	R	SPT	13 15 16	31	105		CL ML	<u>GRAVELLY SILTY CLAY with SAND</u> Wet, very stiff to hard, yellowish brown (10 YR 5/4)	
2318.7	80									
2313.7	85.00							CL		<u>LEAN CLAY</u> Wet, very stiff, light brownish gray (10 YR 6/2) <u>LEAN CLAY with SAND</u> Wet, very stiff, light brownish gray (10 YR 6/2)
	86.50	S	CMS	8 11 15	26	120				
	88.00	T	SPT	6 8 17	25	120				
										90.00



EXPLORATION LOG
 START DATE 5/7/13
 END DATE 5/8/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-17
 E.A. # 73518
 GROUND ELEV. 2398.70 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 89+47
 OFFSET 154' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
5/8/13	75.00	2323.7

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2303.7	95.90	U	CMS	15/0.1'	15/0.1'	0		CL		(U) Last 10 blows; no progress. No sample recovered.
2298.7	100.00 100.70	V	CMS	22 25/0.2'	25/0.2'	110				SANDY LEAN CLAY Wet, very dense, mottled pink (7.5 YR 7/3) to brown (7.5 YR 5/4)
2293.7	105.00 106.50	W	CMS	11 15 22	37	155		CL	LEAN CLAY Wet, hard, light yellowish brown (10 YR 6/4)	(W) Sample expanded to 2.2'.
	108.00	X	SPT	10 13 21	34	155			LEAN CLAY Wet, hard, light yellowish brown (10 YR 6/4)	(X) Sample expanded to 2.2'.
2288.7	110							CL ML	111.50	
2283.7	115.00 116.50	Y	CMS	38 47 41	88	125				SILTY CLAY Wet, hard, light yellowish brown (10 YR 6/4)
									116.50	END BI-17 @ 116.5'



EXPLORATION LOG

START DATE 5/10/13
 END DATE 5/10/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-18
 E.A. # 73518
 GROUND ELEV. 2388.40 (ft)
 HAMMER DROP SYSTEM Automatic

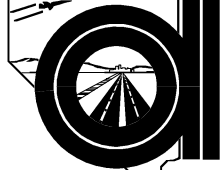
STATION "X" 89+01
 OFFSET 98' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2383.4	5.00	A	SPT	10	39	95		CL	SANDY GRAVEL Dry, tan <u>LEAN CLAY with SAND</u> Dry, hard, light gray (10 YR 7/2)	(A) Weakly to moderately cemented.
	6.50			14						
	6.50			25						
2378.4	10.00	B	SPT	14	70	85		SC SM	<u>SILTY CLAYEY SAND with GRAVEL</u> Dry, very hard, mottled very pale brown (10 YR 8/2) to light brownish gray (10 YR 6/2)	(B) Weakly to moderately cemented.
	11.50			25						
	11.50			45						
2373.4	15.00	C	SPT	18	46	80		SC	<u>CLAYEY SAND with GRAVEL</u> Dry, hard, mottled white (10 YR 8/1) to very pale brown (10 YR 7/3)	(C) Weakly to moderately cemented.
	16.50			20						
	16.50			26						
2368.4	20.00	D	SPT	17	53	75		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, very dense, very pale brown (10 YR 7/4)	
	21.50			25						
	21.50			28						
2363.4	25.00	E	SPT	6	31	80		CL	<u>LEAN CLAY with SAND</u> Dry, very stiff to hard, white (10 YR 8/1) to light gray (10 YR 7/2)	(E) Weakly cemented.
	26.50			13						
	26.50			18						
	30.00									

NEVADA

DEPARTMENT OF TRANSPORTATION



GEOTECHNICAL ENGINEERING

EXPLORATION LOG

SHEET 2 OF 2

START DATE 5/10/13
 END DATE 5/10/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-18
 E.A. # 73518
 GROUND ELEV. 2388.40 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 89+01
 OFFSET 98' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2353.4	31.50	F	SPT	8	28	75	CL	<p>SANDY LEAN CLAY Dry to moist, very stiff, light yellowish brown (2.5 Y 6/3)</p> <p>LEAN CLAY Dry to moist, very stiff, light yellowish brown (2.5 Y 6/3)</p> <p>END BI-18 @ 36.5'</p>	No groundwater encountered.	
	35.00 36.50	G	SPT	9 14 14	28	80				
2348.4	40									
2343.4	45									
2338.4	50									
2333.4	55									



EXPLORATION LOG
 START DATE 5/13/13
 END DATE 5/13/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-19
 E.A. # 73518
 GROUND ELEV. 2394.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 86+27
 OFFSET 114' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2389.1	4.30	5	A SPT	23	65	75		CL ML	SANDY GRAVEL Dry, tan		
	5.80			28					23		2.50
	5.80			37							
2384.1	9.30	10	B SPT	19	51	75		CL	LEAN CLAY Dry to moist, hard, white (2.5 Y 8/1) to light gray (2.5 Y 7/2)		
	10.80			24					7.50		
	10.80			27							
2379.1	15							END BI-19 @ 12.0'	Lost circulation @ 12.0'. No groundwater encountered.		
2374.1	20										
2369.1	25										



EXPLORATION LOG

START DATE 5/13/13
 END DATE 5/13/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-20
 E.A. # 73518
 GROUND ELEV. 2390.70 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 89+07
 OFFSET 186' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2385.7	4.40	5	A SPT	6	72	95		CL	SANDY GRAVEL Dry, tan 2.50 <u>LEAN CLAY</u> Dry to wet, very hard, light gray (10 YR 7/2) to dark grayish brown (10 YR 3/2) 7.50	Organic material in cuttings from 0.0' - 4.4'.
	5.90			12						
	6.00			60						
2380.7	9.40	10	B SPT	26	30	75		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to wet, very stiff, light gray (10 YR 7/2) 13.00 END BI-20 @ 13.0'	(B) First 10 blows on rock. Lost circulation @ 13.0'. No groundwater encountered.
	10.90			16						
	11.00			14						
2375.7	15									
2370.7	20									
2365.7	25									



EXPLORATION LOG

START DATE 5/14/13
 END DATE 5/15/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-21
 E.A. # 73518
 GROUND ELEV. 2390.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 87+94
 OFFSET 85' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS		
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd						
2385.1	4.30	5	A SPT	3	34	40		CL ML	SANDY GRAVEL Dry, tan			
	5.80			12					22		2.50	
	7.50											
2380.1	9.30	10	B CMS	23	32	75		CL	LEAN CLAY Dry to moist, dense, mottled brown (10 YR 4/3) with white (10 YR 8/1)	(B) Weakly to strongly cemented.		
	10.80			15					17		10.80	
	12.30			10					18		23	
2375.1	14.30	15	D CMS	41	35/0.2'	75		GC GM	SILTY CLAYEY SAND with GRAVEL Dry to moist, dense, mottled brown (10 YR 4/3) with white (10 YR 8/1)	(D) Last 10 blows; no progress.		
	15.50			51					35/0.2'		13.30	
	19.30											
2370.1	20.80	20	E CMS	22	97	85		SC	CLAYEY SAND with GRAVEL Dry to moist, very dense, light yellowish brown (10 YR 6/4)			
	22.20			31					50/0.4'		80	CLAYEY SAND with GRAVEL Dry to moist, very dense, mottled light yellowish brown (2.5 Y 6/3) to pale yellow (2.5 Y 8/2)
	24.30			50					50/0.4'			
2365.1	24.30	25	G CMS	30/0.2'	30/0.2'	0		CL		(G) Last 10 blows; no progress. No sample recovered.		
	26.00											
	29.30											
				11								
	30.00								LEAN CLAY with SAND Dry to moist, very			



EXPLORATION LOG
 START DATE 5/14/13
 END DATE 5/15/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-21
 E.A. # 73518
 GROUND ELEV. 2390.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 87+94
 OFFSET 85' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2355.1	30.80	H	CMS	15 18	33	85		CL	stiff, light gray (5 Y 7/2) mottled with white (5 Y 8/1) and reddish yellow (7.5 YR 6/6) SANDY LEAN CLAY Moist, very stiff, olive gray (5 Y 5/2) to light olive brown (2.5 Y 5/3)		
	32.30	I	SPT	8	25	65					
				13 12							
	34.30	35	J	CMS	15	68	85				
					27 41						
					14 14						30
37.30	K	SPT	14 16								
2350.1	40										
	44.30							CH			
2345.1	45	L	CMS	10 14	37	100					
	45.80			23							
2340.1	47.30	M	SPT	9 9 9	18	80					
	50							CL		End day 1 @ 47.3'.	
	52.40							GM		Lost circulation @ 50.9'. Soft to 52.4'. (N) Dropped rod and sampler 24'; penetrated 1.2'.	
2335.1	53.60	N	CMS	push	push	100					
	54.90	O	SPT	6 30	30/0.3'	55					
	55			30/0.3'							
										END BI-21 @ 54.9'	



EXPLORATION LOG

START DATE 5/15/13
 END DATE 5/16/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-22
 E.A. # 73518
 GROUND ELEV. 2392.40 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 87+92
 OFFSET 225' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2387.4	4.60	5	A	SPT	8	54	85	CL	SANDY GRAVEL Dry, tan		
	6.10				15				2.50		LEAN CLAY Dry to moist, hard, pale brown (10 YR 6/3)
	6.10				39						
2382.4	9.60	10	B	SPT	34	63	85	GC	CLAYEY GRAVEL with SAND Dry to moist, very hard, very pale brown (10 YR 8/2)	(B) Weakly to strongly cemented.	
	11.10				35				8.00		
	11.10				28						
2377.4	14.60	15	C	CMS	30	30/0.2'	75	SC	CLAYEY SAND with GRAVEL Dry to moist, very dense, multicolored	(C) Last 10 blows; no progress.	
	15.80				50				13.00		
	15.80				30/0.2'						
2372.4	19.60	20	D	SPT	14	38	80	CL	SANDY LEAN CLAY Dry to moist, dense, pale brown (10 YR 6/3)	(D) Moderately to strongly cemented nodules in sample.	
	21.10				18				18.00		
	21.10				20						
2367.4	24.60	25	E	SPT	28	74	80	CL	SANDY LEAN CLAY Dry to moist, very dense, multicolored	End day 1 @ 26.1'.	
	26.10				39				30.00		
	26.10				35						
										30.00	



EXPLORATION LOG
 START DATE 5/15/13
 END DATE 5/16/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-22
 E.A. # 73518
 GROUND ELEV. 2392.40 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 87+92
 OFFSET 225' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2357.4	34.60							CL	<u>SANDY LEAN CLAY</u> Moist, very stiff to hard, mottled white (2.5 Y 8/1) to light brownish gray (2.5 Y 5/2)	
	35	F	CMS	18 27 24	51	85				
2352.4	36.10							CH	<u>SANDY FAT CLAY with GRAVEL</u> Moist, very stiff to hard, mottled white (2.5 Y 8/1) to light brownish gray (2.5 Y 6/2)	(G) Moderately to strongly cemented nodules in sample.
	37.60	G	SPT	10 12 18	30	60				
2347.4	40							CL	<u>FAT CLAY</u> Moist to wet, very stiff, mottled white (7.5 YR 8/1) to brown (7.5 YR 5/3)	
	44.60	H	CMS	14 17 23	40	95				
2342.4	46.10							CL	<u>LEAN CLAY</u> Moist to wet, very stiff, mottled white (7.5 YR 8/1) to brown (7.5 YR 5/3)	
	47.60	I	SPT	8 12 15	27	100				
2337.4	50							CH	<u>SANDY FAT CLAY with GRAVEL</u> Moist, very stiff, olive (5 Y 5/3) with black and rust oxidation stains	
	51.00									
2337.4	54.60							GC	<u>CLAYEY GRAVEL with SAND</u> Moist, dense, olive (5 Y 5/3) with multicolored gravel	
	55	J	CMS	11 14 23	37	95				
2337.4	56.10							GC	<u>CLAYEY GRAVEL with SAND</u> Moist, dense, olive (5 Y 5/3) with multicolored gravel	
	57.60	K	SPT	10 17 31	48	75				
									END BI-22 @ 57.6' No groundwater encountered.	



EXPLORATION LOG
 START DATE 6/3/13
 END DATE 6/4/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-23
 E.A. # 73518
 GROUND ELEV. 2421.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 80+87
 OFFSET 12' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2416.5	5.00	A	SPT	18	43	80		GC	SANDY GRAVEL Dry, tan 2.50	Approximately 25' of fill.
	6.50			21						
				22						
2411.5	10.00	B	SPT	14	41	80		GC	CLAYEY GRAVEL with SAND Dry, dense, pale brown (10 YR 6/3)	
	11.50			19						
				22						
2406.5	15.00	C	SPT	17	48	95		GC GM	SILTY CLAYEY GRAVEL with SAND Dry, dense, pale brown (10 YR 6/3)	
	16.50			23						
				25						
2401.5	20.00	D	SPT	29	38	95		SP SC	POORLY GRADED SAND with CLAY and GRAVEL Dry, dense, very pale brown (10 YR 7/3)	(D) Asphalt at 20.0' and 21.5' in sample.
	21.50			14						
				24						
2396.5	25.00	E	CMS	13	44	80		GW GM	WELL GRADED GRAVEL with SILT and SAND Dry, dense, pale brown (10 YR 6/3)	(E) Sample loose in sampler.
	26.50			14						
				30						
	28.00	F	SPT	11	11	80		SC	CLAYEY SAND Dry to moist, medium dense, very pale brown (10 YR 7/3)	
				6						
				5						
	30.00									

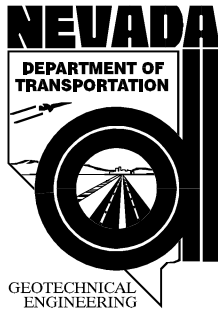


EXPLORATION LOG
 START DATE 6/3/13
 END DATE 6/4/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-23
 E.A. # 73518
 GROUND ELEV. 2421.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 80+87
 OFFSET 12' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2386.5	31.50	G	SPT	5 6 9	15	100		CL	SANDY LEAN CLAY moist, stiff, very pale brown (10 YR 7/4) to light yellowish brown (10 YR 6/4)	(I) Rock in sampler shoe.
	33.00									
	35.00							SC		
2381.5	36.50	H	CMS	17 18 26	44	95		SC	CLAYEY SAND with GRAVEL Dry to moist, dense, light yellowish brown (10 YR 6/4)	
	38.00	I	SPT	10 11 15	26	35		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, light yellowish brown (10 YR 6/4)	
2376.5	39.00									
	40.00							CH	SANDY FAT CLAY Dry to moist, very stiff, pale brown (10 YR 6/3) to yellowish brown (10 YR 5/6)	
	41.50	J	CMS	9 11 14	25	95		CH		
2371.5	43.00	K	SPT	4 7 8	15	85		SC	CLAYEY SAND Moist, stiff, mottled light gray (2.5 Y 7/2) to white (2.5 Y 8/1)	
	44.00									
	45.00	L	CMS	9 12 16	28	100		CL	LEAN CLAY with SAND Moist, very stiff, mottled pale yellow (5 Y 7/3) to white (5 Y 8/1)	
2366.5	46.50									
	48.00	M	SPT	6 9 13	22	75		CH	FAT CLAY Moist, very stiff, pale olive (5 Y 6/3)	
	50							CH		
2366.5	55.00	N	CMS	15/0.1'	15/0.1'	0				(N) Last 10 blows; no progress. No sample recovered.
	57.00									
	60.00							CL		



GEOTECHNICAL ENGINEERING

EXPLORATION LOG

START DATE 6/3/13
 END DATE 6/4/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-23
 E.A. # 73518
 GROUND ELEV. 2421.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 80+87
 OFFSET 12' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2356.5	61.50	O	SPT	12 12 16	28	100		CL	SANDY LEAN CLAY Moist, very stiff, pale yellow (2.5 Y 7/4)	End day 1 drilling @ 61.5'.
	63.00									
2356.5	65.00 65.70	P	CMS	25 25/0.2'	25/0.2'	100		GC	CLAYEY GRAVEL with SAND Dry to moist, hard to very hard, pale brown (10 YR 6/3)	(P) Last 10 blows; no progress. Sample disturbed. Hard drilling from 65.7' - 67.2'. Progress 1.0'/25 minutes @ 450 psi down pressure.
	70.00									
2351.5	71.50	Q	CMS	9 12 10	22	95		GC	CLAYEY GRAVEL with SAND Moist, stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
	73.00	R	SPT	5 4 9	13	75		CH	GRAVELLY FAT CLAY with SAND Moist, stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
2346.5	75.00	S	SPT	20/0.1'	20/0.1'	0				Hard drilling from 73.5' - 75.0'. (S) Last 10 blows; no progress. No sample recovered. Very hard drilling @ 75.1'. Progress 0.1'/20 minutes @ 350 psi down pressure; 0.2'/25 minutes @ 400 psi; 0.2'/25 minutes @ 400 psi; 0.1'/20 minutes @ 400 psi. (T) Last 10 blows; no progress. No sample recovered. No groundwater encountered.
	78.10	T	SPT	20/0.1'	20/0.1'	0				
2341.5	80								END BI-23 @ 78.1'	
2336.5	85									



GEOTECHNICAL
ENGINEERING

EXPLORATION LOG

START DATE 11/18/13
 END DATE 11/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-23A
 E.A. # 73518
 GROUND ELEV. 2421.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 81+07
 OFFSET 12' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2416.5	5								SANDY GRAVEL Dry, tan	BI-23A is located 20' directly east from BI-23, @ same elevation.
2411.5	10									
2406.5	15									
2401.5	20									
2396.5	25									



EXPLORATION LOG

START DATE 11/18/13
 END DATE 11/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-23A
 E.A. # 73518
 GROUND ELEV. 2421.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 81+07
 OFFSET 12' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2386.5	35									
2381.5	40									
2376.5	45									
									48.00	
2371.5	50	A	CMS	15 27 37	64	95		CH	<u>FAT CLAY with SAND</u> . Moist, hard, pale olive (5 YR 6/3) <u>SANDY FAT CLAY</u> . Moist, very stiff, moist, pale olive (5 YR 6/3)	(A) Torvane reading - 1.3, 1.6 tsf; Pocket penetrometer reading - 4.5 tsf. Strongly cemented nodules. Lost circulation at 53.5'.
	51.10			7 9 14	23	100				
	52.60	B	SPT							
2366.5	55								55.00	
	57.60							CL	<u>SANDY LEAN CLAY with GRAVEL</u> . Moist, very stiff, moist, pale yellow (2.5 YR 7/4) to pale brown (10 YR 6/3)	(C) Torvane reading - 1.1 tsf; Pocket penetrometer
	59.10	C	CMS	12 14 22 8	36	85				



GEOTECHNICAL ENGINEERING

START DATE 11/18/13
 END DATE 11/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-23A
 E.A. # 73518
 GROUND ELEV. 2421.50 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 81+07
 OFFSET 12' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	60.60	D	SPT	10	24	85			<u>LEAN CLAY with SAND</u> Moist, very stiff, pale yellow (2.5 YR 7/4) to pale brown (10 YR 6/3)	reading - 3.5 tsf. (D) Pocket penetrometer reading - 2.0, 3.0 tsf.
	65									
2356.5	65									
	70									
2351.5	70								Weakly Cemented or Hard Gravelly Materials	Reduced penetration rate.
	75									
2346.5	75									
	80									
2341.5	80									
	82.00									
	83.50	E	SPT	3 5 7	12	0				
	84.60									
2336.5	85	F	CMS	12 14 23	37	115				
	86.10			5						
	87.60	G	SPT	4 10	14	115				
	89.60									
	90.00									

NV_DOT ALL FILES.GPJ NV_DOT.GDT 6/27/16

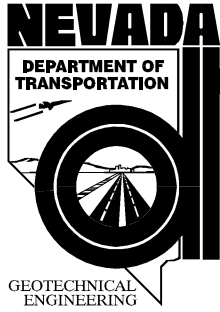


EXPLORATION LOG
 START DATE 11/18/13
 END DATE 11/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-23A
 E.A. # 73518
 GROUND ELEV. 2421.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 81+07
 OFFSET 12' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2326.5	91.10	H	CMS	15 39	54	100		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Moist, very stiff to hard, very pale brown (10 YR 7/3). <u>LEAN CLAY with GRAVEL</u> Moist, very hard, very pale brown (10 YR 7/3) <u>LEAN CLAY</u> Moist, very stiff, very pale brown (10 YR 7/3) with brownish yellow (10 YR 6/6)	(H) Pocket penetrometer reading - 2.0 tsf. (H) Strongly cemented nodules in sample. (I) Strongly cemented nodules in sample. (J) Pocket penetrometer reading - 3.5 tsf.
	92.60	I	SPT	41 47	87	75				
	94.60									
	95	J	SPT	8 10 11	21	105				
2321.5	99.60							CH	98.00 <u>FAT CLAY</u> Moist, hard, very pale brown (10 YR 7/3) with brownish yellow (10 YR 6/6)	(K) Torvane reading - 1.9 tsf; Pocket penetrometer reading - 4.0 tsf.
	100	K	CMS	11 21 37	58	85				
	101.10	L	SPT	6 9 13	22					
2316.5	102.60							CL	<u>LEAN CLAY</u> Moist, very stiff, very pale brown (10 YR 7/3) with brownish yellow (10 YR 6/6) <u>LEAN CLAY with SAND</u> Moist, hard, light yellowish brown (10 YR 7/4)	Alternating harder and softer layers.
	104.60									
	105	M	SPT	10 16 17	33	115				
2311.5	109.60							CL ML	108.00 <u>SANDY SILTY CLAY</u> Moist, very hard, light yellowish brown (10 YR 7/4)	(N) Sampler not on bottom first strike. No progress 25 blows. (O) No sample recovered.
	110	N	CMS	1 46	25/0.0'	80				
	110.60	O	SPT	59/0.2'	50/0.2'	0				
2306.5	114.00							CL	112.50 <u>GRAVELLY LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4)	
	115	P	SPT	11 12 10	22	115				
	115.50									
	119.60								120.00	



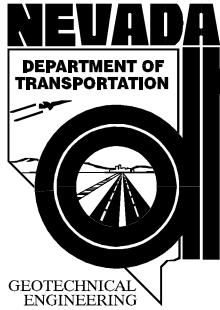
EXPLORATION LOG

START DATE 11/18/13
 END DATE 11/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-23A
 E.A. # 73518
 GROUND ELEV. 2421.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 81+07
 OFFSET 12' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	121.10	Q	CMS	18	76	80		CL	<u>SANDY LEAN CLAY</u> Moist, hard, light yellowish brown (10 YR 6/4) <u>GRAVELLY LEAN CLAY with SAND</u> Moist, very stiff, light yellowish brown (10 YR 6/4)	No groundwater encountered.
	122.60	R	SPT	8	20	80				
	122.60	END BI-23A @ 122.6'								
2296.5	125									
2291.5	130									
2286.5	135									
2281.5	140									
2276.5	145									



EXPLORATION LOG
 START DATE 6/5/13
 END DATE 6/6/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-24
 E.A. # 73518
 GROUND ELEV. 2393.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 87+50
 OFFSET 167' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot					
2388.1	3.60								SANDY GRAVEL Dry, tan	
	5.10	A	CMS	14 28 46	74	95		CL	<u>LEAN CLAY</u> Dry, very hard, very pale brown (10 YR 7/3)	
	6.60	B	SPT	19 20 25	45	65			<u>LEAN CLAY with SAND</u> Dry, very hard, very pale brown (10 YR 7/3)	
	8.60									
	10.10	C	CMS	34 39 44	83	85		GC		
2383.1	10.90	D	SPT	26 50/0.3'	50/0.3'	75		SC	<u>CLAYEY GRAVEL with SAND</u> Dry, very hard, very pale brown (10 YR 8/2) <u>CLAYEY SAND with GRAVEL</u> Dry, very hard, very pale brown (10 YR 8/2)	
	13.60							SC SM		
	15.10	E	CMS	24 34 57	91	85			<u>SILTY CLAYEY SAND with GRAVEL</u> Dry, hard, light gray (10 YR 7/2)	(E) Weakly to moderately cemented.
2378.1	16.60	F	SPT	28 36 44	80	85		GM	<u>SILTY GRAVEL with SAND</u> Dry, very dense, multicolored	
	18.60									
	20.10	G	CMS	21 27 44	71	85		SC	<u>CLAYEY SAND with GRAVEL</u> Dry, dense, multicolored	
	21.60	H	SPT	21 17 21	38	80			<u>CLAYEY SAND with GRAVEL</u> Dry, dense, multicolored	
2373.1	23.60									
	25.10	I	CMS	27 22 20	42	80		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, dense, multicolored	
	26.60	J	SPT	5 4 15	19	75			<u>LEAN CLAY with SAND</u> Dry to moist, very stiff, pale yellow (2.5 Y 8/2) mottled with brownish yellow (10 YR 6/8)	
	28.60							CL		
	30.10	K	CMS	21 32	83	85			<u>SANDY LEAN CLAY</u> Dry to moist, very hard, mottled white (2.5 Y 8/1) to light yellowish brown (2.5 Y 6/3)	(K) Weakly to moderately cemented.



EXPLORATION LOG
 START DATE 6/5/13
 END DATE 6/6/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-24
 E.A. # 73518
 GROUND ELEV. 2393.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 87+50
 OFFSET 167' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2358.1	31.60	L	SPT	24	47	75		CL	SANDY LEAN CLAY Dry to moist, very hard, mottled white (2.5 Y 8/1) to light yellowish brown (2.5 Y 6/3)	(L) Weakly to moderately cemented.
	33.60									
	35.10	M	CMS	21 28 45	73	85				
2353.1	36.60	N	SPT	21 19 16	35	75		CH	SANDY FAT CLAY Dry to moist, very hard, mottled white (2.5 Y 8/1) to light yellowish brown (2.5 Y 6/3)	(N) Weakly to moderately cemented.
	40									
	43.60									
2348.1	45.10	O	CMS	10 13 14	27	100		GC	FAT CLAY Moist, very stiff, yellowish brown (10 YR 5/4) FAT CLAY Moist, very stiff, yellowish brown (10 YR 5/4)	End day 1 drilling @ 48.6'.
	46.60	P	SPT	6 6 10	16	85				
	50									
2338.1	53.60							GC	CLAYEY GRAVEL with SAND Moist, very dense, mottled white (10 YR 8/1) to light yellowish brown (10 YR 6/4) to brown (7.5 YR 5/4) CLAYEY GRAVEL with SAND Moist, very dense, mottled white (10 YR 8/1) to light yellowish brown (10 YR 6/4) to brown (7.5 YR 5/4)	Lost circulation @ 58.2'.
	55.10	Q	CMS	25 49 45	94	100				
	56.40	R	SPT	14 54 50/0.3'	50/0.3'	60				
	60.00									



GEOTECHNICAL
ENGINEERING

EXPLORATION LOG

START DATE 6/5/13
 END DATE 6/6/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-24
 E.A. # 73518
 GROUND ELEV. 2393.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 87+50
 OFFSET 167' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	63.80	S	SPT	50/0.2'	50/0.2'	0			63.80	(S) No sample recovered. No groundwater encountered.
2328.1	65								END BI-24 @ 63.8'	
2323.1	70									
2318.1	75									
2313.1	80									
2308.1	85									

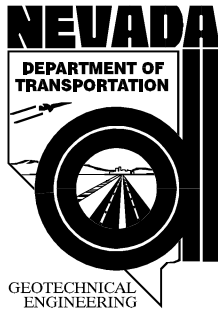


EXPLORATION LOG
 START DATE 6/6/13
 END DATE 6/7/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-25
 E.A. # 73518
 GROUND ELEV. 2387.80 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 91+50
 OFFSET 125' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2382.8	5.00	A	SPT	3	9	85		CL	SANDY GRAVEL Dry, tan 2.50	(A) Probable fill.
	6.50			3						
2377.8	10.00	B	SPT	15	41	95		CL	<u>LEAN CLAY with SAND</u> Dry, dense, very pale brown (10 YR 8/2)	
	11.50			21						
2372.8	15.00	C	CMS	12	50/0.4'	85		CL	<u>SANDY LEAN CLAY</u> Dry, very dense, pale yellow (2.5 Y 7/3)	
	16.40			37						
2367.8	17.80	D	SPT	30	50/0.4'	80		SM	<u>SILTY SAND with GRAVEL</u> Dry, very dense, light gray (2.5 Y 7/2)	
	19.00			42						
2362.8	20.00	E	CMS	54	71	85		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, very dense, very pale brown (10 YR 8/2) to yellow (10 YR 7/6)	
	21.50			49						
2362.8	23.00	F	SPT	11	35	85		CL	<u>LEAN CLAY with SAND</u> Dry, dense, very pale brown (10 YR 7/3)	End day 1 drilling @ 23.0'.
	25.00			14						
2362.8	26.50	G	CMS	41	58	95		CL	<u>LEAN CLAY with SAND</u> Dry, hard, very pale brown (10 YR 8/2) to yellowish brown (10 YR 5/6)	(G) Weakly to moderately cemented.
	28.00			28						
2362.8	28.00	H	SPT	20	58	65		CL	<u>LEAN CLAY with SAND</u> Dry, hard, very pale brown (10 YR 8/2) to yellowish brown (10 YR 5/6)	(H) Weakly to moderately cemented.
	30.00			25						
	30.00									



GEOTECHNICAL ENGINEERING

START DATE 6/6/13
 END DATE 6/7/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-25
 E.A. # 73518
 GROUND ELEV. 2387.80 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 91+50
 OFFSET 125' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2352.8	30.80	I	CMS	57 50/0.3'	50/0.3'	100		GC	CLAYEY GRAVEL with SAND Dry, hard, very pale brown (10 YR 8/2) to yellowish brown (10 YR 5/6)	(I) Weakly cemented.
	35.00									
	36.50	J	CMS	17 20 23	43	95		SC	CLAYEY SAND with GRAVEL Dry, dense, multicolored	
	38.00	K	SPT	11 14 15	29	80			CLAYEY SAND with GRAVEL Dry, dense, multicolored	
2347.8	40.00									
	41.50	L	CMS	11 21 31	52	85		CL	LEAN CLAY with SAND Dry, hard, white (10 YR 8/1)	(L) Weakly to moderately cemented.
	43.00	M	SPT	12 9 8	17	85			LEAN CLAY with SAND Dry to moist, very stiff, mottled very pale brown (10 YR 8/2) to brown (10 YR 5/3)	
	45.00									
2342.8	46.50	N	CMS	10 19 35	54	85		GC	CLAYEY GRAVEL with SAND Dry, hard, mottled light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	(N) Weakly cemented nodules in sample.
	48.00	O	SPT	9 12 13	25	85		CL	LEAN CLAY with SAND Dry, hard, mottled light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	
	50.00									
	55.00									
2332.8	56.50	P	CMS	17 24 29	53	60		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, mottled very pale brown (10 YR 7/4) to brown (7.5 YR 5/4)	
	58.00	Q	SPT	10 13 12	25	55			CLAYEY GRAVEL with SAND Dry to moist, very stiff, light gray (10 YR 7/1 and 10 YR 7/2)	
									END BI-25 @ 58.0'	No groundwater encountered.



EXPLORATION LOG
 START DATE 6/17/13
 END DATE 6/18/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-26
 E.A. # 73518
 GROUND ELEV. 2438.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 60+03
 OFFSET 429' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
6/18/13	68.00	2370.9

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2433.9	1.00								SANDY GRAVEL Dry, tan	
	2.50							ML	SANDY SILT Dry, medium dense, pale brown (10 YR 6/3)	(B) Last 10 blows; no progress. Hard drilling @ 6.0'. Progress 0.1'/5 minutes. Broke through @ 6.3'. (C) Last 10 blows; no progress. No sample recovered.
	4.00	A	SPT	5 8 14	22	85				
	5.00							SC	CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)	
	5.60	B	SPT	35 20/0.1'	20/0.1'	100				
7.50										
2428.9	7.70	C	SPT	20/0.2'	20/0.2'	0				
	10.00							CL ML	SANDY SILTY CLAY Dry to moist, medium dense, light yellowish brown (10 YR 6/4)	
	11.50	D	SPT	13 32 26	58	65				
	12.50								SC	CLAYEY SAND Dry to moist, hard, light gray (10 YR 7/2)
14.00	E	SPT	12 11 11	22	55					
2423.9	15.00								SC	CLAYEY SAND Dry to moist, very stiff, pinkish gray (7.5 YR 7/2) to brown (7.5 YR 4/4)
	16.50	F	SPT	8 9 10	19	85				
	17.50									SC
19.00	G	CMS	12 10 11	21	95					
2418.9	20.00								CL	SANDY LEAN CLAY Dry to moist, medium dense to hard, light gray (10 YR 7/2) to brown (10 YR 5/3)
	20.50	H	SPT	5 6 21	27	80				
2413.9	25.00								GC GM	SILTY CLAYEY GRAVEL with SAND Dry to moist, dense, light yellowish brown (10 YR 6/4) with multicolored gravel
	26.50	I	CMS	14 22 30	52	95				
	28.00	J	SPT	9 7 11	18	75			GC	CLAYEY GRAVEL with SAND Dry to moist, dense, light yellowish brown (10 YR 6/4) with multicolored gravel
	30.00									



GEOTECHNICAL ENGINEERING

EXPLORATION LOG

START DATE 6/17/13
 END DATE 6/18/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-26
 E.A. # 73518
 GROUND ELEV. 2438.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 60+03
 OFFSET 429' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
6/18/13	68.00	2370.9

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2403.9	35.00							MH	SANDY ELASTIC SILT with GRAVEL. Dry to moist, medium dense, pale brown (10 YR 6/3)	
	36.50	K	CMS	11 12 11	23	45				
	38.00	L	SPT	3 5 7	12	40		SM	SILTY SAND with GRAVEL. Dry to moist, medium dense, pale brown (10 YR 6/3)	(L) Rock in sampler shoe. End day 1 drilling @ 38.0'.
2398.9	40									
	43.00									
2393.9	45.00	M	CMS	10/0.1'	10/0.1'	0		SC	CLAYEY SAND. Dry to moist, very stiff to very hard, mottled brown (7.5 YR 5/3) to pink (7.5 YR 7/3)	Hard drilling @ 44.0'. Progress 0.1' / 5 minutes. (M) Last 10 blows; no progress. No sample recovered. Hard drilling from 45.0' - 48.0'. Progress 3.0' / 30 minutes @ 250 psi down pressure. (N) Last 10 blows; no progress. Hard drilling from 50.0' - 55.0'. Progress 5.0' / 45 minutes @ 250 psi down pressure. Hard drilling from 55.0' - 59.0'. Progress 4.0' / 15 minutes @ 250 psi down pressure.
	50.00	N	CMS	7 25/0.2'	25/0.2'	85				
2388.9	50.70									
2383.9	55									
	60.00									



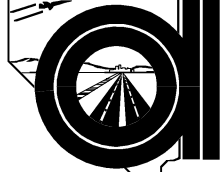
EXPLORATION LOG

START DATE 6/17/13
 END DATE 6/18/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-26
 E.A. # 73518
 GROUND ELEV. 2438.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 60+03
 OFFSET 429' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
6/18/13	68.00	2370.9

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2373.9	65.00 65.40	O	CMS	25/0.4'	25/0.4'	100		CL	<u>LEAN CLAY with SAND</u> Moist, stiff to very stiff, brown (7.5 YR 5/4)	Hard drilling from 60.0' - 62.0'. Progress 2.0'/20 minutes @ 250 psi down pressure. (O) Last 10 blows; no progress.
2368.9	70.00 71.50	P	CMS	7 9 10	19	95		CL	<u>LEAN CLAY with SAND</u> Moist to wet, stiff, pale brown (10 YR 6/3)	(P) Free water on sampler @ 70.0'.
	73.00	Q	SPT	2 2 7	9	125		CH	<u>FAT CLAY</u> Moist to wet, stiff, pale brown (10 YR 6/3)	
2363.9	75.00 76.70	R	CMS	9 12 17	29	135		CH	<u>FAT CLAY</u> Moist to wet, very stiff, brown (7.5 YR 5/4)	
	78.20	S	SPT	6 7 11	18	115		CL	<u>LEAN CLAY</u> Moist to wet, very stiff, brown (7.5 YR 5/4)	
2358.9	80							CL		
2353.9	84.80 85 86.50	T	CMS	12 9 24	33	125		SC	85.80 86.50 <u>CLAYEY SAND</u> Moist to wet, very stiff, brown (7.5 YR 5/4)	
	88.00	U	SPT	14 14 22	36	80		GC	<u>CLAYEY GRAVEL with SAND</u> Moist to wet, hard, brown (7.5 YR 5/4)	
								GC	90.00	

NEVADA**DEPARTMENT OF TRANSPORTATION**

GEOTECHNICAL ENGINEERING

START DATE 6/17/13END DATE 6/18/13JOB DESCRIPTION US95 / CC-215 System-to-System InterchangeLOCATION Northwest Las Vegas - Clark CountyBORING BI-26E.A. # 73518GROUND ELEV. 2438.90 (ft)HAMMER DROP SYSTEM Automatic**EXPLORATION LOG**

SHEET 4 OF 4

 STATION "X" 60+03
 OFFSET 429' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
6/18/13	68.00	2370.9

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2343.9	95.90	V	CMS	20/0.1'	20/0.1'	0			95.10 END BI-26 @ 95.1'	(V) Last 10 blows; no progress. No sample recovered.
2338.9	100									
2333.9	105									
2328.9	110									
2323.9	115									

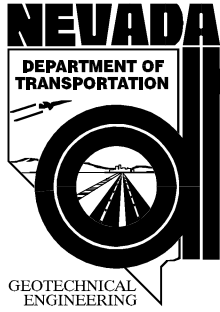


EXPLORATION LOG
 START DATE 6/19/13
 END DATE 6/20/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-27
 E.A. # 73518
 GROUND ELEV. 2446.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 60+26
 OFFSET 35' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS		
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd						
2441.3	4.70								SANDY GRAVEL Dry, tan	(A) No sample recovered.		
	5	A	SPT	5 9 15	24	0						
	6.20											
	7.20											
	8.70	B	SPT	6 3 9	12	0						
2436.3	9.70								9.00	(B) No sample recovered.		
	10	C	SPT	20 31	30/0.2'	85	GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, yellowish brown (10 YR 5/4) with multicolored gravel				
	10.90										11.50	(C) Last 10 blows; no progress.
	12.20											
2431.3	13.50	D	SPT	3 45	50/0.3'	55	SM	<u>SILTY SAND with GRAVEL</u> Dry to moist, very dense, multicolored	14.00	(E) 1.0' of 1/4" gravel.		
	14.70											
	15	E	CMS	5 7 22	29	35	GM	<u>SILTY GRAVEL with SAND</u> Dry to moist, very dense, multicolored	19.00		(F) 1.0' of 1/4" gravel.	
16.20												
2426.3	17.70	F	SPT	4 6 43	49	15		<u>SILTY GRAVEL with SAND</u> Dry to moist, very stiff, yellowish brown (10 YR 5/4)				
	19.70											
2421.3	20	G	CMS	46 50/0.3'	50/0.3'	75	GP GM	<u>POORLY-GRADED GRAVEL with SILT and SAND</u> Dry to moist, very dense, yellowish brown (10 YR 5/4) with multicolored gravel	23.00	(F) 1.0' of 1/4" gravel.		
	20.50											
2421.3	24.70											
	25	H	SPT	32 56	50/0.3'	90	GC GM	<u>SILTY CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, yellowish brown (10 YR 5/4) with multicolored gravel	30.00			
	26.00											



EXPLORATION LOG
 START DATE 6/19/13
 END DATE 6/20/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-27
 E.A. # 73518
 GROUND ELEV. 2446.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 60+26
 OFFSET 35' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	61.70							GC	<u>CLAYEY GRAVEL with SAND</u> Moist, very stiff to hard, brown (7.5 YR 5/4) <u>CLAYEY GRAVEL with SAND</u> Moist, very stiff to hard, brown (7.5 YR 5/4)	(Q) Moderately to strongly cemented.
	63.20	Q	CMS	29 26 24	50	80				
	64.50	R	SPT	8 14 50/0.3'	50/0.3'	75				
2381.3	65								64.50 END BI-27 @ 64.5'	No groundwater encountered.
2376.3	70									
2371.3	75									
2366.3	80									
2361.3	85									



EXPLORATION LOG
 START DATE 6/20/13
 END DATE 6/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-28
 E.A. # 73518
 GROUND ELEV. 2390.20 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 89+10
 OFFSET 222' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS		
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd						
2385.2	5.00	A	SPT	9	65	75		CL	SANDY GRAVEL Dry, tan	(A) Moderately cemented at sampler shoe. (B) Moderately cemented at sampler shoe.		
	6.50			24					41		2.50	
	7.50			13					19		27	
	9.00	B	SPT	13	19	27			46		65	LEAN CLAY Dry, very dense, light gray (10 YR 7/2)
	10.00	10	C	SPT	14	24			36		60	95
2380.2	11.50								12.00			
	12.50											
	14.00	D	CMS	8	7	10	17	95	13.80	FAT CLAY Dry, stiff, light yellowish brown (2.5 Y 6/3)		
2375.2	15.50	E	SPT	14	19	40	59	95		SANDY LEAN CLAY Dry, hard, light brownish gray (2.5 Y 6/2)		
	17.50								16.50	End day 1 drilling @ 15.5'.		
	18.40	F	CMS	39	50/0.4'	50/0.4'	90		19.00	CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 8/3)		
2370.2	20.00											
	21.50	G	CMS	22	24	21	45	95		SANDY FAT CLAY Dry, dense, brownish yellow (10 YR 6/6) to light gray (2.5 Y 8/2)		
	23.00	H	SPT	6	5	8	13	85		FAT CLAY with SAND Dry, medium dense, mottled light gray (10 YR 7/2) and white (10 YR 8/1)		
2365.2	25.00								24.00			
	26.50	I	CMS	17	31	42	73	100		SANDY LEAN CLAY Dry, hard, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1)		
	28.00	J	SPT	17	21	23	44	85		SANDY LEAN CLAY Dry, hard, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1)		
	30.00								30.00	(I) Moderately to strongly cemented nodules in sample. (J) Moderately to strongly cemented nodules in sample.		



