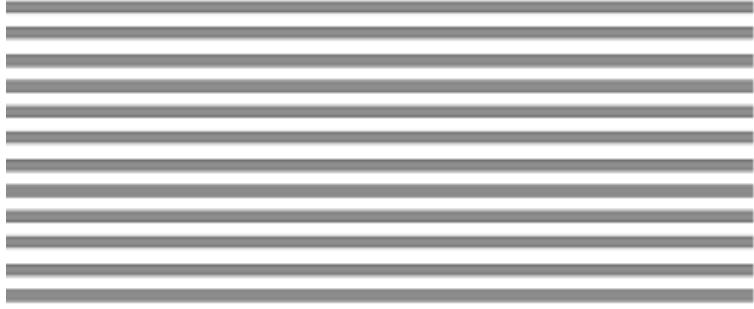


**BLUE DIAMOND DETENTION BASIN
MATERIAL INVESTIGATION with TEST RESULTS
CLARK COUNTY
EA 72495
JULY 2004**



MATERIALS DIVISION

TABLE OF CONTENTS

INTRODUCTION..... 1
FIELD INVESTIGATION..... 2

APPENDICES

APPENDIX A..... Information from June 2001 Investigation
APPENDIX B..... Information from May 2004 Investigation

INTRODUCTION

This compilation has been prepared for informational purposes, regarding the Blue Diamond Detention Basin located one mile north of State Route 160 (Blue Diamond Road), east of the Union Pacific Railroad tracks, in Clark County (see Photo 1). It is not intended to be an all-inclusive source of information regarding this project. As well as providing hydraulic storage capacity, this site will be excavated to supply material needed in several phases of construction on the SR 160 projects. The basin will require approximately 950,000 cubic yards of excavation. The investigation was performed to determine the quality of the material to be excavated.



Photo 1. Blue Diamond Detention Basin Site – Looking Northwest

FIELD INVESTIGATION

The Geotechnical Section performed investigations for the project in June 2001, and May 2004. The first investigation consisted of 16 holes spaced around the site, and advanced with an excavator to depths between 9 and 17 feet. The second investigation consisted of drilling boreholes at approximately the same locations to depths of 35 feet. The primary focus of this phase was to search for and identify any areas containing strongly cemented soils (caliche). The approximate location of each borehole is shown in the information provided for the first site investigation. Surface elevations were obtained for the holes by surveying from a known elevation point.

Excavation was performed with a John Deere 690E Excavator, while drilling was accomplished utilizing a Mobile B-57 drill rig equipped with six-inch solid auger, and a Diedrich D-120 drill rig equipped with six-inch solid auger, as well as eight-inch hollow stem auger. Bulk soil samples were obtained while drilling. Boring logs are provided in the information from the second site investigation. Of the approximately 560 linear feet drilled, only one location in one borehole (BDB-12) appeared to be strongly cemented enough to attempt to obtain a core sample. This occurred at a depth of 23 feet. Coring was attempted for 18 inches, and produced two one-inch long pieces of caliche (see Photo 2). The other 16 inches of sample was collected as loose gravel, indicating that the soil matrix was washed away during the actual coring (see Photo 3). Out of the sixteen locations drilled to depths of 35 feet (~560' total length), approximately 10' to 12', or two percent could be characterized as strongly cemented. These sixteen boreholes represent conditions found at those locations only.



Photo 2. Caliche Sample from Borehole BDB-12

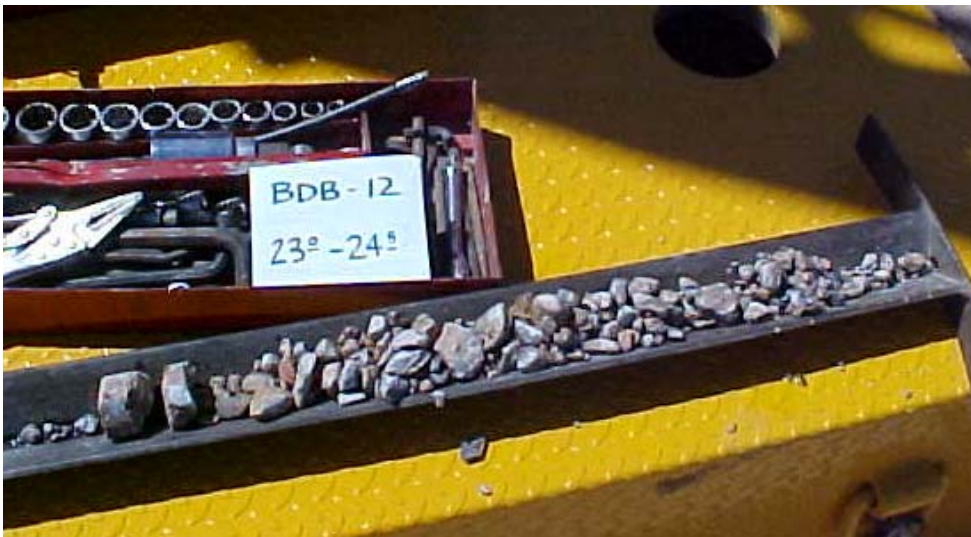
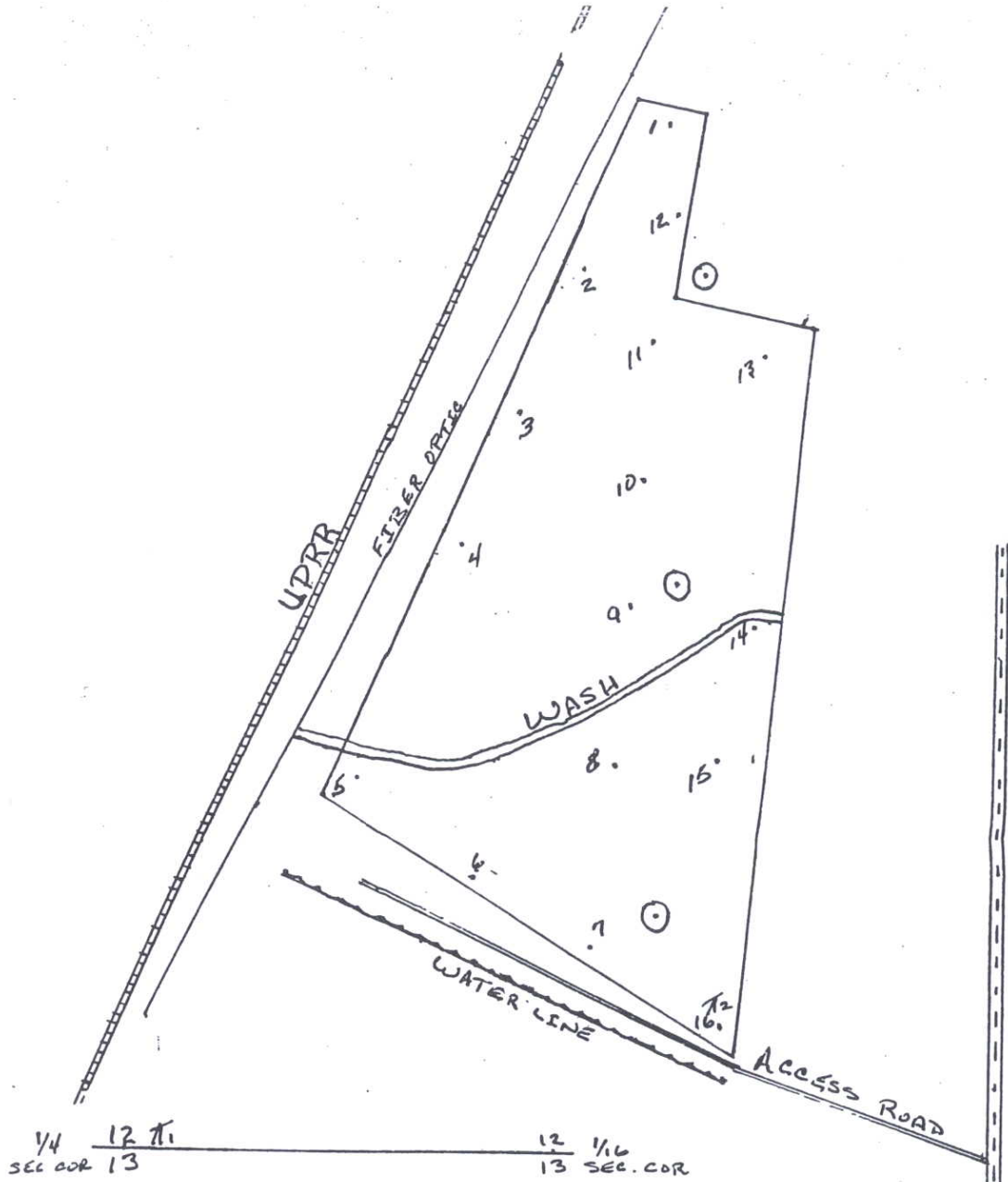


Photo 3. Complete Sample from Borehole BDB-12

The investigation provided information indicating the soils are primarily poorly- to well-graded silty and sandy gravels. This determination is based on samples brought to the surface by auger drilling. These samples become less accurately defined as depth increases, due to soil mixing as the sample is augered to the surface.