GEOTECHNICAL ENGINEERING

START DATE 6/20/13
 END DATE 6/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-28
 E.A. # 73518
 GROUND ELEV. 2390.20 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 89+10
 OFFSET 222' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2355.2	31.50	K	CMS	25 29 37	66	100		SM	<u>SILTY SAND with GRAVEL</u> Dry, dense, very pale brown (10 YR 7/3)		
	33.00	L	SPT	15	79	95		GM	<u>SILTY GRAVEL with SAND</u> Dry, very dense, light gray (2.5 Y 7/2)		
				26 53							
	35.00	36.50	M	CMS	8	26	100		CL	<u>SANDY LEAN CLAY</u> Dry, medium dense, pale yellow (2.5 Y 7/3)	
					13 13						
12 12											
2350.2	40	N	SPT	8	24	85		SC	<u>CLAYEY SAND</u> Dry, medium dense, mottled light gray (2.5 Y 7/2) to white (2.5 Y 8/1)		
				12 12							
	45	46.50	O	CMS	8	35	100		CL	<u>LEAN CLAY with SAND</u> Dry to moist, very stiff, mottled brown (10 YR 5/3) to light gray (10 YR 7/2)	
					14 21						
2340.2	50	P	SPT	6	22	80		CL	<u>LEAN CLAY with SAND</u> Dry to moist, very stiff, mottled brown (10 YR 5/3) to light gray (10 YR 7/2)		
				8 14							
	51.50	53.00	Q	CMS	7	31	100		GC	<u>LEAN CLAY with SAND</u> Dry to moist, very stiff, mottled brown (10 YR 5/3) to light gray (10 YR 7/2)	
8 23											
2335.2	55	R	SPT	13	39	85		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, light gray (2.5 Y 7/2)		
				16 23							
									END BI-28 @ 53.0'	No groundwater encountered.	



EXPLORATION LOG
 START DATE 7/8/13
 END DATE 7/9/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-29
 E.A. # 73518
 GROUND ELEV. 2428.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 204+19
 OFFSET 250' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
7/10/13	62.00	2366.9
7/11/13	62.00	2366.9

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
									SANDY GRAVEL Dry, tan	
	2.50								1.20	
	2.70		SPT	28/0.2'	28/0.2'	0				Last 10 blows; no progress. No sample recovered.
	5.00									
2423.9	5.30	5	SPT	50/0.3'	50/0.3'	0				
	7.50								7.00	
	8.60	A	SPT	17 47	25/0.1'	50		SC	CLAYEY SAND with GRAVEL Dry to moist, very dense, very pale brown (10 YR 8/2) with dark gravel	
				25/0.1'					9.20	
2418.9	10.00									
	11.50	B	SPT	6 10 12	22	85		CH	FAT CLAY with SAND Dry to moist, very stiff, very pale brown (10 YR 8/2)	
	12.50								12.00	
	14.00	C	SPT	10 9 13	22	85		CL	SANDY LEAN CLAY Dry to moist, very stiff, light yellow brown (2.5 YR 6/4) mottled pale yellow (2.5 YR 8/2)	
2413.9	15.00									
	16.50	D	SPT	8 15 17	32	100			LEAN CLAY with SAND Dry to moist, hard, light brownish gray (10 YR 6/2) mottled brownish yellow (10 YR 6/8)	
	17.50								17.00	
	19.00	E	SPT	12 16 19	35	100		SC SM	SILTY CLAYEY SAND Dry to moist, dense, very pale brown (10 YR 7/4)	
2408.9	20.00								19.50	
	21.50	F	CMS	12 14 20	34	85		CL	LEAN CLAY with SAND Dry to moist, very stiff, pinkish white (7.5 YR 8/2) to light brown (7.5 YR 6/3)	
	23.00	G	SPT	8 8 11	19	85			SANDY LEAN CLAY Dry to moist, very stiff, very pale brown (10 YR 7/3)	(G) Moderately cemented nodules in sample.
	24.00								24.00	
2403.9	25.00									
	26.50	H	CMS	28 28 23	51	95		SC	CLAYEY SAND with GRAVEL Dry to moist, very dense, light yellowish brown (10 YR 6/4)	(H) Moderately cemented nodules in sample.
	28.00	I	SPT	12 20 54	74	80			CLAYEY SAND with GRAVEL Dry to moist, very dense, very pale brown (10 YR 7/3) to brown (10 YR 5/3)	(I) Moderately cemented nodules in sample.
	30.00								29.00	

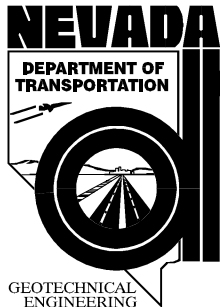


EXPLORATION LOG
 START DATE 7/8/13
 END DATE 7/9/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-29
 E.A. # 73518
 GROUND ELEV. 2428.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 204+19
 OFFSET 250' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
7/10/13	62.00	2366.9
7/11/13	62.00	2366.9

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2393.9	31.50	J	CMS	13 11 24	35	85		CH	<u>SANDY FAT CLAY</u> Dry to moist, very stiff, very pale brown (10 YR 7/3)	
	33.00	K	SPT	19 45 38	83	80		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 8/2) to white (10 YR 8/1) with dark gravel	
	35.00									
	35.70	L	CMS	51 39/0.2'	39/0.2'	55			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	
2388.9	40.00									
	40.00		CMS	29/0.1'	29/0.1'	0			<u>WEAKLY CEMENTED MATERIAL OR GRAVELLY LAYER</u>	Smooth, even penetration through zone.
2383.9	45.00		SPT	10/0.1'	10/0.1'	0			<u>WEAKLY CEMENTED MATERIAL OR GRAVELLY LAYER</u>	
	2378.9	50.00		SPT	50/0.3'	50/0.3'	0			
50.30										
2373.9	55.00							CH		
	56.50	M	CMS	7 10 12	22	95			<u>SANDY FAT CLAY with GRAVEL</u> Moist, very stiff, brownish yellow (10 YR 6/6)	
	57.20	N	SPT	15 50/0.2'	50/0.2'	100			<u>CLAYEY GRAVEL with SAND</u> Moist, dense, brownish yellow (10 YR 6/6) to very pale brown (10 YR 8/2)	(N) Moderately cemented nodules in sample.
	60.00							GC		



GEOTECHNICAL ENGINEERING

START DATE 7/8/13
 END DATE 7/9/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-29
 E.A. # 73518
 GROUND ELEV. 2428.90 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 204+19
 OFFSET 250' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
7/10/13	62.00	2366.9
7/11/13	62.00	2366.9

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	60.20		CMS	50/0.2	50/0.2	0				
	65.00								MODERATELY TO STRONGLY CEMENTED MATERIAL	
	62.00									Water table measured @ 62.0' on 07/10/13 @ 9:10 am; measured @ 62' on 07/11/13 @ 8:15 am.
2363.9	65.00		O CMS	49	56	133			LEAN CLAY Moist, hard, light yellowish brown (10 YR 6/4)	
	66.50			22						
	66.50			34						
	68.00		P SPT	9	52	95			LEAN CLAY with GRAVEL Moist, hard, light yellowish brown (10 YR 6/4)	
	68.00			32						
	68.00			20						
2358.9	70.00		Q CMS	15	46	120		CL	LEAN CLAY Moist, very stiff, brownish yellow (10 YR 6/6) to yellowish brown (10 YR 5/6)	
	71.50			16						
	71.50			30						
	73.00		R SPT	7	19	105			LEAN CLAY Moist, very stiff, brownish yellow (10 YR 6/6) to yellowish brown (10 YR 5/6)	
	73.00			7						
	73.00			12						
2353.9	75.00		S CMS	11	37	120			LEAN CLAY with SAND Hard, moist, yellowish brown (10 YR 5/4)	
	76.50			15						
	76.50			22						
	78.00		T SPT	5	15	125		CH	FAT CLAY Moist, stiff, yellowish brown (10 YR 5/4)	
	78.00			6						
	78.00			9						
2348.9	80									
2343.9	85.00		SH			0				0.2' penetration @ 700 psi; crushed Shelby Tube.
	85.20									
	90.00									



EXPLORATION LOG
 START DATE 7/8/13
 END DATE 7/9/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-29
 E.A. # 73518
 GROUND ELEV. 2428.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 204+19
 OFFSET 250' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
7/10/13	62.00	2366.9
7/11/13	62.00	2366.9

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot					
2333.9	91.40	U	CMS	26 58	50/0.4'	70		CL	<u>LEAN CLAY</u> Moist, very hard, light yellowish brown (10 YR 6/4) <u>SANDY LEAN CLAY</u> Moist, very hard, very hard, yellowish brown (10 YR 6/4) <u>LEAN CLAY</u> Moist, very hard, yellowish brown (10 YR 6/4) <u>SANDY LEAN CLAY</u> Moist, very hard, yellowish brown (10 YR 6/4)	
		V	SPT	24 48	50/0.2'	110				
	95.00									
	96.30	W	CMS	55 54	50/0.3'	100				
	97.80	X	SPT	25 50 56	106	110				
2328.9	100.00 100.90	Y	CMS	45 50/0.4'	50/0.4'	130			<u>LEAN CLAY with SAND</u> Moist, very hard, yellowish brown (10 YR 6/4) END BI-29 @ 100.9'	
2323.9	105									
2318.9	110									
2313.9	115									

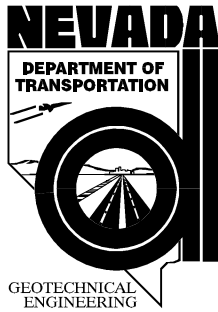


EXPLORATION LOG
 START DATE 7/10/13
 END DATE 7/11/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-30
 E.A. # 73518
 GROUND ELEV. 2427.20 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 65+98
 OFFSET 316' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2422.2	2.50								SANDY GRAVEL Dry, tan	
	4.00	A	SPT	5 8 14	22	90		CL ML	<u>SANDY SILTY CLAY</u> Dry to moist, very stiff, light yellowish brown (10 YR 6/4)	
	5.00									
	6.50	B	SPT	21 26 41	67	95		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2) with dark gravel	
	7.50									
2417.2	9.00	C	SPT	37 34 33	67	90			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 8/2) with dark gravel	
	10.00									
	11.50	D	SPT	17 17 24	41	80		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2) with dark gravel	
2412.2	12.50									
	14.00	E	SPT	11 8 6	14	25			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2) with dark gravel	
	15.00									
	16.50	F	SPT	7 6 5	11	65			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, medium dense, very pale brown (10 YR 8/2) to dark yellowish brown (10 YR 4/4)	
2407.2	17.50									
	19.00	G	SPT	3 4 9	13	65			<u>LEAN CLAY with SAND</u> Dry to moist, stiff, light yellowish brown (10 YR 6/4) mottled white powder (10 YR 8/1)	
	20.00									
	21.50	H	CMS	6 8 14	22	95		CL	<u>LEAN CLAY with SAND</u> Dry to moist, very stiff, pale yellow (2.5 YR 7/3)	
2402.2	23.00	I	SPT	5 8 11	19	65			<u>SANDY LEAN CLAY</u> Dry to moist, very stiff, light yellowish brown (10 YR 6/4) mottled white powder (10 YR 8/1)	
	25.00									
	26.50	J	CMS	11 16 15	31	95			<u>SANDY LEAN CLAY</u> Dry to moist, very stiff, very pale brown (10 YR 7/4) to yellowish brown (10 YR 5/4)	
	28.00	K	SPT	6 7 14	21	75		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, medium dense, very pale brown (10 YR 7/4) to yellowish brown (10 YR 5/4)	
	30.00									



EXPLORATION LOG
 START DATE 7/10/13
 END DATE 7/11/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-30
 E.A. # 73518
 GROUND ELEV. 2427.20 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 65+98
 OFFSET 316' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2392.2	31.50	L	CMS	16 16 16	32	85		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, medium dense, very pale brown (10 YR 7/4) to yellowish brown (10 YR 5/4)	
	33.00	M	SPT	22 18 12	30	65		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, dense, very pale brown (10 YR 7/4) to yellowish brown (10 YR 5/4)	
	35.00									
2387.2	36.50	N	CMS	24 47 46	93	95		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, hard, very pale brown (10 YR 7/4) and multicolored, with white (10 YR 8/1)	
	38.00	O	SPT	15 27 37	64	75			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very hard, very pale brown (10 YR 7/4) and multicolored, with white (10 YR 8/1)	
	40.00									
2382.2	41.30	P	CMS	34 24 50/0.3'	50/0.3'	100		CL	<u>GRAVELLY LEAN CLAY with SAND</u> Dry to moist, very hard, yellowish brown (10 YR 5/4) to white (10 YR 8/1)	
	42.80	Q	SPT	25 39 56	95	95			<u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, very hard, yellowish brown (10 YR 5/4) to white (10 YR 8/1)	
	45								<u>STRONGLY CEMENTED MATERIALS; HARD DRILLING</u>	Hard drilling 44.0'-48.0'; 0.02'/min, 400 psi down.
2377.2	50.00									
	50.60	R	SPT	46 50/0.1'	50/0.1'	100		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, brown (7.5 YR 5/4) mottled pinkish white (7.5 YR 8/2)	
2372.2	55.00									
	56.50	S	SPT	15 20 25	45	95			<u>CLAYEY SAND with GRAVEL</u> Dry to moist, dense, brown (7.5 YR 5/4) mottled pinkish white (7.5 YR 8/2)	
									END BI-30 @ 56.5'	No groundwater encountered.



GEOTECHNICAL ENGINEERING

START DATE 7/22/13
 END DATE 7/23/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-31
 E.A. # 73518
 GROUND ELEV. 2431.50 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 59+50
 OFFSET 219' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
7/23/13	65.00	2366.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2426.5	2.50								2.00	(A) Sampler shoe blocked with rock.
	4.00	A	SPT	16 12 14	26	45		GC GM	SILTY CLAYEY GRAVEL with SAND Moist, dense, yellowish brown (10 YR 5/4) with dark gravel	
	5.00								4.50	
	6.50	B	SPT	6 5 6	11	85		CL	SANDY LEAN CLAY Moist, stiff, very pale brown (10 YR 7/4)	
	7.50									
2421.5	9.00	C	SPT	10 11 15	26	95			9.50	
	10.00									
	11.50	D	CMS	8 10 14	24	85		CL	SANDY SILTY CLAY Moist, stiff, light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	
2416.5	13.00	E	SPT	6 7 8	15	85				
	14.00									
	15.00									
	16.50	F	CMS	8 17 22	39	85		GC	CLAYEY GRAVEL with SAND Moist, dense, multicolored, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/8)	
2411.5	18.00	G	SPT	9 11 14	25	75		SC	CLAYEY SAND with GRAVEL Moist, dense, multicolored, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/8)	
	19.00									
	20.00									
2406.5	21.50	H	CMS	5 11 14	25	85		GM	SILTY GRAVEL with SAND Moist, medium dense, multicolored, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/8)	
	23.00	I	SPT	12 17 14	31	65			SILTY GRAVEL with SAND Moist, dense, multicolored, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/8)	
	24.00									
2406.5	25.00									
	26.50	J	CMS	11 11 46	57	55		GC	CLAYEY GRAVEL with SAND Moist, dense, multicolored, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/8)	
	28.00	K	SPT	15 15 16	31	60			CLAYEY GRAVEL Moist, dense, multicolored, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/8)	
	30.00								30.00	



EXPLORATION LOG
 START DATE 7/22/13
 END DATE 7/23/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-31
 E.A. # 73518
 GROUND ELEV. 2431.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 59+50
 OFFSET 219' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
7/23/13	65.00	2366.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS						
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd										
2396.5	31.50	L	CMS	4 17 22	39	95		CL	<u>GRAVELLY LEAN CLAY with SAND</u> Moist, very stiff, moist, reddish yellow (7.5 YR 6/6) <u>LEAN CLAY with SAND</u> Moist, very stiff, reddish yellow (7.5 YR 6/6)							
	33.00	M	SPT	7 9 11	20	85										
2396.5	35.00	N	CMS	21	50/0.2'	100		SC	<u>CLAYEY SAND with GRAVEL</u> Moist, very dense, very pale brown (10 YR 8/2) to light yellowish brown (10 YR 6/4)	(O) 50 blows; no progress. No sample recovered.						
	35.70										O	SPT	50/0.2'	50/0.2'	0	
	35.90															
2391.5	40.00	P	SPT	10/0.1'	10/0.1'	0		GM	<u>WEAKLY TO MODERATELY CEMENTED MATERIALS</u> Moderately hard drilling, smooth penetration, weak to moderate cementation. (P) 10 blows; no progress. No sample recovered.							
	45.00	Q	SPT	5 13	50/0.4'	70										
2386.5	46.40			50/0.4'					<u>WEAKLY CEMENTED MATERIALS</u> <u>STRONGLY CEMENTED MATERIALS</u>	Hard drilling - .08 ft/min @ 300 psi down.						
	50.00	R	SPT	20/0.1'	20/0.1'	0										
2376.5	55															
	60.00															



EXPLORATION LOG
 START DATE 7/22/13
 END DATE 7/23/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-31
 E.A. # 73518
 GROUND ELEV. 2431.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 59+50
 OFFSET 219' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
7/23/13	65.00	2366.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2366.5	61.50	S	SPT	13	60	115		CL ML	SILTY CLAY with SAND Moist, hard, pale brown (10 YR 6/3) to very pale brown (10 YR 8/2)	
				20						
				40						
2366.5	65.00	T	CMS	20	60	100		CL	LEAN CLAY with GRAVEL Moist, hard, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	(T) Free water on sampler @ 65.0'
				25						
				35						
2361.5	68.00	U	SPT	18	28	95		CL ML	SILTY CLAY Moist, very stiff, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
				12						
				16						
2361.5	70.00	V	CMS	7	24	100		CL	LEAN CLAY Moist, stiff, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
				9						
				15						
2356.5	73.00	W	SPT	6	17	115		CH	FAT CLAY Moist, very stiff, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
				7						
				10						
2356.5	75.00	X	CMS	10	26	95		CL	LEAN CLAY with SAND Moist, very stiff, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
				11						
				15						
2351.5	78.00	Y	SPT	4	20	125		CL	LEAN CLAY with SAND Moist, very stiff, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
				7						
				13						
2351.5	80.00	Z	CMS	12	66	115		GC	GRAVELLY LEAN CLAY Moist, hard, multicolored, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6) with very pale brown (10 YR 8/2)	
				25						
				41						
2346.5	83.00	AA	SPT	34	90	95		GC	CLAYEY GRAVEL with SAND Moist, very dense, multicolored, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6) with very pale brown (10 YR 8/2)	
				48						
				42						
2346.5	85.00	BB	CMS	11	55	115		CL	GRAVELLY LEAN CLAY Moist, hard, multicolored, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6) with very pale brown (10 YR 8/2)	
				18						
				37						
2346.5	86.50	CC	SPT	9	62	120		CL	LEAN CLAY with SAND Moist, very hard, multicolored, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6) with very pale brown (10 YR 8/2)	
				11						
				51						
2346.5	90.00									



GEOTECHNICAL
ENGINEERING

START DATE 7/22/13
 END DATE 7/23/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-31
 E.A. # 73518
 GROUND ELEV. 2431.50 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 59+50
 OFFSET 219' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
7/23/13	65.00	2366.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2336.5	91.50	DD	CMS	12 36 51	87	95		GC	CLAYEY GRAVEL with SAND. Moist, very dense, multicolored, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6) with very pale brown (10 YR 8/2)	
	92.00	EE	SPT	25	20/0.0'	100				
2331.5	100.00							CL ML	WEAKLY TO MODERATELY CEMENTED MATERIALS	
	101.50	FF	CMS	25 33 38	71	115				
	103.00	GG	SPT	10 12 21	33	125				
	110.00									
2321.5	110.00							CL ML	SILTY CLAY. Moist, hard, light yellowish brown (10 YR 6/4)	
	111.50	HH	CMS	20 35 46	81	85				
	113.00	II	SPT	12 11 14	25	140				
2316.5	115.00							CL	SILTY CLAY. Moist, very stiff, light yellowish brown (10 YR 6/4)	
	120.00									



EXPLORATION LOG

START DATE 7/22/13
 END DATE 7/23/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-31
 E.A. # 73518
 GROUND ELEV. 2431.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 59+50
 OFFSET 219' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
7/23/13	65.00	2366.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	121.50	JJ	CMS	10 18 28	46	100		CL	<u>LEAN CLAY with SAND</u> Moist, very stiff, light yellowish brown (10 YR 6/4)	
	123.00	KK	SPT	7 5 13	18	125			123.00	<u>LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4)
									END BI-31 @ 123.0'	
2306.5	125									
2301.5	130									
2296.5	135									
2291.5	140									
2286.5	145									



START DATE 7/24/13
END DATE 7/25/13
JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
LOCATION Northwest Las Vegas - Clark County
BORING BI-32
E.A. # 73518
GROUND ELEV. 2439.40 (ft)
HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 59+01
OFFSET 334' Left
ENGINEER Lawrence
EQUIPMENT Diedrich D-120 (Unit 1627)
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED _____ **DATE** _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2434.4	2.50								2.00		
	4.00	A	SPT	19 22 21	43	80		SM	SILTY SAND with GRAVEL Moist, dense, very pale brown fines (10 YR 7/3) with dark gravel		
	5.00								4.50		
	6.00	B	SPT	21 50	50	90		SC	CLAYEY SAND with GRAVEL Moist, very dense, very pale brown fines (10 YR 7/3) with dark gravel.		
	7.50 7.70	C	SPT	20/0.2'	20/0.2'	0			7.00		
2429.4	10.00							GP GC		(C) Last 10 blows; no progress. No sample recovered.	
	11.50	D	SPT	46 24 12	36	65			12.00		
	12.50										
2424.4	14.00	E	SPT	7 10 29	39	85		SM	SILTY SAND Moist, dense, very pale brown (10 YR 7/4)		
	15.00										
	16.50	F	CMS	11 21 31	52	100			17.00		
2419.4	18.00	G	SPT	9 10 8	18	85		CL ML	SANDY SILTY CLAY Moist, medium dense, light yellowish brown (10 YR 6/4) mottled light gray (10 YR 7/2) and very dark grayish brown (10 YR 3/2)		
	20.00										
	21.50	H	CMS	21 26 22	48	95		SM	SILTY SAND with GRAVEL Moist, dense, light yellowish brown (10 YR 6/4) mottled light gray (10 YR 7/2) with dark gravel		
	23.00	I	SPT	9 9 18	27	80		GC	CLAYEY GRAVEL with SAND Moist, dense, light yellowish brown (10 YR 6/4) mottled light gray (10 YR 7/2) with dark gravel		
2414.4	25.00								24.00		
	26.50	J	CMS	17 22 22	44	100		GC GM	SILTY CLAYEY GRAVEL with SAND Moist, dense, light yellowish brown (10 YR 6/4) mottled light gray (10 YR 7/2) with dark gravel		
	28.00	K	SPT	12 12 19	31	85			29.00		
	30.00							GC	30.00		



EXPLORATION LOG
 START DATE 7/24/13
 END DATE 7/25/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-32
 E.A. # 73518
 GROUND ELEV. 2439.40 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 59+01
 OFFSET 334' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2404.4	31.50	L	CMS	12 23 23	46	85		GC	31.50 <u>CLAYEY GRAVEL with SAND</u> Moist, dense, light gray (10 YR 7/1) to very pale brown (10 YR 7/3) to white (10 YR 8/1) mottled with light reddish brown (5 YR 6/4) and light brownish gray (10 YR 6/2)	
	33.00	M	SPT	11 13 40	53	85		GM		
	35.00									
	36.50	N	CMS	16 16 23	39	65		GC	36.50 <u>CLAYEY GRAVEL with SAND</u> Moist, medium dense, light gray (10 YR 7/1) to very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	38.00	O	SPT	17 25 28	53	60		GW	39.00 <u>WELL GRADED GRAVEL with SAND</u> Moist, dense, light gray (10 YR 7/1) to very pale brown (10 YR 7/3) to white (10 YR 8/1)	
2399.4	40.00									
	41.50	P	SPT	10 8 9	17	40		GC	43.50 <u>CLAYEY GRAVEL with SAND</u> Moist, medium dense, light gray (10 YR 7/1) to very pale brown (10 YR 7/3) to white (10 YR 8/1)	
2394.4	45.00	Q	SPT	10/0.1'	10/0.1'	0			43.5' - 45.0' progress 0.08'/min. (Q) 10 blows; no progress. No sample recovered. 45.0' - 48.5' progress 0.16'/min.	
	48.50							<u>STRONGLY CEMENTED MATERIAL</u>		
2389.4	50.00								48.5' - 53.0' progress 1.5'/min. (R) No sample recovered.	
	50.30	R	SPT	50/0.3'	50/0.3'	0		<u>WEAKLY CEMENTED MATERIAL OR GRAVELLY SOILS</u>		
2384.4	55								53.0' - 59.0' progress 0.04' - 0.08' ft/min. <u>STRONGLY CEMENTED MATERIAL</u>	
	59.00							END BI-32 @ 59.0'		



EXPLORATION LOG
 START DATE 8/6/13
 END DATE 8/7/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-33
 E.A. # 73518
 GROUND ELEV. 2384.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 90+94
 OFFSET 243' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2349.1	31.50	H	CMS	7	16	65		CL	<u>LEAN CLAY with SAND</u> Moist, stiff to very stiff, mottled brown (10 YR 5/3) to white (10 YR 8/1) <u>LEAN CLAY with SAND</u> Dry to moist, stiff to very stiff, mottled light gray (10 YR 7/2) to brown (10 YR 5/3) <u>LEAN CLAY with SAND</u> Moist, medium stiff to stiff, yellowish brown (10 YR 5/4) <u>LEAN CLAY with SAND</u> Moist, medium stiff to stiff, yellowish brown (10 YR 5/4)	
		I	SPT	4 9	20	85				
	35.00	36.50	J	CMS	5 7 8	15	85			
			K	SPT	4 4 9	13	85			
2344.1	40.00	L	CMS	9 11 10	21	85	SC	39.00 <u>CLAYEY SAND with GRAVEL</u> Moist, stiff, mottled light gray (10 YR 7/2) to brown (10 YR 5/4) 41.50 <u>SANDY FAT CLAY</u> Moist, stiff, mottled light gray (10 YR 7/2) to brown (10 YR 5/4)		
		M	SPT	5 10 35	45	85	CH			
	2339.1	45.00	N	CMS	23 27 34	61	100			GC
O			SPT	10 9 11	20	65				
2334.1		50							50.00	
										Hard drilling at 52.0' - 53.0'. Progress 1.0'/15 minutes @ 200 psi down pressure.
2329.1	55								56.50	Hard drilling at 53.0' - 54.0'. Progress 1.0'/10 minutes @ 200 psi down pressure.
										Hard drilling at 54.0' - 55.0'. Progress 1.0'/10 minutes @ 200 psi down
										END BI-33 @ 56.5'



GEOTECHNICAL
ENGINEERING

EXPLORATION LOG

START DATE 8/6/13
 END DATE 8/7/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-33
 E.A. # 73518
 GROUND ELEV. 2384.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 90+94
 OFFSET 243' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2319.1	65									pressure. Hard drilling at 55.0' - 55.5'. Progress 0.5/20 minutes @ 250 psi down pressure. Hard drilling at 55.5' - 56.5'. Progress 1.0/90 minutes @ 300 psi down pressure. Terminate hole. No groundwater encountered.
2314.1	70									
2309.1	75									
2304.1	80									
2299.1	85									



EXPLORATION LOG
 START DATE 8/7/13
 END DATE 8/8/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-34
 E.A. # 73518
 GROUND ELEV. 2392.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 87+86
 OFFSET 306' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2387.9	4.00								1.00 GRAVELLY SAND Dry, tan	
	5.50	A	SPT	11 13 16	29	85		CL	LEAN CLAY Dry, very stiff, very pale brown (10 YR 7/3)	
	9.00									
2382.9	10.50	B	SPT	4 1 4	5	75			SANDY LEAN CLAY with GRAVEL Dry, loose, very pale brown (10 YR 7/3)	
	14.00							SM		
2377.9	15.50	C	CMS	19 23 40	63	85			15.50 SILTY SAND with GRAVEL Dry, dense, light brownish gray (10 YR 6/2)	
	17.00	D	SPT	18 12 11	23	85		SC	CLAYEY SAND Dry, very stiff, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	
2372.9	19.00								18.00	
	20.50	E	CMS	12 14 13	27	95			SANDY FAT CLAY Dry, very stiff, mottled white (10 YR 8/1) to pale brown (10 YR 6/3)	
	22.00	F	SPT	10 12 18	30	95		CH	FAT CLAY with SAND Dry, very stiff to hard, mottled white (10 YR 8/1) to pale brown (10 YR 6/3)	
2367.9	25.50	G	CMS	18 22 20	42	85			25.50 SANDY FAT CLAY with GRAVEL Dry, very stiff, mottled white (10 YR 8/1) to pale brown (10 YR 6/3)	
	27.00	H	SPT	12 14 13	27	95		SC	CLAYEY SAND Dry, very stiff, white (10 YR 8/1)	
									30.00	



EXPLORATION LOG
 START DATE 8/7/13
 END DATE 8/8/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-34
 E.A. # 73518
 GROUND ELEV. 2392.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 87+86
 OFFSET 306' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2357.9	34.00 34.30	I	SPT	30/0.3'	30/0.3'	0				(I) Last 10 blows; no progress. No sample recovered.
	36.00									
2352.9	39.00 40.50	J	CMS	14 22 28	50	95		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Dry, hard, light gray (2.5 Y 7/2)	
	42.00	K	SPT	9 14 24	38	95			<u>SANDY LEAN CLAY with GRAVEL</u> Dry, hard, light gray (2.5 Y 7/2)	
	43.00									
2347.9	44.00 45.50	L	CMS	20 36 62	98	100			<u>SANDY FAT CLAY</u> Dry to moist, very hard, light gray (5 Y 7/2)	
	47.00	M	SPT	19 25 43	68	85		CH	<u>SANDY FAT CLAY</u> Dry to moist, very hard, light gray (5 Y 7/2)	
	50.00									
2342.9	54.00 54.30	N	CMS	50/0.3'	50/0.3'	100		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very hard, white (10 YR 8/1)	End day 1 drilling @ 49.0'. Hard drilling at 49.0' - 54.0'. Progress 5.0'/35 minutes @ 250 psi down pressure. Hard drilling at 54.0' - 55.0'. Progress 1.0'/25 minutes @ 250 psi down pressure. No groundwater encountered.
2337.9	55.50								END BI-34 @ 56.5'	



EXPLORATION LOG
 START DATE 8/19/13
 END DATE 8/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-35
 E.A. # 73518
 GROUND ELEV. 2395.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 89+04
 OFFSET 249' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White/Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2390.3	2.50							CL ML	2.00 SILTY CLAY Dry to moist, medium stiff, light yellowish brown (10 YR 6/4) 4.50 LEAN CLAY Dry, stiff, light yellowish brown (10 YR 6/4) to dark grayish brown (10 YR 4/2) LEAN CLAY with SAND Dry, very hard, light yellowish brown (10 YR 6/4) to dark grayish brown (10 YR 4/2)	
	4.00	A	SPT	3 3 3	6	75				
	5.00									
	6.50	B	SPT	4 6 9	15	85				
	7.50									
2385.3	9.00	C	SPT	23 34 47	81	80		CL	LEAN CLAY with SAND Dry, very hard, light yellowish brown (10 YR 6/4) to dark grayish brown (10 YR 4/2) LEAN CLAY Dry, hard, white (10 YR 8/1) to very pale brown (10 YR 8/2) LEAN CLAY Dry, hard, white (10 YR 8/1) to very pale brown (10 YR 8/2)	
	10.00									
	11.50	D	SPT	14 19 27	46	75				
2380.3	12.50							CL	LEAN CLAY with SAND Dry, hard, white (10 YR 8/1) to very pale brown (10 YR 8/2) LEAN CLAY with SAND Dry, hard, white (10 YR 8/1) to very pale brown (10 YR 8/2)	
	14.00	E	SPT	15 22 33	55	65				
	15.00									
2375.3	16.50	F	SPT	15 22 33	55	75		CL	LEAN CLAY with SAND Dry, hard, white (10 YR 8/1) to very pale brown (10 YR 8/2) LEAN CLAY Moist, very stiff, brown (10 YR 5/3)	
	20.00									
2370.3	21.50	G	SPT	9 10 15	25	75		CL	LEAN CLAY Dry, hard, white (10 YR 8/1) LEAN CLAY with SAND Moist, hard, white (10 YR 8/1) to light yellowish brown (2.5 YR 6/3)	
	25.00									
	26.50	H	CMS	17 23 26	49	65				
	28.00	I	SPT	10 13 18	31	75				
	30.00									



EXPLORATION LOG
 START DATE 8/19/13
 END DATE 8/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-35
 E.A. # 73518
 GROUND ELEV. 2395.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 89+04
 OFFSET 249' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White/Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2360.3	31.50	J	CMS	10 13 14	27	85		CL	SANDY LEAN CLAY Moist to dry, hard, white (10 YR 8/1) to light yellowish brown (2.5 YR 6/3)	Begin losing water/circulation @ 33.0', drill head dropped approximately 3.0' under gravity forces, no down pressure.
	33.00	K	SPT	3 3 3	6	20		GC	CLAYEY GRAVEL with SAND Moist to dry, medium stiff, white (10 YR 8/1) to light yellowish brown (2.5 YR 6/3) to brownish yellow (10 YR 6/8)	
	35.00									
	36.50	L	CMS	3 1 7	8	60				
	38.00	M	SPT	12 21 22	43	75			CLAYEY GRAVEL WITH SAND Moist to dry, hard, white (10 YR 8/1) to light yellowish brown (2.5 YR 6/3)	
2355.3	40.00 40.30	N	CMS	20/0.3'	20/0.3'	0				Hard drilling, 0.3' penetration of sampler likely cuttings. (N) Last 10 blows; no progress. No sample recovered.
2350.3	45									
	48.50									
2345.3	50.00 51.50	O	CMS	22 14 23	37	80		CH	SANDY FAT CLAY with GRAVEL Moist, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	Drill with clean water.
	52.30 52.90	P	SPT	23 50/0.3'	50/0.3'	95		CL	SANDY LEAN CLAY Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	
2340.3	54.40	Q	SPT	11 14 17	31	50		GC	CLAYEY GRAVEL with SAND Moist, hard, white (10 YR 8/1) to pale brown (10 YR 6/3)	
	57.90									MODERATELY CEMENTED MATERIALS: HARD DRILLING



EXPLORATION LOG
 START DATE 8/19/13
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 LOCATION Northwest Las Vegas - Clark County
 BORING BI-35
 E.A. # 73518
 GROUND ELEV. 2395.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 89+04
 OFFSET 249' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White/Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
									60.90	<u>WEAKLY CEMENTED AND SOFT MOIST LAYER</u>	
	62.00	R	SPT	20/0.1'	20/0.1'	0				<u>STRONGLY CEMENTED; HARD DRILLING</u>	Regain circulation with 2 bag bentonite per 200 gallons water, total 350 gallons before regained circulation; still slowly losing slurry. (R) Last 10 blows; no progress. No sample recovered.
2330.3	65										
									67.90	<u>WEAKLY CEMENTED TO MODERATELY CEMENTED; HARD DRILLING</u>	
2325.3	70										
									72.90		
		S	CMS	16	42	50			74.40	<u>SANDY LEAN CLAY</u> Moist, hard, light brown (10 YR 7/2) to pale brown (10 YR 6/3)	+/- 4000 gallons of water/slurry drained into borehole between 57.0'-140.9'.
2320.3	75	T	SPT	3	10	45			75.90	<u>LEAN CLAY</u> Moist, very stiff, light brown (10 YR 7/2) to pale brown (10 YR 6/3)	
				5							
2315.3	80							CL			
									82.90		
		U	CMS	7	25	115			84.40	<u>LEAN CLAY</u> Moist, very stiff, pale brown (10 YR 6/3) with brownish yellow (10 YR 6/8)	
2310.3	85	V	SPT	7	26	100			85.90	<u>FAT CLAY</u> Moist, very stiff, pale brown (10 YR 6/3) with brownish yellow (10 YR 6/8)	
				9							
				17							
								CH			
									88.00		



EXPLORATION LOG
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 E.A. # 73518
 GROUND ELEV. 2395.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 89+04
 OFFSET 249' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White/Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2300.3	92.90							CL	<u>LEAN CLAY with GRAVEL</u> Moist, very stiff, pale brown (10 YR 6/3) <u>LEAN CLAY with SAND</u> Moist, very stiff, pale brown (10 YR 6/3)	
	94.40	W	CMS	9 15 17	32	125				
	95	X	SPT	7 10 18	28	100				
	95.90									
2295.3	100							CL	<u>STRONGLY CEMENTED MATERIALS; HARD DRILLING</u> 0.16'/min- 250 psi down	
	102.90									
	104.40	Y	CMS	23 27 48	75	110				
2290.3	105	Z	SPT	6 11 15	26	120		CH	<u>FAT CLAY with GRAVEL</u> Moist, very stiff, pale brown (10 YR 6/3)	
	105.90									
2285.3	110							CL ML	<u>SILTY CLAY with SAND</u> Moist, very hard, pale brown (10 YR 6/3)	
	112.90									
	114.30	AA	CMS	58 51 65/0.4'	65/0.4'	95				
2280.3	115	BB	SPT	9 20 15	35	110		CL	<u>LEAN CLAY with SAND</u> Moist, hard, pale brown (10 YR 6/3)	
	115.80									
								CL		
										120.00



EXPLORATION LOG

START DATE 8/19/13
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 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-35
 E.A. # 73518
 GROUND ELEV. 2395.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 89+04
 OFFSET 249' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White/Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	122.90							CL	<u>LEAN CLAY with SAND</u> Moist, very hard, pale brown (10 YR 6/3)	
	124.40	CC	CMS	34 79 110	189	50				
2270.3	125									
									128.00	
2265.3	130									
2260.3	135							CL	<u>GRAVELLY LEAN CLAY</u> Moist, very hard, pale brown (10 YR 6/3)	
	137.90	DD	CMS	30 46 90	136	85				
	139.40									
2255.3	140	EE	SPT	41 18 18	36	115				No groundwater encountered.
	140.90								140.90	
2250.3	145									

NV_DOT ALL FILES.GPJ NV_DOT.GDT 6/27/16

END BI-35 @ 140.9'



EXPLORATION LOG
 START DATE 8/22/13
 END DATE 8/22/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-36
 E.A. # 73518
 GROUND ELEV. 2393.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 87+37
 OFFSET 312' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2388.3	1.50									
	2.50									
	4.00	A	SPT	15 17 22	39	85		CL	<u>LEAN CLAY</u> Dry, hard, very pale brown (10 YR 8/2)	
	5.00									
	6.50	B	SPT	7 12 29	41	95		CL	<u>LEAN CLAY with SAND</u> Dry, hard, very pale brown (10 YR 8/2)	
2383.3	7.50									
	9.00	C	SPT	9 8 6	14	95		CL	<u>SANDY LEAN CLAY</u> Dry, stiff, very pale brown (10 YR 8/2)	
	10.00									
	11.50	D	SPT	12 18 44	62	85		CL ML	<u>SANDY SILTY CLAY</u> Dry, very hard, very pale brown (10 YR 8/2)	(D) Rock in sampler shoe.
2378.3	12.50									
	14.00	E	SPT	10 9 12	21	100		CL	<u>SANDY LEAN CLAY</u> Dry to moist, very stiff, light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	
	15.00									
	16.50	F	SPT	15 17 14	31	85		SC SM	<u>SILTY CLAYEY SAND with GRAVEL</u> Dry to moist, hard, light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	
2373.3	18.30									
	20.00									
	21.50	G	CMS	14 12 16	28	80		CL	<u>LEAN CLAY with SAND</u> Dry, white (10 YR 8/1) to light gray (10 YR 7/2)	
	23.00	H	SPT	7 7 11	18	95		CH	<u>SANDY FAT CLAY</u> Dry, very stiff, white (10 YR 8/1) to light gray (10 YR 7/2)	
2368.3	24.00									
	25.00									
	26.50	I	CMS	20 33 30	63	85		CL	<u>SANDY LEAN CLAY</u> Dry, hard, white (10 YR 8/1) to light gray (10 YR 7/2)	
	28.00	J	SPT	12 17 22	39	95		CL	<u>SANDY LEAN CLAY</u> Dry, hard, white (10 YR 8/1) to light gray (10 YR 7/2)	
	30.00									



GEOTECHNICAL ENGINEERING

START DATE 8/22/13
 END DATE 8/22/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-36
 E.A. # 73518
 GROUND ELEV. 2393.30 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 87+37
 OFFSET 312' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2358.3	31.50	K	CMS	35 29 45	74	95		CL	<u>SANDY LEAN CLAY</u> Dry, hard, white (10 YR 8/1) to light gray (10 YR 7/2) <u>LEAN CLAY with SAND</u> Dry, hard, white (10 YR 8/1) to light gray (10 YR 7/2)	
	32.90	L	SPT	13 12	50/0.4'	95				
2358.3	35.00	M	SPT	17 31	50/0.4'	100		SC	<u>CLAYEY SAND with GRAVEL</u> Dry, very dense, white (10 YR 8/1) to light gray (10 YR 7/2)	
	36.40									
2353.3	40.00	N	CMS	17 27	72	100		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, dense, light olive brown (2.5 YR 5/3) to white (10 YR 8/1) to yellowish brown (10 YR 5/8)	
	41.50									
2348.3	45.00	P	CMS	18 42	106	100		CH	<u>SANDY FAT CLAY with GRAVEL</u> Moist, very hard, light olive brown (2.5 YR 5/3) to white (10 YR 8/1) to yellowish brown (10 YR 5/8)	
	46.50									
2343.3	50.00	R	CMS	54	50/0.3'	60		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, very dense, light olive brown (2.5 YR 5/3) to white (10 YR 8/1) to yellowish brown (10 YR 5/8)	(R) 2" rock in sample.
	50.80									
2338.3	55.00	S	SPT	22	50/0.2'	100		CH	<u>SANDY FAT CLAY</u> Moist, very hard, light olive brown (2.5 YR 5/3) to white (10 YR 8/1) to yellowish brown (10 YR 5/8)	
	55.70									
									END BI-36 @ 55.7' No groundwater encountered.	



EXPLORATION LOG
 START DATE 9/25/13
 END DATE 9/26/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-37
 E.A. # 73518
 GROUND ELEV. 2405.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 82+60
 OFFSET 132' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2400.6	2.50	A	SPT	20	24	95		GC	2.00		
	4.00			16					CLAYEY GRAVEL with SAND Moist, medium dense, very pale brown (10 YR 7/3)		
	5.00	B	SPT	6	18	95			4.50		LEAN CLAY with SAND Dry to moist, very stiff, light gray (10 YR 7/2)
	6.50			8					7.00		SILTY CLAY with SAND Dry to moist, very stiff, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)
	7.50			10					9.00		9
2395.6	9.00	C	SPT	14	34	85	9.50	SANDY LEAN CLAY Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)			
	10.00	D	SPT	13			12.00	CLAYEY SAND with GRAVEL Moist to dry, very stiff, very pale brown (10 YR 7/3) to white (10 YR 8/1)			
	11.50			14			14.00	11	29	85	SC
	12.50			20			15.00	17	56	75	GC GM
2390.6	15.00	F	SPT	25	59	75	17.00	SILTY CLAYEY GRAVEL with SAND Moist to dry, very dense, very pale brown (10 YR 7/3) to brownish yellow (10 YR 6/6)			
	16.50	G	SPT	31			19.00	11	39	SC SM	
	17.50			20			20.00	14	36	85	SC
2385.6	20.00	H	SPT	15	36	85	21.50	CLAYEY SAND with GRAVEL Moist to dry, very dense, very pale brown (10 YR 7/3) to brownish yellow (10 YR 6/6)			
	21.50			21			23.20	25.00	25	57	95
2380.6	25.00	I	CMS	25	46	85	26.50	LEAN CLAY with SAND Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)			
	26.50			32			28.00	16	27	SANDY LEAN CLAY Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	28.00	J	SPT	19	30.00	30.00					

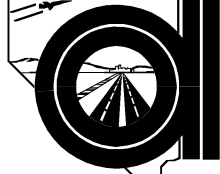


EXPLORATION LOG
 START DATE 9/25/13
 END DATE 9/26/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-37
 E.A. # 73518
 GROUND ELEV. 2405.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 82+60
 OFFSET 132' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2370.6	31.50	K	CMS	17	101	80		CH	<u>SANDY FAT CLAY</u> Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	(L) Last 10 blows, no progress. No sample recovered.
	31.70	L	SPT	25/0.2'	25/0.2'	0				
2365.6	35.00	M	SPT	8	12	45		CH	<u>SANDY FAT CLAY</u> Dry to moist, stiff, white (10 YR 8/1) to very pale brown (10 YR 7/3) to yellow (10 YR 8/6) to dark brown (10 YR 3/3)	
	36.50			5			7			
2360.6	40.00	N	CMS	19	42	80		GC	<u>FAT CLAY with SAND</u> Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	41.50			16			26			
2355.6	43.00	O	SPT	12	73	45		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	44.00			25	48					
2350.6	45.00	P	CMS	15	50/0.4'	85		CL	<u>GRAVELLY LEAN CLAY with SAND</u> Dry, very hard, very pale brown (10 YR 7/3) to light gray (10 YR 7/1)	
	46.40			33			50			
2355.6	46.90	Q	SPT	50	50	100		CL	<u>SANDY LEAN CLAY</u> Dry, very hard, very pale brown (10 YR 7/3) to light gray (10 YR 7/1)	
	49.00									
2350.6	50.00	R	SPT	50/0.1'	50/0.1'	0		CL	<u>MODERATELY TO STRONGLY CEMENTED MATERIALS; HARD DRILLING</u>	Hard drilling, 250 psi down. 0.01'-0.02'/min. (R) 50 blows; no progress. No sample recovered.
	54.50									
2350.6	55.00	S	CMS	32	23	85		CL	<u>GRAVELLY LEAN CLAY with SAND</u> Moist, very stiff to very hard, white (10 YR 8/1) to very pale brown (10 YR 7/2, 10 YR 6/3) to brownish yellow (10 YR 6/8).	
	56.50			16			7			
2350.6	57.00	T	SPT	10	50/0.2'	95		CL	<u>SANDY LEAN CLAY</u> Moist, very stiff to very hard, white (10 YR 8/1) to very pale brown (10 YR 7/2, 10 YR 6/3) to brownish yellow (10 YR 6/8).	No groundwater encountered.
	57.70			41	50/0.2'					
									<u>MODERATELY TO STRONGLY CEMENTED MATERIALS; HARD DRILLING</u> <u>END BI-37 @ 60.0'</u>	

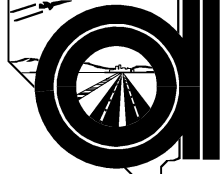
NEVADA**DEPARTMENT OF
TRANSPORTATION**GEOTECHNICAL
ENGINEERINGSTART DATE 10/7/13END DATE 10/8/13JOB DESCRIPTION US95 / CC-215 System-to-System InterchangeLOCATION Northwest Las Vegas - Clark CountyBORING BI-37AE.A. # 73518GROUND ELEV. 2405.60 (ft)HAMMER DROP SYSTEM Automatic**EXPLORATION LOG**

SHEET 1 OF 5

 STATION "X" 82+60
 OFFSET 132' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2400.6	5									Continue Borehole BI-37 as BI-37A from 65.0'.
2395.6	10									
2390.6	15									
2385.6	20									
2380.6	25									



EXPLORATION LOG

START DATE 10/7/13
 END DATE 10/8/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-37A
 E.A. # 73518
 GROUND ELEV. 2405.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 82+60
 OFFSET 132' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2370.6	35									
2365.6	40									
2360.6	45									
2355.6	50									
2350.6	55									
60.00										



EXPLORATION LOG
 START DATE 10/7/13
 END DATE 10/8/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-37A
 E.A. # 73518
 GROUND ELEV. 2405.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 82+60
 OFFSET 132' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2340.6	65.00	A	SPT	10/0.1	10/0.1	0		CL ML	<p><u>SILTY CLAY with SAND</u> Wet, very dense, very pale brown (10 YR 7/3)</p> <p><u>SILTY CLAY with SAND</u> Wet, very hard, pale brown (10 YR 6/3)</p> <p>68.50</p>	<p>(A) Last 10 blows; no progress. No sample recovered.</p> <p>Very hard drilling at 60.2'. Progress 0.2'/10 minutes @ 400 psi down pressure.</p> <p>Very hard drilling at 60.5'. Progress 1.0'/45 minutes @ 400 psi down pressure.</p>
	66.50	B	CMS	30	63	20				
	66.80	C	SPT	50/0.3'	50/0.3'	600				
2335.6	70.00							CL	<p><u>LEAN CLAY</u> Wet, very hard, pale brown (10 YR 6/3)</p> <p><u>LEAN CLAY</u> Wet, very hard, pale brown (10 YR 6/3)</p>	<p>Very hard drilling at 61.5'. Progress 0.1'/75 minutes @ 400 psi down pressure.</p> <p>Broke through hard layer at 62.5'.</p> <p>(C) Sample probably from 65.0'; sample (B) had poor recovery.</p>
	71.50	D	CMS	10	35	100				
	73.00	E	SPT	6	27	115				
2330.6	74.80							CL	<p><u>LEAN CLAY</u> Moist to wet, very stiff, mottled pale brown (10 YR 6/3) to brownish yellow (10 YR 6/6)</p> <p><u>LEAN CLAY</u> Moist to wet, very stiff, mottled pale brown (10 YR 6/3) to brownish yellow (10 YR 6/6)</p>	<p>End day 1 drilling @ 80.0'.</p>
	76.30	F	CMS	11	41	100				
	78.30	G	SPT	9	25	115				
2325.6	80.00							CL	<p><u>SANDY LEAN CLAY</u> Moist to wet, hard, light brownish gray (10 YR 6/2) to pale brown (10 YR 6/3)</p> <p><u>SANDY LEAN CLAY</u> Wet, very stiff, pale brown (10 YR 6/3)</p>	<p>(H) Moderately to strongly cemented nodules in sample.</p>
	85.00	H	CMS	12	51	115				
	86.50	I	SPT	8	27	105				
2320.6	88.00							CL	<p><u>SANDY LEAN CLAY</u> Moist to wet, hard, light brownish gray (10 YR 6/2) to pale brown (10 YR 6/3)</p> <p><u>SANDY LEAN CLAY</u> Wet, very stiff, pale brown (10 YR 6/3)</p>	<p>(H) Moderately to strongly cemented nodules in sample.</p>
	90.00									

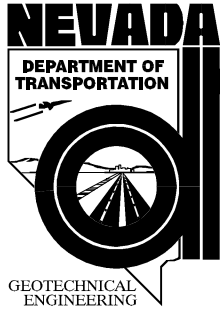


EXPLORATION LOG
 START DATE 10/7/13
 END DATE 10/8/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-37A
 E.A. # 73518
 GROUND ELEV. 2405.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 82+60
 OFFSET 132' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2310.6	95.00	J	CMS	25	78	115				Sporadic thin, hard lenses from 91.0' to 93.0'.	
	96.40			42							
	96.40			36							
2305.6	98.00	K	SPT	9	12	120					
				6							
				6							
2300.6	105.00	L	CMS	25/0.2'	25/0.2'	0		CL		Hard drilling at 103.0'. Progress 0.3'/10 minutes @ 250 psi down pressure. (L) Last 10 blows; no progress. No sample recovered.	
				105.20							25/0.2'
				105.20							25/0.2'
2295.6	110.00	M	CMS	14	50/0.4'	120					
				110							16
				111.40							50/0.4'
2290.6	112.90	N	SPT	11	27	135					
				112							
				115							15
2290.6	115										
	120.00										



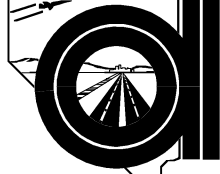
EXPLORATION LOG

START DATE 10/7/13
 END DATE 10/8/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-37A
 E.A. # 73518
 GROUND ELEV. 2405.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 82+60
 OFFSET 132' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	121.30	O	CMS	22 28 50/0.3'	50/0.3'	0		CL ML	<u>SILTY CLAY with SAND</u> Wet, hard, brown (7.5 YR 5/4) 122.80 END BI-37A @ 122.8'	(O) No sample recovered.
	122.80	P	SPT	17 18 24	42	155				No groundwater encountered.
2280.6	125									
2275.6	130									
2270.6	135									
2265.6	140									
2260.6	145									

NEVADA**DEPARTMENT OF
TRANSPORTATION**GEOTECHNICAL
ENGINEERINGSTART DATE 11/4/13END DATE 11/6/13JOB DESCRIPTION US95 / CC-215 System-to-System InterchangeLOCATION Northwest Las Vegas - Clark CountyBORING BI-38E.A. # 73518GROUND ELEV. 2436.50 (ft)HAMMER DROP SYSTEM Automatic**EXPLORATION LOG**

SHEET 1 OF 3

STATION "X" 62+13OFFSET 189' RightENGINEER BoomhowerEQUIPMENT Diedrich D-120 (Unit 1627)OPERATOR PypkowskiDRILLING METHOD 4" Rotary Wash

BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2431.5	5								SANDY GRAVEL, tan, dry	
									2.00	
2426.5	10									
2421.5	15									
2416.5	20									
2411.5	25									



EXPLORATION LOG
 START DATE 11/4/13
 END DATE 11/6/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-38
 E.A. # 73518
 GROUND ELEV. 2436.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 62+13
 OFFSET 189' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2401.5	35									
2396.5	40									
2391.5	45									
2386.5	50									Hard drilling @ 48.0'.
	52.00	A	RC			50				End day 1 drilling @ 52.0'. Lost circulation @ 52.0'. (A) Retrieved 0.5" caliche. Reactive with 10% HCl.
2381.5	55	B	SPT	17 5 7	12	40			<u>SANDY SILTY CLAY with GRAVEL</u> Wet, very hard, pale brown (10 YR 6/3) to reddish yellow (7.5 YR 6/6)	End day 2 drilling @ 59.5'.
	56.40								<u>SANDY SILTY CLAY with GRAVEL</u> Wet, stiff, brown (7.5 YR 5/4)	



GEOTECHNICAL ENGINEERING

EXPLORATION LOG

START DATE 11/4/13
 END DATE 11/6/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-38
 E.A. # 73518
 GROUND ELEV. 2436.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 62+13
 OFFSET 189' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	63.00									Circulation restored after sitting overnight @ 60.0'.
	63.90	C	RC			35			<u>CALICHE</u> Wet, very hard, multicolored	Lost circulation @ 62.5'.
	64.50	D	RC			0			64.50	(C) Small caliche sample recovered. Reactive with 10% HCl. (D) Burnt end of core barrel. Terminate borehole @ 64.5'
2371.5	65								END BI-38 @ 64.5'	No groundwater encountered.
	70									
2366.5	70									
	75									
2361.5	75									
	80									
2356.5	80									
	85									
2351.5	85									



EXPLORATION LOG
 START DATE 11/25/13
 END DATE 11/26/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-39
 E.A. # 73518
 GROUND ELEV. 2396.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 86+54
 OFFSET 265' Left
 ENGINEER Boomhower
 EQUIPMENT CME 75/85 (Cascade Drilling)
 OPERATOR Mike Lester
 DRILLING METHOD 8" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
11/26/13	73.00	2323.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2391.5	3.00								DECORATIVE GRAVEL, tan, dry 1.50	(A) No brass tubes in Cascade CMS sampler.
	4.50	A	CMS	6 18 20	38	100		CL ML	<u>SILTY CLAY</u> Dry, medium dense to dense, very pale brown (10 YR 7/3) 4.50	
	6.00	B	SPT	11 18 13	31	100		CL	<u>LEAN CLAY</u> Dry, dense, very pale brown (10 YR 7/3)	
	7.50	C	CMS	11 18 26	44	100			<u>LEAN CLAY</u> Dry, dense, very pale brown (10 YR 7/3)	
	9.00	D	SPT	11 11 12	23	95			<u>LEAN CLAY with SAND</u> Dry, medium dense, very pale brown (10 YR 7/3)	
2386.5	10.50	E	CMS	38 38 39	77	100			<u>LEAN CLAY with SAND</u> Dry, hard, very pale brown (10 YR 7/3) 10.50	
	12.00	F	SPT	11 16 28	44	100		SC	<u>CLAYEY SAND</u> Dry, hard, very pale brown (10 YR 7/3) 12.00	
2381.5	13.50	G	CMS	10 15 22	37	100		CL	<u>SANDY LEAN CLAY</u> Dry, very stiff, very pale brown (10 YR 7/3) <u>SANDY LEAN CLAY</u> Dry, very stiff, very pale brown (10 YR 7/3)	(G) Moderately to strongly cemented nodules in sample.
	15.00	H	SPT	16 17 13	30	95			<u>SANDY LEAN CLAY</u> Dry, hard, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	16.50	I	CMS	16 26 28	54	100			<u>CLAYEY SAND with GRAVEL</u> Dry, hard, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1) 16.50	
	18.00	J	SPT	13 19 17	36	55		SC	<u>SILTY SAND with GRAVEL</u> Dry, hard, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1) 18.00	
2376.5	19.50	K	CMS	25 26 40	66	100		SM	<u>CLAYEY SAND</u> Dry, dense, light yellowish brown (10 YR 6/4) 19.50	(J) Large rock in sampler.
	21.00	L	SPT	30 15 13	28	95		SC	<u>CLAYEY SAND</u> Dry, hard, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1) 21.00	
	22.50	M	CMS	13 22 32	54	95			<u>SANDY LEAN CLAY</u> Dry, very stiff, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1) 22.50	
2371.5	24.00	N	SPT	17 8 12	20	100		CL	<u>SANDY LEAN CLAY</u> Dry, dense, very pale brown (10 YR 7/4) to white (10 YR 8/1) 24.00	
	25.50	O	CMS	10 15 30	45	100				<u>FAT CLAY with SAND</u> Dry, very stiff, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1) 25.50
	27.00	P	SPT	11 8 11	19	95		CH	<u>SANDY LEAN CLAY</u> Dry, very stiff, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1) 27.00	
	28.50	Q	CMS	17 18 9	27	95		CL	<u>SANDY FAT CLAY</u> Dry, medium stiff, very pale brown (10 YR 8/2) to white (10 YR 8/1) 28.50	
	30.00	R	SPT	5 4 2	6	100		CH		



START DATE 11/25/13
END DATE 11/26/13
JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
LOCATION Northwest Las Vegas - Clark County
BORING BI-39
E.A. # 73518
GROUND ELEV. 2396.50 (ft)
HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 86+54
OFFSET 265' Left
ENGINEER Boomhower
EQUIPMENT CME 75/85 (Cascade Drilling)
OPERATOR Mike Lester
DRILLING METHOD 8" H.S.A.
BACKFILLED _____ **DATE** _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
11/26/13	73.00	2323.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2361.5	31.50	S	CMS	9 7 7	14	95		CH	SANDY FAT CLAY Dry, medium stiff, very pale brown (10 YR 8/2) to white (10 YR 8/1)	(T) Large rock in sampler shoe.
	33.00	T	SPT	3 2 5	7	95			SANDY FAT CLAY Dry, medium stiff, very pale brown (10 YR 8/2) to white (10 YR 8/1)	
	34.50	U	CMS	9 10	19	95			SANDY FAT CLAY Dry, stiff, light gray (10 YR 7/2) to very pale brown (10 YR 7/4)	
	35 36.00	V	SPT	4 11 28	39	80			CLAYEY GRAVEL with SAND Dry, very stiff to hard, mottled pink (7.5 YR 7/4) to white (7.5 YR 8/1)	
	36.40	W	CMS	50/0.4'	50/0.4'	100			SANDY FAT CLAY Dry, very hard, very pale brown (10 YR 7/3)	
2356.5	40.00							CL		Very hard drilling from 36.5' to 37.5'. Blew keyway on drill rig; second drill rig (CME 85) on site @ 1:15 PM.
	41.50	X	CMS	26 23 24	47	100			SANDY LEAN CLAY Dry, very stiff, light gray (10 YR 7/2)	
	43.00	Y	SPT	15 24 24	48	100			CLAYEY GRAVEL with SAND Dry, hard, light gray (10 YR 7/2)	
2351.5	44.50	Z	CMS	11 19 28	47	95		CL	SANDY LEAN CLAY with GRAVEL Dry, very stiff, light gray (10 YR 7/2)	
	45.40 46.00	AA	SPT	23 50/0.4'	50/0.4'	100			CLAYEY SAND with GRAVEL Dry, very hard, light gray (10 YR 7/2)	
	47.50	BB	CMS	16 17 23	40	100			CLAYEY GRAVEL with SAND Dry to moist, very stiff, mottled yellowish brown (10 YR 5/4) to white (10 YR 8/1)	
	48.00	CC	SPT	8 9 50/0.4'	50/0.4'	100			CLAYEY GRAVEL with SAND Dry, very hard, light gray (10 YR 7/2)	
2346.5	49.80 50	DD	CMS	12 50/0.3' 14	50/0.3'	100		CL	SANDY LEAN CLAY Dry, very hard, light gray (10 YR 7/2)	
	51.30	EE	SPT	19 28	47	100			CLAYEY SAND with GRAVEL Dry to moist, very stiff, mottled yellowish brown (10 YR 5/4) to white (10 YR 8/1)	
	52.00 52.40	FF	CMS	50/0.4'	50/0.4'	0				
	60.00									



EXPLORATION LOG
 START DATE 11/25/13
 END DATE 11/26/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-39
 E.A. # 73518
 GROUND ELEV. 2396.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 86+54
 OFFSET 265' Left
 ENGINEER Boomhower
 EQUIPMENT CME 75/85 (Cascade Drilling)
 OPERATOR Mike Lester
 DRILLING METHOD 8" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
11/26/13	73.00	2323.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	61.50	GG	CMS	12 16 28	44	100		CH	SANDY FAT CLAY Moist, very stiff to hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	
	62.50	HH	SPT	12 50/0.5'	50/0.5'	100		SC	CLAYEY SAND with GRAVEL Moist, very hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	
2331.5	65									Very hard drilling from 62.5' to 64.0'. End day 1 drilling @ 64.0'. Continued hard drilling to 70.0'.
2326.5	70	II	SPT	20/0.1'	20/0.1'	0				
	72.00									
2321.5	75							CL		Free water on drill rod @ 73.0'.
	75.00	JJ	CMS	4 5 11	16	115			LEAN CLAY Moist to wet, stiff, brown (10 YR 5/3) mottled with brownish yellow (10 YR 6/6)	(JJ) Pocket penetrometer reading - 0.75 tsf.
	76.50									
	78.00	KK	SPT	5 14 20	34	100		ML	SANDY SILT Moist to wet, dense, brown (10 YR 5/3) mottled with brownish yellow (10 YR 6/6)	
2316.5	80									
	80.30	LL	CMS	35/0.3'	35/0.3'	0				(LL) Last 10 blows; no progress. No sample recovered.
	82.50									
2311.5	85							ML		
	85.00	MM	CMS	20 17 28	45	115			SANDY SILT Moist to wet, dense, brown (10 YR 5/3) mottled with brownish yellow (10 YR 6/6)	(MM) Pocket penetrometer reading - 2.5 tsf.
	86.50									
	88.00	NN	SPT	5 9 11	20	115			LEAN CLAY with SAND Wet, very stiff, light brownish gray (2.5 Y 6/2) mottled with brownish yellow (10 YR 6/6)	
	90.00							CL		



EXPLORATION LOG
 START DATE 11/25/13
 END DATE 11/26/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-39
 E.A. # 73518
 GROUND ELEV. 2396.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 86+54
 OFFSET 265' Left
 ENGINEER Boomhower
 EQUIPMENT CME 75/85 (Cascade Drilling)
 OPERATOR Mike Lester
 DRILLING METHOD 8" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
11/26/13	73.00	2323.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2301.5	91.50	OO	CMS	4	24	115		CH	FAT CLAY Wet, stiff to very stiff, light brownish gray (2.5 Y 6/2) mottled with brownish yellow (10 YR 6/6) FAT CLAY Wet, stiff, brown (7.5 YR 5/4)	(OO) Pocket penetrometer reading - 2.25 tsf. (PP) Pocket penetrometer reading - 3.0 tsf.
	93.00	PP	SPT	3 5 13	18	105				
2291.5	95.00							CL	LEAN CLAY with SAND Wet, hard, brown (7.5 YR 5/4) to light gray (10 YR 7/2) GRAVELLY LEAN CLAY with SAND Wet, hard, brown (7.5 YR 5/4) to light gray (10 YR 7/2)	(QQ) Pocket penetrometer reading - 2.0 tsf. (RR) Pocket penetrometer reading - 1.75 tsf.
	96.50	QQ	CMS	8 24 34	58	115				
	98.00	RR	SPT	9 15 22	37	115				
2281.5	105.00							CH	FAT CLAY with SAND Wet, very stiff, brown (7.5 YR 5/4) to light brown (7.5 YR 6/4) GRAVELLY FAT CLAY Wet, very stiff, brown (7.5 YR 5/4) with white nodules (10 YR 8/1)	
	106.50	SS	CMS	5 19 23	42	105				
	108.00	TT	SPT	8 6 17	23	115				
2281.5	115.00							CL	SANDY LEAN CLAY Wet, very stiff, brown (7.5 YR 5/4) with white nodules (10 YR 8/1) LEAN CLAY Wet, stiff, brown (7.5 YR 5/4) with white nodules (10 YR 8/1)	(UU) Pocket penetrometer reading - 2.75 tsf. (VV) Pocket penetrometer reading - 1.5 tsf.
	116.50	UU	CMS	4 10 28	38	105				
	118.00	VV	SPT	3 4 5	9	100				
									END BI-39 @ 118.0'	



EXPLORATION LOG
 START DATE 11/26/13
 END DATE 11/27/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-40
 E.A. # 73518
 GROUND ELEV. 2402.20 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 84+54
 OFFSET 224' Left
 ENGINEER Boomhower
 EQUIPMENT CME 85 (Cascade Drilling)
 OPERATOR Mike Lester
 DRILLING METHOD 8" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2397.2	5.00							GC GM	DECORATIVE GRAVEL, Dry, tan	
	6.50	A	CMS	19 28 50/0.5'	50/0.5'	100			SILTY CLAYEY GRAVEL with SAND Dry, very dense, pale brown (10 YR 6/3)	
	8.00	B	SPT	17 17 17	34	95			CLAYEY GRAVEL with SAND Dry, dense, pale brown (10 YR 6/3)	
2392.2	10.00							GC		
	11.50	C	CMS	20 20 20	40	100			LEAN CLAY with SAND Dry, very stiff, very pale brown (10 YR 8/3)	
	13.00	D	SPT	8 10 6	16	85			SANDY LEAN CLAY Dry, very stiff, very pale brown (10 YR 8/3)	
2387.2	15.00							CL		
	16.50	E	CMS	7 14 24	38	100			SANDY LEAN CLAY Dry, very stiff, very pale brown (10 YR 8/3)	
	18.00	F	SPT	8 11 14	25	80			GRAVELLY LEAN CLAY with SAND Dry, very stiff, very pale brown (10 YR 8/3)	
2382.2	20.00							SC SM		
	21.50	G	CMS	11 14 25	39	95			SILTY CLAYEY SAND with GRAVEL Dry, medium dense to dense, light yellowish brown (10 YR 6/4)	
	23.00	H	SPT	13 10 7	17	40			SILTY CLAYEY SAND Dry, medium dense, light yellowish brown (10 YR 6/4)	
2377.2	25.00							CH		
	26.50	I	CMS	18 15 15	30	100			FAT CLAY with SAND Dry, very stiff, white (10 YR 8/1)	
	28.00	J	SPT	9 10 14	24	95			SANDY FAT CLAY Dry, very stiff, white (10 YR 8/1)	
	30.00									

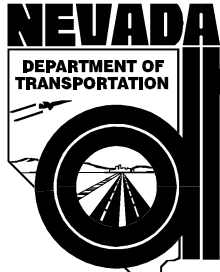


EXPLORATION LOG
 START DATE 11/26/13
 END DATE 11/27/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-40
 E.A. # 73518
 GROUND ELEV. 2402.20 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 84+54
 OFFSET 224' Left
 ENGINEER Boomhower
 EQUIPMENT CME 85 (Cascade Drilling)
 OPERATOR Mike Lester
 DRILLING METHOD 8" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2367.2	31.50	K	CMS	11 19 43	62	95		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, hard, light gray (2.5 Y 7/2)	Blew hydraulic fitting on CME 85. End day 1 drilling @ 33.0'.
	33.00	L	SPT	13 14 17	31	80		SC	<u>CLAYEY SAND with GRAVEL</u> Dry, hard, light gray (2.5 Y 7/2)	
	35.00									
	36.50	M	CMS	19 29 25	54	115				
2362.2	38.00	N	SPT	7 7 20	27	60		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, dense, light gray (10 YR 7/2) <u>CLAYEY GRAVEL with SAND</u> Dry, dense, light gray (10 YR 7/2)	
	40.00									
	41.30	O	CMS	16 20 50/0.3'	50/0.3'	100			<u>CLAYEY GRAVEL with SAND</u> Dry, very dense, light gray (10 YR 7/2)	
2357.2	42.80	P	SPT	8 10	18	60		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, medium dense, light gray (10 YR 7/2)	
	45.00									
	46.50	Q	CMS	8 8 15	23	95			<u>CLAYEY GRAVEL</u> Dry to moist, medium dense, light brownish gray (10 YR 6/2) to white (10 YR 8/1)	
	48.00	R	SPT	28 28 19	47	80			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, light brownish gray (10 YR 6/2) to white (10 YR 8/1)	
2352.2	49.00									
	50.00									
	51.50	S	CMS	23 22 20	42	100		CH	<u>GRAVELLY FAT CLAY with SAND</u> Dry to moist, dense, light brownish gray (10 YR 6/2) to white (10 YR 8/1)	
2347.2	53.00	T	SPT	25 23 30	53	95		CL	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, dense, light brownish gray (10 YR 6/2) to white (10 YR 8/1)	
	55.00									
	55.90	U	CMS	15/0.1' 15/0.1'	15/0.1'	0				
	60.00								(U) Last 10 blows; no progress. No sample recovered. Very hard drilling from 55.0' to 60.0'.	



GEOTECHNICAL ENGINEERING

START DATE 11/26/13
 END DATE 11/27/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-40
 E.A. # 73518
 GROUND ELEV. 2402.20 (ft)

EXPLORATION LOG

STATION "X" 84+54
 OFFSET 224' Left
 ENGINEER Boomhower
 EQUIPMENT CME 85 (Cascade Drilling)
 OPERATOR Mike Lester
 DRILLING METHOD 8" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

HAMMER DROP SYSTEM Automatic

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	TYPE	BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
				6 inch Increments	Last 1 foot					
	60.40	V	SPT	50/0.4'	50/0.4'	100		SC	CLAYEY SAND with GRAVEL Dry to moist, very hard, white (10 YR 8/1)	Continued hard drilling to 65.0'.
	62.50									
2337.2	65.00	W	CMS	30/0.2'	30/0.2'	0				(W) Last 10 blows; no progress. No sample recovered. Very hard drilling from 65.0' to 72.0'.
	70									
	73.00									
2327.2	75.00	X	CMS	7 9 15	24	100			LEAN CLAY Moist, stiff, light brown (7.5 YR 6/3)	(X) Pocket penetrometer reading - 2.5 tsf.
	76.50			5					LEAN CLAY Moist, stiff, light brown (7.5 YR 6/3)	(Y) Pocket penetrometer reading - 2.0 tsf.
	78.00	Y	SPT	5 7	12	100				
	80							CL		
	85.00									
2317.2	85.00	Z	CMS	9 19 26	45	100			LEAN CLAY Moist, very stiff, light brown (7.5 YR 6/3)	(Z) Pocket penetrometer reading - 1.3 tsf.
	86.50			6						
	88.00	AA	SPT	6 6 9	15	115			SANDY LEAN CLAY Moist, stiff to very stiff, light brown (7.5 YR 6/3)	(AA) Pocket penetrometer reading - 1.5 tsf.
	90.00									

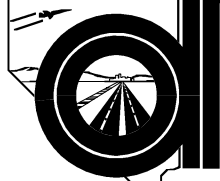


EXPLORATION LOG
 START DATE 11/26/13
 END DATE 11/27/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-40
 E.A. # 73518
 GROUND ELEV. 2402.20 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 84+54
 OFFSET 224' Left
 ENGINEER Boomhower
 EQUIPMENT CME 85 (Cascade Drilling)
 OPERATOR Mike Lester
 DRILLING METHOD 8" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2307.2	95.00	BB	CMS	10	42	105		CL	<u>GRAVELLY LEAN CLAY</u> Wet, very stiff, light brown (7.5 YR 6/4) <u>GRAVELLY LEAN CLAY with SAND</u> Wet, hard, light brown (7.5 YR 6/4)	(CC) Pocket penetrometer reading - 1.3 tsf. No groundwater encountered.
	96.50			15						
	98.00	CC	SPT	9 14 25	39	75				
2302.2	100							98.00	END BI-40 @ 98.0'	
2297.2	105									
2292.2	110									
2287.2	115									



EXPLORATION LOG
 START DATE 1/6/14
 END DATE 1/6/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-41
 E.A. # 73518
 GROUND ELEV. 2389.50 (ft)
 HAMMER DROP SYSTEM Automatic(ETR 74%)

STATION "X" 87+72
 OFFSET 596' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2384.5	5.00	A	SPT	31 50/0.4'	50/0.4'	100		CL	SILTY SAND with GRAVEL Dry, tan 2.50 LEAN CLAY Dry, very hard, very pale brown (10 YR 7/3)	
	5.90									
2379.5	10.00	B	SPT	9 19 25	44	65		CL	LEAN CLAY with SAND Dry, hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	
	11.50									
2374.5	15.00	C	SPT	43 49 50/0.1'	50/0.1'	90		SC SM	SILTY CLAYEY SAND with GRAVEL Dry to moist, very dense, very pale brown (10 YR 7/3)	(C) 25 blows - no progress.
	16.10									
2369.5	20.00	D	SPT	15 18 17	35	80		CL	SANDY LEAN CLAY Moist, hard, very pale brown (10 YR 7/3) with brownish yellow (10 YR 6/8)	
	21.50									
2364.5	25.00	E	SPT	13 15 18	33	95		CL ML	SANDY SILTY CLAY Moist, hard, very pale brown (10 YR 7/3) with brownish yellow (10 YR 6/8) and mottled white (10 YR 8/1)	
	26.50									
	28.20							CL		Thin weakly to moderately cemented layers present from 27' to 55'.
	30.00									



EXPLORATION LOG
 START DATE 1/6/14
 END DATE 1/6/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-41
 E.A. # 73518
 GROUND ELEV. 2389.50 (ft)
 HAMMER DROP SYSTEM Automatic(ETR 74%)

STATION "X" 87+72
 OFFSET 596' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2354.5	31.50	F	SPT	14 16 20	36	75		CL	<u>LEAN CLAY with SAND</u> Dry to moist, hard, very pale brown (10 YR 6/3) with white (10 YR 8/1) <u>SANDY LEAN CLAY</u> Dry to moist, hard, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1) with brownish yellow (10 YR 6/8)	(F) Weak to moderately cemented nodules in sample.
	35.00									
	36.50	G	SPT	14 20 21	41	75				
2349.5	40.00							CH	38.20 <u>FAT CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4) to pale yellow (2.5 YR 7/3)	
	41.50	H	SPT	9 10 16	26	85				
	43.20									
2344.5	45.00							CL	45.00 <u>LEAN CLAY</u> Dry to moist, very stiff, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1) <u>LEAN CLAY with SAND</u> Dry to moist, very stiff, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1)	
	46.50	I	CMS	12 17 24	41	100				
	48.00	J	SPT	8 9 17	26	85				
2339.5	50.00							CL	50.00 <u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, very stiff, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1) <u>LEAN CLAY with SAND</u> Moist, hard, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1)	(K) 3/4"+ rock in sampler.
	51.50	K	CMS	11 16 17	35	100				
	53.00	L	SPT	11 21 19	40	85				
2334.5	55.00							CH	55.00 <u>LEAN CLAY with GRAVEL</u> Moist, very stiff, brown (7.5 YR 5/4) and white (7.5 YR 8/1) <u>SANDY FAT CLAY with GRAVEL</u> Moist, very stiff, multicolored	
	56.50	M	CMS	9 12 24	36	100				
	58.00	N	SPT	14 12 12	24	65				
	60.00									



GEOTECHNICAL
ENGINEERING

EXPLORATION LOG

START DATE 1/6/14
 END DATE 1/6/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-41
 E.A. # 73518
 GROUND ELEV. 2389.50 (ft)
 HAMMER DROP SYSTEM Automatic(ETR 74%)

STATION "X" 87+72
 OFFSET 596' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	TYPE	BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
				6 inch Increments	Last 1 foot	Percent Recov'd				
	61.50	O	CMS	10 17 26	43	95		CH	<u>SANDY FAT CLAY</u> Moist, very stiff, multicolored <u>GRAVELLY FAT CLAY with SAND</u> Dry to moist, hard, white (10 YR 8/1) to very pale brown (10 YR 7/3)	(O) Pocket penetrometer reading - 4.5 tsf.
	63.00	P	SPT	9 8 7	15	95				
2324.5	65.00	Q	CMS	50/0.1'	50/0.1'	0				
								67.00	END BI-41 @ 67.0'	No groundwater encountered.
2319.5	70									
2314.5	75									
2309.5	80									
2304.5	85									



EXPLORATION LOG

START DATE 1/7/14
 END DATE 1/7/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-42
 E.A. # 73518
 GROUND ELEV. 2390.00 (ft)
 HAMMER DROP SYSTEM Automatic(ETR 74%)

STATION "X" 88+02
 OFFSET 489' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120(#1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2385.0	5.00	A	SPT	6	13	75		ML	3.50 ----- <u>SILT with SAND</u> Dry, medium dense, very pale brown (10 YR 7/3)		
	6.50			6							7
	8.20 -----										
2380.0	10.00	B	SPT	11	29	65		CL	8.20 ----- <u>SANDY LEAN CLAY with GRAVEL</u> Dry, very stiff, very pale brown (10 YR 7/3)		
	11.50			12							17
	15.00 -----										
2375.0	15.00	C	SPT	10	65	55		GM	15.00 ----- <u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, very hard, light yellowish brown (2.5 YR 6/3)		
	16.50			13							52
	17.50 -----										
2370.0	20.00	D	SPT	30	50/0.4'	85		GM	17.50 ----- <u>SILTY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	(D) No progress last 10 blows.	
	21.40			43							50/0.4'
	22.00 -----										
2365.0	25.00	E	SPT	13	24	80		CL	22.00 ----- <u>LEAN CLAY with SAND</u> Dry, very stiff, very pale brown (10 YR 7/3)		
	26.50			13							11
	28.00 -----										
	30.00							CL ML	28.00 ----- 30.00		



EXPLORATION LOG
 START DATE 1/7/14
 END DATE 1/7/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-42
 E.A. # 73518
 GROUND ELEV. 2390.00 (ft)
 HAMMER DROP SYSTEM Automatic(ETR 74%)

STATION "X" 88+02
 OFFSET 489' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120(#1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2355.0	31.50	F	SPT	10 17 28	45	80		CL ML	<u>SILTY CLAY with SAND</u> Dry, hard, very pale brown (10 YR 7/3) <u>SILTY CLAY with SAND</u> Dry to moist, hard, very pale brown (10 YR 7/3)	
	35.00 36.50	G	SPT	11 15 21	36	80				
2350.0	40.00 41.50	H	SPT	8 11 19	30	80		CL	<u>LEAN CLAY with SAND</u> Dry to moist, very stiff, very pale brown (10 YR 7/3)	
	45.00 46.50	I	SPT	16 22 22	44	75				
2340.0	50.00 51.50	J	CMS	15 21 32	53	85		CL	<u>SANDY LEAN CLAY</u> Moist, very stiff to hard, pale yellow (2.5 YR 7/3) <u>LEAN CLAY with SAND</u> Moist, very stiff to hard, pale yellow (2.5 YR 7/3)	(I) Moderately cemented nodules in sample. (J) Moderately cemented nodules in sample. (K) Moderately cemented nodules in sample.
	53.00	K	SPT	9 12 18	30	80				
2335.0	55.00 56.50	L	CMS	24 20 37	57	100		CH	<u>SANDY FAT CLAY</u> Moist, hard, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1) <u>FAT CLAY with SAND</u> Moist, hard, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1)	(L) Torvane reading - 15.0 tsf, pocket penetrometer reading - 4.5 tsf.
	58.00	M	SPT	11 17 27	44	75				
	60.00							GC		



EXPLORATION LOG

START DATE 1/7/14
 END DATE 1/7/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-42
 E.A. # 73518
 GROUND ELEV. 2390.00 (ft)
 HAMMER DROP SYSTEM Automatic(ETR 74%)