APPENDIX A

Information from June 2001 Investigation

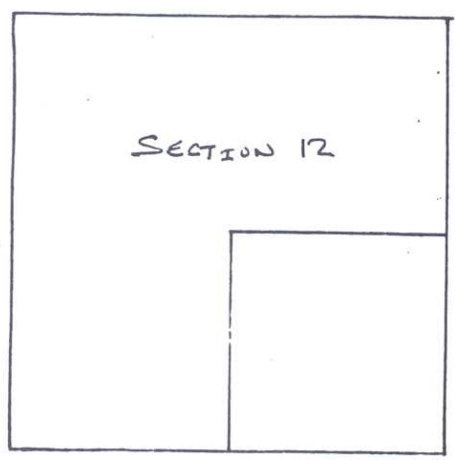


LEGAL: SE 1/4 SEC 12, T22S, R61E
EA 12495 EIP

LEGEND:

- UPRR 
- FIBER OPTIC 
- WASH 
- WATER LINE 
- ACCESS ROAD 
- POWER POLES 
- TEST HOLES 

PIT COMPLETED 6-27-01
DRAWN 7-3-01
BY M. DARRAGH



N

Date Reported 07/31/01
 Laboratory No. AO-21-01
 RV - 279 - 01, C - 316 - 01
 Date Received 06/29/01
 Checked By MAP
 Sheet Number 1 of 3

STATE OF NEVADA
 DEPARTMENT OF
 TRANSPORTATION
 MATERIALS DIVISION
 1263 S. Stewart, C.C., Nv., 89712

Cont./E.A. No. 72495
 County: CLARK
 Project No.: SR-160, CL 1.0
 Project: Sec. 12, T.22S.,R.61E.

REPORT OF TESTS ON SOILS AND AGGREGATES

Material: PIT AGGREGATE

Log of Test Hole or Core

Date Field Work Completed 06/28/01
 Sampled (Observed) By SWIFT
 Source of Sample BLUE DIAMOND RETENSION BASIN



R-VALUE
 #5

Distance or Quantity Represented by Sample _____

SIEVE SIZE:		%PASSING	SPECS			SPECS
75.00mm	3"	100	_____	LIQUID LIMIT	19	_____
50.00mm	2"	98	_____	PLASTICITY INDEX	NP	_____
37.50mm	1 1/2"	97	_____	SPECIFIC GRAVITY	_____	_____
25.00mm	1"	88	_____	RESISTANCE VALUE	82	_____
19.00mm	3/4"	80	_____	COVER THICKNESS	2.5"	EXPANSION PRES. 0
12.50mm	1/2"	65	_____	SAND EQUIVALENT	57	_____
9.50mm	3/8"	56	_____	FRACTURED FACE,%	_____	_____
4.75mm	NO. 4	39	_____	LAR. % LOSS AT 500 REV.	_____	_____
2.36mm	NO. 10	28	_____	SOUNDNESS (COARSE AGG)	_____	_____
1.18mm	NO. 16	25	_____	SOUNDNESS (FINE AGG)	_____	_____
425µm	NO. 40	21	_____	PARTS PER MILLION MAX	_____	_____
300µm	NO. 50	19	_____	PARTS PER MILLION MAX	_____	_____
150µm	NO. 100	8	_____	Ohms-cm MIN.	_____	_____
75µm	NO. 200	3	_____	REMARKS:	_____	_____

WATER-SOLUBLE SALT:
 CHLORIDE _____
 SULPHATE _____
 pH 8.0
 RESISTIVITY 3,584

A.R.B. CLASS A - 1 - a (0)

REMARKS AND RECOMMENDATIONS:

DISTRIBUTION:
 _____ DISTRICT ENGINEER
 _____ RESIDENT ENGINEER
 _____ CONSTRUCTION ENGINEER
 1 _____ LABORATORY
 _____ LAS VEGAS FACILITY

Date Reported 07/31/01
 Laboratory No. AO-21-01
 RV - 280 - 01, C - 317 - 01
 Date Received 06/29/01
 Checked By MAP
 Sheet Number 2 of 3

STATE OF NEVADA
 DEPARTMENT OF
 TRANSPORTATION
 MATERIALS DIVISION
 1263 S. Stewart, C.C., Nv., 89712

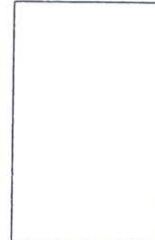
Cont./E.A. No. 72495
 County: CLARK
 Project No.: SR-160 CL 1.0
 Project: Sec. 12, T.22S.,R.61E.

REPORT OF TESTS ON SOILS AND AGGREGATES

Material: PIT AGGREGATE

Log of Test Hole or Core

Date Field Work Completed 06/28/01
 Sampled (Observed) By SWIFT
 Source of Sample BLUE DIAMOND RETENSION BASIN



R-VALUE
 #13

Distance or Quantity Represented by Sample _____

SIEVE SIZE:	%PASSING	SPECS		SPECS
75.00mm	3"	100	LIQUID LIMIT	19
50.00mm	2"	83	PLASTICITY INDEX	NP
37.50mm	1 1/2"	74	SPECIFIC GRAVITY	
25.00mm	1"	65		
19.00mm	3/4"	59	RESISTANCE VALUE	81
12.50mm	1/2"	49		
9.50mm	3/8"	44		
4.75mm	NO. 4	30	COVER THICKNESS	STABILOMETER 2.5"
2.36mm	NO. 10	22		EXPANSION PRES. 0
1.18mm	NO. 16	18	SAND EQUIVALENT	54
425µm	NO. 40	14	FRACTURED FACE,%	
300µm	NO. 50	12	LAR. % LOSS AT 500 REV.	
150µm	NO. 100	5		
75µm	NO. 200	2	SOUNDNESS (COARSE AGG)	
			SOUNDNESS (FINE AGG)	

SOLUBLE SALT:
 CHLORIDE _____ PARTS PER MILLION MAX
 SULPHATE _____ PARTS PER MILLION MAX
 pH 8.0
 RESISTIVITY 5,435 Ohms-cm MIN. REMARKS: _____

I.R.B. CLASS A - 1 - a (0)

REMARKS AND RECOMMENDATIONS:

DISTRIBUTION:
 _____ DISTRICT ENGINEER
 _____ RESIDENT ENGINEER
 _____ CONSTRUCTION ENGINEER
1 _____ LABORATORY
 _____ LAS VEGAS FACILITY

Date Reported 07/31/01
 Laboratory No. AO-21-01
 RV - 281 - 01, C - 318 - 01
 Date Received 06/29/01
 Checked By MAP
 Sheet Number 3 of 3

STATE OF NEVADA
 DEPARTMENT OF
 TRANSPORTATION
 MATERIALS DIVISION
 1263 S. Stewart, C.C., Nv., 89712

Cont./E.A. No. 72495
 County: CLARK
 Project No.: SR-160, CL 1.0
 Project: Sec. 12, T.22S., R.61E.

REPORT OF TESTS ON SOILS AND AGGREGATES

Material: PIT AGGREGATE

Log of Test Hole or Core

Date Field Work Completed 06/28/01
 Sampled (Observed) By SWIFT
 Source of Sample BLUE DIAMOND RETENSION BASIN



R-VALUE
 OB COMP
 # 7
 # 8
 # 9
 #11

Distance or Quantity Represented by Sample _____

SIEVE SIZE:	%PASSING	SPECS		SPECS
75.00mm	3"	_____	LIQUID LIMIT	15
50.00mm	2"	100	PLASTICITY INDEX	NP
37.50mm	1 1/2"	94	SPECIFIC GRAVITY	_____
25.00mm	1"	88	RESISTANCE VALUE	76
19.00mm	3/4"	81	COVER THICKNESS	4"
12.50mm	1/2"	72	SAND EQUIVALENT	23
9.50mm	3/8"	67	FRACTURED FACE,%	_____
4.75mm	NO. 4	61	LAR. % LOSS AT 500 REV.	_____
2.36mm	NO. 10	55	SOUNDNESS (COARSE AGG)	_____
1.18mm	NO. 16	53	SOUNDNESS (FINE AGG)	_____
425µm	NO. 40	49		
300µm	NO. 50	47		
150µm	NO. 100	26		
75µm	NO. 200	11		
SOLUBLE SALT:				
CHLORIDE	_____	_____	PARTS PER MILLION MAX	
SULPHATE	_____	_____	PARTS PER MILLION MAX	
pH	7.9	_____		
RESISTIVITY	6,993	_____	Ohms-cm MIN.	

STABILOMETER
 EXPANSION PRES.
 3.5"

H.R.B. CLASS A - 1 - b (0)

REMARKS: _____

REMARKS AND RECOMMENDATIONS: _____

DISTRIBUTION:

- _____ DISTRICT ENGINEER
- _____ RESIDENT ENGINEER
- _____ CONSTRUCTION ENGINEER
- 1 _____ LABORATORY
- _____ LAS VEGAS FACILITY

E.A. NO.: 72495
 PIT NO.: CL 38-01
 DATE SAMPLED: 06/28/01
 LOCATION: SEC.12,T22S.,R61E.
 ROUTE, COUNTY, MILEPOST: SR-160, CL 1.0
 % OF WEAR (500 REVS): 26.9

LAB NO.: AO-21-01
 DATE REPORTED: 07/31/01
 MATERIAL: PIT AGGREGATE
 SP. GR. (% OF WEAR): 2.75
 REMARKS:

SODIUM SOUNDNESS
 CONCRETE: 3
 PLANTMIX: 3

COARSE FINES
 2
 2

HOLE NUMBER	1 OB	1	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6
SAMPLE DEPTH (METERS)	0-.5	.5-4.25	BTM	0-.5	.5-4.5	BTM	0-.5	.5-4.0	BTM	0-.75	.75-5.75	BTM	0-.5	.5-4.0	BTM	0-25	25-3.75
SAMPLE DEPTH (FEET)	0-1.5	1.5-13.5	BTM	0-1.5	1.5-13.5	BTM	0-1.5	1.5-12.0	BTM	0-2.25	2.25-17.25	BTM	0-1.5	1.5-12.0	BTM	0-7.5	7.5-30.75
% PASS. 75mm (3") SIEVE	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% PASS. 50mm (2") SIEVE	95	76	76	76	76	90	90	90	90	90	87	87	94	98	98	100	83
% PASS. 37.5mm (1 1/2") SIEVE	80	66	94	68	68	80	80	80	80	59	84	84	94	97	89	100	66
% PASS. 25mm (1") SIEVE	80	57	87	56	56	75	75	75	75	46	73	73	81	88	88	92	55
% PASS. 19mm (3/4") SIEVE		48	87	48	48	68	68	68	68	31	63	63	81	80	71	92	49
% PASS. 12.5mm (1/2") SIEVE		37		38	38	60	60	60	60	20	51	51	81	65	65	89	39
% PASS. 9.5mm (3/8") SIEVE		32		34	34	53	53	53	53	16	45	45	81	56	56	92	34
% PASS. 4.75mm (#4) SIEVE	52	22	45	25	25	40	40	40	40	13	33	33	54	39	46	61	24
% PASS. 2mm (#10) SIEVE	43	16	33	18	18	30	30	30	30	7	23	23	42	28	36	48	18
% PASS. 1.18mm (#16) SIEVE		14		16	16	25	25	25	25	3	19	19	35	25	25	37	15
% PASS. 425µm (#40) SIEVE	38	12	22	13	13	20	20	20	20	1	16	16	35	21	29	37	13
% PASS. 300µm (#50) SIEVE		11		12	12	18	18	18	18	0	14	14	35	19	19	37	12
% PASS. 150µm (#100) SIEVE		5		6	6	7	7	7	7	0	6	6	35	8	8	37	5
% PASS. 75µm (#200) SIEVE	7	2	3	2	2	2	2	2	2	0	2	2	6	3	6	6	2
SPECIFIC GRAVITY		2.72		2.69	2.69	2.72	2.72	2.72	2.72		2.72	2.72	2.72	2.72	2.72	2.72	2.72
LIQUID LIMIT	17	19	19	16	18	21	16	18	18	15	19	19	19	19	19	16	17
PLASTICITY INDEX	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
SAND EQUIVALENT		60				33								57			2

REMARKS: NO SAMPLE, PUSHED IN WASTE FINES.

E.A. NO.: 72495
 PIT NO.: CL 38-01
 DATE SAMPLED: 06/28/01
 LOCATION: SEC.12,T22S.,R61E.
 ROUTE, COUNTY, MILEPOST: SR-160, CL 1.0
 % OF WEAR (500 REVS): 26.9

LAB NO.: AO-21-01
 DATE REPORTED: 07/31/01
 MATERIAL: PIT AGGREGATE
 SP. GR. (% OF WEAR): 2.75
 REMARKS:

SODIUM SOUNDNESS
 CONCRETE: 3
 PLANTMIX: 3

COARSE FINES
 2
 2

HOLE NUMBER	7 OB	7	7	8 OB	8	8	8	9 OB	9	9	10 OB	10	10	10	11 OB	11	11	11	12 OB	12	12
SAMPLE DEPTH (METERS)	0-.25	.25-4.5	BTM	0-.25	.25-3.25	BTM	0-.25	0-.25	.25-4.0	BTM	0-.5	.5-4.5	BTM	0-.5	0-.5	.5-4.5	BTM	0-.5	0-.5	.5-4.75	BTM
% PASS. 75mm (3") SIEVE		100	100	100	100		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% PASS. 50mm (2") SIEVE		98		95					96						96						91
% PASS. 37.5mm (1 1/2") SIEVE	100	91	87	95	93	100	73	86	77	83	89	83	89	91	91	90	90	92	92	86	74
% PASS. 25mm (1") SIEVE		81		81				78		73					81						76
% PASS. 19mm (3/4") SIEVE	85	73	73	92	72	83	64	71	67	83	74	67	74	73	75	79	75	75	75	67	54
% PASS. 12.5mm (1/2") SIEVE		60		60				58							65						55
% PASS. 9.5mm (3/8") SIEVE		52		53				51							58						48
% PASS. 4.75mm (#4) SIEVE	65	36	31	77	39	50	52	37	36	55	38	36	38	43	43	45	45	51	51	35	14
% PASS. 2mm (#10) SIEVE	61	26	20	70	29	42	46	27	25	45	27	24	27	35	31	32	32	46	46	26	9
% PASS. 1.18mm (#16) SIEVE		22		24				23							26						23
% PASS. 425µm (#40) SIEVE	56	18	15	64	19	36	42	18	18	38	16	16	20	28	21	23	23	43	43	19	6
% PASS. 300µm (#50) SIEVE		16		17				16							18						17
% PASS. 150µm (#100) SIEVE		8		8				7							7						9
% PASS. 75µm (#200) SIEVE	12	3	3	16	3	9	10	2	4	9	2	2	4	6	3	6	6	11	11	3	1
SPECIFIC GRAVITY		2.73		2.70				2.72			2.70				2.73						2.72
LIQUID LIMIT	15	20	28	14	19	36	15	20	24	14	19	19	19	15	18	20	20	15	15	19	23
PLASTICITY INDEX	NP	NP	5	NP	NP	9	NP	NP	2	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
SAND EQUIVALENT		22						31							36						

REMARKS:

E.A. NO.: 72495
 PIT NO.: CL 38-01
 DATE SAMPLED: 06/28/01
 LOCATION: SEC.12,T22S.,R61E.
 ROUTE, COUNTY, MILEPOST: SR-160, CL 1.0
 % OF WEAR (500 REVS): 26.9

LAB NO.: AO-21-01
 DATE REPORTED: 07/31/01
 MATERIAL: PIT AGGREGATE
 SP. GR. (% OF WEAR): 2.75
 REMARKS:

SODIUM SOUNDNESS
 CONCRETE: 3
 PLANTMIX: 3

COARSE FINES
 2
 2

HOLE NUMBER	13 OB	13	13	13	14 OB	14	14	14	15 OB	15	15	15	16 OB	16	16
SAMPLE DEPTH (METERS)	0-25	.25-4.25	BTM	0-25	.25-3.5	BTM	0-25	.25-3.0	BTM	0-25	.25-2.75	BTM	0-25	.25-3.0	BTM
SAMPLE DEPTH (FEET)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% PASS. 75mm (3") SIEVE	83	74	90	97	81	85	88	89	91	100	88	81	90	90	90
% PASS. 50mm (2") SIEVE	67	59	61	88	72	71	76	75	86	86	67	72	79	79	79
% PASS. 37.5mm (1 1/2") SIEVE	49	44	30	37	31	40	63	42	45	56	38	44	44	44	44
% PASS. 25mm (1") SIEVE	47	42	22	23	26	29	59	31	31	46	28	32	32	32	32
% PASS. 19mm (3/4") SIEVE	38	14	19	20	17	21	52	23	23	39	20	24	24	24	24
% PASS. 12.5mm (1/2") SIEVE	12	5	5	6	6	6	8	8	8	7	7	7	7	7	7
% PASS. 9.5mm (3/8") SIEVE	7	2	2	2	2	2	3	2	2	4	3	5	5	5	5
% PASS. 4.75mm (#4) SIEVE	2.75	2.75	2.75	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72
% PASS. 2mm (#10) SIEVE	16	19	22	19	18	21	15	18	21	16	19	25	25	25	25
% PASS. 1.18mm (#16) SIEVE	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
% PASS. 425µm (#40) SIEVE	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
% PASS. 300µm (#50) SIEVE															
% PASS. 150µm (#100) SIEVE															
% PASS. 75µm (#200) SIEVE															
SPECIFIC GRAVITY															
LIQUID LIMIT															
PLASTICITY INDEX															
SAND EQUIVALENT															

REMARKS:

PIT SUMMARY

EA NO. 72495 LAB NO. AO -21-01 PIT NO. CL 38-01

DATE SAMPLED: 6-28-01 SAMPLED BY: SWIFT & CREW

PROJECT: PIT AGGREGATE - SECTION 12, T22S., R 61E.

SR 160, CL~1.0

REMARKS: _____

R-VALUES RUN ON 3/4" MNUS FRACTION

CV= 200 TI= 9.0

CRUSHABLE MATERIAL: AVG.	OVERBURDEN:	
3/8" <u>42</u> % TO <u>68</u> % <u>52.4</u> %	DEPTH <u>0.25M</u> TO <u>0.75M</u>	
3/4" <u>40</u> % TO <u>52</u> % <u>34.7</u> %	LL <u>14</u> TO <u>19</u>	
3" TO 6" <u>5</u> % TO <u>8</u> % <u>6.3</u> %	PI <u>NP</u> TO <u>-----</u>	
OVER 6" <u>2</u> % TO <u>4</u> % <u>2.9</u> %	% P #200 <u>2</u> TO <u>16</u>	
	RV <u>76</u> TO <u>-----</u>	
 SPECIFIC GRAVITY <u>2.69</u> TO <u>2.75</u>	AGGREGATE LAYER:	
 SOUNDNESS (CONCRETE)	DEPTH <u>2.25M</u> TO <u>5.0M</u>	
COARSE <u>3%</u> FINES <u>2%</u>	LL <u>17</u> TO <u>20</u>	
 SOUNDNESS (PMS)	PI <u>NP</u> TO <u>-----</u>	
COARSE <u>3%</u> FINES <u>2%</u>	% P #200 <u>2</u> TO <u>3</u>	
 CLEANNESS VALUE <u>N/A</u>	RV <u>81</u> TO <u>82</u>	
FINE BULK S/G <u>2.639</u>		
COARSE BULK S/G <u>2.683</u>		
ABSORPTION % <u>0.8</u>		
LAR (% LOSS AT 500 REV.) <u>26.9</u>		
	TEST	NEEDED
		COMPLETED
	R-VALUE	X
	GRADATION	X
	LL & PI	X
	S / E	X
	RESISTIVITY / PH	X
	BITUMINOUS MIX	X
	CONCRETE AGG.	X
PH <u>7.9</u> TO <u>8.0</u>		
RESISTIVITY-ohm-cm <u>3584</u> TO <u>6993</u>		

125, R 61E
 SR-160
 BY SWIFT & CREW
 6-28-01

AGGR. ATE = +
 OVERBURDEN = +
 BOTTOM = +
 R-VALUE = H
 Prelim. BASE = ⊕

35

30

25

20

15

10

5

81

0

PLASTICITY INDEX

PERCENT PASSING NO. 200 SIEVE

90

80

70

60

50

40

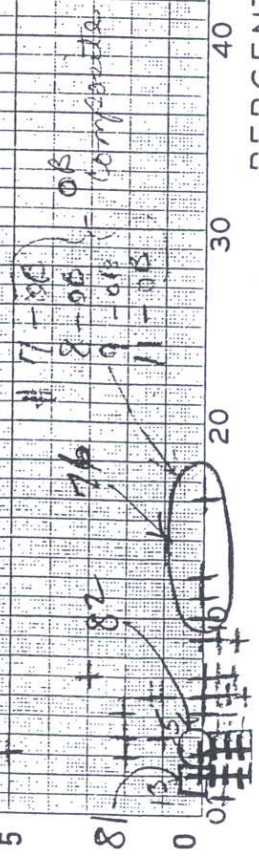
30

20

10

0

100



STATE OF NEVADA
 DEPARTMENT OF TRANSPORTATION
 MATERIALS DIVISION
 1263 S. STEWART ST. CARSON CITY, NV 89712
PRELIMINARY BITUMINOUS MIX DESIGN

LAB NUMBER:	AO01-21	T-2C DENSE GRADE BITUMEN RATIO:	4.5 AC-30
TA NUMBER:	72495	12.5mm OPEN GRADE BITUMEN RATIO:	6.0 AC-30
PROJECT NUMBER:	SPSR-0160(006)		
COUNTY:	CLARK		
DATE AGG. SAMPLED:	06/28/01		
DATE AGG. RECEIVED:	07/26/01		
REPORT DATE:	09/06/01		
SAMPLED BY:	FIELD CREW		
CHECKED BY:	SJH & TO		
TYPE MATERIAL:	PIT AGGREGATE (TYPE 2C AND 12.5mm OPEN GRADE)		
SOURCE OF SAMPLE(S):	CL 38-01 (SR 160, MILEPOST CL 1.0) SECTION 12, T22S, R61E		
MINERAL FILLER:	1.5% HYDRATED LIME WET-CURED (MARINATED) 48 HOURS		
TYPE ASPHALT:	AC-30 (CCAC99-1853)		
ASPHALT PRODUCER:	KPA (LAS VEGAS)		

JOB DESCRIPTION:
 SR 160, PAHRUMP VALLEY ROAD FROM LAS VEGAS BOULEVARD TO RAINBOW

SURFACE AREA m ² /kg (ft ² /lb):	5.67 (27.7)	
SAND EQUIVALENT:	54	
"CALIFORNIA" SPECIFIC GRAVITY:	2.72	
COARSE AGG. BULK SPECIFIC GRAVITY:	2.68	SPECIFICATIONS:
FINE AGG. BULK SPECIFIC GRAVITY:	2.64	2.85 MAX
+4.75mm (COARSE) WATER ABSORPTION:	0.8	2.85 MAX
SS SOUNDNESS COARSE:	3	4% MAX
SOUNDNESS FINES:	2	12% MAX
LIQUID LIMIT (BEFORE MARINATION):	CRUSHER FINES: 15; NATURAL FINES: 17	15% MAX
PLASTICITY INDEX (BEFORE MARINATION):	CRUSHER FINES: NP; NATURAL FINES: NP	35 MAX
LA ABRASION:	26.9	10 MAX
VMA (BASED UPON CALIF. SP. GR.):	16.0	37% MAX
ORIGINAL TENSILE STRENGTH, (kPa):	783	12 - 22
% RETAINED STRENGTH:	102	450 kPa MIN
		70% MINIMUM

REMARKS:
 FOR THE MATERIAL REPRESENTED BY THE SUBMITTED SAMPLES WITH THE ATTACHED GRADINGS, LABORATORY TESTS INDICATE A BITUMEN RATIO OF 4.5 AC-30 FOR TYPE 2C PLANTMIX AGGREGATE, AND FOR 12.5mm OPEN GRADE PLANTMIX AGGREGATE A BITUMEN RATIO OF 6.0 AC-30 IS INDICATED, ALL OF THE PRECEDING TREATED WITH 1.5% HYDRATED LIME AND WET-CURED (MARINATED) 48 HOURS.

- BIN PERCENTAGES:
- 07% 25mm AGG
 - 32% 19mm AGG
 - 10% 12.5mm AGG
 - 41% CRUSHER FINES
 - 10% NATURAL FINES

STATE OF NEVADA
 DEPARTMENT OF TRANSPORTATION
 MATERIALS DIVISION
 1263 S. STEWART ST. CARSON CITY, NV 89712
 PRELIMINARY BITUMINOUS MIX DESIGN

A001-21
 72495

MAX. DENSITY, Mg/m ³ :	2.535					STANDARD TYPE 2C SPECS: 37 MIN 4-7
MAX. DENSITY, PCF:	158.2					
DENSITY, Mg/m ³ :	2.334	2.382	2.389	2.427	2.431	
DENSITY, PCF:	145.6	148.6	149.1	151.4	151.7	
BITUMEN RATIO:	3.5	4.0	4.5	5.0	5.5	
HVEEM VALUE:	41	43	38	36	30	
% AIR VOIDS:	9.4	6.8	5.8	3.7	2.8	

SIEVE ANALYSIS RESULTS:
 (PERCENT PASSING)

BIN PERCENTAGES:	7	32	10	41	10	100	STANDARD TYPE 2C SPECS:						
	25mm AGG:	19mm AGG:	12.5mm AGG:	CRUSHER FINES:	NATURAL FINES:	AS COMBINED & TESTED:							
SIEVE SIZE:	25 mm (1"):	19 mm (3/4"):	12.5 mm (1/2"):	9.5 mm (3/8"):	4.75 mm (NO. 4):	2.36 mm (NO. 8):	2.00 mm (NO. 10):	1.18 mm (NO. 16):	600 μm (NO. 30):	425 μm (NO. 40):	300 μm (NO. 50):	150 μm (NO. 100):	75 μm (NO. 200):
	100.0	100.0	100.0	100.0	100.0	100.0	100.0						
	0.0	99.2	100.0	100.0	100.0	100.0	92.7	100					
	0.0	72.7	85.2	100.0	100.0	100.0	82.8	88 - 95					
	0.0	32.8	40.4	100.0	100.0	100.0	65.5	70 - 85					
	0.0	3.0	2.6	99.6	99.8	52.0	60 - 78						
	0.0	0.6	0.5	64.7	76.3	34.4	43 - 60						
	0.0	0.6	0.5	57.0	71.6	30.8	30 - 44						
	0.0	0.5	0.4	43.4	61.7	24.2							
	0.0	0.4	0.4	32.7	54.0	19.0							
	0.0	0.4	0.4	29.0	50.6	17.1	12 - 22						
	0.0	0.3	0.3	25.7	45.7	15.3							
	0.0	0.2	0.2	17.3	19.0	9.1							
				11.3	7.3	5.4	3 - 8						

STATE OF NEVADA
 DEPARTMENT OF TRANSPORTATION
 MATERIALS DIVISION

Date reported 07-11-2001
 Lab No. CG-01-43;CS-01-38
 Date sampled 06-28-01
 Date Rec'd 07-03-01
 Checked by POLISH

Cont. E.A. No. 72495
 Project _____
 County Clark
 Deposit No. _____

MATERIAL STATE AGGREGATE DEPOSITS

Ref. Sec. 705 & 706 Nevada Standard Specifications
 Source AO-21-01; SEC.12.T22S.R61E; SR-160 CL-1.0
Blue Diamond Retention Basin

Material represents _____
 Production samples
 Preliminary Samples
 Field Samples (Designate with X)
 Sampled by Swift & Crew

Concrete
Coarse

Sieves	Theo	% Loss	SS
MM	Grade	Weight	%Loss
0-37.5	2-1/2	2.5	3.16
25-19	1-3/4	45	1.86
12.5-9.5	1/2-3/8	32.5	2.88
4.75	#4	17.5	3.33
-4.75	-#4	2.5	3.33
SPECS 12% MAX			Total 3 %

Bituminous
Coarse

Sieves	Theo	% Loss	SS
MM	Grade	Weight	%Loss
25-19	1-3/4	10.9	1.86
12.5-9.5	1/2-3/8	45.6	2.88
4.75	#4	43.5	3.33
SPECS 12% MAX			Total 3 %

Fine

Sieves	Theo	% Loss	SS
SI	Grade	Weight	% Loss
4.75mm	+#4	2.5	3.84
2.36mm	#8	18	3.84
1.18mm	#16	18	2.05
600 um	#30	21	2.10
300 um	#50	18	0.99
SPECS 10% MAX			Total 2 %

Fine

Sieves	Theo	% Loss	SS
SI	Grade	Weight	% Loss
2.36mm	#8	15.8	3.84
1.18mm	#16	27.7	2.05
600 mu	#30	12.0	2.10
300 mu	#50	20.4	0.99
SPECS 15% MAX			Total 2 %

Loss on Ignition (LOR) 26.9% Loss 500 Rev. Organic Impurities 1
 Satisfactory Unsatisfactory _____

Remarks The materials tested meets the sodium sulfate soundness requirement for concrete and bituminous aggregate. It will not be tested for reactivity of aggregates.