STATION "X" 88+02
 OFFSET 489' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120(#1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2325.0	61.50	N	CMS	8 16 27	43	85		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, dense, multicolored, strong brown (7.5 YR 5/8), very pale brown (10 YR 7/3), olive yellow (2.5 Y 6/8), white (10 YR 8/1). <u>CLAYEY GRAVEL with SAND</u> Moist, dense, multicolored, strong brown (7.5 YR 5/8), very pale brown (10 YR 7/3), olive yellow (2.5 Y 6/8), white (10 YR 8/1). WEAKLY TO STRONGLY CEMENTED MATERIALS, HARD DRILLING	(P) Hard drilling continues beyond sample location. 0.2 ft/min 66.5' - 67.0' 250 psi down. .05 ft/min 67.0' - 67.5' 250 psi down. No groundwater encountered.
	62.80	O	SPT	19 28 50/0.3'	50/0.3'	85				
	65.00									
	66.50	P	SPT	8 9 7	16	65		CL	<u>GRAVELLY LEAN CLAY</u> Moist, very stiff, very pale brown (10 YR 7/3) to white (10 YR 8/1) END BI-42 @ 67.5'	
2320.0	70									
2315.0	75									
2310.0	80									
2305.0	85									



EXPLORATION LOG

START DATE 1/8/14
 END DATE 1/8/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-43
 E.A. # 73518
 GROUND ELEV. 2425.00 (ft)
 HAMMER DROP SYSTEM Automatic(ETR 74%)

STATION "XP" 203+64
 OFFSET 304' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120(#1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2420.0	1.50									
	2.50									
	4.00	A	SPT	10 15 14	29	75		GM	<u>SILTY GRAVEL with SAND</u> . Moist to dry, dense, pale brown (10 YR 6/3)	
	5.00									
	6.50	B	SPT	9 19 15	34	95		SM	<u>SILTY SAND with GRAVEL</u> . Moist to dry, dense, pale brown (10 YR 6/3)	
2415.0	7.50									
	8.80	C	SPT	20 42 50/0.3'	50/0.3'	100		SC	<u>CLAYEY SAND with GRAVEL</u> . Moist to dry, dense, pale brown (10 YR 6/3)	
	10.00 10.30	D	SPT	50/0.3'	50/0.3'	100		SP SC	<u>POORLY GRADED SAND with SILTY CLAY and GRAVEL</u> . Moist to dry, dense, pale brown (10 YR 6/3)	
2410.0	15.00 15.20	E	SPT	50/0.2'	50/0.2'	0				Gravelly drilling; slower progress. (E) No sample recovered.
	20.00									
2405.0	20.80	F	SPT	41 50/0.3'	50/0.3'	100		SC	<u>CLAYEY SAND with GRAVEL</u> . Moist to dry, hard, very pale brown (10 YR 7/3)	
	25.00									
2400.0	26.50	G	SPT	37 31 36	67	85		GC	<u>CLAYEY GRAVEL with SAND</u> . Moist to dry, hard, very pale brown (10 YR 7/3)	
	30.00									



EXPLORATION LOG
 START DATE 1/8/14
 END DATE 1/8/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-43
 E.A. # 73518
 GROUND ELEV. 2425.00 (ft)
 HAMMER DROP SYSTEM Automatic(ETR 74%)

STATION "XP" 203+64
 OFFSET 304' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120(#1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2390.0	31.50	H	SPT	11 10 15	25	75		GC	<u>CLAYEY GRAVEL with SAND</u> Moist to dry, hard, very pale brown (10 YR 7/3)	
	33.20									
2385.0	35.00	I	SPT	17 16 22	38	85		SC	<u>CLAYEY SAND with GRAVEL</u> Moist to dry, hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	
	36.50									
2380.0	40.00	J	SPT	20 36 45	81	95		GC	<u>CLAYEY GRAVEL with SAND</u> Moist to dry, hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	(J) Weakly cemented nodules in sample.
	41.50									
2375.0	45.00	K	SPT	7 11 19	30	75			<u>CLAYEY GRAVEL with SAND</u> Moist to dry, hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	(K) Strongly cemented nodules in sample.
	46.50									
2370.0	47.30								<u>GRAVELLY WEAKLY CEMENTED MATERIALS, HARD DRILLING</u>	.1 ft/min 47.5' - 48.5' 300 psi down.
	48.50									
2370.0	50.00	L	SPT	50/0.1'	50/0.1'	0			<u>MODERATELY TO STRONGLY CEMENTED MATERIALS, HARD DRILLING</u>	(L) No sample recovered.
	51.80								<u>END BI-43 @ 51.8'</u>	.05 ft/min 50.0' - 51.5' 300 psi down. .01 ft/min 51.5' - 51.8' 300 psi down. No groundwater encountered.
2370.0	55									



EXPLORATION LOG
 START DATE 1/8/14
 END DATE 1/9/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-44
 E.A. # 73518
 GROUND ELEV. 2421.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 202+61
 OFFSET 337' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
1/9/14	60.50	2360.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	2.50 2.70	A	SPT	50/0.2'	50/0.2'	0				(A) No sample recovered.
2416.0	5 5.90	B	SPT	50/0.1'	50/0.1'	0				(B) No sample recovered.
	7.50 7.70	C	SPT	50/0.2'	50/0.2'	0				(C) No sample recovered.
2411.0	10 10.90	D	SPT	50/0.1'	50/0.1'	0				(D) No sample recovered.
									12.50	
2406.0	15 15.00 16.50	E	SPT	15 20 31	51	55		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	
2401.0	20 20.00 21.50	F	SPT	24 24 21	45	80		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, very pale brown (10 YR 7/3)	
2396.0	25 25.00 26.50	G	SPT	17 37 30	67	80		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	(G) Weakly cemented nodules in sample.
	30.00								30.00	



EXPLORATION LOG

START DATE 1/8/14
 END DATE 1/9/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-44
 E.A. # 73518
 GROUND ELEV. 2421.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 202+61
 OFFSET 337' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
1/9/14	60.50	2360.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2386.0	30.80	H	SPT	47 50/0.3'	50/0.3'	100		GC	<u>CLAYEY GRAVEL with SAND</u> . Dry to moist, very dense, very pale brown (10 YR 7/3)	(H) Weakly cemented nodules in sample.
	35.00									
2381.0	36.50	I	SPT	13 12 21	33	95		CH	<u>SANDY FAT CLAY with GRAVEL</u> . Dry to moist, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	40.00									
2376.0	41.50	J	SPT	23 45 65	110	85		SC	<u>CLAYEY SAND with GRAVEL</u> . Dry to moist, very dense, very pale brown (10 YR 7/2) and white (10 YR 8/1)	(J) Weakly cemented nodules in sample.
	45.00									End day 1 drilling @ 43'.
2371.0	45.00	K	SPT	50/0.1'	50/0.1'	0			WEAKLY TO STRONGLY CEMENTED MATERIALS	(K) No sample recovered.
	50.00									1.25 ft/min 400 psi down, 45' - 50'.
2366.0	50.00	L	SPT	50/0.1'	50/0.1'	0			WEAKLY TO MODERATELY CEMENTED MATERIALS	(L) No sample recovered.
	55.00									1.25 ft/min 400 psi down, 50' - 55'.
60.00	55.00	M	SPT	50/0.1'	50/0.1'	0			WEAKLY TO MODERATELY CEMENTED MATERIALS	(M) No sample recovered.
	60.00									1.6 ft/min 400 psi down, 55' - 60'.



EXPLORATION LOG

START DATE 1/8/14
 END DATE 1/9/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-44
 E.A. # 73518
 GROUND ELEV. 2421.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 202+61
 OFFSET 337' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
1/9/14	60.50	2360.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	60.50	N	SPT	50/0.5'	50/0.5'	100		CL ML	<u>SANDY SILTY CLAY</u> Moist to wet, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	(N) Free water on sampler.
	63.00									
2356.0	65.00 66.00	O	CMS	51 78	78	90		CL	<u>LEAN CLAY</u> Moist to wet, very hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	
	70.00									
2351.0	70.00 71.50	P	CMS	27 44 46	90	55		CL	<u>LEAN CLAY with SAND</u> Moist to wet, hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	(P) Pocket penetrometer reading - 2.5, 3.5, 4.5 tsf.
	71.50								END BI-44 @ 71.5'	
	75.00									
2346.0	75.00									
	80.00									
2341.0	80.00									
	85.00									
2336.0	85.00									



EXPLORATION LOG
 START DATE 1/9/14
 END DATE 1/9/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-45
 E.A. # 73518
 GROUND ELEV. 2423.00 (ft)
 HAMMER DROP SYSTEM Automatic(ETR 74%)

STATION "XP" 204+54
 OFFSET 307' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2418.0	2.50	A	SPT	23	42	95		SC SM	2.00	
	4.00			21					21	
	5.00	B	SPT	50/0.2'	50/0.2'	0			(B) No sample recovered.	
	6.20			50/0.3'	50/0.3'	0			(C) No sample recovered.	
2413.0	7.50	C	SPT	50/0.3'	50/0.3'	0	GC	9.00		
	7.80			46	116	100		<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3)		
	10.00	D	SPT	45				71		(D) 0.4' @ 50 blows, 20 blows for final 0.1'.
2408.0	11.50	E	SPT	23	44	80	GC	15.00		
	15.00			20				24		<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, very pale brown (10 YR 7/3)
	16.50	F	SPT	30	71	85		<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3)		
20.00	28			43			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, very pale brown (10 YR 7/3)			
2398.0	21.50	G	SPT	12	30	65	SC	25.00		
	25.00			13				17		<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, very pale brown (10 YR 7/3)
	26.50	17	28.20							
	30.00							30.00		



EXPLORATION LOG
 START DATE 1/9/14
 END DATE 1/9/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-45
 E.A. # 73518
 GROUND ELEV. 2423.00 (ft)
 HAMMER DROP SYSTEM Automatic(ETR 74%)

STATION "XP" 204+54
 OFFSET 307' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2388.0	31.50	H	SPT	11 13 14	27	100		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, dense, very pale brown (10 YR 7/3 to 10 YR 8/2)	
	35.00	I	SPT	13 16 11	27	95				
2383.0	40.00	J	CMS	23	63	85		GM	<u>SILTY GRAVEL with SAND</u> Dry to moist, dense, very pale brown (10 YR 7/3 to 10 YR 8/2)	
	41.50			25 38						
2378.0	45.00	K	SPT	50/0.1'	50/0.1'	0			Gravelly or weakly cemented materials <u>STRONGLY CEMENTED MATERIALS</u> HARD DRILLING END BI-45 @ 45.8'	(K) No sample recovered. 0.1 ft/min 300 psi down. No groundwater encountered.
	45.80									
2373.0	50									
2368.0	55									



EXPLORATION LOG
 START DATE 1/10/14
 END DATE 1/10/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-46
 E.A. # 73518
 GROUND ELEV. 2401.00 (ft)
 HAMMER DROP SYSTEM Automatic(ETR 74%)

STATION "X" 80+65
 OFFSET 190' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120(#1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2396.0	2.50								2.00	
	4.00	A	SPT	5 9 21	30	95		CL	<u>LEAN CLAY with SAND</u> Dry, very stiff, very pale brown (10 YR 8/2)	
	5.00									
	6.50	B	SPT	10 15 20	35	100			<u>LEAN CLAY with SAND</u> Dry, hard, very pale brown (10 YR 8/2)	
	7.50								7.00	
2391.0	9.00	C	SPT	14 17 25	42	100		CL ML	<u>SILTY CLAY with SAND</u> Dry, hard, very pale brown (10 YR 8/2)	
	10.00									
	11.50	D	SPT	14 21 24	45	95			<u>SILTY CLAY with SAND</u> Dry, hard, very pale brown (10 YR 8/2)	
2386.0	15.00								13.20	
	16.50	E	SPT	11 15 18	33	85		SC SM	<u>SILTY, CLAYEY SAND</u> Dry to moist, hard, very pale brown (10 YR 8/2 to 10 YR 7/3) with mottled brownish yellow (10 YR 6/8)	
									18.20	
2381.0	20.00									
	21.50	F	SPT	9 9 16	25	95		SC	<u>CLAYEY SAND</u> Moist to dry, very stiff, very pale brown (10 YR 7/3)	
									23.20	
2376.0	25.00									
	26.50	G	SPT	6 7 9	16	95		CH	<u>FAT CLAY with SAND</u> Moist to dry, very stiff, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1)	(G) Weakly to strongly cemented nodules in sample.
									28.20	
	30.00							CL		



EXPLORATION LOG
 START DATE 1/10/14
 END DATE 1/10/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-46
 E.A. # 73518
 GROUND ELEV. 2401.00 (ft)
 HAMMER DROP SYSTEM Automatic(ETR 74%)

STATION "X" 80+65
 OFFSET 190' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120(#1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2366.0	31.50	H	CMS	22 22 24	46	95		CL	SANDY LEAN CLAY Moist to dry, very stiff, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1)	(H) Weakly to strongly cemented nodules in sample.
	33.20									
2366.0	35.00	I	SPT	7	30	85		CH	GRAVELLY FAT CLAY with SAND Dry to moist, very stiff, pale yellow (2.5 YR 7/3) to white (10 YR 8/1) to brownish yellow (10 YR 6/3)	(I) Weakly to strongly cemented nodules in sample.
	36.50			13 17						
2361.0	40.00	J	SPT	8	25	95		CL	SANDY LEAN CLAY Moist, very stiff, pale yellow (2.5 YR 7/3) to white (10 YR 8/1).	
	41.50			9 16						
2356.0	45.00	K	CMS	15	55	100		GC	CLAYEY GRAVEL WITH SAND Moist, very stiff, pale yellow (2.5 YR 7/3) to white (10 YR 8/1).	(K) Pocket penetrometer reading - 4.5 tsf. Torvane reading - 15 tsf.
	46.50			21 34						
2351.0	50.00	L	SPT	14	50/0.3'	100		CH	STRONGLY CEMENTED MATERIALS, HARD DRILLING SANDY FAT CLAY Moist, very stiff, pale yellow (2.5 YR 7/3) to white (10 YR 8/1) END BI-46 @ 50.8'	0.03 ft/min @ 250 psi down from 48.8' to 49.1'. (L) Last 30 blows, no progress. No groundwater encountered.
	50.80			50/0.3'						
2346.0	55									



EXPLORATION LOG
 START DATE 1/27/14
 END DATE 1/28/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-47
 E.A. # 73518
 GROUND ELEV. 2399.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 82+14
 OFFSET 201' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2394.3	5.00	A	SPT	6	14	85		CL ML	SANDY GRAVEL Dry, tan		
	6.50			6					8		2.50
	7.50			6					8		
2389.3	9.00	B	SPT	5	11	85		CL	LEAN CLAY with SAND Dry, medium dense, very pale brown (10 YR 7/3)		
	10.00			6					6		7.00
	11.50			5					6		
2384.3	12.50	C	SPT	20	101	95		SC	CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)		
	14.00			46					55		9.50
	15.00			26					28		
2379.3	17.50	D	SPT	31	59	45		GC GM	SILTY CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 7/3)		
	19.00			12					17		14.50
	20.00			17					28		
2374.3	21.50	E	SPT	15	45	80		SM	SILTY SAND with GRAVEL Dry, dense, very pale brown (10 YR 7/3)		
	22.50			17					28		17.00
	24.00			15					21		
2374.3	25.00	F	SPT	21	39	80		SC	CLAYEY SAND with GRAVEL Dry, dense, very pale brown (10 YR 7/3) to yellow (10 YR 7/6)		
	26.50			19					25		22.00
	27.50			25					31		
2374.3	28.00	G	SPT	19	56	95		CL	CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)	End day 1 @ 21.5'	
	29.00			12					20		24.50
	30.00			12					22		
2374.3	30.00	H	SPT	12	42	95		CH	SANDY LEAN CLAY Dry, hard, mottled yellow (10 YR 7/6) to white (10 YR 8/1)		
	30.00			12					10		27.00
	30.00			10					13		
2374.3	30.00	I	SPT	12	23	85		CL	FAT CLAY with SAND Dry, very stiff, mottled pale yellow (5 Y 8/2) to yellow (10 YR 7/6)		
	30.00			12					14		24.50
	30.00			12					12		
2374.3	30.00	J	SPT	12	26	80		CL	GRAVELLY LEAN CLAY with SAND Dry to moist, very stiff, light yellowish brown (2.5 Y 6/3) to white (2.5 Y 8/1)		
	30.00			14					12		27.00
	30.00			12					12		



EXPLORATION LOG
 START DATE 1/27/14
 END DATE 1/28/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-47
 E.A. # 73518
 GROUND ELEV. 2399.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 82+14
 OFFSET 201' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2364.3	31.50	K	CMS	15 20 31	51	95		CL	31.30 <u>LEAN CLAY with SAND</u> Dry to moist, hard, pale yellow (5 Y 7/3)	(M) Weakly to moderately cemented nodules in sample.
		L	SPT	11 19 28	47	95		CH	34.00 <u>SANDY FAT CLAY</u> Dry to moist, very stiff, pale yellow (2.5 Y 7/3) to light yellowish brown (2.5 Y 6/3)	
	35.00	M	CMS	17 17 32	49	85		CL	36.50 <u>LEAN CLAY with SAND</u> Dry to moist, very stiff, pale yellow (2.5 Y 7/3) to light yellowish brown (2.5 Y 6/3)	
		N	SPT	13 15 20	35	85		CH	39.00 <u>FAT CLAY with SAND</u> Dry to moist, hard, pale yellow (2.5 Y 7/3) with white (2.5 Y 8/1) inclusions	
2359.3	40.00									
	41.50	O	SPT	7 7 12	19	95		CL	45.00 <u>LEAN CLAY with SAND</u> Moist, very stiff, light olive brown (2.5 Y 5/4) to white (2.5 Y 8/1)	
2354.3	45							END BI-47 @ 45.0'	Drilled to 45'. Lost inner rod bit down borehole. Terminated borehole. No groundwater encountered.	
2349.3	50									
2344.3	55									



EXPLORATION LOG
 START DATE 2/10/14
 END DATE 2/11/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-48
 E.A. # 73518
 GROUND ELEV. 2436.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 209+22
 OFFSET 206' Left
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2431.0	5.00	A	SPT	37	50/0.3'	85		SM	<u>SILTY SAND with GRAVEL</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	(A) Last 25 blows, no progress. Smooth penetration with light pressure (5' - 10').
	6.30			50						
2426.0	10.20	B	SPT	50/0.2'	50/0.2'	100		SC SM	<u>SILTY, CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	(B) Last 35 blows, no progress. Smooth penetration with light pressure (10' - 15').
	10.98			50						
2421.0	15.00	C	SPT	50/0.1'	50/0.1'	0		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	(C) 50 blows, no progress. No sample recovered. Smooth penetration with light pressure (15' - 20').
	15.98			50						
2416.0	20.00	D	SPT	50/0.2'	50/0.2'	100		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	Smooth penetration with light pressure (15' - 20').
	20.20			50						
2411.0	25.00	E	CMS	61	60/0.1'	80		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3) coarser gravels	Smooth penetration with light pressure (15' - 20').
	25.60			60/0.1'						
	30.00							SC		

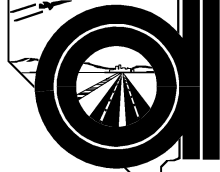


EXPLORATION LOG
 START DATE 2/10/14
 END DATE 2/11/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-48
 E.A. # 73518
 GROUND ELEV. 2436.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 209+22
 OFFSET 206' Left
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	31.50	F	SPT	13 20 42	62	85		SC	<u>CLAYEY SAND with GRAVEL</u> . Dry to moist, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4), mottled white (10 YR 8/1)	(F) Weakly cemented nodules in sample.
	33.20									
2401.0	35.90	G	CMS	50/0.1'	50/0.1'	0			<u>WEAKLY TO MODERATELY CEMENTED MATERIALS</u>	(G) 50 blows, no progress. No sample recovered.
	37.50									
2396.0	40.00							GC	<u>CLAYEY GRAVEL with SAND</u> . Dry to moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4).	(H) Weakly cemented nodules in sample. Smooth penetration, some weak cementation (40' - 44').
	41.50	H	CMS	22 24 18	42	80				
	43.20									
2391.0	45.90	I	SPT	50/0.1'	50/0.1'	0			<u>MODERATELY TO STRONGLY CEMENTED MATERIALS</u>	(I) 50 blows, no progress. No sample recovered.
	47.50									
2386.0	50.00	J	SPT	50/0.4'	50/0.4'	50		GC	<u>CLAYEY GRAVEL with SAND</u> . Dry to moist, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4).	(J) Weakly cemented nodules in sample.
	50.40									
	55.00									
2381.0	55.00	K	CMS	48 55	50/0.1'	100			<u>CLAYEY GRAVEL with SAND</u> . Dry to moist, very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).	(K) Weakly cemented nodules in sample.
	56.10			50/0.1'						
	58.00									
	60.00							CL		



EXPLORATION LOG

START DATE 2/10/14
 END DATE 2/11/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-48
 E.A. # 73518
 GROUND ELEV. 2436.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 209+22
 OFFSET 206' Left
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	60.30	L	CMS	60/0.3'	60/0.3'	100		CL	<p>GRAVELLY LEAN CLAY Moist, very hard, light gray (10 YR 7/2) to very pale brown (10 YR 7/3).</p>	(L) Last 30 blows, no progress.
2371.0	65.00 65.50	M	CMS	73	73	100		CL	<p>GRAVELLY LEAN CLAY Moist, very hard, very pale brown (10 YR 7/3).</p> <p>END BI-48 @ 65.5'</p>	(M) Strongly cemented nodules in sample. No groundwater encountered.
2366.0	70									
2361.0	75									
2356.0	80									
2351.0	85									



EXPLORATION LOG
 START DATE 2/11/14
 END DATE 2/12/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-49
 E.A. # 73518
 GROUND ELEV. 2432.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 207+68
 OFFSET 219' Left
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2427.0	5 5.90	A	SPT	50/0.1'	50/0.1'	0			Coarse gravel and cobbles from 0' - 5'.	
									(A) Gravel or cobbles. No sample recovered.	
									7.50	
2422.0	10 10.60	B	SPT	43 50/0.1'	50/0.1'	100		SC	<u>CLAYEY SAND with GRAVEL</u> . Dry to moist, very dense, very pale brown (10 YR 8/2) to white (10 YR 8/1)	(B) Gravel or cobbles.
									12.80	
2417.0	15 16.50	C	CMS	23 33 40	73	95		CL	<u>SANDY LEAN CLAY with GRAVEL</u> . Dry, hard, very pale brown (10 YR 7/3)	Coarse gravel and cobbles from 10' - 15'.
									18.20	
2412.0	20 21.50	D	CMS	15 26 46	72	95		SC	<u>CLAYEY SAND</u> . Dry to moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
2407.0	25 26.50	E	SPT	18 19 18	37	80		SC	<u>CLAYEY SAND with GRAVEL</u> . Dry to moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
									28.20	
								GC		
	30.00								30.00	



EXPLORATION LOG
 START DATE 2/11/14
 END DATE 2/12/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-49
 E.A. # 73518
 GROUND ELEV. 2432.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 207+68
 OFFSET 219' Left
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2397.0	31.50	F	SPT	5 10 10	20	45		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, medium dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) with white (10 YR 8/1)	(F) Weakly cemented nodules in sample.
	33.20									
2392.0	35.00 35.40	G	CMS	65/0.4'	65/0.4'	75		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	
	37.70									
2387.0	40.00 41.50	H	SPT	25 60 25	85	100		GC	<u>CLAYEY GRAVEL with SAND</u> Moist to dry, very dense, very pale brown (10 YR 7/3), darker gravels	
	42.40									
2382.0	45.00 45.00	I	SPT	50/0.1'	50/0.1'	0			MODERATELY TO STRONGLY CEMENTED MATERIALS	(I) No sample recovered.
	46.00									
2377.0	50.00 50.00	J	SPT	50/0.1'	50/0.1'	0			GRAVELLY OR WEAKLY CEMENTED MATERIALS	(J) No sample recovered.
	54.00									
2377.0	55.00 56.50	K	SPT	24 16 21	37	100		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, multicolored, pale yellow (2.5 YR 7/3) reddish yellow (7.5 YR 6/6), dark gravels	
	58.50									
	60.00								MODERATELY TO STRONGLY CEMENTED MATERIALS	



EXPLORATION LOG

START DATE 2/11/14
 END DATE 2/12/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-49
 E.A. # 73518
 GROUND ELEV. 2432.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 207+68
 OFFSET 219' Left
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
		L	SPT	50/0.1	50/0.1	0			GRAVELLY, OR WEAKLY TO MODERATELY CEMENTED MATERIALS	(L) No sample recovered.
	63.00									
2367.0	65.00 66.50	M	CMS	15 11 12	23	135		CH	FAT CLAY Moist to wet, stiff, light yellowish brown (10 YR 6/4)	(M) Pocket penetrometer reading - 2.5, 2.5 tsf. Torvane reading - 9, 11 tsf.
	68.20									
2362.0	70.00 71.50	N	CMS	11 20 44	64	120		CL	LEAN CLAY with GRAVEL Moist to wet, hard, very pale brown (10 YR 7/3)	(N) Pocket penetrometer reading - 4.5 tsf. (N) Moderately to strongly cemented nodules in sample.
	75.00									
2357.0	75.00 76.50	O	CMS	8 11 16	27	135		CL	LEAN CLAY Moist, very stiff, light yellowish brown (10 YR 6/4)	(O) Pocket penetrometer reading - 2.75 tsf. Torvane reading - 15 tsf.
	78.20									
2352.0	80.00 81.50	P	CMS	8 10 16	26	135		CH	FAT CLAY Moist, very stiff, very pale brown (10 YR 7/3)	(P) Pocket penetrometer reading - 2.75 tsf. Torvane reading - 6.5 tsf. No groundwater encountered.
	81.50								END BI-49 @ 81.5'	
2347.0	85									



EXPLORATION LOG
 START DATE 2/12/14
 END DATE 2/13/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-50
 E.A. # 73518
 GROUND ELEV. 2427.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 205+93
 OFFSET 235' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2422.0	5.00	A	SPT	38	50/0.3'	85		SP SM	<u>POORLY GRADED SAND with SILT and GRAVEL</u> . Dry to moist, very dense, very pale brown (10 YR 8/2)	
	6.30			56						
				50/0.3'						
2417.0	10.00	B	SPT	50/0.4'	50/0.4'	100		SC	<u>CLAYEY SAND with GRAVEL</u> . Dry to moist, very dense, very pale brown (10 YR 8/2)	
	10.40									
2412.0	15.00	C	SPT	10	39	95		CL	<u>SANDY LEAN CLAY</u> . Dry to moist, hard, light yellowish brown (10 YR 6/4) mottled white (10 YR 8/1)	
	16.50			10						
				29						
2407.0	20.00	D	SPT	9	24	95		CL	<u>SANDY LEAN CLAY</u> . Dry to moist, very stiff, light yellowish brown (10 YR 6/4) mottled white (10 YR 8/1)	
	21.50			11						
				13						
2402.0	25.00	E	SPT	15	42	75		GC	<u>CLAYEY GRAVEL with SAND</u> . Dry to moist, dense, very pale brown (10 YR 8/2)	
	26.50			21						
				21						
	30.00									



EXPLORATION LOG
 START DATE 2/12/14
 END DATE 2/13/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-50
 E.A. # 73518
 GROUND ELEV. 2427.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 205+93
 OFFSET 235' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	30.40	F	SPT	50/0.4'	50/0.4'	100			<u>CLAYEY GRAVEL</u> Dry to moist, very dense, very pale brown (10 YR 8/2)	(F) Weakly to strongly cemented.
2392.0	35.00							GC		
	36.50	G	CMS	33 24 16	40	100			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, pale yellow (5 YR 7/3)	(G) Pocket penetrometer reading - 4.5 tsf. Torvane reading - 15 tsf.
2387.0	40.00									
	41.50	H	CMS	14 11 17	28	80			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, medium dense, white (10 YR 8/1) to very pale brown (10 YR 7/3) to pale yellow (5 YR 7/3)	(H) Weakly to moderately cemented nodules.
	43.00									
2382.0	45.00							CL ML		
	46.30	I	SPT	39 29 50/0.3'	50/0.3'	105			<u>GRAVELLY SILTY CLAY with SAND</u> Dry to moist, very hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(I) With moderately cemented nodules.
	48.00									
2377.0	50.00	J	SPT	50/0.0'	50/0.0'	0				(J) No sample recovered.
	55.00								INTERMITTENT WEAKLY TO MODERATELY CEMENTED LAYERS	
2372.0	55.20	K	CMS	60/0.2'	60/0.2'	0				(K) No sample recovered.
	60.00								INTERMITTENT WEAKLY TO MODERATELY CEMENTED LAYERS	



EXPLORATION LOG

START DATE 2/12/14
 END DATE 2/13/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-50
 E.A. # 73518
 GROUND ELEV. 2427.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 205+93
 OFFSET 235' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
		L	SPT	50/0.1	50/0.1	0			INTERMITTENT WEAKLY TO MODERATELY CEMENTED LAYERS	
2362.0	65.00								64.00	
	66.50	M	CMS	45 33 32	65	100		CL ML	<u>GRAVELLY SILTY CLAY</u> Moist, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(M) Pocket penetrometer reading - 2.5 tsf. Torvane reading - 12 tsf.
2357.0	70								70.00	
	75.00									
2352.0	76.50	N	SH	200psi 350psi	350psi	120			<u>FAT CLAY</u> Moist to wet, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	Push Shelby tube @ 200 psi first 12", then @ 350 psi from 12" - 18". No groundwater encountered.
									76.50	
2347.0	80									
2342.0	85									

END BI-50 @ 76.5'



EXPLORATION LOG
 START DATE 3/10/14
 END DATE 3/11/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-51
 E.A. # 73518
 GROUND ELEV. 2410.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 194+35
 OFFSET 180' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
3/11/14	60.00	2350.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2405.5	5.00	A	SPT	4	11	80		ML	SANDY GRAVEL, Dry, tan 2.00	
	6.50			4						
	7.50			7						
2400.5	9.00	B	SPT	11	67	95		GC	CLAYEY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3) 7.00	
	10.00			16						
	11.40			51						
2395.5	12.50	D	SPT	20	62	80		GP GC	POORLY GRADED GRAVEL with SILTY CLAY and SAND Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3) 12.00	
	14.00			33						
	15.00			50/0.4'			85			
2390.5	16.50	E	SPT	9	37	80		GC	CLAYEY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3) 14.50	
	17.50			12						
	19.00			25						
2385.5	20.00	F	SPT	10	28	80		GC	CLAYEY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3) 19.50	
	20.90			14						
	20.90			14						
2385.5	25.00	G	CMS	24	50/0.4'	100		SC	CLAYEY SAND with GRAVEL Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3) 23.00	
	26.50			50/0.4'						
	26.50			50/0.4'						
2385.5	25.00	H	SPT	6	22	85		CH	SANDY FAT CLAY Dry to moist, very stiff, very pale brown (10 YR 7/3 to 10 YR 7/4) 28.20	
	26.50			8						
	26.50			14						
2385.5	30.00							CL		
	30.00									



EXPLORATION LOG
 START DATE 3/10/14
 END DATE 3/11/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-51
 E.A. # 73518
 GROUND ELEV. 2410.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 194+35
 OFFSET 180' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
3/11/14	60.00	2350.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2375.5	31.50	I	CMS	35 29 36	65	95		CL	<u>GRAVELLY LEAN CLAY with SAND</u> Dry to moist, hard, very pale brown (10 YR 7/2)	(M) Weakly to moderately cemented nodules in sample. End day 1 @ 33'.
	33.00	J	SPT	10 7 15	22	95		CH	<u>FAT CLAY with SAND</u> Dry to moist, very stiff, mottled light brown (7.5 YR 6/3) to white (7.5 YR 8/1)	
	35.00									
2370.5	36.50	K	CMS	11 14 35	49	95		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Dry, hard, very pale brown (10 YR 7/3) to reddish yellow (7.5 YR 6/8)	
	38.00	L	SPT	12 14 21	35	85		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, hard, very pale brown (10 YR 7/3) to reddish yellow (7.5 YR 6/8)	
	40.00									
2365.5	41.50	M	CMS	14 21 28	49	95		CL	<u>LEAN CLAY with SAND</u> Dry, hard, light gray (10 YR 7/2)	
	43.00	N	SPT	8 17 23	40	95		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, dense, light gray (10 YR 7/2)	
	45									
2360.5	50.00									
	51.50	O	CMS	8 11 20	31	95			<u>ELASTIC SILT</u> Moist, very stiff, reddish yellow (7.5 YR 6/6)	
	52.10	P	SPT	11 15/0.1'	15/0.1'	85		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, very stiff, reddish yellow (7.5 YR 6/6)	
2355.5	55									
	60.00							CL		Broke through hard layer @ 56.5'.



EXPLORATION LOG
 START DATE 3/10/14
 END DATE 3/11/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-51
 E.A. # 73518
 GROUND ELEV. 2410.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 194+35
 OFFSET 180' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
3/11/14	60.00	2350.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2345.5	61.50	Q	CMS	11 22 34	56	115		CL	<u>LEAN CLAY</u> Moist to wet, hard, pale brown (10 YR 6/3) to light gray (10 YR 7/2) <u>LEAN CLAY with GRAVEL</u> Moist to wet, hard, pale brown (10 YR 6/3) to light gray (10 YR 7/2)	(Q) Free water on sampler. Pocket penetrometer reading - 1.8, 2.3 tsf.
		R	SPT	11 14 25	39	100				
2340.5	71.50	S	CMS	8 7 15	22	0		CL ML	<u>LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4)	(S) No sample recovered.
		T	SPT	8 10 12	22	155				
2330.5	81.50	U	CMS	17 25 26	51	105		CL ML	<u>SILTY CLAY with SAND</u> Wet, hard, light yellowish brown (10 YR 6/4)	(U) Pocket penetrometer reading - 3.8, 4.3 tsf.
		V	SPT	50/0.4'	50/0.4'	150				
2325.5	85.00							CL	<u>LEAN CLAY with SAND</u> Wet, hard, light yellowish brown (10 YR 6/4)	(V) Rock in sampler shoe.
	90.00									



EXPLORATION LOG

START DATE 3/10/14
 END DATE 3/11/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-51
 E.A. # 73518
 GROUND ELEV. 2410.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 194+35
 OFFSET 180' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
3/11/14	60.00	2350.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	91.50	W	CMS	12 32 26	58	105		CL	<u>GRAVELLY LEAN CLAY</u> Wet, hard, light yellowish brown (10 YR 6/4) <u>LEAN CLAY with GRAVEL</u> Wet, hard, light yellowish brown (10 YR 6/4)	(W) Pocket penetrometer reading - 2.0, 1.8 tsf.
	93.00	X	SPT	7 10 21	31	120				
									93.00	
2315.5	95									
2310.5	100									
2305.5	105									
2300.5	110									
2295.5	115									
										END BI-51 @ 93.0'



EXPLORATION LOG
 START DATE 3/12/14
 END DATE 3/13/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-52
 E.A. # 73518
 GROUND ELEV. 2421.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 68+86
 OFFSET 67' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2416.9	5.00	A	SPT	12	47	95		GC GM	SANDY GRAVEL, Dry, tan	
	6.50			15						
	7.50			32						
	8.90	B	SPT	33 47	50/0.4'	85				
2411.9	10.20	C	CMS	30/0.2'	30/0.2'	0		SM	SILTY SAND with GRAVEL Dry, very dense, white (10 YR 8/1)	(C) Last 10 blows; no progress. No sample recovered.
	12.50	D	CMS	35	50/0.4'	100				
	13.40			50/0.4'						
2406.9	15.00	E	SPT	22	56	85		GC	CLAYEY GRAVEL with SAND Dry, very dense, white (10 YR 8/1)	
	16.50			26						
	17.50	F	CMS	20	55	80				
	19.00			28 27						
2401.9	20.00	G	SPT	5	47	75		CH	CLAYEY GRAVEL with SAND Dry, hard, pale brown (10 YR 6/3)	
	21.50			16						
	22.50			31						
	24.00	H	SPT	10 13	26	80				
2396.9	25.00	I	SPT	14	48	95		SC SM	SANDY LEAN CLAY Dry, hard, pale brown (10 YR 6/3)	
	26.50			21						
	27.50	J	SPT	17	55	95				
	28.00			27 28						
	30.00									



EXPLORATION LOG
 START DATE 3/12/14
 END DATE 3/13/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-52
 E.A. # 73518
 GROUND ELEV. 2421.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 68+86
 OFFSET 67' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2386.9	31.40	K	CMS	16 26 40/0.4'	40/0.4'	0		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, very dense, light gray (10 YR 7/2)	(K) Last 10 blows; no progress.
	35.00									
2386.9	36.50	L	SPT	22 20 29	49	0		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, dense, light gray (10 YR 7/2)	
	38.00	M	SPT	11 9 14	23	100		GC	<u>SANDY FAT CLAY</u> Dry to moist, very stiff, white (10 YR 8/1) to very pale brown (10 YR 7/3)	
2381.9	40.00							CH	<u>GRAVELLY FAT CLAY with SAND</u> Dry to moist, very stiff, white (10 YR 8/1) to very pale brown (10 YR 7/3)	
	41.50	N	CMS	17 25 41	66	95		CH	<u>GRAVELLY FAT CLAY with SAND</u> Dry to moist, very stiff, white (10 YR 8/1) to very pale brown (10 YR 7/3)	
2376.9	43.00	O	SPT	11 12 17	29	95		CH	<u>GRAVELLY FAT CLAY with SAND</u> Dry to moist, very stiff, white (10 YR 8/1) to very pale brown (10 YR 7/3)	Hard drilling 44.5' to 45'.
	45.00							CL		Hard drilling 45' to 46'; Progress 1.0'/15 minutes @ 200 psi down pressure.
2376.9	45.20	P	SPT	15/0.2'	15/0.2'	85		CL		(P) Last 10 blows; no progress. No sample recovered.
	50.00							CL		Hard drilling 46' to 47'; Progress 1.0'/15 minutes @ 250 psi down pressure.
2371.9	51.40	Q	CMS	9 22 50/0.4'	50/0.4'	100		CL	<u>SANDY LEAN CLAY</u> Dry to moist, very hard, very pale brown (10 YR 7/3) to yellowish brown (10 YR 5/4)	(Q) Free water on sampler.
	53.00							CL		Hard drilling 47' to 47.5'; Progress 0.5'/15 minutes @ 250 psi down pressure.
2366.9	55.00							SC		(R) Last 10 blows; no progress.
	56.10	R	SPT	51 38 15/0.1'	15/0.1'	85		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, white (10 YR 8/1)	Hard drilling 47.5' to 50'; Progress 2.5'/10 minutes @ 250 psi down pressure.
	60.00							SC		Hard drilling 56' to 57'; Progress 1.0'/30 minutes



GEOTECHNICAL ENGINEERING

EXPLORATION LOG

START DATE 3/12/14
 END DATE 3/13/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-52
 E.A. # 73518
 GROUND ELEV. 2421.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 68+86
 OFFSET 67' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2356.9	65									@ 250 psi down pressure. End day 1 @ 57'. Hard drilling 57' to 58'; Progress 1.0'/30 minutes @ 250 psi down pressure. Hard drilling 58' to 59'; Progress 1.0'/60 minutes @ 250 psi down pressure. Hard drilling 59' to 60'; Progress 1.0'/30 minutes @ 250 psi down pressure. Hard drilling 60' to 61'; Progress 1.0'/25 minutes @ 250 psi down pressure. Hard drilling 61' to 62'; Progress 1.0'/30 minutes @ 250 psi down pressure. Hard drilling 62' to 62.5'; Progress 0.5'/15 minutes @ 250 psi down pressure. No groundwater encountered.
2351.9	70									
2346.9	75									
2341.9	80									
2336.9	85									



EXPLORATION LOG
 START DATE 3/31/14
 END DATE 4/1/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-53
 E.A. # 73518
 GROUND ELEV. 2379.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 98+67
 OFFSET 193' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2374.5	5.00	A	SPT	12	51	95		ML	SANDY GRAVEL, Dry, tan	
	6.50			21					21	21
	6.50			30					30	30
2369.5	10.00	B	SPT	10	20	95		CL	LEAN CLAY with SAND Dry, very stiff, pale brown (10 YR 6/3)	
	11.50			10					10	10
	12.50			10					10	10
	14.00			10					10	10
2364.5	15.50	D	SPT	4	9	65		SC	GRAVELLY LEAN CLAY Dry, medium dense, very pale brown (10 YR 7/4) to pale brown (10 YR 6/3)	
	15.50			4					4	4
	15.50			5					5	5
2359.5	18.50	E	CMS	14	71	95		SC SM	CLAYEY SAND with GRAVEL Dry to moist, hard, light yellowish brown (2.5 Y 6/3)	
	18.50			24					24	24
	20.00	F	SPT	26	79	80		GC GM	SILTY CLAYEY SAND with GRAVEL Dry to moist, hard, light yellowish brown (2.5 Y 6/3)	
	20.00			37					37	37
	21.40	G	CMS	32	50/0.4'	95		GC GM	SILTY CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 7/4)	
	21.40			55					55	55
22.90	H	SPT	32	67	80		SC SM	SILTY CLAYEY SAND with GRAVEL Dry to moist, very dense, very pale brown (10 YR 7/4)		
22.90			27					27	27	
23.80	I	CMS	40	50/0.4'	90		GC GM	SILTY CLAYEY GRAVEL with SAND Dry to moist, hard, very pale brown (10 YR 7/4)		
23.80			32					32	32	
2354.5	25.00	J	CMS	13	67	85		CL	LEAN CLAY with SAND Dry to moist, hard, very pale brown (10 YR 8/3) to light yellowish brown (10 YR 6/4)	
	26.50			27					27	27
	28.00	K	SPT	13	35	100		CL	LEAN CLAY with SAND Dry to moist, hard, very pale brown (10 YR 8/3) to light yellowish brown (10 YR 6/4)	
	28.00			16					16	16
29.50	L	CMS	15	42	100		CL	SANDY LEAN CLAY Dry to moist, hard, very pale brown (10 YR 8/3) to light yellowish brown (10 YR 6/4)		
29.50			17					17	17	
	30.00			15					SANDY LEAN CLAY with GRAVEL Dry to	

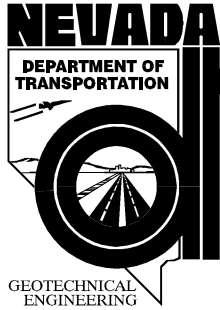


EXPLORATION LOG
 START DATE 3/31/14
 END DATE 4/1/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-53
 E.A. # 73518
 GROUND ELEV. 2379.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 98+67
 OFFSET 193' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2344.5	31.00	M	SPT	22 25	47	100		CL	moist, hard, very pale brown (10 YR 8/3) to light yellowish brown (10 YR 6/4) SANDY LEAN CLAY Dry to moist, very hard, white (2.5 Y 8/1) to light yellowish brown (2.5 Y 6/3) SANDY LEAN CLAY Dry to moist, very hard, white (2.5 Y 8/1) to light yellowish brown (2.5 Y 6/3)	End day 1 @ 31.0'. Hard drilling from 37' to 38'.
	32.50									
	34.00	N	CMS	19 31 53	84	95				
2339.5	35.40	O	SPT	52 50/0.4'	50/0.4'	100		CL	SANDY LEAN CLAY with GRAVEL Dry to moist, very hard, white (2.5 Y 8/1) to light yellowish brown (2.5 Y 6/3) GRAVELLY LEAN CLAY with SAND Dry to moist, very hard, white (2.5 Y 8/1) to light yellowish brown (2.5 Y 6/3)	43.00
	40.00									
	40.90 41.30	P Q	CMS SPT	17 50/0.4'	50/0.4'	120 100				
2334.5	45.00							SC	CLAYEY SAND with GRAVEL Wet, hard, white (10 YR 8/1) to very pale brown (10 YR 7/3)	46.50
	46.50	R	CMS	14 25 49	74	100				
	48.00	S	SPT	25 49 48	97	100				
2329.5	50							CL	GRAVELLY LEAN CLAY with SAND Wet, hard, white (10 YR 8/1) to very pale brown (10 YR 7/3)	48.00
	55									
2324.5	55								END BI-53 @ 48.0' No groundwater encountered.	