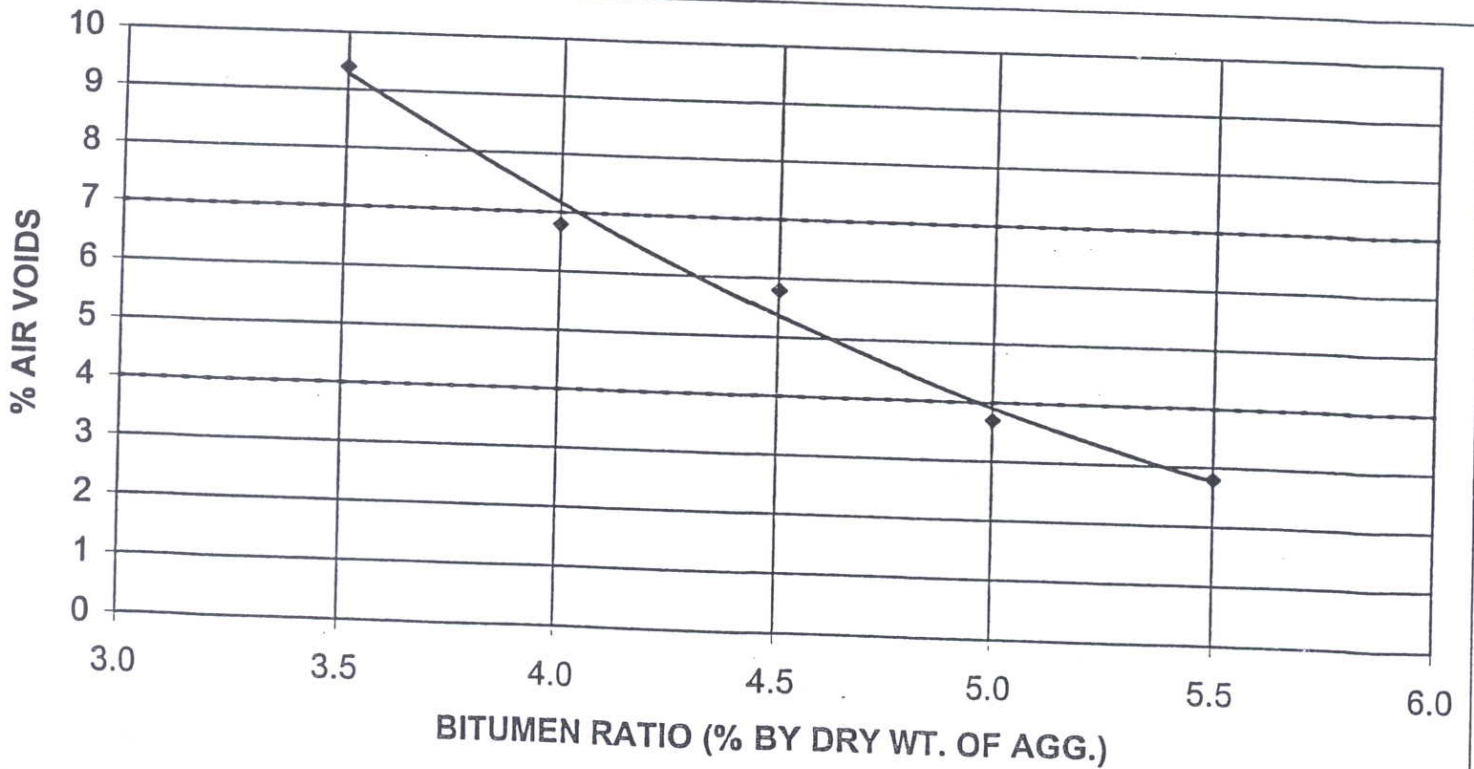
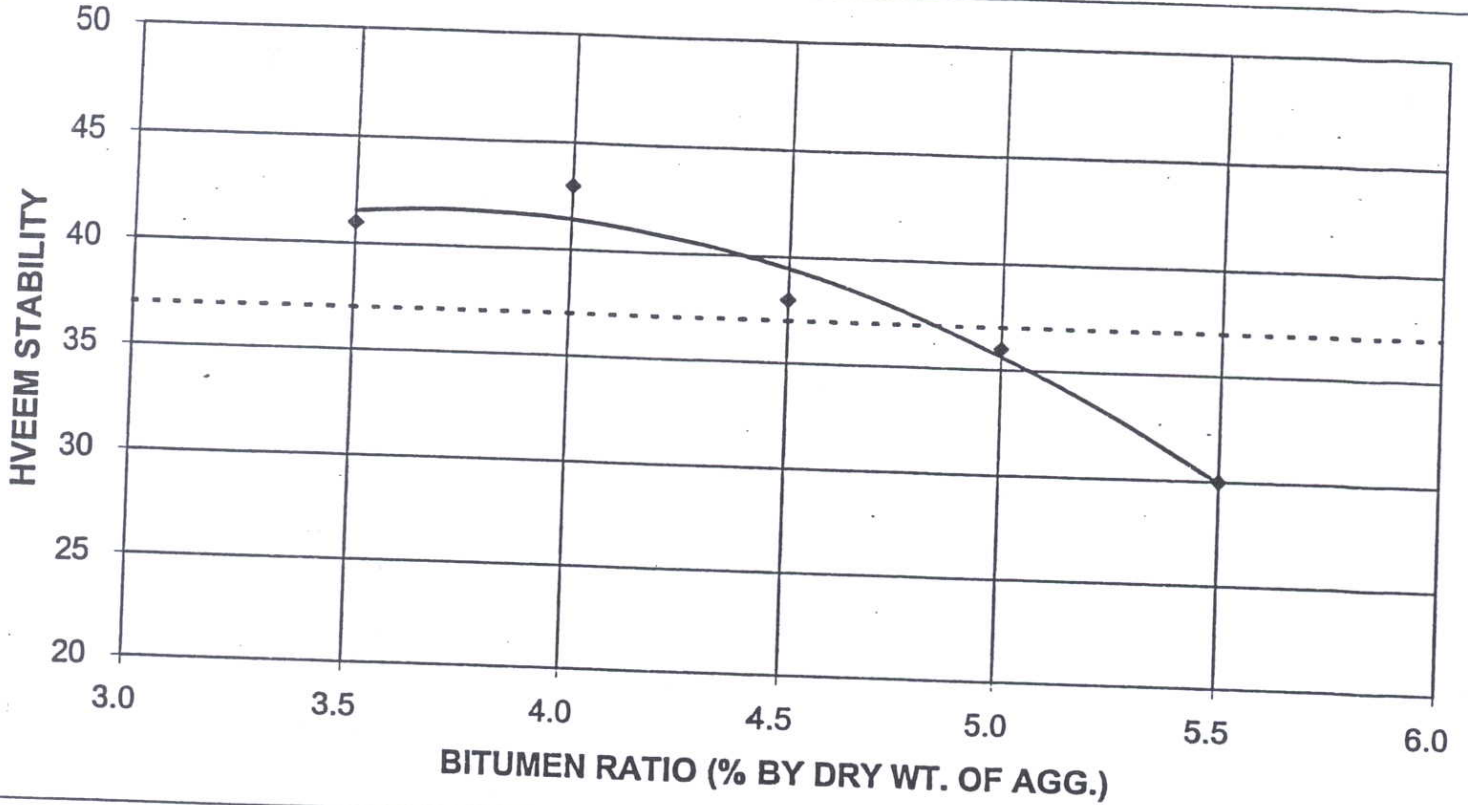
DISTRIBUTION:
 _____ District Engineer
 _____ Resident Engineer
 _____ Construction Engineer
1 RICK HANSON

Michael Polish

DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION
1263 S. STEWART ST. CARSON CITY, NV 89712
PRELIMINARY BITUMINOUS MIX DESIGN

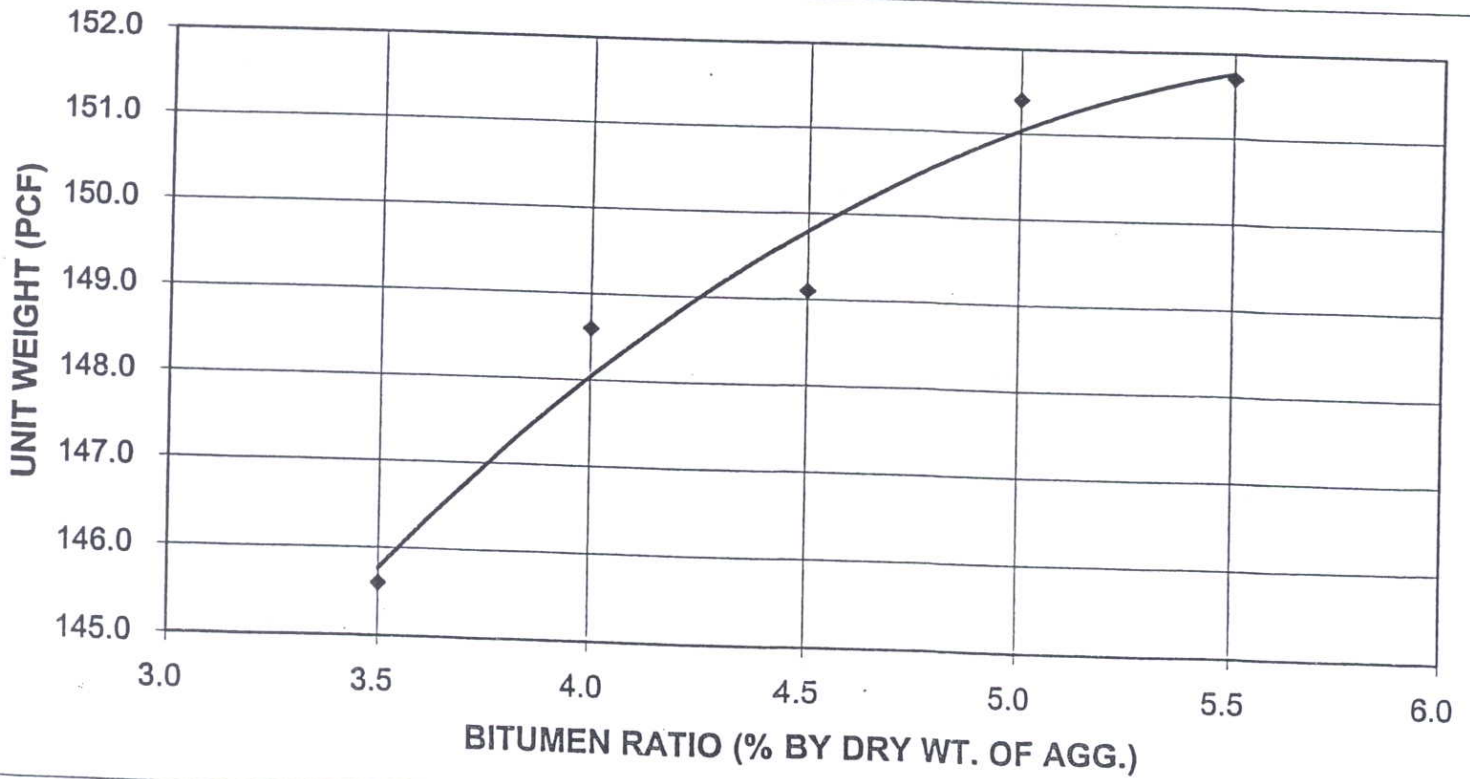
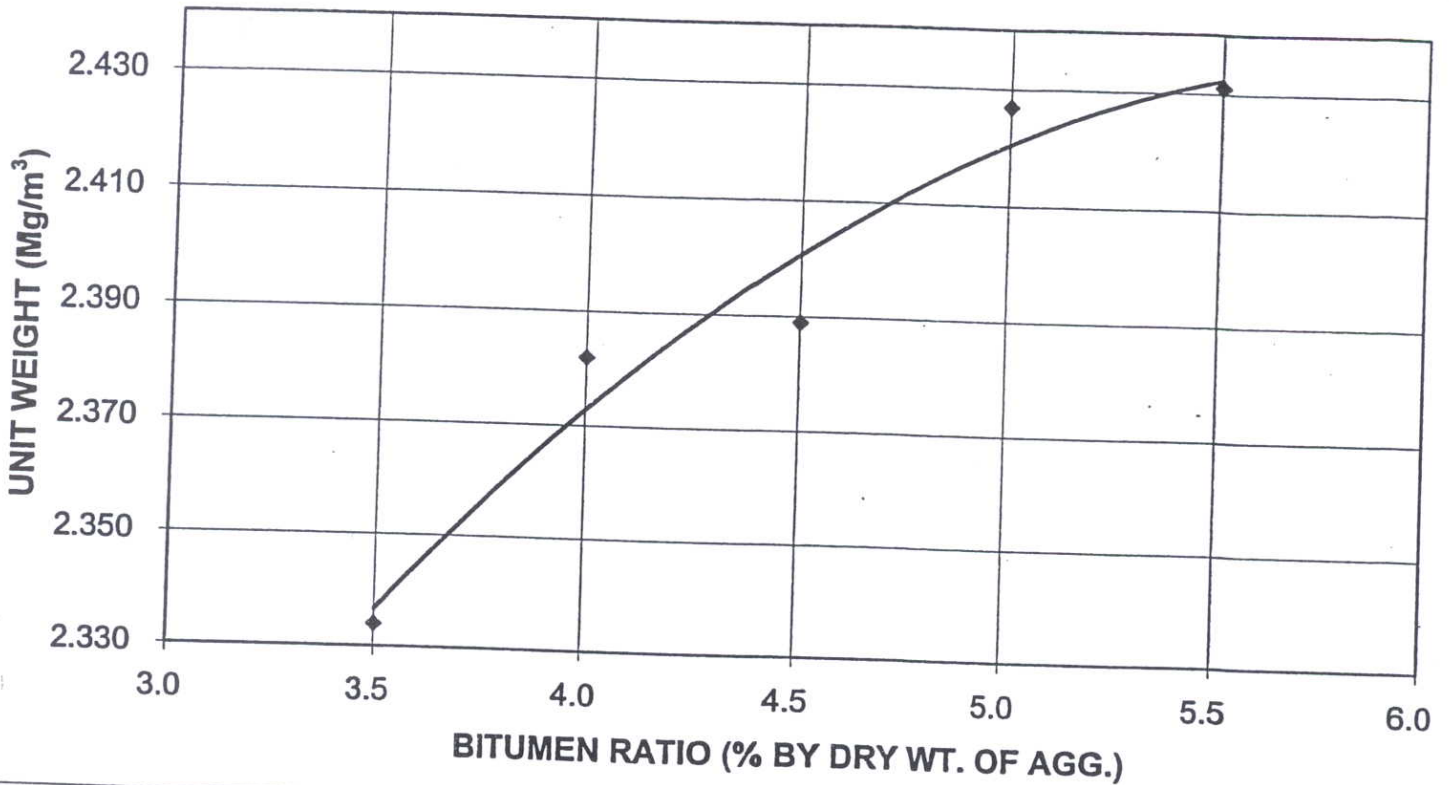
AO01-21

72495



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION
1263 S. STEWART ST. CARSON CITY, NV 89712
PRELIMINARY BITUMINOUS MIX DESIGN

A001-21
72495



APPENDIX B

Information from May 2004 Investigation

KEY TO BORING LOGS

PARTICLE SIZE LIMITS								
CLAY	SILT	SAND			GRAVEL		COBBLES	BOULDERS
		FINE	MEDIUM	COARSE	FINE	COARSE		
.002 mm	#200	#40	#10	#4	3/4 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
GM	Silty gravels, poorly graded gravel-sand-silt mixtures
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
CS	Claystone/Siltstone
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

Blow counts on Calif. Modified Sampler (N_{CMS}) can be converted to N_{SPT} by:
 $(N_{CMS})(0.62) = N_{SPT}$

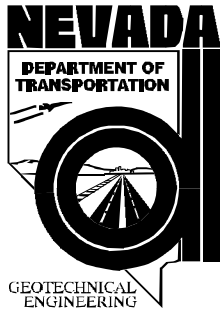
Blow counts from Automatic or Safety Hammer can be converted to Standard SPT N_{60} by:
 $(N_{AUTOMATIC})(1.30) = N_{60}$
 $(N_{SAFETY})(1.17) = N_{60}$

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

SOIL COLOR DESIGNATIONS ARE FROM THE MUNSELL SOIL COLOR CHART.
 EXAMPLE: (7.5 YR 5/3) BROWN

<u>SAMPLER NOTATION</u>	
CMS	CALIF. MODIFIED SAMPLER ^①
CPT	CONE PENETRATION
CS	CONTINUOUS SAMPLER ^②
CSS	CALIFORNIA SPLIT SPOON
P	PUSHED (NOT DRIVEN)
PB	PITCHER BARREL
RC	ROCK CORE ^③
SH	SHELBY TUBE ^④
SPT	STANDARD PENETRATION TEST
TP	TEST PIT

① - I.D.= 2.421 inch
 ② - I.D.=3.228 inch with tube; 3.50 inch w/o tube
 ③ - NXB I.D.= 1.875 inch
 ④ - I.D.= 2.875 inch



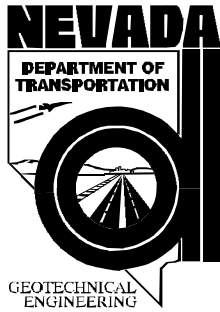
EXPLORATION LOG

START DATE 5/10/04
 END DATE 5/10/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-1
 E.A. # 72495
 GROUND ELEV. 2397.30 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT DIEDRICH D-120
 OPERATOR MARSHALL
 DRILLING METHOD 6" Solid Auger / 8" H.S.A.
 BACKFILLED Yes DATE 5/10/2004

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				
2392.3	5							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									7.00	
2387.3	10							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									12.00	
2382.3	15								<u>WELL GRADED GRAVEL with SILT and SAND</u> Dry, very dense	
2377.3	20									
2372.3	25							GW GM		No progress at 21'. 600 psi down pressure. Re-drilled w/ 8" H.S.A. Cemented from 21' - 21.3'. Cemented from 28' - 28.5'.



EXPLORATION LOG

START DATE 5/10/04
 END DATE 5/10/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-1
 E.A. # 72495
 GROUND ELEV. 2397.30 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT DIEDRICH D-120
 OPERATOR MARSHALL
 DRILLING METHOD 6" Solid Auger / 8" H.S.A.
 BACKFILLED Yes DATE 5/10/2004

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				
2362.3	35									
2357.3	40									
2352.3	45									
2347.3	50									
2342.3	55									

NV_DOT_BLUE DIAMOND DETENTION BASIN.GPJ NV_DOT.GDT 11/17/06

Cemented from 32' - 32.5'.

35.00

B.O.H.