EXPLORATION LOG

START DATE 4/1/14
 END DATE 4/1/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-54
 E.A. # 73518
 GROUND ELEV. 2383.70 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 95+89
 OFFSET 235' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2348.7	31.00	J	SPT	12 33	45	95		CH	pale brown (10 YR 6/3) with white inclusions (10 YR 8/1)	No groundwater encountered.
	32.00									
	33.30	K	CMS	27 52 50/0.3'	50/0.3'	100		CL	LEAN CLAY Dry to moist, very hard, mottled light gray (2.5 Y 7/1) to white (2.5 Y 8/1)	
	34.80	L	SPT	17 18	35	100		SC	CLAYEY SAND with GRAVEL Dry to moist, hard, pale yellow (2.5 Y 8/2)	
	35									
	37.50									
	39.00	M	CMS	12 27 33	60	95		CL	SANDY LEAN CLAY Dry to moist, hard, mottled white (10 YR 8/1) to very pale brown (10 YR 7/3)	
2343.7	40 40.50	N	SPT	13 18 21	39	100			LEAN CLAY Dry to moist, hard, mottled white (10 YR 8/1) to very pale brown (10 YR 7/3)	
									END BI-54 @ 40.5'	
2338.7	45									
2333.7	50									
2328.7	55									



EXPLORATION LOG
 START DATE 4/2/14
 END DATE 4/2/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-55
 E.A. # 73518
 GROUND ELEV. 2366.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 106+95
 OFFSET 183' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS			
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd							
2361.0	5.00	A	SPT	3	18	75		CL ML	0-30 ROADWAY MILLINGS, Dry, dark gray				
	6.50			7					11		SILTY CLAY Dry, medium dense, pale brown (10 YR 6/3)		
	8.20												
2356.0	10.00	B	SPT	9	18	85		CH	FAT CLAY Dry, very stiff, pale brown (10 YR 6/3) to light gray (2.5 Y 7/2)				
	11.50			9					9				
	12.50												
2351.0	14.00	C	SPT	25	68	85		SC SM	SILTY CLAYEY SAND Dry, very hard, very pale brown (10 YR 7/3)				
	15.00			38					30				
	16.20			28					53		50/0.2'	90	CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)
2346.0	17.50	E	SPT	37	52	75		GC	CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 7/3)				
	19.00			33					19				
	20.00												
2341.0	21.50	F	CMS	14	39	95		CH	FAT CLAY with SAND Dry, very stiff, pale brown (10 YR 6/3)				
	23.00			12					27				LEAN CLAY Dry, very stiff, pale brown (10 YR 6/3)
	24.50			16					26		47	73	55
2341.0	25.40	I	SPT	31	50/0.4'	80		CL	SANDY LEAN CLAY with GRAVEL Dry, very hard, light gray (2.5 Y 7/2)	(I) Strongly cemented at 25.3'.			
	27.00												
	28.50			30					33		63	85	CH
2341.0	28.50	J	SPT	33	87	65		GC	CLAYEY GRAVEL with SAND Dry, very hard, white (10 YR 8/1) to very pale brown (10 YR 8/2)				
	30.00			42					45				
	30.00			15					22		33	55	45



EXPLORATION LOG
 START DATE 4/2/14
 END DATE 4/2/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-55
 E.A. # 73518
 GROUND ELEV. 2366.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 106+95
 OFFSET 183' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2331.0	31.50	L	CMS	19 56 58	114	85		CL	<u>LEAN CLAY with SAND</u> Dry to moist, very hard, light yellowish brown (10 YR 6/4) with black flecks	(L) Weakly to moderately cemented.
	33.00	M	SPT	13 13 15	28	45		CH	<u>FAT CLAY with SAND</u> Moist, very stiff, light yellowish brown (10 YR 6/4 to 2.5 Y 6/3)	
	35.00									
2326.0	36.50	N	CMS	25 24 31	55	85		CL	<u>SANDY LEAN CLAY</u> Dry to moist, hard, light gray (2.5 Y 7/2) to white (2.5 Y 8/1)	(N) Weakly cemented.
	38.00	O	SPT	13 17 21	38	55		CH	<u>FAT CLAY with SAND</u> Dry to moist, hard, light gray (2.5 Y 7/2) to white (2.5 Y 8/1)	(O) Weakly cemented.
2321.0	40.00									
	41.40	P	CMS	36 50 50/0.4'	50/0.4'	70		CL	<u>SANDY LEAN CLAY</u> Dry to moist, hard, light gray (2.5 Y 7/2) to white (2.5 Y 8/1)	
2316.0	45.00	Q	CMS	17 29 37	66	95		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, hard, light gray (2.5 Y 7/2) to white (2.5 Y 8/1)	
	48.00	R	SPT	21 18 22	40	65		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very stiff, very pale brown (10 YR 6/3) to white (10 YR 8/1)	
2311.0	50.00	S	SPT	15/0.1'	15/0.1'	0			END BI-55 @ 50.1'	(S) Last 10 blows; no progress. No sample recovered. No groundwater encountered.
2311.0	55									



EXPLORATION LOG
 START DATE 4/3/14
 END DATE 4/3/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-56
 E.A. # 73518
 GROUND ELEV. 2373.80 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 102+70
 OFFSET 192' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2368.8	5.00	A	SPT	3	6	60		CL ML	SANDY GRAVEL, Dry, tan 2.50	
	6.50			2						
	6.50			4						
2363.8	10.00	B	CMS	11	32	85		CL	LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)	
	11.50			12						
	11.50			20						
2358.8	13.00	C	SPT	17	13	55		GC	CLAYEY GRAVEL with SAND Dry, stiff, white (10 YR 8/1)	
	13.00			9						
	13.00			4						
2358.8	15.00	D	CMS	10	62	85		CL	SANDY LEAN CLAY Dry, hard, light brownish gray (2.5 Y 6/2) to white (10 YR 8/1)	
	16.50			21						
	16.50			41						
2353.8	17.30	E	SPT	42	50/0.3'	90		SC SM	SILTY CLAYEY SAND with GRAVEL Dry, very hard, light gray (10 YR 7/2) to white (10 YR 8/1)	
	17.30			50/0.3'						
	17.30			50/0.3'						
2353.8	20.00	F	CMS	50/0.2'	50/0.2'	0				(F) No sample recovered.
	20.00			50/0.2'						
	20.00			50/0.2'						
2348.8	22.00	G	SPT	40/0.4'	40/0.4'	0				(G) Last 10 blows; no progress. No sample recovered.
	22.40			40/0.4'						
	22.40			40/0.4'						
2348.8	25.00	H	CMS	20	79	100		CL	LEAN CLAY with SAND Dry, hard, very pale brown (10 YR 7/4)	
	26.50			34						
	26.50			45						
2348.8	28.00	I	SPT	23	51	85			SANDY LEAN CLAY Dry, hard, very pale brown (10 YR 7/4) to white (10 YR 8/1)	
	28.00			23						
	28.00			28						
	30.00									



GEOTECHNICAL ENGINEERING

START DATE 4/3/14
 END DATE 4/3/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-56
 E.A. # 73518
 GROUND ELEV. 2373.80 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 102+70
 OFFSET 192' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2338.8	31.50	J	CMS	23 30 36	66	95		CL	LEAN CLAY with SAND Dry, hard, mottled white (10 YR 8/1) with yellow (10 YR 8/6) SANDY LEAN CLAY Dry, very hard, very pale brown (10 YR 8/2)	
	33.00	K	SPT	20 24 40	64	85				
	35.00									
2338.8	36.50	L	CMS	10 14 23	37	85		CH	FAT CLAY Dry to moist, very stiff, light brownish gray (2.5 Y 6/2) to pale brown (10 YR 6/3) FAT CLAY with SAND Dry to moist, very stiff, pale brown (10 YR 6/3)	
	38.00	M	SPT	8 10 15	25	75				
	40.00									
2333.8	41.50	N	CMS	14 21 30	51	85		CL	LEAN CLAY with SAND Dry to moist, hard, mottled light yellowish brown (2.5 Y 6/3) to white (2.5 Y 8/1)	
	43.00	O	SPT	7 14 24	38	75				
2328.8	45									
2323.8	50									
2318.8	55									
									END BI-56 @ 43.0' No groundwater encountered.	



START DATE 5/20/14
END DATE 5/20/14
JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
LOCATION Northwest Las Vegas - Clark County
BORING BI-57
E.A. # 73518
GROUND ELEV. 2384.50 (ft)
HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 131+69
OFFSET 145' Left
ENGINEER Boomhower
EQUIPMENT Diedrich D-120 (Unit 1082)
OPERATOR Beus
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes **DATE** 5/20/2014

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
									0.70 Asphaltic Concrete	
	3.50							GC		
2379.5	5.00	A	CMS	29 26 23	49	85			CLAYEY GRAVEL with SAND Dry to moist, dense, light brown (7.5 YR 6/3)	
	6.50	B	SPT	16 28 42	70	65		SC	CLAYEY SAND with GRAVEL Dry to moist, dense, light brown (7.5 YR 6/3)	
	7.90	C	CMS	42 57 50/0.4'	50/0.4'	100		GW GC	WELL GRADED GRAVEL with CLAY Dry to moist, very dense, light brown (7.5 YR 6/4)	
	9.40	D	SPT	31 32 45	77	95		SC SM	SILTY CLAYEY SAND with GRAVEL Dry to moist, very dense, light brown (7.5 YR 6/4)	
2374.5	10.00									
	11.50	E	CMS	31 35 43	78	100		GW GC	WELL GRADED GRAVEL with CLAY and SAND Dry to moist, very dense, light brown (7.5 YR 6/4)	
	12.50	F	SPT	34 50/0.4'	50/0.4'	100		GC	CLAYEY GRAVEL with SAND Dry to moist, very dense, light brown (7.5 YR 6/4)	
	13.90	G	CMS	33 40 50/0.4'	50/0.4'	100			POORLY GRADED GRAVEL with CLAY and SAND Moist, very dense, light brown (7.5 YR 6/4)	
2369.5	14.70	H	SPT	35 50/0.3'	50/0.3'	90			POORLY GRADED GRAVEL with CLAY and SAND Moist, very dense, light brown (7.5 YR 6/4)	
	15.30	I	CMS	50/0.3'	50/0.3'	0				(I) No sample recovered.
	16.00							GP GC		
	16.90	J	CMS	34 50/0.4'	50/0.4'	100			POORLY GRADED GRAVEL with CLAY and SAND Moist, very dense, light brown (7.5 YR 6/4)	
	17.70	K	SPT	41 50/0.3'	50/0.3'	90			POORLY GRADED GRAVEL with CLAY and SAND Moist, very dense, light brown (7.5 YR 6/4)	
	18.00									
	18.90	L	CMS	34 50/0.4'	50/0.4'	100			POORLY GRADED GRAVEL with CLAY and SAND Moist, very dense, light brown (7.5 YR 6/4)	
2364.5	20.00									
	20.40	M	CMS	50/0.4'	50/0.4'	100		SC	CLAYEY SAND with GRAVEL Moist, very dense, light brown (7.5 YR 6/4)	
	21.00									
	21.90	N	CMS	30 50/0.4'	50/0.4'	100		GP GC	POORLY GRADED GRAVEL with CLAY and SAND Moist, very dense, light brown (7.5 YR 6/4)	
	22.20	O	SPT	50/0.3'	50/0.3'	0				(O) No sample recovered.
	23.00									
	23.40	P	CMS	50/0.4'	50/0.4'	100		SC	CLAYEY SAND with GRAVEL Moist, very dense, light brown (7.5 YR 6/4)	
2359.5	25.00									
	25.90	Q	CMS	44 50/0.4'	50/0.4'	100		GP GC	POORLY GRADED GRAVEL with CLAY and SAND Moist, very dense, light brown (7.5 YR 6/4)	
	26.30	R	SPT	50/0.4'	50/0.4'	100				
	27.00									
	28.50	S	CMS	13 8 4	12	100		CL ML	SILTY CLAY with SAND Moist, medium stiff, brown (7.5 YR 5/4)	
		T	SPT	3 13 13	26	100		CL	LEAN CLAY Moist, medium stiff, brown (7.5 YR 5/4)	
	30.00									



GEOTECHNICAL
ENGINEERING

START DATE 5/20/14
 END DATE 5/20/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-57
 E.A. # 73518
 GROUND ELEV. 2384.50 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 131+69
 OFFSET 145' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1082)
 OPERATOR Beus
 DRILLING METHOD 6" H.S.A.
 BACKFILLED Yes DATE 5/20/2014

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2349.5	31.50	U	CMS	16 22 50	72	95		CL	<u>SANDY LEAN CLAY</u> Dry, hard, very pale brown (10 YR 8/2) <u>SANDY LEAN CLAY</u> Dry, stiff, brown (7.5 YR 5/4) with pinkish white (7.5 YR 8/2) inclusions	No groundwater encountered.
	36.50	V	SPT	5 5 4	9	60				
2344.5	40									
2339.5	45									
2334.5	50									
2329.5	55									
									END BI-57 @ 36.5'	



EXPLORATION LOG
 START DATE 5/21/14
 END DATE 5/21/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-58
 E.A. # 73518
 GROUND ELEV. 2358.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 117+16
 OFFSET 161' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1082)
 OPERATOR Beus
 DRILLING METHOD 6" H.S.A.
 BACKFILLED Yes DATE 5/21/2014

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2353.5	5.00							CL	0.60 Asphaltic Concrete	
	6.50	A	CMS	5 5 7	12	95		CL	<u>LEAN CLAY</u> Dry to moist, medium stiff, brown (10 YR 5/3)	
	8.00	B	SPT	2 3 4	7	80		ML	<u>SILT with SAND</u> Dry to moist, medium stiff, brown (10 YR 5/3)	
2348.5	9.50	C	CMS	9 12 12	24	95		CL	<u>LEAN CLAY</u> Dry to moist, medium stiff, pale brown (10 YR 6/3)	
	11.00	D	SPT	6 7 10	17	85			<u>LEAN CLAY</u> Dry to moist, medium stiff, pale brown (10 YR 6/3)	
	13.50	E	CMS	8 10 11	21	95			<u>LEAN CLAY with SAND</u> Dry to moist, medium stiff, pale brown (10 YR 6/3)	
2343.5	15.00	F	SPT	8 8 14	22	85		CL ML	<u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, medium stiff, pale brown (10 YR 6/3)	
	16.50	G	CMS	12 10 12	22	100			<u>SILTY CLAY with SAND</u> Moist, stiff, yellowish brown (10 YR 5/4)	
	18.00	H	SPT	5 6 5	11	85			<u>LEAN CLAY with SAND</u> Moist, stiff, yellowish brown (10 YR 5/4)	
2338.5	20.00							CL		
	21.50	I	CMS	10 8 10	18	85			<u>GRAVELLY LEAN CLAY with SAND</u> Dry to moist, medium dense, light olive brown (2.5 Y 5/4)	
	23.00	J	SPT	5 5 7	12	85			<u>SANDY LEAN CLAY</u> Moist, stiff, light yellowish brown (2.5 Y 6/4) to light gray (2.5 Y 7/2)	
2333.5	25.00							SC		
	26.50	K	CMS	9 20 20	40	85			<u>CLAYEY SAND with GRAVEL</u> Dry to moist, dense, mottled light gray (2.5 Y 7/2) to light yellowish brown (2.5 Y 6/4)	
	28.00	L	SPT	7 8 10	18	80		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, mottled light gray (2.5 Y 7/2) to light yellowish brown (2.5 Y 6/4)	
	30.00									



GEOTECHNICAL ENGINEERING

START DATE 5/21/14
 END DATE 5/21/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-58
 E.A. # 73518
 GROUND ELEV. 2358.50 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 117+16
 OFFSET 161' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1082)
 OPERATOR Beus
 DRILLING METHOD 6" H.S.A.
 BACKFILLED Yes DATE 5/21/2014

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2323.5	31.50	M	CMS	15 23 23	46	95		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, dense, mottled light gray (2.5 Y 7/2) to light yellowish brown (2.5 Y 6/4)	
	33.00	N	SPT	10 11 12	23	85		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Moist, very stiff, pale yellow (2.5 Y 8/2) to light gray (2.5 Y 7/2)	
	35.00 35.40	O	CMS	40/0.4'	40/0.4'	100		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, very stiff to hard, light olive gray (5 Y 6/2)	(O) Last 10 blows; no progress. Hard drilling from 35.4' to 37.0'.
2318.5	38.00 38.90	P	SPT	39 50/0.4'	50/0.4'	90		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very hard, white (2.5 Y 8/1)	
	40.00 41.50	Q	SPT	10 13 12	25	80		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, very hard, white (2.5 Y 8/1)	
2313.5	45.00 46.50	R	SPT	4 5 10	15	65			<u>GRAVELLY LEAN CLAY</u> Moist, stiff to very stiff, mottled light brown (7.5 YR 6/4) to white (7.5 YR 8/1)	
	46.50								END BI-58 @ 46.5'	No groundwater encountered.
2308.5	50									
2303.5	55									



EXPLORATION LOG
 START DATE 9/22/15
 END DATE 9/22/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-59
 E.A. # 73518
 GROUND ELEV. 2469.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 49+70
 OFFSET 133' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2464.0	1.50									
	2.50									
	4.00	A	SPT	10 16 18	34	85		CL	LEAN CLAY with SAND . Dry to moist, hard, dark grayish brown (10 YR 4/2) to light olive brown (2.5 Y 5/3)	
	5.00									
	6.50	B	SPT	19 44 26	70	95		CL ML	SANDY SILTY CLAY with GRAVEL . Dry to moist, very hard, light yellowish brown (10 YR 6/4) to brown (10 YR 5/3)	
2459.0	7.50									
	8.90	C	SPT	28 60 50/0.4'	50/0.4'	100		SM	SILTY SAND with GRAVEL . Moist, very dense, very pale brown (10 YR 7/3).	(C) Broken up gravel in sample.
	10.00									
2454.0	11.50	D	SPT	24 33 23	56	95		GC GM	SILTY CLAYEY GRAVEL with SAND . Moist, very dense, very pale brown (10 YR 7/3).	(D) Broken up gravel in sample.
	12.50									
	14.00	E	SPT	29 38 22	60	100		GM	SILTY GRAVEL with SAND . Moist, very dense, very pale brown (10 YR 7/3).	(E) Broken up gravel in sample.
2449.0	15.00									
	16.50	F	CMS	9 7 8	15	85		GC GM	SILTY CLAYEY GRAVEL with SAND . Moist, loose, very pale brown (10 YR 7/3).	
	18.00	G	SPT	8 4 6	10	75		SC SM	SILTY CLAYEY SAND with GRAVEL . Moist, loose, very pale brown (10 YR 7/3).	
2444.0	20.00									
	21.50	H	CMS	14 10 9	19	95		GC GM	SILTY CLAYEY GRAVEL with SAND . Moist, medium dense, very pale brown (10 YR 7/3).	
	23.00	I	SPT	4 3 3	6	40			SILTY CLAYEY GRAVEL with SAND . Moist, loose, very pale brown (10 YR 7/3).	
2444.0	24.00									(J) No sample recovered. (K) Moderately cemented nodules in sample.
	25.00									
	26.50	J	CMS	1 1 6	7	0		CH		Low blow counts are due to being in north-south utility trench.
2444.0	28.00	K	SPT	5 4 5	9	40			SANDY FAT CLAY . Moist to wet, loose, very pale brown (10 YR 7/3)	
	28.00								END BI-59 @ 28.0'	No groundwater encountered.



EXPLORATION LOG

START DATE 9/24/14
 END DATE 9/25/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-60
 E.A. # 73518
 GROUND ELEV. 2415.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 197+87
 OFFSET 227' Right
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
9/25/14	55.50	2359.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2410.0	5.00	A	SPT		100	85		GC GM	<u>SILTY CLAYEY GRAVEL with SAND</u> Dry, very dense, very pale brown (10 YR 7/3)	
	6.50			44						
				50						
2405.0	10.00	B	SPT		100	85		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, very dense, very pale brown (10 YR 7/3)	
	11.50			20						
				50						
2400.0	15.00	C	SPT		64	80		SC	<u>CLAYEY SAND with GRAVEL</u> Dry, very dense, very pale brown (10 YR 7/3)	
	16.50			42						
				27						
2395.0	20.00	D	SPT		50/0.2'	100		CL	<u>SANDY LEAN CLAY</u> Dry, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	(D) Weakly cemented nodules in sample. Last 20 blows, no progress.
	20.70			27						
				50/0.2'						
2390.0	25.00	E	SPT		47	80		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, very pale brown (10 YR 7/3) to white (10 YR 8/1)	(E) Weakly to strongly cemented nodules in sample.
	26.50			19						
				22						
								SC		
	30.00									



EXPLORATION LOG
 START DATE 9/24/14
 END DATE 9/25/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-60
 E.A. # 73518
 GROUND ELEV. 2415.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 197+87
 OFFSET 227' Right
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
9/25/14	55.50	2359.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2380.0	31.50	F	SPT	9 13 16	29	65		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(F) Weakly to moderately cemented nodules in sample.
	33.20									
	35.00	G	CMS	27 32 39	71	95		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	(G) Weakly to moderately cemented nodules in sample.
2375.0	36.50			23 52 31	83	80		SM	<u>SILTY SAND with GRAVEL</u> Dry to moist, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	(H) Weakly to moderately cemented nodules in sample.
	38.00	H	SPT							
2370.0	40.00	I	CMS	50/0.2'	50/0.2'	0				(I) No sample recovered.
	44.00								WEAKLY TO MODERATELY CEMENTED MATERIALS from 40' to 44'	
	45.00	J	SPT	50/0.1'	50/0.1'	0			STRONGLY CEMENTED MATERIALS from 44' to 47'	(J) No sample recovered.
2365.0	47.00									
	48.00								WEAKLY TO MODERATELY CEMENTED MATERIALS from 47' to 48'	
	50.00	K	CMS	26 52 47	99	100		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, very dense, light yellowish brown (10 YR 6/4)	(K) Weakly to moderately cemented nodules in sample.
	51.50	L	SPT	60	60	100			<u>CLAYEY GRAVEL with SAND</u> Moist, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
2360.0	52.00									
	55.00	M	CMS	16 56	50/0.2'	100			<u>CLAYEY GRAVEL with SAND</u> Moist to wet, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	End day 1 drilling @ 54'. (M) Weakly to moderately cemented nodules in sample. Free water on sampler.
	56.20			50/0.2'					WEAKLY TO MODERATELY CEMENTED MATERIALS from 57.5' to 58.5'	
	57.50									
	58.50									
	60.00							CL		



EXPLORATION LOG
 START DATE 9/24/14
 END DATE 9/25/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-60
 E.A. # 73518
 GROUND ELEV. 2415.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 197+87
 OFFSET 227' Right
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
9/25/14	55.50	2359.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2350.0	61.50	N	CMS	9 18 31	49	100		CL	<p>LEAN CLAY Moist to wet, very stiff to hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)</p> <p>LEAN CLAY with GRAVEL Moist to wet, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)</p> <p>GRAVELLY LEAN CLAY Moist to wet, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)</p> <p>LEAN CLAY Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)</p> <p>LEAN CLAY with SAND Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)</p> <p>LEAN CLAY Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)</p>	<p>(N) Weakly to moderately cemented nodules in sample.</p> <p>(O) Weakly to moderately cemented nodules in sample.</p> <p>(P) Weakly to moderately cemented nodules in sample. Pocket penetrometer reading - 2.5, 4.5 tsf.</p> <p>(Q) Pocket penetrometer reading - 1.2, 2.3 tsf.</p> <p>(R) Torvane reading - 6 tsf.</p>
		O	SPT	12 31 20	51	100				
	65.00	P	CMS	7 12 28 32	60	100				
2345.0	66.50	Q	SPT	7 8 13	21	120		CL	<p>(T) Push CMS sampler with shoe extension; 100 psi start, terminate @ 600psi down pressure.</p>	
		R	CMS	6 11 15	26	100				
	70.00	S	SPT	11 15	26	100				
2340.0	71.50	T	SH			65		CL	<p>Drill @ 500 psi down pressure.</p>	
2335.0	73.00							CL	<p>87.00 CEMENTED LENSES from 87' to 88.5'</p>	
2330.0	75.00							CL	<p>88.50</p>	
2325.0	77.00							CL	<p>89.00</p>	
2320.0	79.00							CL	<p>90.00</p>	



EXPLORATION LOG
 START DATE 9/24/14
 END DATE 9/25/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-60
 E.A. # 73518
 GROUND ELEV. 2415.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 197+87
 OFFSET 227' Right
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
9/25/14	55.50	2359.5

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot					
	91.20	U	CMS	20 43 60/0.2'	60/0.2'	100		CL ML	GRAVELLY SILTY CLAY Moist to wet, very hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(U) Moderately to strongly cemented nodules in sample.
2320.0	95								96.00 CEMENTED LENSES from 96' to 97' 97.00	
2315.0	100.00 100 100.80	V	CMS	43 50/0.3'	50/0.3'	100		ML	100.80 SILT with SAND Moist to wet, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) END BI-60 @ 100.8'	(V) Moderately to strongly cemented nodules in sample.
2310.0	105									
2305.0	110									
2300.0	115									



EXPLORATION LOG
 START DATE 10/6/14
 END DATE 10/7/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-61
 E.A. # 73518
 GROUND ELEV. 2410.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 193+48
 OFFSET 189' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2405.3	0.50								Asphaltic Concrete	
	2.50							GP GM	<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, dense, light gray (10 YR 7/2)	
	4.00	A	SPT	14 17 19	36	65				
	5.50	B	SPT	10 6 4	10	85		CL ML	<u>SANDY SILTY CLAY</u> Dry to moist, stiff, pale brown (10 YR 6/3)	
	6.50									
2400.3	8.00	C	SPT	11 10 9	19	80		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, medium dense, light yellowish brown (10 YR 6/4)	
	9.50									
	10.00	D	SPT	15 37 50/0.4'	50/0.4'	70			<u>CLAYEY GRAVEL with SAND</u> Dry, very dense, very pale brown (10 YR 8/2)	
	12.00									
2395.3	13.50	E	SPT	15 27 23	50	75		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, very dense, very pale brown (10 YR 7/4)	
	14.50									
	15.00	F	SPT	7 7 16	23	65			<u>CLAYEY GRAVEL with SAND</u> Dry, medium dense, very pale brown (10 YR 7/4)	
2390.3	16.00									
	17.00									
	18.50	G	SPT	16 26 32	58	85		SC	<u>CLAYEY SAND with GRAVEL</u> Dry, very dense, very pale brown (10 YR 7/4)	
	19.50									
2385.3	20.00	H	SPT	9 9 14	23	85		CH	<u>SANDY FAT CLAY</u> Dry to moist, very stiff, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	21.00									
2385.3	25.00									
	26.50	I	CMS	13 37 49	86	100			<u>CLAYEY GRAVEL with SAND</u> Dry, very dense, very pale brown (10 YR 7/4)	
	26.60	J	SPT	20/0.1' 20/0.1'	20/0.1'	0		GC		(J) Last 10 blows; no progress. No sample recovered.
	30.00									



GEOTECHNICAL ENGINEERING

START DATE 10/6/14
 END DATE 10/7/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-61
 E.A. # 73518
 GROUND ELEV. 2410.30 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 193+48
 OFFSET 189' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2375.3	31.50	K	CMS	18 22 40	62	100		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, very stiff, mottled yellowish brown (10 YR 5/4) to very pale brown (10 YR 8/2)	(K) Lightly to moderately cemented nodules in sample.
	33.00	L	SPT	16 23 21	44	85		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, pink (7.5 YR 7/3)	
	35.00								34.00	
2370.3	36.50	M	CMS	9 16 41	57	100		CL	<u>SANDY LEAN CLAY</u> Moist, hard, light brown (7.5 YR 6/3)	
	38.00	N	SPT	15 16 24	40	85		SC	<u>CLAYEY SAND with GRAVEL</u> Moist, dense, light brownish gray (10 YR 6/2)	
	40.00								39.00	
2365.3	41.50	O	CMS	13 13 23	36	100		CL	<u>SANDY LEAN CLAY</u> Moist, very stiff, light brownish gray (10 YR 6/2)	
	43.00	P	SPT	13 14 19	33	80			<u>CLAYEY GRAVEL with SAND</u> Moist, dense, light gray (10 YR 7/2) with reddish yellow (5 YR 6/6) inclusion	
	45.00								49.00	
2360.3	46.50	Q	CMS	8 14 15	29	95		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, medium dense, pale brown (10 YR 6/3)	
	48.00	R	SPT	5 13 21	34	60			<u>CLAYEY GRAVEL with SAND</u> Moist, dense, pale brown (10 YR 6/3)	(R) Pocket penetrometer reading - 2.3, 2.5 tsf.
	50.00								51.70	
2355.3	51.70	S	CMS	16 33 36	69	105		CL	<u>LEAN CLAY with SAND</u> Moist, hard, brown (7.5 YR 5/3) to very pale brown (10 YR 8/2)	(S) Pocket penetrometer reading - 2.5, 3.3 tsf.
	53.20	T	SPT	20 35 25	60	100			<u>CLAYEY GRAVEL with SAND</u> Moist, very dense, multicolored	Hard drilling @ 53.5'; Progress 0.1/5 minutes @ 250 psi down pressure, 0.2/10 minutes @ 250 psi down pressure.
	55							GC	<u>END BI-61 @ 56.2'</u>	Hard drilling @ 54.8'; Progress 0.2/5 minutes @ 400 psi down pressure, 2.7/90 minutes @ 400 psi down pressure. No groundwater encountered.



EXPLORATION LOG
 START DATE 10/8/14
 END DATE 10/9/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-62
 E.A. # 73518
 GROUND ELEV. 2409.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 193+25
 OFFSET 242' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2404.5	0.50								Asphaltic Concrete	
	2.50							GP GM	<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, dense, very pale brown (10 YR 7/3)	Bulk sample 1 @ 2.5' - 4.5'
	4.00	A	SPT	9 12 14	26	55				
	4.50								4.20	
	5.00	B	SPT	9 10 7	17	95		CL	<u>LEAN CLAY with SAND</u> Dry, very stiff, very pale brown (10 YR 7/3)	
	6.00								6.50	
	7.00									
	8.50	C	SPT	9 22 18	40	95		SC	<u>CLAYEY SAND with GRAVEL</u> Dry, dense, very pale brown (10 YR 7/3)	
	9.50								9.00	
	2399.5	10	D	SPT	13 28 40	68	75		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, very dense, white (10 YR 8/1) to very pale brown (10 YR 8/2)
11.00									11.50	
12.00										
13.50	E	SPT	16 25 36	61	75		GC GM	<u>SILTY CLAYEY GRAVEL with SAND</u> Dry, very dense, white (10 YR 8/1) to very pale brown (10 YR 8/2)		
14.50									14.00	
2394.5	15	F	SPT	14 20 20	40	75		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, dense, white (10 YR 8/1) to very pale brown (10 YR 8/2)	
16.00									16.50	
17.00										
18.50	G	SPT	20 23 30	53	85		SC	<u>CLAYEY SAND with GRAVEL</u> Dry, very dense, light gray (10 YR 7/2)		
19.50									19.00	
2389.5	20	H	CMS	40 42 39	81	95		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, dense, light gray (10 YR 7/2)	
21.00									21.00	
22.50	I	SPT	10 14 27	41	95		CH	<u>SANDY FAT CLAY</u> Dry to moist, hard, very pale brown (10 YR 7/4)		
24.50									24.00	
2384.5	25	J	CMS	15/0.1' 15/0.1'	0					(J) Last 10 blows; no progress. No sample recovered.
26.00										
27.40	K	CMS	20 35 50/0.4'	50/0.4'	100		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Dry, very hard, white (10 YR 8/1) to very pale brown (10 YR 8/2)		
28.90	L	SPT	30 34 40	74	85					(K) Weakly to strongly cemented.
30.00									30.00	



EXPLORATION LOG
 START DATE 10/8/14
 END DATE 10/9/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-62
 E.A. # 73518
 GROUND ELEV. 2409.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 193+25
 OFFSET 242' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2374.5	31.50	M	CMS	14 17 28	45	95		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, dense, mottled pale brown (10 YR 6/3) with white (10 YR 8/1)	(M) Weakly to strongly cemented nodules in sample.
	33.00	N	SPT	9 11 14	25	75		CL	<u>LEAN CLAY with SAND</u> Dry, very stiff, mottled pale brown (10 YR 6/3) with white (10 YR 8/1)	
	34.50									
	35 36.00	O	CMS	8 17 24	41	100		SC	<u>CLAYEY SAND with GRAVEL</u> Dry, dense, mottled pale brown (10 YR 6/3) with white (10 YR 8/1)	
	37.50	P	SPT	10 11 17	28	75		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Dry, very stiff, mottled pale brown (10 YR 6/3) with white (10 YR 8/1)	
2369.5	40							CL		
	44.50							CH		
2364.5	45 45.90	Q	CMS	22 33 50/0.4'	50/0.4'	95			<u>SANDY FAT CLAY with GRAVEL</u> Dry to moist, very hard, pale brown (10 YR 6/3) to very pale brown (10 YR 8/2)	
	46.70	R	SPT	19 50/0.3'	50/0.3'	100			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, pale brown (10 YR 6/3) to very pale brown (10 YR 8/2)	
2359.5	50							GC		
	55							GC		
2354.5	58.00								END BI-62 @ 58.0'	Hard drilling @ 53'; Progress 0.2'/10 minutes @ 250 psi down pressure. Very hard drilling @ 55.5'; Progress 0.5'/30 minutes @ 400 psi down pressure. End day 1 @ 56.0'. No groundwater encountered.



GEOTECHNICAL ENGINEERING

START DATE 10/20/14
 END DATE 10/20/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-63
 E.A. # 73518
 GROUND ELEV. 2408.00 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 185+33
 OFFSET 238' Right
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2403.0	5.00	A	SPT	3	8	85		CL	<u>LEAN CLAY</u> Dry, medium stiff, very pale brown (10 YR 7/3)	
	6.50			4						
	6.50			4						
2398.0	10.00	B	SPT	7	20	100		CL	<u>LEAN CLAY</u> Dry, very stiff, very pale brown (10 YR 7/3)	
	11.50			7						
	11.50			13						
2393.0	15.00	C	SPT	11	44	95		CL	<u>SANDY LEAN CLAY</u> Dry, hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	
	16.50			18						
	16.50			26						
2388.0	20.00	D	SPT	26	59	95		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) mottled with white (10 YR 8/1)	
	21.50			33						
	21.50			26						
2383.0	25.00	E	SPT	50/.4'	50/.4'	100		SM	<u>SILTY SAND with GRAVEL</u> Dry, very dense, very pale brown (10 YR 8/2) to white (10 YR 8/1)	Gravelly/cobbles from 22' - 25'.
	25.40									
	25.40									
2383.0	27.70							CL	<u>Gravelly/cobbles from 25' - 28'.</u>	
	30.00									



GEOTECHNICAL ENGINEERING

START DATE 10/20/14
 END DATE 10/20/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-63
 E.A. # 73518
 GROUND ELEV. 2408.00 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 185+33
 OFFSET 238' Right
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2373.0	31.50	F	CMS	13 16 23	39	100		CL	<u>LEAN CLAY</u> Dry to moist, very stiff, very pale brown (10 YR 8/2) mottled light yellowish brown (10 YR 6/4)	
	33.00	G	SPT	11 19 24	43	100		CL ML	<u>SILTY CLAY with SAND</u> Dry to moist, hard, very pale brown (10 YR 8/2) mottled light yellowish brown (10 YR 6/4)	
	35.00 36.50	H	CMS	15 27 32	59	95		CL	<u>SANDY LEAN CLAY</u> Dry to moist, hard, pale yellow (2.5 Y 7/3)	
2368.0	38.00	I	SPT	11 19 28	47	95		CH	<u>FAT CLAY with SAND</u> Dry to moist, hard, pale yellow (2.5 Y 7/3) to strong brown (7.5 YR 5/6) to yellowish brown (10 YR 5/6).	
	40.00 41.50	J	CMS	22 24 17	41	95		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, very pale brown (10 YR 7/3), brownish yellow (10 YR 6/6), white (10 YR 8/1), and pale yellow (2.5 Y 7/3)	
	43.00	K	SPT	9 12 21	33	85		CL	<u>LEAN CLAY with SAND</u> Moist, hard, very pale brown (10 YR 7/3), mottled with brownish yellow (10 YR 6/6) and white (10 YR 8/1)	
2363.0	45.00 46.50	L	CMS	21 32 41	73	85		CL ML	<u>SILTY CLAY WITH GRAVEL</u> Dry to moist, hard, pale yellow (2.5 YR 7/3) to white (10 YR 8/1)	
	48.00	M	SPT	11 12 17	29	85		CL	<u>LEAN CLAY with SAND</u> Moist, very stiff, light yellowish brown (10 YR 6/4), mottled with yellowish brown (10 YR 5/6) and very pale brown (10 YR 7/3)	
	50.00 51.50	N	CMS	13 22 35	57	85		CH	<u>FAT CLAY with SAND</u> Moist, hard, pale yellow (2.5 Y 7/3) mottled with yellowish brown (10 YR 5/6)	(N) Torvane reading - 11 tsf.
53.00	O	SPT	15 17 16	33	95		<u>FAT CLAY with SAND</u> Moist, hard, pale yellow (2.5 Y 7/3) to light yellowish brown (10 YR 6/4), mottled with yellowish brown (10 YR 5/6)			
55.00 56.50	P	CMS	11 20 33	53	85		<u>SANDY FAT CLAY</u> Moist, hard, pale yellow (2.5 Y 7/3) to white (10 YR 8/1), mottled with yellowish brown (10 YR 5/6)			
2353.0	58.00	Q	SPT	13 16 18	34	65		CL	<u>SANDY FAT CLAY</u> Moist, hard, pale yellow (2.5 Y 7/3), white (10 YR 8/1), light yellowish brown (10 YR 6/4), brownish yellow (10 YR 6/6), and strong brown (7.5 YR 5/6)	
	59.00									
	60.00									



GEOTECHNICAL ENGINEERING

START DATE 10/20/14
 END DATE 10/20/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-63
 E.A. # 73518
 GROUND ELEV. 2408.00 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 185+33
 OFFSET 238' Right
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	61.50	R	CMS	22 28 38	66	100		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Moist, hard, very pale brown (10 YR 7/3), light yellowish brown (10 YR 6/4), white (10 YR 8/1), and pale yellow (2.5 Y 7/3) <u>CLAYEY SAND with GRAVEL</u> Moist, very dense, very pale brown (10 YR 7/3), light yellowish brown (10 YR 6/4), white (10 YR 8/1), and pale yellow (2.5 Y 7/3) END BI-63 @ 63.0'	No groundwater encountered.
	63.00	S	SPT	17 27 36	63	95		SC		
2343.0	65									
2338.0	70									
2333.0	75									
2328.0	80									
2323.0	85									



EXPLORATION LOG
 START DATE 10/21/14
 END DATE 12/3/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-64
 E.A. # 73518
 GROUND ELEV. 2418.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 199+46
 OFFSET 151' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A. / 4" Rotary
 BACKFILLED Wash DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2413.0	5 5.90	A	SPT	50/0.1'	50/0.1'	0				(A) Probable cobble/gravel layer. No sample recovered.
2408.0	10 11.40	B	SPT	28 39 50/0.4'	50/0.4'	85		GW GC	<u>WELL GRADED GRAVEL with CLAY and SAND.</u> Moist to dry, very dense, very pale brown (10 YR 7/3)	
2403.0	15 16.50	C	SPT	14 27 33	60	75		SC	<u>CLAYEY SAND with GRAVEL.</u> Moist to dry, very dense, very pale brown (10 YR 7/3)	
2398.0	20 21.50	D	SPT	12 14 20	34	45		CH	<u>FAT CLAY with SAND.</u> Moist to dry, hard, pale yellow (2.5 Y 7/3) with white lenses (10 YR 8/1)	
2393.0	25 26.50	E	SPT	23 33 46	79	80		GC	<u>CLAYEY GRAVEL with SAND.</u> Moist to dry, very dense, pale yellow (2.5 Y 7/3) to white (10 YR 8/1)	(E) Weakly to moderately cemented nodules in sample.
	30.00									



GEOTECHNICAL ENGINEERING

START DATE 10/21/14
 END DATE 12/3/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-64
 E.A. # 73518
 GROUND ELEV. 2418.00 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 199+46
 OFFSET 151' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A. / 4" Rotary
 BACKFILLED Wash DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS						
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd										
2383.0	31.50	F	CMS	31 37 36	73	100		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, very pale brown (10 YR 7/3) <u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) <u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, very pale brown (10 YR 7/3) to white (10 YR 8/1) <u>SANDY FAT CLAY</u> Dry to moist, very stiff, very pale brown (10 YR 7/3) to white (10 YR 8/1)	(H) Moderately to strongly cemented nodules in sample. (I) Moderately to strongly cemented nodules in sample. (J) Moderately to strongly cemented nodules in sample. Last 20 blows; no progress.						
	33.00	G	SPT	14 14 17	31	25										
	35.00	H	CMS	23 49 26	75	95										
2378.0	36.50	I	SPT	9 10 16	26	55		CH	<u>WEAKLY TO MODERATELY CEMENTED GRAVELLY MATERIALS</u> <u>MODERATELY TO STRONGLY CEMENTED MATERIALS</u>	(K) No sample recovered. Hard drilling, 250 - 400 psi down pressure, 0.06 ft/min. Switch drilling method to rotary wash @ 47.0'.						
	38.00	J	CMS	29 50/0.4'	50/0.4'	65										
2373.0	40.00	K	SPT	50/0.1'	50/0.1'	0		GC	<u>STRONGLY CEMENTED MATERIALS</u> <u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	(L) Strongly cemented nodules in sample. (M) Strongly cemented nodules in sample.						
	40.90															
	45.00															
2368.0	45.00	L	CMS	46 35 47	82	80		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) <u>CLAYEY GRAVEL with SAND</u> Moist, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) <u>STRONGLY CEMENTED MATERIALS</u>	(N) Strongly cemented nodules in sample. (O) Strongly cemented nodules in sample. End Week 1 @ 56.7'. Continue hole on						
	49.50															
	51.00										M	SPT	17 50/0.3'	50/0.3'	65	
2363.0	51.80	N	CMS	12 22 44	66	85		GC	<u>CLAYEY GRAVEL</u> Moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) <u>CLAYEY GRAVEL with SAND</u> Moist, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) <u>STRONGLY CEMENTED MATERIALS</u>							
	54.50															
	56.00										O	SPT	41 50/0.2'	50/0.2'	45	
2358.0	56.70	O	SPT	41 50/0.2'	50/0.2'	45		CL	<u>GRAVELLY LEAN CLAY with SAND</u> Moist to							
	59.50															
				21												

NV_DOT ALL FILES.GPJ NV_DOT.GDT 6/27/16



START DATE 10/21/14
END DATE 12/3/14
JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
LOCATION Northwest Las Vegas - Clark County
BORING BI-64
E.A. # 73518
GROUND ELEV. 2418.00 (ft)
HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 199+46
OFFSET 151' Right
ENGINEER Lawrence
EQUIPMENT Diedrich D-120 (Unit 1627)
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A. / 4" Rotary
BACKFILLED Wash DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2353.0	61.00	P	CMS	37 58	95	85		CL	wet, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1) LEAN CLAY with GRAVEL Moist to wet, very stiff to hard, very pale brown (10 YR 7/3) to white (10 YR 8/1) GRAVELLY LEAN CLAY with SAND Moist to wet, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	12/2/2014. (P) Strongly cemented nodules in sample. (Q) Strongly cemented nodules in sample. (R) Moderately to strongly cemented nodules in sample.
	64.50									
	65	Q	CMS	16 20 29	49	100				
	66.00									
2348.0	67.50	R	SPT	10 16 28	44	85		CL	LEAN CLAY Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) LEAN CLAY Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) to pale yellow (2.5 Y 7/3)	(S) Moderately cemented nodules in sample. Pocket penetrometer reading - 4, 4.5 tsf. Torvane reading - 10.5 tsf. (T) Torvane reading - 12.5 tsf.
	69.50									
	70	S	CMS	9 12 18	30	100				
	71.00									
2343.0	72.50	T	SPT	7 9 13	22	100		CL	LEAN CLAY Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) to pale yellow (2.5 Y 7/3) LEAN CLAY Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(U) Pocket penetrometer reading - 2.5, 4.5 tsf. (V) Pocket penetrometer reading - 3.3, 4 tsf.
	74.50									
	75	U	CMS	11 13 23	36	135				
	76.00									
2338.0	77.50	V	SPT	8 11 16	27	105		CL	LEAN CLAY Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) SANDY LEAN CLAY Moist to wet, very stiff, strong brown (7.5 YR 5/6)	(W) Pocket penetrometer reading - 2.8, 4 tsf. Torvane reading - 7 tsf. (X) Moderately to strongly cemented nodules in sample.
	79.50									
	80	W	CMS	11 16 25	41	115				
	81.00									
2333.0	82.50	X	SPT	10 16 66	82	105		CL	LEAN CLAY with SAND Moist to wet, very hard, strong brown (7.5 YR 5/6) to light yellowish brown (10 YR 6/4) 83.00 84.00 WEAKLY TO MODERATELY CEMENTED MATERIALS	(Y) Weakly to strongly cemented nodules in sample.
	84.50									
	85	Y	CMS	38 47	35/0.1'	100				
	85.60									
	89.50									
				12					90.00 LEAN CLAY Moist to wet, very stiff, light	



EXPLORATION LOG
 START DATE 10/21/14
 END DATE 12/3/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-64
 E.A. # 73518
 GROUND ELEV. 2418.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 199+46
 OFFSET 151' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A. / 4" Rotary
 BACKFILLED Wash DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2323.0	91.00	Z	CMS	12	29	125		CL	yellowish brown (10 YR 6/4) to very pale brown (10 YR 7/3) LEAN CLAY Moist to wet, hard, light yellowish brown (10 YR 6/4) to very pale brown (10 YR 7/3)	(Z) Weakly cemented nodules in sample. (AA) Weakly cemented nodules in sample.
	92.50	AA	SPT	7	45	115				
2318.0	95							CL	94.00 SCATTERED WEAK TO MODERATE CEMENTATION 97.00	
	100	BB	CMS	11	23	115				
2313.0	101.00							CL	LEAN CLAY Moist to wet, stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) LEAN CLAY Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4).	(BB) Weakly cemented particles in sample. (CC) Weakly cemented particles in sample.
	102.50	CC	SPT	15	30	120				
2308.0	105							CL ML	106.00 SILTY CLAY with SAND Moist to wet, very hard, brown (7.5 YR 5/4) SILTY CLAY Moist to wet, hard, brown (7.5 YR 5/4)	
	109.50	DD	CMS	19	35/0.3'	100				
2303.0	110							CL		
	110.80	EE	SPT	27	60	115				
	112.30									
	115									
	119.50									
				16					120.00	LEAN CLAY Moist to wet, very hard, very



GEOTECHNICAL ENGINEERING

START DATE 10/21/14
 END DATE 12/3/14
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-64
 E.A. # 73518
 GROUND ELEV. 2418.00 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 199+46
 OFFSET 151' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A. / 4" Rotary
 BACKFILLED Wash DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	<u>120.40</u>	FF	CMS	60/0.4'	60/0.4'	135		CL	pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) LEAN CLAY Moist to wet, very hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) END BI-64 @ 121.3'	(FF) Weakly cemented lenses in sample. (GG) Weakly cemented lenses in sample. No groundwater encountered.
	121.30	GG	SPT	31 50/0.4'	50/0.4'	135				
2293.0	125									
2288.0	130									
2283.0	135									
2278.0	140									
2273.0	145									



EXPLORATION LOG
 START DATE 12/4/14
 END DATE 1/14/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-65
 E.A. # 73518
 GROUND ELEV. 2408.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 191+93
 OFFSET 271' Right
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120(Unit 1627,1082)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2403.5	4.70	5	A	SPT	6	19	65	CL ML	2.50 ----- <u>SILTY CLAY with SAND</u> . Moist, very stiff, very pale brown (10 YR 7/3)	Drill Unit 1627 from 0' - 46.2'.
	6.20				7					
	6.20				12					
2398.5	9.70	10	B	CMS	8	23	80	SC SM	8.00 ----- <u>SILTY, CLAYEY SAND</u> . Moist, medium dense, light yellowish brown (2.5 Y 6/3)	
	11.20				9					
	11.20				14					
2393.5	12.70	15	C	SPT	7	20	55	SC	11.20 ----- <u>CLAYEY SAND with GRAVEL</u> . Moist, medium dense, yellowish brown (10 YR 5/4) to very pale brown (10 YR 8/2)	(C) Weakly to moderately cemented nodules in sample.
	12.70				9					
	12.70				11					
2393.5	14.70	15	D	CMS	20	61	85	GM	13.70 ----- <u>SILTY GRAVEL with SAND</u> . Moist, dense, multicolored	
	16.20				25					
	16.20				36					
2388.5	17.70	20	E	SPT	21	36	45	GC	16.20 ----- <u>CLAYEY GRAVEL with SAND</u> . Moist, dense, multicolored	
	17.70				18					
	17.70				18					
2388.5	19.70	20	F	CMS	29	65	85	SC	18.70 ----- <u>CLAYEY SAND</u> . Moist, dense, very pale brown (10 YR 6/3)	
	21.20				26					
	21.20				39					
2383.5	22.70	25	G	SPT	15	23	60	CH	21.20 ----- <u>SANDY FAT CLAY</u> . Moist, very stiff, pale yellow (2.5 Y 7/3) to white (10 YR 8/1) to very pale brown (10 YR 7/3)	(G) Weakly cemented nodules in sample.
	22.70				11					
	22.70				12					
2383.5	24.70	25	H	CMS	24	79	85	GC	23.70 ----- <u>CLAYEY GRAVEL with SAND</u> . Moist, dense, very pale brown (10 YR 7/3) to white (10 YR 8/1)	(H) Weakly to strongly cemented nodules in sample.
	26.20				37					
	26.20				42					
2383.5	27.50	25	I	SPT	17	50/0.3'	85	CL	26.20 ----- <u>CLAYEY GRAVEL with SAND</u> . Moist, very dense, multicolored	
	27.50				42					
	27.50				50/0.3'					
2383.5	29.70	30						CL	28.60 ----- 30.00	
	29.70									



EXPLORATION LOG
 START DATE 12/4/14
 END DATE 1/14/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-65
 E.A. # 73518
 GROUND ELEV. 2408.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 191+93
 OFFSET 271' Right
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120(Unit 1627,1082)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2373.5	31.20	J	SPT	20 24 30	54	75		CL	<u>LEAN CLAY with SAND</u> Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	(J) Weakly cemented
	34.70									
	35	K	CMS	23 18	45	85				
	36.20			27						
	37.70	L	SPT	11 30 31	61	35				
2368.5	39.70							CH	<u>GRAVELLY FAT CLAY with SAND</u> Moist, hard, brown (7.5 YR 5/4) with white (10 YR 8/1)	(K) Weakly cemented
	40	M	CMS	14 19	60	85				
	41.20			41						
	42.70	N	SPT	14 22 24	46	65				
2363.5	44.70							GC	<u>CLAYEY GRAVEL with SAND</u> Moist, very dense, pale yellow (2.5 Y 7/3) to light yellowish brown (10 YR 6/4)	(O) Weakly to moderately cemented nodules in sample.
	45	O	CMS	28 32	50/0.3'	70				
	46.00 46.20	P	SPT	50/0.2'	50/0.2'	0				
2358.5	47.50							GC	<u>WEAKLY TO MODERATELY CEMENTED MATERIALS</u>	End previous week @ 46.2', switch drill rigs, continue in same hole with Unit # 1082. No circulation of drilling fluid beyond 47.5'. (Q) Weakly to strongly cemented nodules in sample. (R) Weakly to strongly cemented nodules in sample. (S) No sample recovered.
	50.00									
	51.50	Q	CMS	17 23 37	60	85				
	53.00	R	SPT	11 13 7	20	60				
2353.5	55.00 55.90	S	CMS	50/0.1'	50/0.1'	0			<u>MODERATELY TO STRONGLY CEMENTED MATERIALS</u>	
	60.00									



GEOTECHNICAL ENGINEERING

START DATE 12/4/14
 END DATE 1/14/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-65
 E.A. # 73518
 GROUND ELEV. 2408.50 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 191+93
 OFFSET 271' Right
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120(Unit 1627,1082)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2343.5	61.50	T	CMS	3 4 50	54	0		CL	62.00	(T) No circulation; no sample recovered.
	65.00									
	66.50	U	CMS	11 10 15	25	80				<u>LEAN CLAY with SAND</u> . Moist to wet, very stiff, very pale brown (10 YR 7/3)
2338.5	68.00	V	SPT	8 15 13	28	75				(V) Moderately cemented nodules in sample.
	70.00									
	71.50	W	CMS	9 59 30	89	65		<u>LEAN CLAY with GRAVEL</u> . Moist to wet, hard, very pale brown (10 YR 7/3)	(W) Weakly to moderately cemented lenses in sample.	
2333.5	73.00	X	SPT	15 21 34	55	75				(X) Weakly to moderately cemented lenses in sample. 0.6' - 0.7' of slough measured prior to driving sampler.
	75.00									
	76.50	Y	CMS	8 11 13	24	100		<u>LEAN CLAY</u> . Moist to wet, stiff, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/8)	(Y) Weakly to moderately cemented nodules in sample.	
2328.5	78.00	Z	SPT	5 6 7	13	85				(Z) Weakly cemented nodules in sample.
	80.00									
	81.40	AA	CMS	32 39 50/0.4'	50/0.4'	100		<u>LEAN CLAY with GRAVEL</u> . Moist to wet, very hard, very pale brown (10 YR 7/3)	(AA) Weakly to moderately cemented lenses in sample.	
2323.5	82.90	BB	SPT	23 27 24	51	85				(BB) Weakly to moderately cemented lenses in sample.
	85.00									
	86.50	CC	CMS	19 24 64	88	95		<u>SANDY LEAN CLAY with GRAVEL</u> . Moist to wet, hard, light yellowish brown (10 YR 6/4)	(CC) Strongly cemented nodules in sample.	
88.00	88.00	DD	SPT	14 16 23	39	95				<u>LEAN CLAY with SAND</u> . Moist to wet, hard, light yellowish brown (10 YR 6/4)
	90.00									WEAKLY TO MODERATELY CEMENTED LENSES



EXPLORATION LOG
 START DATE 12/4/14
 END DATE 1/14/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-65
 E.A. # 73518
 GROUND ELEV. 2408.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 191+93
 OFFSET 271' Right
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120(Unit 1627,1082)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2313.5	91.50	EE	CMS	42 20 20	40	100		CL	<u>GRAVELLY LEAN CLAY</u> Moist to wet, very stiff, light yellowish brown (10 YR 6/4) <u>LEAN CLAY with SAND</u> Moist to wet, hard, light yellowish brown (10 YR 6/4)	(EE) Moderately cemented nodules in sample. (FF) Moderately cemented nodules in sample.
		FF	SPT	12 15 21	36	100				
2308.5	100.00 101.50	GG	CMS	22 28 58	86	100		CL	<u>LEAN CLAY with SAND</u> Moist to wet, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) <u>SANDY LEAN CLAY with GRAVEL</u> Moist to wet, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(HH) Weakly to moderately cemented lenses in sample. No groundwater encountered.
		HH	SPT	24 22 20	42	80				
2303.5	105									
2298.5	110									
2293.5	115									



EXPLORATION LOG
 START DATE 1/14/15
 END DATE 1/15/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-66
 E.A. # 73518
 GROUND ELEV. 2407.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 76+88
 OFFSET 241' Right
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120 (Unit 1082)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2402.5	5	A	SPT	7	22	80		CL	2.50		
				9					2407.50		LEAN CLAY with SAND. Moist, very stiff, very pale brown (10 YR 7/3)
				13							
				6.40							
2397.5	10	B	SPT	8	12	80		CL ML	8.40		
				6					2397.50		SANDY SILTY CLAY. Moist, stiff, pale brown (10 YR 6/3)
				6							
				9.40							
2392.5	15	C	SPT	5	12	85		CL	10.90		
				6					2392.50		SANDY LEAN CLAY. Moist, stiff, light yellowish brown (2.5 Y 6/3)
				6							
				11.90							
2387.5	20	D	SPT	20	76	100		GC	13.40		
				42					2387.50		CLAYEY GRAVEL with SAND. Moist, very dense, very pale brown (10 YR 7/3)
				34							
				14.40							
2382.5	25	E	SPT	19	43	85		SM	15.90		
				24					2382.50		SILTY SAND with GRAVEL. Moist, dense, brownish yellow (10 YR 6/6)
				19							
				16.90							
2382.5	25	F	SPT	10	15	65		SC	18.40	(F) Weakly cemented nodules in sample.	
				9					2382.50		CLAYEY SAND with GRAVEL. Moist, medium dense, brownish yellow (10 YR 6/8) to white (10 YR 8/1)
				6							
				19.40							
2382.5	25	G	SPT	8	24	85		CH	20.90		
				11					2382.50		CLAYEY SAND with GRAVEL. Moist, medium dense, light yellowish brown (10 YR 6/4)
				13							
				21.90							
2382.5	25	H	SPT	6	18	75		CH	23.40	(I) Strongly cemented nodules in sample. (J) Strongly cemented nodules in sample.	
				7					2382.50		SANDY FAT CLAY. Moist, very stiff, light yellowish brown (10 YR 6/4)
				11							
				24.40							
2382.5	25	I	CMS	10	27	65		CH	25.90		
				12					2382.50		SANDY FAT CLAY with GRAVEL. Moist, very stiff, very pale brown (10 YR 7/3)
				15							
				27.40							
2382.5	25	J	SPT	6	22	45		CH	27.40		
				9					2382.50		SANDY FAT CLAY. Moist, very stiff, very pale brown (10 YR 7/3) to white (10 YR 8/1)
				13							
				29.40							
				5					30.00	GRAVELLY FAT CLAY with SAND. Moist,	



EXPLORATION LOG
 START DATE 1/14/15
 END DATE 1/15/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-66
 E.A. # 73518
 GROUND ELEV. 2407.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 76+88
 OFFSET 241' Right
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120 (Unit 1082)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2372.5	30.90	K	CMS	20	30	100		CH	medium dense, light yellowish brown (2.5 Y 6/3) to white (10 YR 8/1) GRAVELLY FAT CLAY with SAND Moist, very stiff, light yellowish brown (2.5 Y 6/3) to white (10 YR 8/1)	(K) Moderately cemented nodules in sample. (L) Moderately cemented nodules in sample.
	32.40	L	SPT	4	7	16	60			
	34.40									
	35.90	M	CMS	8	11	28	95			
2367.5	37.40	N	SPT	9	9	21	80	SC	CLAYEY SAND with GRAVEL Moist, medium dense, very pale brown (10 YR 7/3) to white (10 YR 8/1)	(M) Moderately cemented nodules in sample. (N) Moderately cemented nodules in sample.
	39.40									
	40.90	O	CMS	13	12	25	95			
	42.40	P	SPT	5	7	16	85			
2362.5	44.40							CH	FAT CLAY Moist, very stiff, very pale brown (10 YR 7/3)	(Q) Moderately to strongly cemented nodules in sample.
	45.90	Q	CMS	12	20	51	85			
	47.40	R	SPT	15	25	43	45			
	49.40									
2357.5	50.90	S	CMS	7	8	18	95	GC	FAT CLAY with SAND Moist, stiff, reddish yellow (7.5 YR 6/6)	(R) Moderately to strongly cemented nodules in sample. (S) Strongly cemented nodules in sample.
	52.40	T	SPT	3	10	26	60			
	54.40									
	55.90	U	CMS	5	9	39	85			
2352.5	56.30	V	SPT	30	50/0.4'	50/0.4'	100	GC	CLAYEY GRAVEL with SAND Moist, dense, very pale brown (10 YR 7/3) to white (10 YR 8/1) to light yellowish brown (10 YR 6/4) CLAYEY GRAVEL with SAND Moist, very dense, very pale brown (10 YR 7/3) to white (10 YR 6/4)	(U) Moderately to strongly cemented nodules in sample. (V) Moderately to strongly cemented nodules in sample. Hard drilling @ 57.2 ft. No groundwater encountered.
	57.20									



EXPLORATION LOG
 START DATE 1/26/15
 END DATE 1/28/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-67
 E.A. # 73518
 GROUND ELEV. 2409.40 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 192+22
 OFFSET 185' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1082)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2404.4	0.50								0.50 Asphaltic Concrete	(A) No sample recovered.
	2.50									
	4.00	A	SPT	8 10 17	27	0		CL ML		
	4.80									
	5	B	SPT	17 16 15	31	80			GRAVELLY SILTY CLAY Moist, hard, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	
2399.4	6.30								6.80	
	7.30									
	8.80	C	SPT	6 7 11	18	80		CL	SANDY LEAN CLAY Moist, medium dense, light brown (7.5 YR 6/4) mottled with pinkish gray (7.5 YR 7/2)	
	9.80									
	10	D	SPT	9 11 14	25	75			SANDY LEAN CLAY Moist, dense, pale yellow (2.5 Y 7/3)	
2394.4	11.30								11.80	
	12.30									
	13.80	E	SPT	17 24 25	49	80		GC	CLAYEY GRAVEL with SAND Moist, dense, multicolored	
	14.80								14.30	
	15	F	SPT	23 30 28	58	75		GC GM	SILTY CLAYEY GRAVEL with SAND Moist, very dense, multicolored	
2389.4	16.30								16.80	
	17.30									
	18.80	G	SPT	12 23 25	48	75		SC	CLAYEY SAND with GRAVEL Moist, dense, multicolored	
	19.80									
	20	H	SPT	12 23 19	42	65			CLAYEY SAND with GRAVEL Moist, dense, multicolored	
2384.4	21.30								21.80	
	22.30									
	23.80	I	SPT	14 19 19	38	65		CL	SANDY LEAN CLAY Moist, hard, pink (7.5 YR 7/3 and 7/4)	
	24.80								24.30	
	25	J	CMS	21 44 50/0.4'	50/0.4'	100		GC	CLAYEY GRAVEL with SAND Moist, dense, multicolored	
2384.4	26.20								26.20	
	27.70	K	SPT	16 21 10	31	60		SC	CLAYEY SAND with GRAVEL Moist, dense, multicolored	
	30.00								30.00	

End day 1 @ 27.7'.



EXPLORATION LOG
 START DATE 1/26/15
 END DATE 1/28/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-67
 E.A. # 73518
 GROUND ELEV. 2409.40 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 192+22
 OFFSET 185' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1082)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2314.4	94.80	95	W	CMS	23	50/0.4'	85	CL ML	<u>GRAVELLY SILTY CLAY</u> Moist, very dense, pink (7.5 YR 7/4) <u>SANDY SILTY CLAY</u> Moist to wet, hard, brown (7.5 YR 5/4)	
	96.20				41					
	97.70	X	SPT	14 16 23	39	100				
2309.4	100							100.50		
2304.4	104.80	105	Y	CMS	11	30/0.3'	130	CL	<u>LEAN CLAY</u> Moist, very dense, pink (7.5 YR 7/4) <u>LEAN CLAY with SAND</u> Moist to wet, hard, brown (7.5 YR 5/4)	(Y) Last 10 blows; no progress.
	106.10				8					
	107.60	Z	SPT	21 22 25	46	115				
2299.4	110									
2294.4	114.80	115	AA	CMS	15	74	0	CL	<u>LEAN CLAY</u> Moist to wet, hard, brown (7.5 YR 5/4)	(AA) No sample recovered.
	116.30				19					
	117.30				55					
	118.80	BB	SPT	14 12 27	39	105				
								118.80	<u>END BI-67 @ 118.8'</u>	No groundwater encountered.



EXPLORATION LOG
 START DATE 1/29/15
 END DATE 1/29/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-68
 E.A. # 73518
 GROUND ELEV. 2396.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 88+93
 OFFSET 109' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2391.3	4.50	5	A	SPT	5	8	75	CL	1.00	SANDY GRAVEL, Dry, tan
	6.00				4				LEAN CLAY with SAND Dry, loose, light gray (10 YR 7/2)	
	9.50				4					
2386.3	11.00	10	B	SPT	19	48	55	CL	17.70	LEAN CLAY Dry, hard, very pale brown (10 YR 8/2) to light gray (10 YR 7/2)
	14.50				23					
	16.00				25					
2381.3	16.00	15	C	SPT	11	23	75	SM	22.70	SANDY LEAN CLAY with GRAVEL Dry, very stiff, white (10 YR 8/1) to very pale brown (10 YR 8/2)
	19.50				13					
	21.00				10					
2376.3	21.00	20	D	SPT	23	75	85	SM	28.00	SILTY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 8/2)
	24.50				32					
	26.00				43					
2371.3	26.00	25	E	SPT	13	16	60	SC	30.00	CLAYEY SAND Dry, medium dense, very pale brown (10 YR 8/3) with brownish yellow (10 YR 6/6) and white (10 YR 8/1)
	30.00				9					
					7					
	30.00							CL		

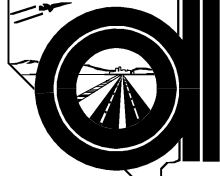


EXPLORATION LOG
 START DATE 1/29/15
 END DATE 1/29/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-68
 E.A. # 73518
 GROUND ELEV. 2396.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 88+93
 OFFSET 109' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2361.3	31.50	F	CMS	28 27 32	59	100		CL	SANDY LEAN CLAY Dry, dense, light gray (2.5 Y 7/2) 31.50	No groundwater encountered.
	33.00	G	SPT	13 20 32	52	75		CH	FAT CLAY Dry to moist, hard, very pale brown (10 YR 7/3) to light gray (2.5 Y 7/2) 33.70	
	34.50									
	35 36.00	H	CMS	13 16 23	39	95		SC	CLAYEY SAND Dry, dense, light gray (2.5 Y 7/2) 36.00	
2356.3	37.50	I	SPT	8 11 18	29	80		CH	SANDY FAT CLAY Dry to moist, hard, very pale brown (10 YR 7/3) to light gray (2.5 Y 7/2) 41.00	
	40									
2351.3	44.50							CL		
	45 46.00	J	CMS	8 11 18	29	75		CL	LEAN CLAY with GRAVEL Dry to moist, very stiff, brown (10 YR 5/3) to light gray (10 YR 7/2)	
	47.50	K	SPT	5 11 16	27	95		CL	LEAN CLAY with GRAVEL Dry to moist, very stiff, light brown (7.5 YR 6/4) to pink (7.5 YR 7/3) 47.50	
2346.3	50							END BI-68 @ 47.5'		
2341.3	55									



EXPLORATION LOG

START DATE 2/10/15
 END DATE 2/11/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-69
 E.A. # 73518
 GROUND ELEV. 2427.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 202+65
 OFFSET 263' Left
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120(Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2422.5	4.60									(A) No sample recovered.
	5.20	A	SPT	37	50/0.1'	0				
2417.5	9.60									
	11.10	B	SPT	5 27 32	59	60		SC	<u>CLAYEY SAND with GRAVEL</u> . Dry to moist, very dense, very pale brown (10 YR 7/3) with dark angular gravel	
	12.80									
2412.5	14.60									
	16.10	C	SPT	14 12 10	22	60		GC	<u>CLAYEY GRAVEL with SAND</u> . Dry to moist, medium dense, very pale brown (10 YR 7/3) to white (10 YR 8/1)	(C) Weakly cemented nodules in sample.
	17.80									
2407.5	19.60									
	21.10	D	SPT	9 9 16	25	80		ML	<u>SILT with SAND</u> . Moist, dense, very pale brown (10 YR 7/3) to white (10 YR 8/1) to light yellowish brown (10 YR 6/4)	(D) Weakly cemented nodules in sample.
	22.80									
2402.5	24.60									
	26.10	E	SPT	17 18 19	37	80		SC	<u>CLAYEY SAND with GRAVEL</u> . Moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	
	27.80									
	29.60							GC		
	30.00									



EXPLORATION LOG
 START DATE 2/10/15
 END DATE 2/11/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-69
 E.A. # 73518
 GROUND ELEV. 2427.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 202+65
 OFFSET 263' Left
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120(Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2392.5	31.10	F	CMS	17	34	85		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, medium dense, very pale brown (10 YR 6/3) to light yellowish brown (10 YR 6/4) to white (10 YR 8/1) to brownish yellow (10 YR 6/8)	(F) Strongly cemented nodules in sample.
	32.60	G	SPT	8 9 12	21	60		CH		
	34.60									
	35	H	CMS	27 25 34	59	85			<u>GRAVELLY FAT CLAY with SAND</u> Moist, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	(H) Strongly cemented nodules in sample.
	36.10	I	SPT	50	25/0.1'	100		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	(I) 25 blows; no progress. Strongly cemented nodules in sample.
2387.5	36.70			25/0.1'						
	39.60									
2382.5	40.30	J	SPT	32 50/0.2'	50/0.2'	100			<u>LEAN CLAY with GRAVEL</u> Moist, very hard, very pale brown (10 YR 7/3)	
	45								WEAKLY TO MODERATELY CEMENTED MATERIALS	
	45.60								STRONGLY CEMENTED MATERIALS	500 psi down pressure, consistant progress.
2377.5	47.40									
	49.60									
2372.5	50	K	SPT	64 31 22	53	85		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Moist, hard, light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2)	
	51.10									
	53.00								WEAKLY TO MODERATELY CEMENTED MATERIALS	
2372.5	53.50									
	54.60									
	55	L	SPT	12 30 45	75	80		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, very dense, light yellowish brown (10 YR 6/4) with dark gravel	
2372.5	56.10									
	57.50								WEAKLY TO STRONGLY CEMENTED MATERIALS	300 psi - 450 psi down pressure, consistant progress.
	59.60	M	SPT	50/0.1'	50/0.1'	0				



EXPLORATION LOG

START DATE 2/10/15
 END DATE 2/11/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-69
 E.A. # 73518
 GROUND ELEV. 2427.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 202+65
 OFFSET 263' Left
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120(Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2362.5	64.60							CL ML	WEAKLY TO STRONGLY CEMENTED MATERIALS 62.00 SILTY CLAY Moist to wet, very hard, very pale brown (10 YR 6/4)	(M) No sample recovered.
	65	N	SPT	60 27 39	66	100				
	66.10									
2357.5	69.60							CL ML	71.10 SILTY CLAY with GRAVEL Moist to wet, hard, light yellowish brown (10 YR 6/4)	(O) Strongly cemented nodules in sample. (P) Strongly cemented nodules in sample.
	70	O	CMS	23 24 38	62	95				
	71.10									
2352.5	72.60	P	SPT	15 17 18	35	100		CL	LEAN CLAY with GRAVEL Moist to wet, hard, light yellowish brown (10 YR 6/4)	
	75									
	79.60									
2347.5	80	Q	CMS	10 12 26	38	125		CL	LEAN CLAY Moist to wet, very stiff, light yellowish brown (10 YR 6/4) to yellowish brown (10 YR 5/4) LEAN CLAY Moist to wet, hard, light yellowish brown (10 YR 6/4) to yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/8)	
	81.10									
	82.60	R	SPT	12 19 21	40	120				
2342.5	85							CL	87.00 WEAKLY TO STRONGLY CEMENTED MATERIALS 88.80	
	89.60									
								GC	90.00	



GEOTECHNICAL ENGINEERING

EXPLORATION LOG

START DATE 2/10/15
 END DATE 2/11/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-69
 E.A. # 73518
 GROUND ELEV. 2427.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 202+65
 OFFSET 263' Left
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120(Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	90.70	S	CMS	29 74	50/0.1'	110		GC	90.70 CLAYEY GRAVEL with SAND Moist to wet, very dense, very pale brown (10 YR 7/3)	(S) Strongly cemented nodules in sample. (T) Strongly cemented nodules in sample. No groundwater encountered.
	91.60	T	SPT	50/0.1' 50/0.4'	50/0.4'	120		CL ML	91.60 GRAVELLY SILTY CLAY with SAND Moist to wet, very hard, very pale brown (10 YR 7/3) END BI-69 @ 91.6'	
2332.5	95									
2327.5	100									
2322.5	105									
2317.5	110									
2312.5	115									



EXPLORATION LOG
 START DATE 2/12/15
 END DATE 2/12/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-70
 E.A. # 73518
 GROUND ELEV. 2416.00 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 71+48
 OFFSET 174' Left
 ENGINEER Lawrence
 EQUIPMENT Deidrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2381.0	31.40	I	CMS	30 47 50/0.4'	50/0.4'	95		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3) <u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3) with dark gravel 33.90	(I) Weakly to strongly cemented nodules in sample.
	32.70	J	SPT	30 42 50/0.3'	50/0.3'	60				
	35.00									
2376.0	36.50	K	CMS	9 23 20	43	95		CH	<u>GRAVELLY FAT CLAY with SAND</u> Moist, very stiff, light yellowish brown (10 YR 6/4) to very pale brown (10 YR 7/3) to white (10 YR 8/1) 36.50	
	38.00	L	SPT	56 28 26	54	65				
2371.0	40.00							GC	<u>CLAYEY GRAVEL with SAND</u> Moist, very pale brown (10 YR 8/2 to 10 YR 7/3) to white (10 YR 8/1) <u>WEAKLY CEMENTED MATERIALS</u> <u>CLAYEY GRAVEL with SAND</u> Moist, very pale brown (10 YR 8/2 to 10 YR 7/3) to white (10 YR 8/1) 43.00	150 psi down pressure - 25 min/negligible progress. No groundwater encountered.
	41.50	M	CMS	53 33 60	93	95				
	42.20	N	SPT	22 50/0.2'	50/0.2'	70				
2366.0	44.20								<u>MODERATELY TO STRONGLY CEMENTED MATERIALS</u> 44.20	
	45									
2361.0	55								<u>END BI-70 @ 44.2 ft.</u>	



EXPLORATION LOG
 START DATE 3/23/15
 END DATE 3/23/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-71
 E.A. # 73518
 GROUND ELEV. 2374.90 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 100+42
 OFFSET 147' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2369.9	4.00								1.00 SANDY GRAVEL, Dry, tan	
	5.50	A	SPT	5 7 12	19	95		CL	<u>LEAN CLAY</u> Dry to moist, very stiff, pale brown (10 YR 6/3)	
	6.50									
	8.00	B	SPT	14 24 33	57	85			<u>LEAN CLAY</u> Dry to moist, hard, pale brown (10 YR 6/3)	
	9.00									
2364.9	10.50	C	SPT	12 20 36	56	85			<u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, hard, pale brown (10 YR 6/3)	
	11.50									
	13.00	D	SPT	13 21 28	49	85			<u>SANDY LEAN CLAY</u> Dry to moist, hard, pale brown (10 YR 6/3) to white (10 YR 8/1)	
2359.9	14.00								13.50	
	15.50	E	SPT	19 17 12	29	75		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, dense, multicolored	
2354.9	16.50								16.00	
	17.80	F	CMS	22 38 50/0.3'	50/0.3'	100		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, white (10 YR 8/1)	
	19.30	G	SPT	39 51 49	100	0			19.30	
2354.9	20								END BI-71 @19.3'	(G) Sampler broke downhole. Attempted recovery of sampler. Abandoned borehole. No sample recovered. No groundwater encountered.
2349.9	25									



GEOTECHNICAL ENGINEERING

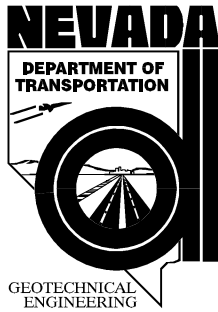
START DATE 3/24/15
 END DATE 3/24/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-72
 E.A. # 73518
 GROUND ELEV. 2362.90 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 100+55
 OFFSET 84' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Larracuente
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2357.9	1.00								SANDY GRAVEL, Dry, tan	
	2.40							SM	<u>SILTY SAND with GRAVEL</u> , Dry, medium dense to dense, light gray (10 YR 7/1)	
	3.90	A	SPT	6 5 19	24	45				
	4.90							SC SM	<u>SILTY CLAYEY SAND with GRAVEL</u> , Dry, dense, light gray (10 YR 7/1)	
	6.40	B	SPT	16 19 15	34	60				
7.40							SC	<u>CLAYEY SAND with GRAVEL</u> , Dry, very dense, light gray (10 YR 7/1)		
8.90	C	SPT	16 34 17	51	60					
2352.9	9.90							CL	<u>LEAN CLAY with SAND</u> , Dry, hard, very pale brown (10 YR 8/2) to light gray (10 YR 7/2)	
	11.40	D	SPT	16 18 21	39	45				
	12.40									
2347.9	13.90							CL	<u>LEAN CLAY</u> , Dry, hard, very pale brown (10 YR 8/2) to light gray (10 YR 7/2)	
	14.90									
	16.40	F	SPT	17 24 26	50	55				
2342.9	14.90								<u>END BI-72 @ 16.4'</u>	(F) Sampler broke downhole. Attempted recovery of sampler. Abandoned borehole. No sample recovered. No groundwater encountered.
	16.40									
2337.9	20									
	25									



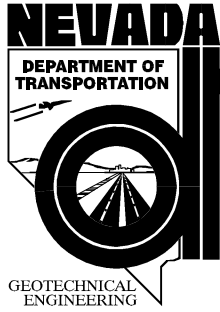
EXPLORATION LOG

START DATE 3/24/15
 END DATE 3/24/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-73
 E.A. # 73518
 GROUND ELEV. 2376.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 100+46
 OFFSET 91' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2371.3	1.00								SANDY GRAVEL, Dry, tan	
	2.50							SM	<u>SILTY SAND with GRAVEL</u> , Dry, dense, very pale brown (10 YR 7/3)	
	4.00	A	CMS	30 37 32	69	95				
	5.00							CL ML	<u>SILTY CLAY</u> , Dry, medium stiff, brown (10 YR 5/3)	
	6.50	B	CMS	4 5 5	10	85				
2366.3	7.50							CL	<u>LEAN CLAY</u> , Dry, very stiff, brown (10 YR 5/3)	
	9.00	C	CMS	9 14 26	40	95				
	10.00									
	11.50	D	CMS	15 14 11	25	85				
	12.50									
2361.3	14.00	E	CMS	6 8 17	25	85			<u>LEAN CLAY with SAND</u> , Dry, stiff to very stiff, light brownish gray (10 YR 6/2) mottled with very pale brown (10 YR 8/2)	
	15.00								<u>SANDY LEAN CLAY</u> , Dry, very stiff, light brownish gray (10 YR 6/2) mottled with very pale brown (10 YR 8/2)	
	16.50	F	CMS	16 23 26	49	95				
2356.3	20.00								<u>LEAN CLAY with SAND</u> , Dry, stiff to very stiff, light brownish gray (10 YR 6/2) mottled with very pale brown (10 YR 8/2)	
	21.50	G	CMS	26 40 47	87	95			<u>SANDY LEAN CLAY with GRAVEL</u> , Dry, hard, light brownish gray (10 YR 6/2) mottled with very pale brown (10 YR 8/2)	
	25.00								<u>LEAN CLAY with SAND</u> , Dry, hard, very pale brown (10 YR 8/2) to pale brown (10 YR 6/3)	
2351.3	26.50	H	CMS	28 33 38	71	95			<u>LEAN CLAY with SAND</u> , Dry, hard, very pale brown (10 YR 8/2) to pale brown (10 YR 6/3)	
									END BI-73 @ 26.5'	No groundwater encountered.