EXPLORATION LOG

START DATE 5/10/04

END DATE 5/10/04

JOB DESCRIPTION Blue Diamond Detention Basin

STATION _____

OFFSET _____

LOCATION 1 mile North of SR 160; east of UPRR Tracks

ENGINEER BOOMHOWER

BORING BDB-2

EQUIPMENT DIEDRICH D-120

E.A. # 72495

OPERATOR MARSHALL

GROUND ELEV. 2398.60 (ft)

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

DRILLING METHOD 6" Solid Auger

HAMMER DROP SYSTEM N/A

BACKFILLED Yes DATE 5/10/2004

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				
2393.6	5							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	Hard drilling from 18.5' - 18.8'.
2388.6	10									
2383.6	15									
2378.6	20									
2373.6	25									
30.00										

NV_DOT_BLUE DIAMOND DETENTION BASIN.GPJ NV_DOT.GDT 11/17/06



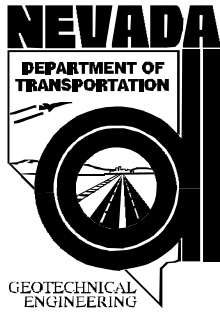
EXPLORATION LOG

START DATE 5/10/04
 END DATE 5/10/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-2
 E.A. # 72495
 GROUND ELEV. 2398.60 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT DIEDRICH D-120
 OPERATOR MARSHALL
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/10/2004

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				
2363.6	35							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									35.00	
									<u>B.O.H.</u>	
2358.6	40									
2353.6	45									
2348.6	50									
2343.6	55									



EXPLORATION LOG

START DATE 5/10/04
 END DATE 5/10/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-3
 E.A. # 72495
 GROUND ELEV. 2399.50 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT DIEDRICH D-120
 OPERATOR MARSHALL
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/10/2004

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				
2394.5	5								<p>POORLY GRADED GRAVEL with SAND Dry, very dense</p> <p>5'-6' Drill rate - 10 ft/min.</p> <p>10'-11' Drill rate - 12 ft/min.</p> <p>15'-16' Drill rate - 10 ft/min.</p> <p>25'-26' Drill rate - 12 ft/min.</p>	
2389.5	10									
2384.5	15						GP			
2379.5	20									
2374.5	25									
								30.00		



EXPLORATION LOG

START DATE 5/10/04
 END DATE 5/10/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-3
 E.A. # 72495
 GROUND ELEV. 2399.50 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT DIEDRICH D-120
 OPERATOR MARSHALL
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/10/2004

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				
2364.5	35							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	Cemented at 34"; probable caliche.
									35.00	
									<u>B.O.H.</u>	
2359.5	40									
2354.5	45									
2349.5	50									
2344.5	55									



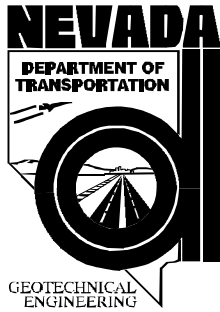
EXPLORATION LOG

START DATE 5/11/04
 END DATE 5/11/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-4
 E.A. # 72495
 GROUND ELEV. 2400.40 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/11/2004

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				
2395.4	5							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
2390.4	10									
2385.4	15									
2380.4	20									
2375.4	25									
								30.00		



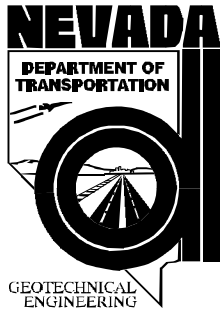
EXPLORATION LOG

START DATE 5/11/04
 END DATE 5/11/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-4
 E.A. # 72495
 GROUND ELEV. 2400.40 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/11/2004

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				
2365.4	35							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	Cemented at 33'; probable caliche. 500 psi down pressure.
									35.00 B.O.H.	
2360.4	40									
2355.4	45									
2350.4	50									
2345.4	55									



START DATE 5/11/04

END DATE 5/11/04

JOB DESCRIPTION Blue Diamond Detention Basin

LOCATION 1 mile North of SR 160; east of UPRR Tracks

BORING BDB-5

E.A. # 72495

GROUND ELEV. 2402.10 (ft)

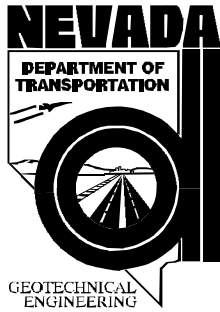
HAMMER DROP SYSTEM N/A

EXPLORATION LOG

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/11/2004

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				
2397.1	5							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									6.00	
2392.1	10							GW	<u>WELL GRADED GRAVEL with SAND</u> Dry, very dense	
									13.00	
2387.1	15									
2382.1	20									
2377.1	25							GP GM	<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, very dense	
									30.00	



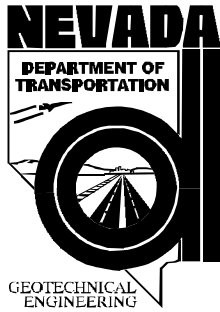
EXPLORATION LOG

START DATE 5/11/04
 END DATE 5/11/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-5
 E.A. # 72495
 GROUND ELEV. 2402.10 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/11/2004

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				
2367.1	35							GP GM	<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, very dense	
									35.00	
									<u>B.O.H.</u>	
2362.1	40									
2357.1	45									
2352.1	50									
2347.1	55									



EXPLORATION LOG

START DATE 5/11/04
 END DATE 5/11/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-6
 E.A. # 72495
 GROUND ELEV. 2400.60 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT DIEDRICH D-120
 OPERATOR MARSHALL
 DRILLING METHOD 6" Solid Auger / 8" H.S.A.
 BACKFILLED Yes DATE 5/11/2004

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				
2395.6	5								<p><u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense</p> <p>GP</p> <p>Lightly cemented from 13'-13.5'.</p> <p>Lightly cemented from 19'-19.5'.</p> <p>Hard drilling from 23'-23.5'.</p>	
2390.6	10									
2385.6	15									
2380.6	20									
2375.6	25									
								30.00		

NV_DOT_BLUE DIAMOND DETENTION BASIN.GPJ NV_DOT.GDT 11/17/06



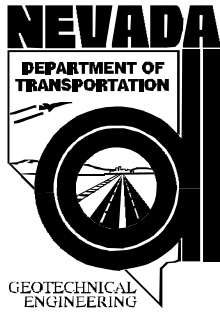
EXPLORATION LOG

START DATE 5/11/04
 END DATE 5/11/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-6
 E.A. # 72495
 GROUND ELEV. 2400.60 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT DIEDRICH D-120
 OPERATOR MARSHALL
 DRILLING METHOD 6" Solid Auger / 8" H.S.A.
 BACKFILLED Yes DATE 5/11/2004

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				
2365.6	35							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									35.00	
									<u>B.O.H.</u>	
2360.6	40									
2355.6	45									
2350.6	50									
2345.6	55									



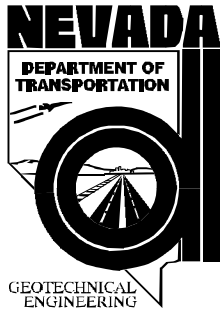
EXPLORATION LOG

START DATE 5/11/04
 END DATE 5/11/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-7
 E.A. # 72495
 GROUND ELEV. 2398.90 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/11/2004

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				
2393.9	5								<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
2388.9	10									
2383.9	15						GP			
2378.9	20									
2373.9	25									
								30.00		



EXPLORATION LOG

START DATE 5/11/04
 END DATE 5/11/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-7
 E.A. # 72495
 GROUND ELEV. 2398.90 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/11/2004

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				
2363.9	35							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									35.00	
									<u>B.O.H.</u>	
2358.9	40									
2353.9	45									
2348.9	50									
2343.9	55									



START DATE 5/11/04

EXPLORATION LOG

END DATE 5/11/04

JOB DESCRIPTION Blue Diamond Detention Basin

STATION _____

LOCATION 1 mile North of SR 160; east of UPRR Tracks

OFFSET _____

BORING BDB-8

ENGINEER BOOMHOWER

E.A. # 72495

EQUIPMENT MOBILE B-57

GROUND ELEV. 2398.50 (ft)

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

OPERATOR ALTAMIRANO

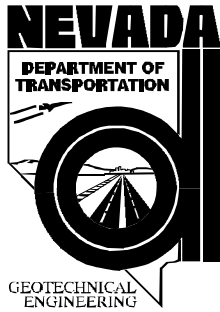
HAMMER DROP SYSTEM N/A

DRILLING METHOD 6" Solid Auger

BACKFILLED Yes DATE 5/11/2004

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				
2393.5	5							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									7.00	
2388.5	10							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									13.00	
2383.5	15							SW SM	<u>WELL GRADED SAND with SILT and GRAVEL</u> Dry, very dense	
									18.00	
2378.5	20							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
2373.5	25							GP		Hard drilling from 22.5'-23'.
									30.00	

NV_DOT_BLUE DIAMOND DETENTION BASIN.GPJ NV_DOT.GDT 11/17/06



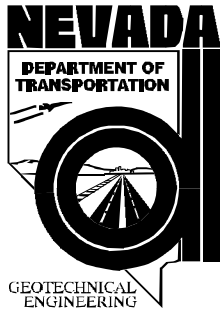
EXPLORATION LOG

START DATE 5/11/04
 END DATE 5/11/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-8
 E.A. # 72495
 GROUND ELEV. 2398.50 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/11/2004

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				
2363.5	35							SP SM	<u>POORLY GRADED SAND with SILT and GRAVEL</u> Dry, very dense	
									35.00	
									<u>B.O.H.</u>	
2358.5	40									
2353.5	45									
2348.5	50									
2343.5	55									



EXPLORATION LOG

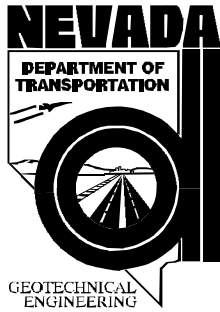
START DATE 5/11/04
 END DATE 5/11/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-9
 E.A. # 72495
 GROUND ELEV. 2398.50 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/11/2004