EXPLORATION LOG
 START DATE 3/25/15
 END DATE 3/25/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-74
 E.A. # 73518
 GROUND ELEV. 2341.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 108+91
 OFFSET 89' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Larracuente
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2336.5	1.00								SANDY GRAVEL, Dry, tan	Weakly to strongly cemented nodules present in samples (A) through (J).
	2.70						CH			
	4.20	A	CMS	9 11 18	29	100			SANDY FAT CLAY with GRAVEL Dry to moist, very stiff, white (5 Y 8/1) to pale yellow (5 Y 7/3)	
	5.70	B	SPT	9 13 18	31	60			SANDY LEAN CLAY Dry to moist, very stiff to hard, white (5 Y 8/1) to light olive gray (5 Y 6/2)	
	7.70							CL		
2331.5	9.20	C	CMS	13 21 23	44	95			LEAN CLAY with GRAVEL Dry to moist, very stiff, white (5 Y 8/1) to pale yellow (5 Y 7/3)	
	10.70	D	SPT	8 9 15	24	65			LEAN CLAY with GRAVEL Dry to moist, very stiff, white (5 Y 8/1) to light olive gray (5 Y 6/2)	
	11.70									
2326.5	12.70							SC		
	14.20	E	CMS	28 52 63	115	100			CLAYEY SAND with GRAVEL Dry to moist, dense, white (5 Y 8/1) to pale yellow (5 Y 7/3)	
	15.70	F	SPT	18 23 34	57	65			SANDY LEAN CLAY Dry to moist, hard, white (5 Y 8/1) to light olive gray (5 Y 6/2)	
	17.70									
2321.5	19.20	G	CMS	12 18 30	48	85			SANDY LEAN CLAY Dry to moist, very stiff, white (5 Y 8/1) to pale yellow (5 Y 7/3)	
	20.70	H	SPT	12 11 13	24	65			SANDY LEAN CLAY Moist, very stiff, light gray (5 Y 7/2)	
	22.70							CL		
2316.5	24.20	I	CMS	13 15 23	38	85			GRAVELLY LEAN CLAY with SAND Dry to moist, very stiff, very pale brown (10 YR 7/3 to 10 YR 8/2)	
	25.70	J	SPT	9 39 18	57	80			LEAN CLAY with SAND Dry to moist, hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	
	30.00									



GEOTECHNICAL ENGINEERING

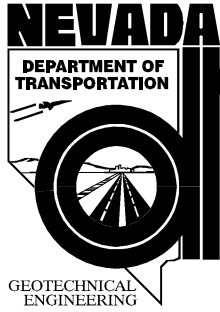
EXPLORATION LOG

START DATE 3/25/15
 END DATE 3/25/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-74
 E.A. # 73518
 GROUND ELEV. 2341.50 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 108+91
 OFFSET 89' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Larracuente
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2306.5	31.50	K	CMS	12 15 21	36	85		SC	<p>CLAYEY SAND with GRAVEL Moist, medium dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)</p> <p>CLAYEY SAND with GRAVEL Moist, medium dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)</p> <p>CLAYEY SAND with GRAVEL Moist, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)</p>	<p>(M) Last 10 blows; no progress. Hard drilling 36.2' to 40'; Progress 1.0'/10 minutes @ 350 psi down pressure.</p>
	33.00	L	SPT	7 8 16	24	55				
	35.00									
	36.10	M	CMS	22 31	20/0.1'	90				
2301.5	40.10	N	SPT	15/0.1'	15/0.1'	0			<p>END BI-74 @ 40.1'</p> <p>(N) Last 10 blows; no progress. No sample recovered. No groundwater encountered.</p>	
2296.5	45									
2291.5	50									
2286.5	55									



EXPLORATION LOG
 START DATE 3/26/15
 END DATE 3/26/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-75
 E.A. # 73518
 GROUND ELEV. 2417.70 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 196+70
 OFFSET 183' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS			
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd							
2412.7	5.00	A	SPT	9	41	80		SC SM	1.00	SANDY GRAVEL, Dry, tan			
	6.50			14					27	7.00		<u>SILTY CLAYEY SAND with GRAVEL</u> Dry to moist, dense, light brown (7.5 YR 6/4)	
	7.50												
2407.7	8.30	B	CMS	39	40/0.3'	60		GC	9.10	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, light brown (7.5 YR 6/4)	(B) Last 10 blows; no progress.		
	10.00			17					40/0.3'	60	10.00	<u>CLAYEY SAND with GRAVEL</u> Dry, very dense, white (10 YR 8/1) to very pale brown (10 YR 8/2)	(C) Last 10 blows; no progress.
	10.80												
2402.7	12.50	D	SPT	30/0.3'	30/0.3'	100		SC	13.90	<u>CLAYEY SAND with GRAVEL</u> Dry, very dense, white (10 YR 8/1) to very pale brown (10 YR 8/2)	(D) Last 10 blows; no progress.		
	12.80												
	15.00			32					90	85	17.00	<u>CLAYEY SAND with GRAVEL</u> Dry, very dense, white (10 YR 8/1) to very pale brown (10 YR 8/2)	
2397.7	16.50	E	SPT	35	16	55		GC	17.00	<u>CLAYEY SAND with GRAVEL</u> Dry, medium dense, white (10 YR 8/1) to very pale brown (10 YR 8/2)			
	17.50			55									
	19.00			31					13	3			
2392.7	20.00	G	CMS	13	25	65		CL	21.50	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, medium stiff, light yellowish brown (10 YR 6/4) with very pale brown (10 YR 8/2)			
	21.50			15					34	85		24.00	<u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, very stiff, light yellowish brown (10 YR 6/4) with very pale brown (10 YR 8/2)
	23.00			9					10	15			
2392.7	25.00	I	CMS	12	60	95		CH	26.30	<u>FAT CLAY with SAND</u> Moist, hard, yellowish brown (10 YR 5/4)			
	26.50			17					43				
	28.00			18					22	30			
	30.00	J	SPT	22	52	45		GC	30.00	<u>CLAYEY GRAVEL with SAND</u> Dry, very dense, very pale brown (10 YR 8/2)			
				30									

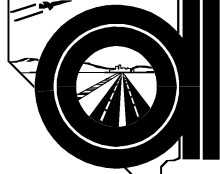


EXPLORATION LOG
 START DATE 3/26/15
 END DATE 3/26/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-75
 E.A. # 73518
 GROUND ELEV. 2417.70 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 196+70
 OFFSET 183' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2382.7	31.50	K	CMS	25	66	85		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, white (10 YR 8/1) to light gray (10 YR 7/2) <u>CLAYEY GRAVEL with SAND</u> Dry, very dense, multicolored	(L) Last 10 blows; no progress.
	31.90	L	SPT	40/0.4'	40/0.4'	50				
2382.7	35.00	M	CMS	12	38	100		CL	<u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, very stiff, light gray (10 YR 7/2) to yellowish brown (10 YR 5/4) <u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, light gray (10 YR 7/2) to yellowish brown (10 YR 5/4)	
	36.50			18			20			
2377.7	38.00	N	SPT	11	45	55		GC		
	40	18	27							
2372.7	45.00	O	SPT	4	20	60		CH	<u>SANDY FAT CLAY with GRAVEL</u> Dry to moist, very stiff, very pale brown (10 YR 7/3) to yellowish brown (10 YR 5/4)	
	46.50			6			14			
2367.7	50	P	CMS	42	40/0.2'	70		CL	<u>LEAN CLAY with SAND</u> Moist, very hard, very pale brown (10 YR 7/3)	(P) Last 10 blows; no progress. Hard drilling 56.5' to 57.0'; Terminate borehole. No groundwater encountered.
	55.00			40/0.2'						
2362.7	55.70								<u>END BI-75 @ 57.0'</u>	



EXPLORATION LOG

START DATE 5/6/15

END DATE 5/7/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION Northwest Las Vegas - Clark County

BORING BI-75A

E.A. # 73518

GROUND ELEV. 2417.70 (ft)

HAMMER DROP SYSTEM Automatic

STATION "XP" 196+70

OFFSET 183' Left

ENGINEER Lawrence

EQUIPMENT Diedrich D-120 (Unit 1627)

OPERATOR Larracuente

DRILLING METHOD 6" H.S.A.

BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2412.7	5									Continue drilling at site of Borehole BI-75.
2407.7	10									
2402.7	15									
2397.7	20									
2392.7	25									



GEOTECHNICAL
ENGINEERING

EXPLORATION LOG

START DATE 5/6/15
 END DATE 5/7/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-75A
 E.A. # 73518
 GROUND ELEV. 2417.70 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 196+70
 OFFSET 183' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Larracuente
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2382.7	35									
2377.7	40									
2372.7	45									
2367.7	50									
2362.7	55									



EXPLORATION LOG
 START DATE 5/6/15
 END DATE 5/7/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-75A
 E.A. # 73518
 GROUND ELEV. 2417.70 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 196+70
 OFFSET 183' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Larracuente
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2352.7	65.00	A	SPT	24	50/0.3'	105		CL ML	<u>SANDY SILTY CLAY</u> Moist to wet, very hard, light yellowish brown (10 YR 6/4)	(A) Weakly cemented lenses 1" - 2" thick in sample. End day 1 drilling @ 66.3'.	
	66.30			21							50/0.3'
	63.20										
2347.7	70.00	B	CMS	56	50/0.3'	70		CL	<u>LEAN CLAY with SAND</u> Moist to wet, very hard, light yellowish brown (10 YR 6/4)	(B) Weakly cemented zones in sample.	
	71.30			44							50/0.3'
	72.80	C	SPT	24 26 49	75	85			<u>LEAN CLAY</u> Moist, very hard, light yellowish brown (10 YR 6/4)		
2342.7	75.00	D	CMS	13	56	120		CL	<u>LEAN CLAY with GRAVEL</u> Moist, hard, light yellowish brown (10 YR 6/4)	(D) Strongly cemented nodules up to 2" in sample.	
	76.50			21 35							
	78.00	E	SPT	7 11 15	26	115			<u>LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4)		
2337.7	80.00	F	CMS	22	79	115		CL ML	<u>SILTY CLAY with SAND</u> Moist, hard, light yellowish brown (10 YR 6/4)	(F) Strongly cemented nodules up to 1" in sample.	
	81.50			30 49							
	83.00	G	SPT	24 34 50	84	85			<u>SILTY CLAY with SAND</u> Moist, very hard, light yellowish brown (10 YR 6/4)	(G) Weakly cemented zones and nodules in sample.	
2332.7	85.00	H	CMS	11	50/0.2'	75		CL	<u>SANDY LEAN CLAY</u> Moist, very hard, light yellowish brown (10 YR 6/4)	(H) No progress last 20 blows.	
	86.20			53							50/0.2'
	87.70	I	SPT	23 27 52	79	100			<u>SANDY LEAN CLAY with GRAVEL</u> Moist, very hard, light yellowish brown (10 YR 6/4)	(I) Weakly cemented zones in sample.	
	90.00							GC			



GEOTECHNICAL
ENGINEERING

EXPLORATION LOG

START DATE 5/6/15
 END DATE 5/7/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-75A
 E.A. # 73518
 GROUND ELEV. 2417.70 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 196+70
 OFFSET 183' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Larracuente
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
90.60	J	CMS	57	50/0.1'	50		GC	90.90 CLAYEY GRAVEL with SAND Moist, very hard, light yellowish brown (10 YR 6/4) END BI-75A @ 90.9'	No groundwater encountered.	
90.90	K	SPT	50/0.3'	50/0.3'	100					
2322.7	95									
2317.7	100									
2312.7	105									
2307.7	110									
2302.7	115									



GEOTECHNICAL ENGINEERING

START DATE 4/20/15
 END DATE 4/22/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-76
 E.A. # 73518
 GROUND ELEV. 2421.60 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 198+16
 OFFSET 243' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White/Larracuenta
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/21/15	65.00	2356.6

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2416.6	1.00								SANDY GRAVEL, Dry, tan	
	2.50							SM	<u>SILTY SAND with GRAVEL</u> , Dry, dense to very dense, light brownish gray (10 YR 6/2)	
	4.00	A	SPT	14 20 30	50	65				
	5.00							CL ML	<u>SANDY SILTY CLAY</u> , Dry, very stiff, very pale brown (10 YR 7/3)	
	6.50	B	SPT	14 12 16	28	75				
7.50							SC SM	<u>SILTY CLAYEY SAND with GRAVEL</u> , Dry, very dense, light brownish gray (10 YR 6/2)		
9.00	C	SPT	17 34 51	85	80					
2411.6	10.00	D	SPT	25/0.2'	25/0.2'	0				(D) Last 10 blows; no progress. No sample recovered.
	12.50	E	SPT	15/0.2'	15/0.2'	0				(E) Last 10 blows; no progress; No sample recovered.
2406.6	15.00	F	SPT	23 39 77	116	85		SC SM	<u>SILTY CLAYEY SAND with GRAVEL</u> , Dry, very dense, very pale brown (10 YR 7/3)	
	17.50	G	SPT	20/0.2'	20/0.2'	0				(G) Last 10 blows; no progress; No sample recovered.
2401.6	20.00	H	SPT	20 24 28	52	75		CH	<u>SANDY FAT CLAY</u> , Dry, hard, very pale brown (10 YR 7/3)	
	22.50	I	SPT	12 23 35	58	60			<u>SANDY LEAN CLAY</u> , Dry, hard to very hard, light brownish gray (10 YR 6/2) mottled with white (10 YR 8/1)	
2396.6	25.00	J	SPT	20 20 28	48	75		CL	<u>SANDY LEAN CLAY</u> , Dry, hard, light brownish gray (10 YR 6/2) mottled with white (10 YR 8/1)	
	27.50									
	29.00	K	SPT	16 16 21	37	65			<u>SANDY LEAN CLAY</u> , Dry, hard, light brownish gray (10 YR 6/2) mottled with white (10 YR 8/1)	
	30.00									



EXPLORATION LOG
 START DATE 4/20/15
 END DATE 4/22/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-76
 E.A. # 73518
 GROUND ELEV. 2421.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 198+16
 OFFSET 243' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White/Larracuenta
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/21/15	65.00	2356.6

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2386.6	31.50	L	SPT	16 13 19	32	75		GC	CLAYEY GRAVEL with SAND. Dry, hard, light brownish gray (10 YR 6/2) mottled with white (10 YR 8/1)	End day 1 drilling @ 38.0'.
	33.30									
	35.00							CH	FAT CLAY Dry to moist, very stiff to very hard, light gray (10 YR 6/2) to light brownish gray (10 YR 7/2)	
2381.6	36.50	M	CMS	7 13 55	68	85		CH		
	38.00	N	SPT	12 15 25	40	80		SC	CLAYEY SAND. Dry to moist, very stiff to hard, light gray (10 YR 6/2) to light brownish gray (10 YR 7/2)	
2376.6	40.00									
	41.50	O	CMS	11 18 34	52	85		CH	GRAVELLY FAT CLAY. Dry to moist, dense, white (7.5 YR 8/1) to pinkish gray (7.5 YR 7/2)	
	43.00	P	SPT	15 19 25	44	75		CH	GRAVELLY FAT CLAY with SAND. Dry to moist, dense, white (7.5 YR 8/1) to pinkish gray (7.5 YR 7/2)	
2371.6	45.00									
	46.50	Q	CMS	18 27 18	45	95		GC	CLAYEY GRAVEL with SAND. Dry to moist, dense, white (7.5 YR 8/1) to pinkish gray (7.5 YR 7/2)	
	48.00	R	SPT	8 5 9	14	45		GC	CLAYEY GRAVEL with SAND. Dry to moist, medium dense, white (7.5 YR 8/1) to pinkish gray (7.5 YR 7/2)	
2366.6	50.00									
	51.40	S	CMS	12 29 50/0.4'	50/0.4'	105		CL	GRAVELLY LEAN CLAY. Dry to moist, very hard, pale brown (10 YR 6/3) to very pale brown (10 YR 8/3)	
	52.90	T	SPT	21 12 27	39	75		SC	CLAYEY SAND with GRAVEL. Dry to moist, hard, pale brown (10 YR 6/3) to very pale brown (10 YR 8/3)	
2366.6	55.00									
	55.40	U	CMS	50/0.4' 26	50/0.4'	100			SANDY FAT CLAY with GRAVEL. Dry to moist, very hard, pale brown (10 YR 6/3) to very pale brown (10 YR 8/3)	
	56.90	V	SPT	13 18	31	75		CH	SANDY FAT CLAY with GRAVEL. Dry to moist, hard, pale brown (10 YR 6/3) to very pale brown (10 YR 8/3)	
	60.00									



EXPLORATION LOG
 START DATE 4/20/15
 END DATE 4/22/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-76
 E.A. # 73518
 GROUND ELEV. 2421.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 198+16
 OFFSET 243' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White/Larracuenta
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/21/15	65.00	2356.6

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
		W	CMS	15/0.1'	15/0.1'	0		CL		(W) Last 10 blows; no progress. No sample recovered.
2356.6	65.00								62.50	
	66.50	X	SPT	21 29 51	80	100		CL ML		(X) Free water in sampler @ 65.0'.
2351.6	70.00									
	71.40	Y	SPT	12 27 50/0.4'	50/0.4'	100		CL ML		<u>SILTY CLAY</u> Moist to wet, very hard, light yellowish brown (10 YR 6/4)
2346.6	75.00								73.20	
	76.50	Z	CMS P			115		CL ML		(Z) CMS push @ 100 psi down pressure.
	78.00	AA	SPT	8 9 13	22	100		CL ML		<u>LEAN CLAY with GRAVEL</u> Moist to wet, very stiff, yellowish brown (10 YR 5/4)
2341.6	80							CL		End day 2 drilling @ 78.0'.
2336.6	85.00	BB	CMS P			40		CL		(BB) CMS push @ 500 psi down pressure; crushed sampler tip.
	86.40	CC	SPT	20 50/0.4'	50/0.4'	100		CL		<u>GRAVELLY LEAN CLAY</u> Wet, light yellowish brown (10 YR 6/4) <u>GRAVELLY LEAN CLAY with SAND</u> Wet, very hard, light yellowish brown (10 YR 6/4)
									90.00	



EXPLORATION LOG

START DATE 4/20/15
 END DATE 4/22/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-76
 E.A. # 73518
 GROUND ELEV. 2421.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 198+16
 OFFSET 243' Left
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR White/Larracuenta
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
4/21/15	65.00	2356.6

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2326.6	95.00	DD	CMS	50	91	105		CL	<u>SANDY LEAN CLAY</u> Wet, hard, light yellowish brown (10 YR 6/4) <u>SANDY LEAN CLAY with GRAVEL</u> Wet, very hard, light yellowish brown (10 YR 6/4)	(DD) Pocket penetrometer reading - 2.0 tsf, Torvane reading - 3.8 tsf.
	96.50			43						
	98.00	EE	SPT	13	61	120				
2321.6	100									
	101.50									
2316.6	105.00	FF	CMS	22	30/0.3'	90		CL ML	<u>GRAVELLY SILTY CLAY with SAND</u> Wet, very hard, light yellowish brown (10 YR 6/4)	(FF) Last 10 blows; no progress. Pocket penetrometer reading - 1.0 tsf.
	105.80			30/0.3'						
2311.6	110.00	GG	CMS	35	50/0.2'	110			<u>SILTY CLAY</u> Wet, very hard, light yellowish brown (10 YR 6/4) <u>SILTY CLAY</u> Wet, very hard, light yellowish brown (10 YR 6/4)	(GG) Pocket penetrometer reading - 3.5 tsf, Torvane reading - 3.5 tsf.
	111.20			63						
	112.70	HH	SPT	25	62	115				
2306.6	115								<u>END BI-76 @ 112.7'</u>	



EXPLORATION LOG
 START DATE 5/4/15
 END DATE 5/4/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-77
 E.A. # 73518
 GROUND ELEV. 2390.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 88+38
 OFFSET 337' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Larracuente
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2385.1	1.00								SANDY GRAVEL, Dry, tan	
	2.00									
	3.50	A	SPT	13	54	75		CL	<u>LEAN CLAY with SAND</u> Dry, hard, very pale brown (10 YR 7/3)	
	4.50									
	6.00	B	SPT	13	38	75		SC	<u>CLAYEY SAND with GRAVEL</u> Dry, dense, very pale brown (10 YR 7/3)	(B) Weakly cemented nodules in sample.
2380.1	7.00	C	SPT	50/0.1'	50/0.1'	0				(C) No sample recovered.
	9.50									
	10.20	D	SPT	60	50/0.2'	100		SC SM	<u>SILTY CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	
	12.00	E	CMS	50/0.1'	50/0.1'	0				(E) No sample recovered.
	14.50							GM		
2375.1	15	F	CMS	30	81	100			<u>SILTY GRAVEL with SAND</u> Dry to moist, dense to very dense, very pale brown (10 YR 7/3)	
	16.00			43						
	17.00			38						
2370.1	17.80	G	CMS	30	62	95		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, dense, very pale brown (10 YR 7/3)	(G) Weakly to moderately cemented nodules in sample.
	18.50			30						
	19.50			30						
	20	H	CMS	32	100	95		CL	<u>SANDY LEAN CLAY</u> Dry to moist, very hard, very pale brown (10 YR 7/3) mottled with brownish yellow (10 YR 6/6)	
	21.00			50						
2365.1	22.00									
	23.50	I	SPT	21	57	80		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, pale yellow (2.5 Y 7/3) mottled with brownish yellow (10 YR 6/6)	(I) Weakly cemented nodules in sample.
	24.50			33						
	25	J	SPT	17	80	75			<u>LEAN CLAY with SAND</u> Dry to moist, very hard, pale yellow (2.5 YR 7/3)	(J) Strongly cemented nodules in sample.
	26.00			25						
2365.1	27.00			55						
	28.50	K	SPT	20	52	65		CL	<u>SANDY LEAN CLAY</u> Dry to moist, hard, pale yellow (2.5 YR 7/3) mottled with brownish yellow (10 YR 6/6)	(K) Moderately cemented nodules in sample.
	29.50			25						
	30.00			27					<u>SANDY LEAN CLAY with GRAVEL</u> Moist,	
				23						



EXPLORATION LOG
 START DATE 5/4/15
 END DATE 5/4/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-77
 E.A. # 73518
 GROUND ELEV. 2390.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 88+38
 OFFSET 337' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Larracuente
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2355.1	31.00	L	CMS	31 42	73	100		CL	31.00 hard, very pale brown (10 YR 7/3) mottled with brownish yellow (10 YR 6/6)	(L) Weakly cemented zones and nodules.
	32.50	M	SPT	15 26 38	64	75		CH	FAT CLAY with SAND Moist, hard, very pale brown (10 YR 7/3) mottled with brownish yellow (10 YR 6/6)	
	34.50								33.50 -----	
	35 36.00	N	CMS	24 41 51	92	95		CL	LEAN CLAY with SAND Moist, hard to very hard, white (10 YR 8/1) mottled with pale yellow (2.5 Y 7/3) and yellowish brown (10 YR 5/4)	
2350.1	37.50	O	SPT	13 16 20	36	55			FAT CLAY with SAND Moist, hard to very hard, white (10 YR 8/1) mottled with pale yellow (2.5 Y 7/3) and yellowish brown (10 YR 5/4)	
	39.50									
	40 41.00	P	CMS	14 26 36	62	95		CH	FAT CLAY with SAND Moist, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
	42.50	Q	SPT	8 13 19	32	75			FAT CLAY with SAND Moist, hard, pale yellow (2.5 Y 7/3) to very pale brown (10 YR 7/3)	
2345.1	44.50								43.50 -----	
	45 46.00	R	SPT	7 11 16	27	65			LEAN CLAY with SAND Moist, very stiff, pale yellow (2.5 Y 7/3) to very pale brown (10 YR 7/3)	(R) Weakly cemented nodules in sample.
	49.50							CL		Weakly cemented from 47' to 48'.
2340.1	50 51.00	S	SPT	4 6 10	16	80			LEAN CLAY with SAND Moist, very stiff, white (10 YR 8/1) mottled with very pale brown (10 YR 7/3), pale yellow (2.5 Y 7/3) and brownish yellow (10 YR 6/6)	
									51.00 END BI-77 @ 51.0'	No groundwater encountered.
2335.1	55									



GEOTECHNICAL ENGINEERING

START DATE 5/5/15
 END DATE 5/5/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-78
 E.A. # 73518
 GROUND ELEV. 2425.00 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 66+82
 OFFSET 174' Left
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Larracuente
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2390.0	31.00	I	CMS	5 6	11	0		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, medium dense, very pale brown (10 YR 8/2) to light yellowish brown (10 YR 6/4)	(I) No sample recovered.	
	32.00										(J) Strongly cemented nodules in sample.
	33.50	J	CMS	7 17 15	32	100					
	34.50										
	35.00	35	K	CMS	11 14 20	34	115		CL	<u>GRAVELLY LEAN CLAY</u> Moist, very stiff, very pale brown (10 YR 8/2 to 10 YR 7/3)	(K) Weakly to moderately cemented zones and nodules in sample.
	36.00										
	37.50	L	SPT	20 18 26	44	85					
2385.0	39.50 39.70	M	CMS	50/0.2'	50/0.2'	0				(M) No sample recovered.	
	44.60										
2380.0	44.60	N	CMS	50/0.1'	50/0.1'	0				(N) No sample recovered.	
	49.50 49.90	O	CMS	80/0.4'	80/0.4'	75		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, very dense, very pale brown (10 YR 7/3) END BI-78 @ 49.9'	(O) Weakly to moderately cemented nodules in sample. No groundwater encountered.	
2375.0	50										
2370.0	55										



EXPLORATION LOG
 START DATE 5/4/15
 END DATE 5/4/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-79
 E.A. # 73518
 GROUND ELEV. 2419.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 69+13
 OFFSET 144' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Grayson/Larracuente
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2414.6	5.00	A	SPT	7	38	80		ML	1.00	SANDY GRAVEL, Dry, tan SANDY SILT Dry to moist, dense, very pale brown (10 YR 7/3)	
	6.50			22					7.30		
	10.00										
2409.6	10.30	B	CMS	50/0.3'	50/0.3'	0				(B) No sample recovered.	
2404.6	15.00	C	CMS	80	50/0.3'	25		GC	12.60	CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 7/3)	
	15.80			50/0.3'					17.90		
2399.6	20.00	D	CMS	18	32	85		CH	21.50	SANDY FAT CLAY Moist, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
	21.50			20					23.00		
2394.6	23.00	E	SPT	24	59	75		SC	26.50	CLAYEY SAND with GRAVEL Moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
	25.00	F	CMS	28					62		85
	26.50			33							
	28.00	G	SPT	19					57		75
	30.00							SC SM		(D) Weakly to moderately cemented zones and nodules in sample. (E) Weakly to moderately cemented zones and nodules in sample. (F) Weakly to moderately cemented nodules in sample. (G) Weakly to moderately cemented nodules in sample.	



EXPLORATION LOG

START DATE 5/4/15
 END DATE 5/4/15
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING BI-79
 E.A. # 73518
 GROUND ELEV. 2419.60 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 69+13
 OFFSET 144' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Grayson/Larracuente
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
31.50	31.50	H	CMS	17	53	85		SC	CLAYEY SAND with GRAVEL. Moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(H) Weakly to moderately cemented zones and nodules in sample.
		I	SPT	13						
33.00	33.00			12	27	95		CL	LEAN CLAY with SAND. Moist, very stiff, very pale brown (10 YR 7/3)	
				15						
2384.6	35								END BI-79 @ 33.0'	No groundwater encountered.
2379.6	40									
2374.6	45									
2369.6	50									
2364.6	55									



EXPLORATION LOG
 START DATE 9/9/13
 END DATE 9/10/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-1
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+88
 OFFSET 313' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Beus/Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2401.1	3.00							CL ML	Asphaltic Concrete		
	4.50	A	CMS	12	24	100			4.50	SILTY CLAY Dry, medium dense, very pale brown (10 YR 7/4)	
	5.00	B	SPT	6	19	85		CL	LEAN CLAY with SAND Dry, medium dense, very pale brown (10 YR 7/4) to white (10 YR 8/1)		
	6.00			5					LEAN CLAY Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)		
	6.50			14					LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)		
2396.1	8.00	C	CMS	11	37	95		CL	LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)		
	9.50	D	SPT	11	28	85			LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)		
	10.00	E	CMS	18	31	85			LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)		
	11.00			15					SANDY LEAN CLAY Dry, very stiff, light gray (2.5 Y 7/2)		
2391.1	12.50	F	SPT	8	23	85		SC	SANDY LEAN CLAY Dry, very stiff, light gray (2.5 Y 7/2)		
	14.00	G	CMS	11	38	95			CLAYEY SAND Dry, very stiff, light gray (2.5 Y 7/2)		
	15.50	H	SPT	12	36	85			CLAYEY SAND with GRAVEL Dry, very hard, light gray (10 YR 7/2)	(I) Last 10 blows; no progress.	
2386.1	16.60	I	CMS	20	15/0.1'	80		GM	SILTY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2)		
	17.00			31					16.80		
	18.40	J	CMS	38	50/0.4'	95		SC	CLAYEY SAND with GRAVEL Dry, very dense, light gray (10 YR 7/2)		
	20.00			20					19.00		
	21.50	K	CMS	33	74	95			CLAYEY GRAVEL with SAND Dry, dense, yellowish (10 YR 7/6) to very pale brown (10 YR 8/2)		
2381.1	23.00	L	SPT	15	49	80		CH	FAT CLAY with SAND Dry, dense, yellowish brown (10 YR 5/6) to very pale brown (10 YR 7/3)		
	24.50	M	CMS	23	54	95			23.80		
	25.00	N	CMS	1	32	55		SC	CLAYEY SAND with GRAVEL Dry, dense, yellowish brown (10 YR 5/6) to very pale brown (10 YR 7/3)	(N) Loose sample recovered.	
	26.00			6					24.50		
2381.1	27.50	O	SPT	14	35	80		CH	SANDY FAT CLAY Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)		
	29.00	P	SPT	25	88	95			26.00		
	30.00			35				SC	CLAYEY SAND with GRAVEL Dry, very dense, white (7.5 YR 8/1)	End day 1 drilling @ 27.5'.	
				53					27.50		



START DATE 9/9/13
END DATE 9/10/13
JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
LOCATION Northwest Las Vegas - Clark County
BORING TS-1
E.A. # 73518
GROUND ELEV. 2406.10 (ft)
HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "XP" 189+88
OFFSET 313' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120 (Unit 1627)
OPERATOR Beus/Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED _____ **DATE** _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2371.1	31.50	Q	CMS	19 26 55	81	100		CL	GRAVELLY LEAN CLAY with SAND Dry, hard, light gray (10 YR 7/2) with white (10 YR 8/1) nodules LEAN CLAY Dry to moist, very hard, white (10 YR 8/1) SANDY LEAN CLAY Dry to moist, medium dense to dense, white (10 YR 8/1) to very pale brown (10 YR 7/4) SANDY LEAN CLAY Moist, very stiff, very pale brown (10 YR 8/2) to brown (7.5 YR 5/4)	(Q) Nodules lightly to strongly cemented.
	32.80 33.00	R	SPT	18 30	50/0.3'	100				
	34.50	S	CMS	27 17 21	38	95				
	35 36.00	T	SPT	10 9	20	75				
	37.50									
	39.00	U	CMS	10 15 30	45	95				
2366.1	40 40.50	V	SPT	11 13 18	31	60		GC	CLAYEY GRAVEL with SAND Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1) nodules	(V) Nodules lightly to strongly cemented.
	42.00	W	CMS	11 23 30	53	100		CL	SANDY LEAN CLAY with GRAVEL Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1) nodules	(W) Nodules lightly to strongly cemented.
	43.50	X	SPT	9 13 32	45	95		ML	SANDY SILT with GRAVEL Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1) nodules	
2361.1	45 45.00	Y	CMS	13 14 22	36	85		CL	LEAN CLAY with SAND Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1) nodules LEAN CLAY Dry to moist, hard, light brown (7.5 YR 6/4)	
	46.50	Z	SPT	7 12 21	33	85				
	48.00	AA	CMS	18 18 24	42	95				
2356.1	49.50	BB	SPT	2 7 24	31	65		GC	CLAYEY GRAVEL with SAND Moist, stiff to very stiff, light yellowish brown (10 YR 6/4)	(BB) Sample strongly cemented in sampler shoe.
	50 51.00	CC	CMS	11 24 20	44	95		CH	SANDY FAT CLAY Moist, very stiff, mottled light gray (10 YR 7/2) to brown (7.5 YR 5/4)	(CC) Nodules lightly to strongly cemented.
	52.50	DD	SPT	7 9 11	20	65		GC	CLAYEY GRAVEL with SAND Moist, medium dense, brown (7.5 YR 5/4) CLAYEY GRAVEL with SAND Moist, very stiff, mottled light gray (10 YR 7/2) to brown (7.5 YR 5/4) CLAYEY GRAVEL with SAND Moist, very hard, very pale brown (10 YR 8/3)	
54.00	EE	CMS	11 11 34	45	85					
2351.1	55 55.50	FF	SPT	9 14	50/0.3'	60				
	56.30	GG	CMS	41 50/0.3'	50/0.3'	90		CLAYEY GRAVEL with SAND dry to moist, very hard, very pale brown (10 YR 8/2) to light gray (10 YR 7/2)	(GG) Sample strongly cemented lenses. Very hard drilling from 56.5' to 60.0'. Progress 3.5/30 minutes @ 250	
	60.00									



GEOTECHNICAL ENGINEERING

EXPLORATION LOG

START DATE 9/9/13
 END DATE 9/10/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-1
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+88
 OFFSET 313' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Beus/Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2341.1	65	HH	SPT	15/0.1	15/0.1	0			<p>END TS-1 @ 60.6'</p> <p>psi down pressure. (HH) Last 10 blows; no progress. No sample recovered. Very hard drilling from 60.1' to 60.3'. Progress 0.2'/25 minutes @ 300 psi down pressure. Very hard drilling from 60.3' to 60.6'. Progress 0.3'/30 minutes @ 300 psi down pressure. No groundwater encountered.</p>	
2336.1	70									
2331.1	75									
2326.1	80									
2321.1	85									



EXPLORATION LOG
 START DATE 9/9/13
 END DATE 9/10/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-1-2
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+88
 OFFSET 313' Right
 ENGINEER Boomhower/Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Beus/Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
10/10/13	62.00	2344.1

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2401.1	3.00							CL ML	Asphaltic Concrete	
	4.50	A	CMS	12	24	100			4.50	SILTY CLAY Dry, medium dense, very pale brown (10 YR 7/4)
	5.00	B	SPT	6	19	85		CL	LEAN CLAY with SAND Dry, medium dense, very pale brown (10 YR 7/4) to white (10 YR 8/1)	
	6.00			5					LEAN CLAY Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)	
	6.50			14					LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)	
2396.1	8.00	C	CMS	11	37	95		CL	LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)	
	9.50	D	SPT	11	28	85			LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)	
	10.00	E	CMS	18	31	85			LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)	
	11.00			15					LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)	
2391.1	12.50	F	SPT	8	23	85		SC	SANDY LEAN CLAY Dry, very stiff, light gray (2.5 Y 7/2)	
	14.00	G	CMS	11	38	95			SANDY LEAN CLAY Dry, very stiff, light gray (2.5 Y 7/2)	
	15.00	H	SPT	12	36	85			CLAYEY SAND Dry, very stiff, light gray (2.5 Y 7/2)	
2386.1	15.50	I	CMS	15	15/0.1'	80		GM	CLAYEY SAND with GRAVEL Dry, very hard, light gray (10 YR 7/2)	(I) Last 10 blows; no progress.
	16.60			20					SILTY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2)	
	17.00			31	50/0.4'	95		SC	CLAYEY SAND with GRAVEL Dry, very dense, light gray (10 YR 7/2)	
	18.40	J	CMS	38					CLAYEY GRAVEL with SAND Dry, dense, yellow (10 YR 7/6) to very pale brown (10 YR 8/2)	
	20.00	K	CMS	20	74	95			FAT CLAY with SAND Dry, dense, yellowish brown (10 YR 5/6) to very pale brown (10 YR 7/3)	
2381.1	21.50	L	SPT	15	49	80		CH	CLAYEY SAND with GRAVEL Dry, dense, yellowish brown (10 YR 5/6) to very pale brown (10 YR 7/3)	(N) Loose sample recovered.
	23.00	M	CMS	23	54	95			SANDY FAT CLAY Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	24.50	N	CMS	1	32	55		SC	CLAYEY SAND with GRAVEL Dry, very dense, white (7.5 YR 8/1)	
	25.00	O	SPT	6	35	80			CLAYEY SAND with GRAVEL Dry, very dense, white (7.5 YR 8/1)	
26.00	P	SPT	14	88	95		SC		End day 1 drilling @ 27.5'.	
27.50			16							
29.00			19							
30.00			25							
			35							
			53							



EXPLORATION LOG
 START DATE 9/9/13
 END DATE 9/10/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-1-2
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+88
 OFFSET 313' Right
 ENGINEER Boomhower/Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Beus/Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
10/10/13	62.00	2344.1

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2371.1	31.50	Q	CMS	19 26 55	81	100		CL	GRAVELLY LEAN CLAY with SAND Dry, hard, light gray (10 YR 7/2) with white (10 YR 8/1) nodules LEAN CLAY Dry to moist, very hard, white (10 YR 8/1) SANDY LEAN CLAY Dry to moist, medium dense to dense, white (10 YR 8/1) to very pale brown (10 YR 7/4) SANDY LEAN CLAY Moist, very stiff, very pale brown (10 YR 8/2) to brown (7.5 YR 5/4)	(Q) Nodules lightly to strongly cemented.
	32.80 33.00	R	SPT	18 30	50/0.3'	100				
	34.50	S	CMS	27 17 21	38	95				
	35 36.00	T	SPT	10 9	20	75				
	37.50									
	39.00	U	CMS	10 15 30	45	95				
2366.1	40 40.50	V	SPT	11 13 18	31	60		GC	CLAYEY GRAVEL with SAND Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1) nodules	(V) Nodules lightly to strongly cemented.
	42.00	W	CMS	11 23 30	53	100		CL	SANDY LEAN CLAY with GRAVEL Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1) nodules	(W) Nodules lightly to strongly cemented.
	43.50	X	SPT	9 13 32	45	95		ML	SANDY SILT with GRAVEL Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1) nodules	
2361.1	45 45.00	Y	CMS	13 14 22	36	85		CL	LEAN CLAY with SAND Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1) nodules LEAN CLAY Dry to moist, hard, light brown (7.5 YR 6/4)	
	46.50	Z	SPT	7 12 21	33	85				
	48.00	AA	CMS	18 18 24	42	95				
2356.1	49.50	BB	SPT	2 7 24	31	65		GC	CLAYEY GRAVEL with SAND Moist, stiff to very stiff, light yellowish brown (10 YR 6/4)	(BB) Sample strongly cemented in sampler shoe.
	50 51.00	CC	CMS	11 24 20	44	95		CH	SANDY FAT CLAY Moist, very stiff, mottled light gray (10 YR 7/2) to brown (7.5 YR 5/4)	(CC) Nodules lightly to strongly cemented.
	52.50	DD	SPT	7 9 11	20	65		GC	CLAYEY GRAVEL with SAND Moist, medium dense, brown (7.5 YR 5/4) CLAYEY GRAVEL with SAND Moist, very stiff, mottled light gray (10 YR 7/2) to brown (7.5 YR 5/4) CLAYEY GRAVEL with SAND Moist, very hard, very pale brown (10 YR 8/3)	
54.00	EE	CMS	11 11 34	45	85					
2351.1	55 55.50	FF	SPT	9 14	50/0.3'	60				
	56.30	GG	CMS	41 50/0.3'	50/0.3'	90		CLAYEY GRAVEL with SAND dry to moist, very hard, very pale brown (10 YR 8/2) to light gray (10 YR 7/2)	(GG) Sample strongly cemented lenses. Very hard drilling from 56.5' to 60.0'. Progress 3.5/30 minutes @ 250	
	60.00									



EXPLORATION LOG
 START DATE 9/9/13
 END DATE 9/10/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-1-2
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+88
 OFFSET 313' Right
 ENGINEER Boomhower/Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Beus/Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
10/10/13	62.00	2344.1

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
		HH	SPT	15/0.1	15/0.1	0			62.00	psi down pressure. (HH) Last 10 blows; no progress. No sample recovered.
2341.1	64.50									
	65	A2	CMS	6 10 25	35	100				LEAN CLAY Moist, very stiff to hard, very pale brown (10 YR 7/3)
	66.00									
	67.50	B2	SPT	8 7 6	13	100				LEAN CLAY with SAND Moist, stiff, very pale brown (10 YR 6/3)
	69.50									
2336.1	70	C2	CMS	7 50/0.45	50/0.45	0				
	70.50									
	71.00	D2	SPT	50/0.45	50/0.45	100				LEAN CLAY Moist, hard, very pale brown (10 YR 6/3)
	74.50									
2331.1	75	E2	CMS	18 14 12	26	105		CL		LEAN CLAY with SAND Moist, very stiff, very pale brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6)
	76.00									
	77.50	F2	SPT	4 7 12	19	95				LEAN CLAY with SAND Moist, very stiff, very pale brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6)
	79.50									
2326.1	80	G2	CMS	8 9 54	63	100				LEAN CLAY with SAND Moist, very stiff, very pale brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6)
	81.00									
	81.80	H2	SPT	34 50/0.30'	50/0.30'	100				GRAVELLY LEAN CLAY with SAND Moist, very hard, very pale brown (10 YR 7/4)
	84.50									
2321.1	85	I2	CMS	14 51	50/0.15	75				SANDY LEAN CLAY Moist, very hard, brown (7.5 YR 5/4)
	85.70									
	86.50	J2	SPT	28 50/0.30'	50/0.30'	100				SANDY LEAN CLAY with GRAVEL Moist, very hard, very pale brown (10 YR 7/4)
	89.50									
				20					90.00	GRAVELLY LEAN CLAY Moist, hard, very pale brown (10 YR 7/4)



EXPLORATION LOG
 START DATE 9/9/13
 END DATE 9/10/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-1-2
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+88
 OFFSET 313' Right
 ENGINEER Boomhower/Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Beus/Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
10/10/13	62.00	2344.1

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2311.1	91.00	K2	CMS	30	60	0		CL	<u>GRAVELLY LEAN CLAY</u> Moist, hard, very pale brown (10 YR 7/4)	(L2) 2' + in SPT, CMS sample?
	92.50	L2	SPT	5 9 27	36	55				
		94.50								
	95	M2	CMS	12 20 45	65	115				
2306.1	96.00	N2	SPT	26 30 55	85	100		CL ML	<u>SANDY SILTY CLAY</u> Moist, hard, very pale brown (10 YR 7/4)	98.50
	97.50									
	99.50									
	100	O2	CMS	12 19	50/ .40'	120		CL	<u>LEAN CLAY with SAND</u> Moist, very hard, light yellowish brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6) <u>LEAN CLAY with SAND</u> Moist, hard, very pale brown (10 YR 6/4)	(O2) CMS full, not draining pressure
100.90			28 25 20	45	75					
102.40	P2	SPT								
2301.1	104.50	O2	CMS	50/ .30'	50/ .30'	0		CL	<u>LEAN CLAY</u> Wet, hard, light yellowish brown (10 YR 6/4)	(Q2) 1.3' cuttings in CMS sample, No recovery
	104.88									
	105	R2	SPT	30 17 19	36	120				
2296.1	109.50							CL ML	<u>SILTY CLAY</u> Moist, very hard, light yellowish brown (10 YR 6/4) <u>SILTY CLAY</u> Moist, very hard, light yellowish brown (10 YR 6/4)	
	110	S2	CMS	33 31 60	91	100				
	111.00			18 26 45	71	100				
2291.1	112.50	T2	SPT					CL ML	<u>SILTY CLAY</u> Moist, hard, light yellowish brown (10 YR 6/4)	
	114.50									
	115	U2	CMS	18 28 40	68	100				
	116.00							CL	<u>LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4)	
	117.50	V2	SPT	11 14 26	40	115				
	119.50									
				38						



GEOTECHNICAL ENGINEERING

EXPLORATION LOG

START DATE 9/9/13
 END DATE 9/10/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-1-2
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+88
 OFFSET 313' Right
 ENGINEER Boomhower/Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Beus/Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
10/10/13	62.00	2344.1

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2281.1	121.00	W2	CMS	22	42	115		CL	<u>LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4) <u>LEAN CLAY WITH SAND</u> Moist, hard, light yellowish brown (10 YR 6/4) <u>LEAN CLAY WITH SAND</u> Moist, very stiff, light yellowish brown (10 YR 6/4) <u>LEAN CLAY WITH SAND</u> Moist, hard, light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2) END TS-1-2 @ 127.4'	
	122.50	X2	SPT	5 19 30	49	105				
	124.50									
	125	Y2	CMS	32 40	50/.40'	100				
	125.90			50/.40'						
	127.40	Z2	SPT	24 24 28	52	85				
2276.1	130									
2271.1	135									
2266.1	140									
2261.1	145									



GEOTECHNICAL
ENGINEERING

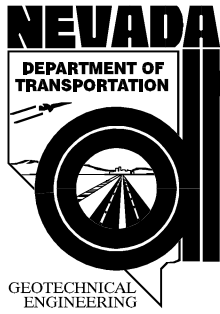
EXPLORATION LOG

START DATE 9/11/13
 END DATE 9/24/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-2
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+92
 OFFSET 313' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
9/23/13	62.00	2344.1

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2401.1	5									
2396.1	10									
2391.1	15									
2386.1	20									
2381.1	25									



EXPLORATION LOG

START DATE 9/11/13
 END DATE 9/24/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-2
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+92
 OFFSET 313' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
9/23/13	62.00	2344.1

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2371.1	35									
2366.1	40									
2361.1	45									
2356.1	50									
2351.1	55									



EXPLORATION LOG
 START DATE 9/11/13
 END DATE 9/24/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-2
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+92
 OFFSET 313' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
9/23/13	62.00	2344.1

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
									MODERATELY TO STRONGLY CEMENTED MATERIALS 62.00		
2341.1	65	A	CMS	6 10 25	35	100		CL	<u>LEAN CLAY</u> Moist, very stiff to hard, very pale brown (10 YR 7/3)		
	66.00								<u>LEAN CLAY with SAND</u> Moist, stiff, very pale brown (10 YR 6/3)		
	67.50	B	SPT	8 7 6	13	100					
	69.50										
2336.1	70	C	CMS	7 50/0.5'	50/0.5'	0				(C) No recovery.	
	71.00	D	SPT	50/0.5'	50/0.5'	100				<u>LEAN CLAY</u> Moist, hard, very pale brown (10 YR 6/3)	
	74.50										
2331.1	75	E	CMS	18 14 12	26	105			<u>LEAN CLAY with SAND</u> Moist, very stiff, very pale brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6)		
	76.00								<u>LEAN CLAY with SAND</u> Moist, very stiff, very pale brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6)		
	77.50	F	SPT	4 7 12	19	95					
	79.50										
2326.1	80	G	CMS	8 9 54	63	100		<u>LEAN CLAY with SAND</u> Moist, very stiff, very pale brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6)			
	81.00							<u>GRAVELLY LEAN CLAY with SAND</u> Moist, very hard, very pale brown (10 YR 7/4)			
	81.80	H	SPT	34 50/0.3'	50/0.3'	100					
	84.50										
2321.1	85	I	CMS	14 51 28	50/0.2'	75		<u>SANDY LEAN CLAY</u> Moist, very hard, brown (7.5 YR 5/4)			
	85.70							<u>SANDY LEAN CLAY with GRAVEL</u> Moist, very hard, very pale brown (10 YR 7/4)			
	86.50	J	SPT	50/0.3'	50/0.3'	100					
	89.50										
				20					<u>GRAVELLY LEAN CLAY</u> Moist, hard, very pale brown (10 YR 7/4)		
									90.00		



EXPLORATION LOG
 START DATE 9/11/13
 END DATE 9/24/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-2
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+92
 OFFSET 313' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
9/23/13	62.00	2344.1

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd					
2311.1	91.00	K	CMS	30	60	0		CL	<u>GRAVELLY LEAN CLAY</u> Moist, hard, very pale brown (10 YR 7/4)	(K) No recovery.	
	92.50	L	SPT	5	36	55					
				9			27				
	94.50										
	95	M	CMS	12	65	115					
96.00			20								
2306.1	96.00	N	SPT	26	85	100		CL ML	<u>SANDY SILTY CLAY</u> Moist, hard, very pale brown (10 YR 7/4)		
	97.50			30			55				
	99.50										
	100	O	CMS	12	50/0.4'	120					
	100.90			19							
102.40	P	SPT	25	45	75						
2301.1	104.50	Q	CMS	50/0.3'	50/0.3'	0		CL	<u>LEAN CLAY with SAND</u> Moist, very hard, light yellowish brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6)	(Q) No recovery.	
	104.88										
	105	R	SPT	30	36	120					
	106.30			17							
	109.50			19							
2296.1	110	S	CMS	33	91	100		CL ML	<u>SILTY CLAY</u> Moist, very hard, light yellowish brown (10 YR 6/4)		
	111.00			31							
	112.50	T	SPT	18	71	100					
	114.50			26							
	115	U	CMS	28	68	100					
116.00			40								
2291.1	117.50	V	SPT	11	40	115		CL	<u>LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4)		
	119.50			14							
				26							
			38								



EXPLORATION LOG

START DATE 9/11/13
 END DATE 9/24/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-2
 E.A. # 73518
 GROUND ELEV. 2406.10 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "XP" 189+92
 OFFSET 313' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
9/23/13	62.00	2344.1

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2281.1	121.00	W	CMS	22 20	42	115		CL	<u>LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4) <u>LEAN CLAY WITH SAND</u> Moist, hard, light yellowish brown (10 YR 6/4) <u>LEAN CLAY WITH SAND</u> Moist, very stiff, light yellowish brown (10 YR 6/4) <u>LEAN CLAY WITH SAND</u> Moist, hard, light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2) END TS-2 @ 127.4'	
	122.50	X	SPT	5 19 30	49	105				
	124.50									
	125	Y	CMS	32 40	50/0.4'	100				
	125.90			50/0.4'						
	127.40	Z	SPT	24 24 28	52	85				
2276.1	130									
2271.1	135									
2266.1	140									
2261.1	145									



EXPLORATION LOG
 START DATE 10/9/13
 END DATE 10/10/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-3
 E.A. # 73518
 GROUND ELEV. 2425.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 65+30
 OFFSET 227' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2420.3	5.00							GC	SANDY GRAVEL, tan, dry	
	6.40	A	CMS	15	50/0.4'	100				
	6.50	B	SPT	50/0.4'	20/0.1'	0				
	7.50									
2415.3	6.80	C	CMS	50/0.3'	50/0.3'	0		GW GC	WELL-GRADED GRAVEL with SILTY CLAY and SAND Dry, very dense, very pale brown (10 YR 7/4)	(B) Last 10 blows; no progress. No sample recovered. (C) Last 10 blows; no progress; No sample recovered.
	9.40	D	CMS	37	50/0.4'	85				
	10.00							SW SM	WELL-GRADED SAND with SILT and GRAVEL Dry, very dense, very pale brown (10 YR 7/4)	
	11.50	E	CMS	9	108	95				
	12.20	F	SPT	50	35/0.2'	100		SC	CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/4)	
	13.00									
2410.3	14.50	G	CMS	20	103	80		GC	CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 7/4)	(F) Last 10 blows; no progress.
	15.00	H	SPT	39	71	80				
	17.50	I	CMS	30/0.2'	30/0.2'	0				
2405.3	17.70							CL	LEAN CLAY with SAND Dry, very stiff, very pale brown (10 YR 7/3) SANDY LEAN CLAY Dry, hard, mottled light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2) LEAN CLAY with SAND Dry, hard, mottled light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2) SANDY LEAN CLAY Dry, very stiff, light brown (7.5 YR 6/4)	(I) Last 10 blows; no progress.
	19.00	J	CMS	16	49	100				
	20.50	K	SPT	15	32	80				
	22.00	L	CMS	12	43	95				
	23.50	M	SPT	14	21	85				
2400.3	25.00							SC	CLAYEY SAND with GRAVEL Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1) CLAYEY SAND with GRAVEL Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	25.50	N	CMS	16	56	95				
	26.50									
	28.00	O	SPT	9	26	80				
	30.00									



EXPLORATION LOG
 START DATE 10/9/13
 END DATE 10/10/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-3
 E.A. # 73518
 GROUND ELEV. 2425.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 65+30
 OFFSET 227' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2390.3	31.50	P	CMS	12 30 47	77	100		GC GM	SILTY CLAYEY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	33.00	Q	SPT	9 8 13	21	85		CH	FAT CLAY with SAND Dry to moist, very stiff, mottled light brown (7.5 YR 6/3) to pale yellow (2.5 Y 8/3)	
	35.00									
2385.3	36.50	R	CMS	22 26 32	58	100		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	38.00	S	SPT	16 16 24	40	75			CLAYEY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	39.50	T	CMS	17 21 36	57	100			CLAYEY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
2380.3	41.00	U	SPT	11 20 17	37	75		MH	GRAVELLY ELASTIC SILT with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	42.00									
	42.40	V	CMS	50/0.4'	50/0.4'	100		GM	SILTY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
2375.3	43.00									
	44.40	W	SPT	16 24 50/0.4'	50/0.4'	70		SC	CLAYEY SAND with GRAVEL Dry, very dense, light brown (7.5 YR 6/3) to pinkish white (7.5 YR 8/2)	
	45.00									
2370.3	45.40	X	CMS	50/0.4'	50/0.4'	100			CLAYEY GRAVEL with SAND Dry to moist, very dense, light brown (7.5 YR 6/3)	
	47.00									
	48.50	Y	CMS	28 15 25	40	100			CLAYEY GRAVEL with SAND Dry to moist, medium dense to dense, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
2370.3	50.00	Z	SPT	17 23 40	63	85			CLAYEY GRAVEL with SAND Dry to moist, very dense, multicolored	
	51.50	AA	CMS	45 32 28	60	100			CLAYEY GRAVEL with SAND Dry to moist, very dense, multicolored	
	53.00	BB	SPT	17 10 12	22	75		GC	CLAYEY GRAVEL with SAND Moist, very stiff, light brown (7.5 YR 6/4)	
2370.3	55.00									
	56.20	CC	CMS	25 23	25/0.2'	90			CLAYEY GRAVEL with SAND Moist, very dense, yellowish brown (10 YR 5/6)	(CC) Last 10 blows; no progress.
	56.60	DD	SPT	25/0.2'	25/0.2'	0				(DD) Last 10 blows; no progress. No sample recovered. Hard drilling at 57.5' to 60.0'.
	60.00									



GEOTECHNICAL ENGINEERING

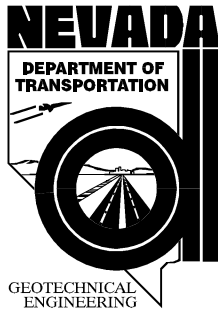
EXPLORATION LOG

START DATE 10/9/13
 END DATE 10/10/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-3
 E.A. # 73518
 GROUND ELEV. 2425.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 65+30
 OFFSET 227' Right
 ENGINEER Boomhower
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A.
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
	60.20	EE	SPT	35/0.2'	35/0.2'	0				Progress 3.5'/30 minutes @ 250 psi down pressure. (EE) Last 10 blows; no progress. No sample recovered. Very hard drilling at 62.0'. Progress 0.3'/20 minutes @ 350 psi down pressure. Very hard drilling at 62.5'. Progress 0.1'/20 minutes @ 350 psi down pressure. No groundwater encountered.
									62.80 END TS-3 @ 62.8'	
2360.3	65									
2355.3	70									
2350.3	75									
2345.3	80									
2340.3	85									



EXPLORATION LOG
 START DATE 10/9/13
 END DATE 10/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-3A
 E.A. # 73518
 GROUND ELEV. 2425.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 65+30
 OFFSET 227' Right
 ENGINEER Boomhower/ Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A. /4" Rotary
 BACKFILLED Wash DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
10/21/13	63.00	2362.3

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2420.3	5.00							GC	SANDY GRAVEL, tan, dry	
	6.40	A	CMS	15	50/0.4'	100				
	6.50	B	SPT	50/0.4'	20/0.1'	0			7.00	
	7.50									
	6.80	C	CMS	50/0.3'	50/0.3'	0				
2415.3	9.40	D	CMS	37	50/0.4'	85		GW GC	WELL-GRADED GRAVEL with SILTY CLAY and SAND Dry, very dense, very pale brown (10 YR 7/4)	(B) Last 10 blows; no progress. No sample recovered. (C) Last 10 blows; no progress; No sample recovered.
	10.00									
	11.50	E	CMS	9	108	95		SW SM	WELL-GRADED SAND with SILT and GRAVEL Dry, very dense, very pale brown (10 YR 7/4)	
	12.20	F	SPT	50	35/0.2'	100				
	13.00							SC	CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/4)	
14.50	G	CMS	20	103	80					13.80
2410.3	15.00	H	SPT	39	71	80		GC	CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 7/4)	(I) Last 10 blows; no progress.
	16.00									
	17.50	I	CMS	30/0.2'	30/0.2'	0			17.50	
2405.3	19.00							CL	LEAN CLAY with SAND Dry, very stiff, very pale brown (10 YR 7/3) SANDY LEAN CLAY Dry, hard, mottled light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2) LEAN CLAY with SAND Dry, hard, mottled light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2) SANDY LEAN CLAY Dry, very stiff, light brown (7.5 YR 6/4)	
	20.50	J	CMS	16	49	100				
	22.00	K	SPT	15	32	80				
	23.50	L	CMS	12	43	95				
	25.00	M	SPT	14	21	85				
2400.3	25.00							SC	CLAYEY SAND with GRAVEL Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1) CLAYEY SAND with GRAVEL Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	26.50	N	CMS	16	56	95				
	28.00	O	SPT	9	26	80				
	30.00			13						



EXPLORATION LOG
 START DATE 10/9/13
 END DATE 10/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-3A
 E.A. # 73518
 GROUND ELEV. 2425.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 65+30
 OFFSET 227' Right
 ENGINEER Boomhower/ Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A. /4" Rotary
 BACKFILLED Wash DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
10/21/13	63.00	2362.3

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2390.3	31.50	P	CMS	12 30 47	77	100		GC GM	SILTY CLAYEY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	33.00	Q	SPT	9 8 13	21	85		CH	FAT CLAY with SAND Dry to moist, very stiff, mottled light brown (7.5 YR 6/3) to pale yellow (2.5 Y 8/3)	
	35.00 36.50	R	CMS	22 26 32	58	100		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
2385.3	38.00	S	SPT	16 16 24	40	75		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	39.50	T	CMS	17 21 36	57	100			CLAYEY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	40 41.00	U	SPT	11 20 17	37	75		MH	GRAVELLY ELASTIC SILT with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
2380.3	42.00 42.40	V	CMS	50/0.4'	50/0.4'	100		GM	SILTY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	43.00									
	44.40	W	SPT	16 24 50/0.4'	50/0.4'	70		SC	CLAYEY SAND with GRAVEL Dry, very dense, light brown (7.5 YR 6/3) to pinkish white (7.5 YR 8/2)	
2375.3	45.00 45.40	X	CMS	50/0.4'	50/0.4'	100			CLAYEY GRAVEL with SAND Dry to moist, very dense, light brown (7.5 YR 6/3)	
	47.00									
	48.50	Y	CMS	28 15 25	40	100			CLAYEY GRAVEL with SAND Dry to moist, medium dense to dense, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
2370.3	50.00	Z	SPT	17 23 40	63	85			CLAYEY GRAVEL with SAND Dry to moist, very dense, multicolored	
	51.50	AA	CMS	45 32 28	60	100			CLAYEY GRAVEL with SAND Dry to moist, very dense, multicolored	
	53.00	BB	SPT	17 10 12	22	75		GC	CLAYEY GRAVEL with SAND Moist, very stiff, light brown (7.5 YR 6/4)	
2370.3	55.00									End day 1 drilling @ 53.0'.
	56.20	CC	CMS	25 23	25/0.2'	90			CLAYEY GRAVEL with SAND Moist, very dense, yellowish brown (10 YR 5/6)	(CC) Last 10 blows; no progress.
	56.60	DD	SPT	25/0.2'	25/0.2'	0				(DD) Last 10 blows; no progress. No sample recovered. Hard drilling at 57.5' to 60.0'.
	60.00									



EXPLORATION LOG
 START DATE 10/9/13
 END DATE 10/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-3A
 E.A. # 73518
 GROUND ELEV. 2425.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 65+30
 OFFSET 227' Right
 ENGINEER Boomhower/ Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A. /4" Rotary
 BACKFILLED Wash DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
10/21/13	63.00	2362.3

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot					
	60.20	EE	SPT	35/0.2'	35/0.2'	0				Progress 3.5'/30 minutes @ 250 psi down pressure. (EE) Last 10 blows; no progress. No sample recovered.
2360.3	65							CL ML		Very hard drilling at 62.0'. Progress 0.3'/20 minutes @ 350 psi down pressure. Very hard drilling at 62.5'. Progress 0.1'/20 minutes @ 350 psi down pressure.
2355.3	70	FF	CMS	56	58	100				<u>SILTY CLAY with SAND</u> Moist, hard, light yellowish brown (10 YR 6/4)
	71.00			28						
	72.50	GG	SPT	21	76	100				<u>SILTY CLAY with SAND</u> Moist, very hard, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/6)
	74.50			43						
2350.3	75	HH	CMS	8	27	100				<u>LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4)
	76.00			11						
	77.50	II	SPT	6	21	100				<u>LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/6) mottled with black
	79.50			8						
2345.3	80	JJ	CMS	19	57	100				<u>LEAN CLAY with SAND</u> Moist, hard, light yellowish brown (10 YR 6/4)
	81.00			31						
	82.50	KK	SPT	9	42	100				<u>LEAN CLAY with SAND</u> Moist, hard, light yellowish brown (10 YR 6/4)
	84.50			15						
2340.3	85	LL	CMS	56	50/0.4'	0				(LL) No progress last 20 blows, no sample recovered.
	85.40			50/0.4'						
	86.90	MM	SPT	12	54	100				<u>GRAVELLY LEAN CLAY with SAND</u> Moist, hard, light yellowish brown (10 YR 6/4)
	89.50			24						
	89.70	NN	CMS	30	50/0.2'	0				(NN) No progress last 40 blows, no sample
										<u>MODERATELY CEMENTED MATERIALS</u>



START DATE 10/9/13
 END DATE 10/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-3A
 E.A. # 73518
 GROUND ELEV. 2425.30 (ft)
 HAMMER DROP SYSTEM Automatic

EXPLORATION LOG

STATION "X" 65+30
 OFFSET 227' Right
 ENGINEER Boomhower/ Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A. /4" Rotary
 BACKFILLED Wash DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
10/21/13	63.00	2362.3

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot					
									<u>MODERATELY CEMENTED MATERIALS</u>	recovered.
	92.00									
2330.3	94.50	OO	CMS	37	50/0.3'	100		CL ML	<u>GRAVELLY SILTY CLAY with SAND</u> Moist, very hard, very pale brown (10 YR 7/3)	
	95.30			35					<u>SANDY SILTY CLAY</u> Moist, very hard, very pale brown (10 YR 7/3)	
	96.80	PP	SPT	39	92	100				
				53						
	99.50									
2325.3	100	QQ	CMS	16		0		CL		(QQ) No sample recovered.
	101.00			9	41					
				32						
	102.40	RR	SPT	3	50/0.4'	150			<u>GRAVELLY LEAN CLAY</u> Moist, very hard, brownish yellow (10 YR 6/6) to very pale brown (10 YR 7/3)	
				6						
				50/0.4'						
	103.00								<u>WEAKLY CEMENTED MATERIALS</u>	
	104.50									
2320.3	105.00	SS	CMS	50/0.5'	50/0.5'	40		CL	<u>GRAVELLY LEAN CLAY with SAND</u> Moist, very hard, brownish yellow (10 YR 6/6) to very pale brown (10 YR 7/3)	
	105.40	TT	SPT	50/0.4'	50/0.4'	100				
	106.00									Depth 106.0'-110.5' .08ft/min to .15 ft/min drilling rate 250psi down
									<u>WEAKLY TO STRONGLY CEMENTED MATERIALS</u>	
	108.50									
2315.3	110	UU	SPT	50/0.2'	50/0.2'	0				(UU) No sample recovered.
	114.50									
2310.3	115	VV	CMS	31	50/0.3'	95		CL ML	<u>SILTY CLAY</u> Moist, very hard, light yellowish brown (10 YR 6/4)	
	115.80			56						
				19	50/0.3'				<u>SILTY CLAY</u> Moist, very hard, light yellowish brown (10 YR 6/4)	
	117.10	WW	SPT	32	50/0.3'	95				
				19						
				50/0.3'						
	118.30									
	119.50							CL	<u>LEAN CLAY</u> Moist, hard, reddish yellow (7.5 YR 6/6)	
				22						
	120.00									



EXPLORATION LOG

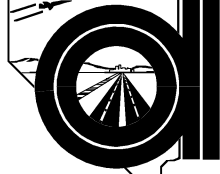
START DATE 10/9/13
 END DATE 10/21/13
 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange
 LOCATION Northwest Las Vegas - Clark County
 BORING TS-3A
 E.A. # 73518
 GROUND ELEV. 2425.30 (ft)
 HAMMER DROP SYSTEM Automatic

STATION "X" 65+30
 OFFSET 227' Right
 ENGINEER Boomhower/ Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 6" H.S.A. /4" Rotary
 BACKFILLED Wash DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
10/21/13	63.00	2362.3

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2300.3	121.00	XX	CMS	26 45	71	75		CL	<u>LEAN CLAY</u> Moist, hard, reddish yellow (7.5 YR 6/6) <u>LEAN CLAY</u> Moist, hard, reddish yellow (7.5 YR 6/6) <u>LEAN CLAY</u> Moist, hard, reddish yellow (7.5 YR 6/6) <u>LEAN CLAY with GRAVEL</u> Moist, hard, reddish yellow (7.5 YR 6/6)	
	122.50	YY	SPT	6 10 32	42	115				
	124.50									
	125 126.00	ZZ	CMS	14 22 39	61	80				
	127.50	AB	SPT	13 20 34	54	140				
2295.3	130									
2290.3	135									
2285.3	140									
2280.3	145									
									END TS3-A @ 127.5'	

NEVADA

**DEPARTMENT OF
TRANSPORTATION**GEOTECHNICAL
ENGINEERINGSTART DATE 10/21/13END DATE 10/21/13JOB DESCRIPTION US95 / CC-215 System-to-System InterchangeLOCATION Northwest Las Vegas - Clark CountyBORING TS3-AE.A. # 73518GROUND ELEV. 2425.30 (ft)HAMMER DROP SYSTEM Automatic

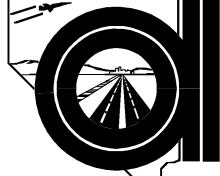
EXPLORATION LOG

SHEET 1 OF 5

STATION "X" 65+30
 OFFSET 227' Right
 ENGINEER Lawrence
 EQUIPMENT Diedrich D-120 (Unit 1627)
 OPERATOR Pypkowski
 DRILLING METHOD 4" Rotary Wash
 BACKFILLED _____ DATE _____

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
10/21/13	63.00	2362.3

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2420.3	5								Continue drilling down Borehole TS-3 from depth 62.8' as Borehole TS3-A	
2415.3	10									
2410.3	15									
2405.3	20									
2400.3	25									



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 E.A. # 73518
 GROUND ELEV. 2425.30 (ft)
 HAMMER DROP SYSTEM Automatic

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10/21/13	63.00	2362.3

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2390.3	35									
2385.3	40									
2380.3	45									
2375.3	50									
2370.3	55									



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10/21/13	63.00	2362.3

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
									62.80	
2360.3	65							CL ML		
	69.50									
2355.3	70	A	CMS	56	58	100			<u>SILTY CLAY with SAND</u> Moist, hard, light yellowish brown (10 YR 6/4)	
	71.00			30						
	72.50	B	SPT	21	76	100			<u>SILTY CLAY with SAND</u> Moist, very hard, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/6)	
	72.50			43						
	74.50			33						
2350.3	75	C	CMS	8	27	100		CL	<u>LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4)	
	76.00			11						
	77.50	D	SPT	6	21	100			<u>LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/6) mottled with black	
	79.50			8						
2345.3	80	E	CMS	19	57	100		CL	<u>LEAN CLAY with SAND</u> Moist, hard, light yellowish brown (10 YR 6/4)	
	81.00			31						
	82.50	F	SPT	9	42	100			<u>LEAN CLAY with SAND</u> Moist, hard, light yellowish brown (10 YR 6/4)	
	84.50			15						
2340.3	85	G	CMS	56	50/0.4'	0			<u>GRAVELLY LEAN CLAY with SAND</u> Moist, hard, light yellowish brown (10 YR 6/4)	(G) No progress last 20 blows, no sample recovered.
	85.40			50/0.4'						
	86.90	H	SPT	12	54	100				
	88.50			24						
	89.70	I	CMS	30	50/0.2'	0			<u>MODERATELY CEMENTED MATERIALS</u>	(I) No progress last 40 blows, no sample recovered.
	89.70			50/0.2'						



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ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot					
									<u>MODERATELY CEMENTED MATERIALS</u>	
	92.00									
2330.3	94.50	J	CMS	37	50/0.3'	100		CL ML	<u>GRAVELLY SILTY CLAY with SAND</u> Moist, very hard, very pale brown (10 YR 7/3) <u>SANDY SILTY CLAY</u> Moist, very hard, very pale brown (10 YR 7/3)	
	95.30			35						
	96.80	K	SPT	39	92	100				
	99.50									(L) No sample recovered.
2325.3	100	L	CMS	16	41	0		CL	<u>GRAVELLY LEAN CLAY</u> Moist, very hard, brownish yellow (10 YR 6/6) to very pale brown (10 YR 7/3)	
	101.00			32						
	102.40	M	SPT	3	50/0.4'	150				
	103.00								<u>WEAKLY CEMENTED MATERIALS</u>	
	104.00									
2320.3	104.50								<u>GRAVELLY LEAN CLAY with SAND</u> Moist, very hard, brownish yellow (10 YR 6/6) to very pale brown (10 YR 7/3)	
	105.00	N	CMS	50/0.5'	50/0.5'	40		CL		
	105.40	O	SPT	50/0.4'	50/0.4'	100				
	106.00									Depth 106.0'-110.5' .08ft/min to .15 ft/min drilling rate 250psi down
	108.50								<u>WEAKLY TO STRONGLY CEMENTED MATERIALS</u>	
2315.3	109.50	P	SPT	50/0.2'	50/0.2'	0				(P) No sample recovered.
	110.50									
	114.50									
2310.3	115	Q	CMS	31	50/0.3'	95		CL ML	<u>SILTY CLAY</u> Moist, very hard, light yellowish brown (10 YR 6/4)	
	115.80			56						
	117.10	R	SPT	19	50/0.3'	95			<u>SILTY CLAY</u> Moist, very hard, light yellowish brown (10 YR 6/4)	
	118.30			32						
	119.50									
	120.00			22				CL	<u>LEAN CLAY</u> Moist, hard, reddish yellow (7.5 YR 6/6)	



GEOTECHNICAL
ENGINEERING

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10/21/13	63.00	2362.3

ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
2300.3	121.00	S	CMS	26 45	71	75		CL	<u>LEAN CLAY</u> Moist, hard, reddish yellow (7.5 YR 6/6) <u>LEAN CLAY</u> Moist, hard, reddish yellow (7.5 YR 6/6) <u>LEAN CLAY</u> Moist, hard, reddish yellow (7.5 YR 6/6) <u>LEAN CLAY with GRAVEL</u> Moist, hard, reddish yellow (7.5 YR 6/6)	
	122.50	T	SPT	6 10 32	42	115				
	124.50									
	125	U	CMS	14 22 39	61	80				
	126.00	V	SPT	13 20 34	54	140				
127.50							127.50			
2295.3	130									
2290.3	135									
2285.3	140									
2280.3	145									
									END TS3-A @ 127.5'	

BOREHOLE DATA

BOREHOLE	STATION	OFFSET	ELEVATION	DEPTH	FOUND ON SHEET(S)	NUMBER OF PAGES							
						BORING LOGS	TEST SUMMARY	PARTICLE SIZE	CHEM	CONSOL	DIRECT SHEAR	TRIAXIAL	TOTAL
BI-1	"XP"188+79	283' Rt.	2406.1'	61.0'	9, GE 05	3	2	6					11
BI-2	"XP"189+74	257' Rt.	2406.6'	59.2'	9, GE 05	2	3	10		4	5		24
BI-3	"XP"187+57	242' Rt.	2406.1'	66.5'	9, GE 05	3	3	9			1		16
BI-4	"X"60+50	192' Rt.	2441.4'	69.3'	10, GE 02	3	3	8					14
BI-5	"X"60+71	283' Rt.	2439.3'	42.2'	GE 02	2	2	6		4			14
BI-6	"X"60+71	247' Rt.	2440.0'	75.5'	GE 02	3	2	5					10
BI-7	"XP"181+80	125' Lt.	2402.6'	83.0'	9	3	4	12		2	1	2	24
BI-8	"XP"188+86	288' Rt.	2405.9'	97.2'	9, GE 05	4	2	7		4		3	20
BI-9	"XP"187+60	128' Rt.	2406.8'	76.5'	9, GE 05	3	3	10			1		17
BI-9A	"XP"187+60	128' Rt.	2406.8'	120.9'	9, GE 05	5	3	8		2		2	20
BI-10	"X"79+51	207' Rt.	2403.5'	65.1'	11, GE 05	3	2	7			1	1	14
BI-10A	"X"79+51	207' Rt.	2403.5'	56.5'	11, GE 05	2	1	1					4
BI-10B	"X"79+51	207' Rt.	2403.5'	78.0'	11, GE 05	3	1	2					6
BI-11	"X"61+99	291' Rt.	2447.9'	103.0'	10, GE 02	4	4	12		2	2	1	25
BI-12	"X"62+05	170' Rt.	2436.6'	45.0'	10, GE 02	2	2	5					9
BI-13	"XP"183+68	99' Lt.	2404.6'	95.1'	9	4	4	13		2		3	26
BI-14	"XP"189+74	263' Rt.	2406.6'	70.3'	9, GE 05	3	1	4					8
BI-15	"XP"185+99	1' Rt.	2406.2'	101.5'	9	4	5	17		5	1	2	34
BI-16	"X"62+06	189' Rt.	2437.0'	56.5'	10, GE 02	2	1	2					5
BI-17	"X"89+47	154' Rt.	2398.7'	116.5'	11, 16	4	4	12				3	23
BI-18	"X"89+01	98' Rt.	2388.4'	36.5'	11, 16	2	1	3					6
BI-19	"X"86+27	114' Rt.	2394.1'	12.0'	11, 16	1	1	1					3
BI-20	"X"89+07	186' Rt.	2390.7'	13.0'	11, 16	1	1	1					3
BI-21	"X"87+94	85' Rt.	2390.1'	54.9'	11, 16	2	3	9		2		2	18
BI-22	"X"87+92	225' Rt.	2392.4'	57.6'	11, 16	2	2	6		2		2	14
BI-23	"X"80+87	12' Rt.	2421.5'	78.1'	11, GE 05	3	3	8		1			15
BI-23A	"X"81+07	12' Rt.	2421.5'	122.6'	11, GE 05	5	3	10		3		4	25
BI-24	"X"87+50	167' Rt.	2393.1'	63.8'	11, 16	3	4	12		3		1	23

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						BORING LOGS	TEST SUMMARY	PARTICLE SIZE	CHEM	CONSOL	DIRECT SHEAR	TRIAXIAL	TOTAL
BI-25	"X"91+50	125' Rt.	2387.8'	58.0'	11, 16	2	3	11					16
BI-26	"X"60+03	429' Lt.	2438.9'	95.1'	GE 02	4	3	10		3	3	3	26
BI-27	"X"60+26	35' Rt.	2446.3'	64.5'	10, GE 02	3	3	10					16
BI-28	"X"89+10	222' Rt.	2390.2'	53.0'	11, 16	2	3	11		4	1		21
BI-29	"XP"204+19	250' Lt.	2428.9'	100.9'	10, GE 02	4	4	15		3		4	30
BI-30	"X"65+98	316' Lt.	2427.2'	56.5'	10, GE 02	2	3	10					15
BI-31	"X"59+50	219' Lt.	2431.5'	123.0'	10, GE 02	5	6	20		4		5	40
BI-32	"X"59+01	334' Lt.	2439.4'	59.0'	GE 02	2	3	8					13
BI-33	"X"90+94	243' Lt.	2384.1'	56.5'	11	3	3	9					15
BI-34	"X"87+86	306' Lt.	2392.9'	56.5'	11	2	2	8					12
BI-35	"X"89+04	249' Lt.	2395.3'	140.9'	11	5	5	17		5		4	36
BI-36	"X"87+37	312' Lt.	2393.3'	55.7'	11	2	3	10					15
BI-37	"X"82+60	132' Lt.	2405.6'	60.0'	11, GE 05	2	3	9					14
BI-37A	"X"82+60	132' Lt.	2405.6'	122.8'	11, GE 05	5	3	8		4		2	22
BI-38	"X"62+13	189' Rt.	2436.5'	64.5'	10, GE 02	3	1	1					5
BI-39	"X"86+54	265' Lt.	2396.5'	118.0'	11	4	7	27		4	1	2	45
BI-40	"X"84+54	224' Lt.	2402.2'	98.0'	11	4	4	14		4		2	28
BI-41	"X"87+72	596' Rt.	2389.5'	67.0'	16	3	2	8		2	1		16
BI-42	"X"88+02	489' Rt.	2390.0'	67.5'	16	3	2	7		1			13
BI-43	"XP"203+64	304' Rt.	2425.0'	51.8'	18, GE 03	2	1	4					7
BI-44	"XP"202+61	337' Rt.	2421.0'	71.5'	18, GE 03	3	2	4				1	10
BI-45	"XP"204+53	282' Rt.	2423.0'	45.8'	18, GE 03	2	2	3					7
BI-46	"X"80+65	190' Rt.	2401.0'	50.8'	11, GE 05	2	2	6					10
BI-47	"X"82+14	201' Rt.	2399.3'	45.0'	11, GE 05	2	2	7		1			12
BI-48	"XP"209+22	206' Lt.	2436.0'	65.5'	GE 03	3	2	3					8
BI-49	"XP"207+68	219' Lt.	2432.0'	81.5'	GE 03	3	3	9		1	1	4	21
BI-50	"XP"205+93	235' Lt.	2427.0'	76.5'	10, GE 03	3	2	6				2	13
BI-51	"XP"194+35	180' Rt.	2410.5'	93.0'	GE 05	4	4	12		4		2	26
BI-52	"X"68+86	67' Rt.	2421.9'	62.5'	10, GE 05	3	3	8					14
BI-53	"X"98+67	193' Rt.	2379.5'	48.0'	12	2	3	10					15

BOREHOLE	STATION	OFFSET	ELEVATION	DEPTH	FOUND ON SHEET(S)	NUMBER OF PAGES							
						BORING LOGS	TEST SUMMARY	PARTICLE SIZE	CHEM	CONSOL	DIRECT SHEAR	TRIAXIAL	TOTAL
BI-54	"X"95+89	235' Rt.	2383.7'	40.5'	12	2	2	7					11
BI-55	"X"106+95	183' Rt.	2366.0'	50.1'	12	2	3	9					14
BI-56	"X"102+70	192' Rt.	2373.8'	43.0'	12	2	3	8					13
BI-57	"XP"131+69	145' Lt.	2384.5'	36.5'	5	2	4	12					18
BI-58	"X"117+16	161' Lt.	2358.5'	46.5'	13	2	3	11		4		2	22
BI-59	"X"49+70	133' Lt.	2469.0'	28.0'	GE 01	1	1	4					6
BI-60	"XP"197+87	227' Rt.	2415.0'	100.8'	18, GE 04	4	3	9		2		1	19
BI-61	"XP"193+48	189' Rt.	2410.3'	56.2'	GE 05	2	3	11					16
BI-62	"XP"193+25	242' Rt.	2409.5'	58.0'	GE 05	2	3	9	1			1	16
BI-63	"XP"185+33	238' Rt.	2408.0'	63.0'	9, GE 05	3	2	8		2	1	2	18
BI-64	"X"70+35	262' Lt.	2418.0'	121.3'	18, GE 04	5	5	17		2	1		30
BI-65	"XP"191+93	271' Rt.	2408.5'	103.0'	GE 05	4	6	20					30
BI-66	"X"76+88	241' Rt.	2407.5'	57.2'	9, GE 05	2	3	11					16
BI-67	"XP"192+22	185' Rt.	2409.4'	118.8'	GE 05	4	3	10					17
BI-68	"X"88+93	109' Lt.	2396.3'	47.5'	11	2	2	6			2		12
BI-69	"XP"202+65	263' Lt.	2427.5'	91.6'	10, GE 02	4	3	8					15
BI-70	"X"71+48	174' Lt.	2416.0'	44.2'	18, GE 04	2	2	6					10
BI-71	"X"100+42	147' Lt.	2374.9'	19.3'	12	1	1	3					5
BI-72	"X"100+55	84' Rt.	2362.9'	16.4'	12	1	1	2					4
BI-73	"X"100+46	91' Rt.	2376.3'	26.5'	12	1	2	7					10
BI-74	"X"108+91	89' Lt.	2341.5'	40.1'	13	2	3	9					14
BI-75	"XP"196+70	183' Lt.	2417.7'	57.0'	10, GE 05	2	2	8		1			13
BI-75A	"X"69+82	179' Rt.	2417.7'	90.9'	10, GE 05	4	2	6				1	13
BI-76	"XP"198+16	243' Lt.	2421.6'	112.7'	10, GE 05	4	4	15		1		3	27
BI-77	"X"88+38	337' Rt.	2390.1'	51.0'	11, 16, GE 07	2	3	8		4		1	18
BI-78	"X"66+65	174' Lt.	2425.0'	49.9'	10, GE 02	2	3	6					11
BI-79	"X"69+13	144' Rt.	2419.6'	33.0'	10, GE 05	2	2	4					8

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TS-1	"XP"189+88	313' Rt.	2406.1'	127.4'	9, GE 05	3	6	21		2	2	1	35
TS-2	"XP"189+88	313' Rt.	2406.1'	127.4'	9, GE 05	5	4	14		7		9	39
TS-1-2	"XP"189+88	313' Rt.	2406.1'	127.4'	9, GE 05	5							5
TS-3	"X"65+30	227' Rt.	2425.3'	127.5'	10, GE 02	3	4	14					21
TS3-A	"X"65+30	227' Rt.	2425.3'	127.5'	10, GE 02	5	4	10		1		3	23
TS-3A	"X"65+30	227' Rt.	2425.3'	127.5'	10, GE 02	5							5