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				
2393.5	5								<p>POORLY GRADED GRAVEL with SAND Dry, very dense</p> <p>GP</p>	
2388.5	10									Hard drilling from 12.5'-13'.
2383.5	15									15'-16'. Drill rate - 6 ft/min.
2378.5	20									
2373.5	25									Hard drilling from 25.5'-26'.
									30.00	

NV_DOT_BLUE DIAMOND DETENTION BASIN.GPJ NV_DOT.GDT 11/17/06



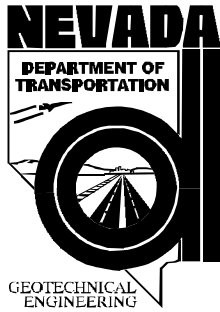
EXPLORATION LOG

START DATE 5/11/04
 END DATE 5/11/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-9
 E.A. # 72495
 GROUND ELEV. 2398.50 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/11/2004

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				
2363.5	35							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	31'-32'. Drill rate - 8 ft/min.
									35.00	
									<u>B.O.H.</u>	
2358.5	40									
2353.5	45									
2348.5	50									
2343.5	55									



EXPLORATION LOG

START DATE 5/11/04

END DATE 5/11/04

JOB DESCRIPTION Blue Diamond Detention Basin

LOCATION 1 mile North of SR 160; east of UPRR Tracks

BORING BDB-10

E.A. # 72495

GROUND ELEV. 2398.20 (ft)

HAMMER DROP SYSTEM N/A

STATION _____

OFFSET _____

ENGINEER BOOMHOWER

EQUIPMENT DIEDRICH D-120

OPERATOR MARSHALL

DRILLING METHOD 8" H.S. Auger

BACKFILLED Yes DATE 5/11/2004

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				
2393.2	5								<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
2388.2	10							GP GM	<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, very dense	Hard drilling from 9'-12'.
2383.2	15							GW	13.00 <u>WELL GRADED GRAVEL with SAND</u> Dry, very dense	Hard drilling from 14.5'-14.5'.
2378.2	20								18.00 <u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
2373.2	25							GP		Hard drilling from 25'-26'.
									30.00	28'-29'. Drill rate - 5 ft/min.

NV_DOT_BLUE DIAMOND DETENTION BASIN.GPJ NV_DOT.GDT 11/17/06



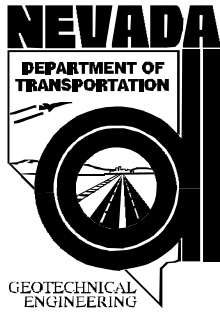
EXPLORATION LOG

START DATE 5/11/04
 END DATE 5/11/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-10
 E.A. # 72495
 GROUND ELEV. 2398.20 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT DIEDRICH D-120
 OPERATOR MARSHALL
 DRILLING METHOD 8" H.S. Auger
 BACKFILLED Yes DATE 5/11/2004

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				
2363.2	35							GP GM	<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, very dense	34'-34.5'. Drill rate - 2 min/ft.
								35.00	<u>B.O.H.</u>	
2358.2	40									
2353.2	45									
2348.2	50									
2343.2	55									



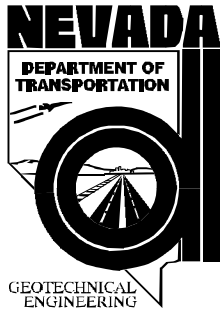
EXPLORATION LOG

START DATE 5/11/04
 END DATE 5/11/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-11
 E.A. # 72495
 GROUND ELEV. 2398.50 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/11/2004

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				
2393.5	5								<p><u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense</p> <p>GP</p> <p>Hard drilling from 8.5'-9'.</p>	
2388.5	10									
2383.5	15									
2378.5	20									
2373.5	25									
								30.00		



EXPLORATION LOG

START DATE 5/11/04
 END DATE 5/11/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-11
 E.A. # 72495
 GROUND ELEV. 2398.50 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/11/2004

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				
2363.5	35							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									35.00	
									<u>B.O.H.</u>	
2358.5	40									
2353.5	45									
2348.5	50									
2343.5	55									



START DATE 5/12/04

END DATE 5/12/04

JOB DESCRIPTION Blue Diamond Detention Basin

LOCATION 1 mile North of SR 160; east of UPRR Tracks

BORING BDB-12

E.A. # 72495

GROUND ELEV. 2397.70 (ft)

HAMMER DROP SYSTEM N/A

EXPLORATION LOG

STATION _____

OFFSET _____

ENGINEER BOOMHOWER

EQUIPMENT DIEDRICH D-120

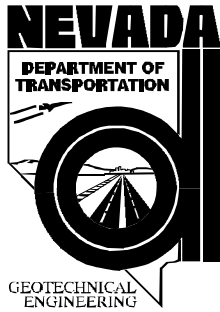
OPERATOR MARSHALL

DRILLING METHOD 8" H.S. Auger

BACKFILLED Yes DATE 5/12/2004

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				
2392.7	5							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
2387.7	10							GP	8.00 <u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	Hard drilling from 9'-12'.
2382.7	15							GP	13.00 <u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
2377.7	20							GP GM	18.00 <u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, very dense	Hard drilling from 19'-23'.
2372.7	25	A	RC			90		GW GM	22.50 <u>WELL GRADED GRAVEL with SILT and SAND</u> Dry, very dense	(A) 2 - 1" caliche pieces; remainder gravel; fines washed away.
									30.00	



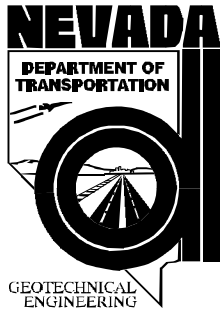
EXPLORATION LOG

START DATE 5/12/04
 END DATE 5/12/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-12
 E.A. # 72495
 GROUND ELEV. 2397.70 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT DIEDRICH D-120
 OPERATOR MARSHALL
 DRILLING METHOD 8" H.S. Auger
 BACKFILLED Yes DATE 5/12/2004

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				
2362.7	35							GP GM	<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, very dense	
									35.00	
									<u>B.O.H.</u>	
2357.7	40									
2352.7	45									
2347.7	50									
2342.7	55									



EXPLORATION LOG

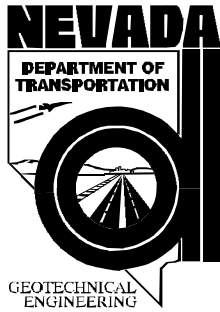
START DATE 5/12/04
 END DATE 5/12/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-13
 E.A. # 72495
 GROUND ELEV. 2396.70 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/12/2004

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				
2391.7	5							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									7.00	
2386.7	10							SW SM	<u>WELL GRADED SAND with SILT and GRAVEL</u> Dry, very dense	
									13.00	
2381.7	15							GP GM	<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, very dense	
									18.00	
2376.7	20							SP SM	<u>POORLY GRADED SAND with SILT and GRAVEL</u> Dry, very dense	
									23.00	
2371.7	25							GW	<u>WELL GRADED GRAVEL</u> Dry, very dense	
									30.00	

NV_DOT_BLUE DIAMOND DETENTION BASIN.GPJ NV_DOT.GDT 11/17/06



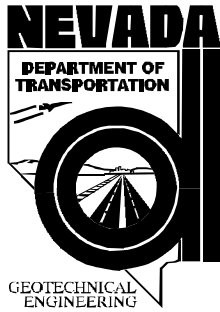
EXPLORATION LOG

START DATE 5/12/04
 END DATE 5/12/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-13
 E.A. # 72495
 GROUND ELEV. 2396.70 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/12/2004

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				
2361.7	35							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									35.00	
									<u>B.O.H.</u>	
2356.7	40									
2351.7	45									
2346.7	50									
2341.7	55									



START DATE 5/12/04

END DATE 5/12/04

JOB DESCRIPTION Blue Diamond Detention Basin

LOCATION 1 mile North of SR 160; east of UPRR Tracks

BORING BDB-14

E.A. # 72495

GROUND ELEV. 2396.60 (ft)

HAMMER DROP SYSTEM N/A

EXPLORATION LOG

STATION _____

OFFSET _____

ENGINEER BOOMHOWER

EQUIPMENT MOBILE B-57

OPERATOR ALTAMIRANO

DRILLING METHOD 6" Solid Auger

BACKFILLED Yes DATE 5/12/2004

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				
2391.6	5							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	Borehole located just south of wash.
									7.00	
2386.6	10							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
2381.6	15									
									18.00	
2376.6	20							GP GM	<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, very dense	
									23.00	
2371.6	25							SW SM	<u>WELL GRADED SAND with SILT and GRAVEL</u> Dry, very dense	
									30.00	

NV_DOT_BLUE DIAMOND DETENTION BASIN.GPJ NV_DOT.GDT 11/17/06



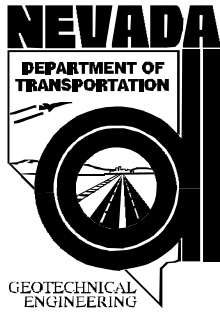
EXPLORATION LOG

START DATE 5/12/04
 END DATE 5/12/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-14
 E.A. # 72495
 GROUND ELEV. 2396.60 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/12/2004

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				
2361.6	35							GP GM	<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, very dense	
									35.00	
									<u>B.O.H.</u>	
2356.6	40									
2351.6	45									
2346.6	50									
2341.6	55									



START DATE 5/12/04

END DATE 5/12/04

JOB DESCRIPTION Blue Diamond Detention Basin

LOCATION 1 mile North of SR 160; east of UPRR Tracks

BORING BDB-15

E.A. # 72495

GROUND ELEV. 2397.40 (ft)

HAMMER DROP SYSTEM N/A

EXPLORATION LOG

STATION _____

OFFSET _____

ENGINEER BOOMHOWER

EQUIPMENT MOBILE B-57

OPERATOR ALTAMIRANO

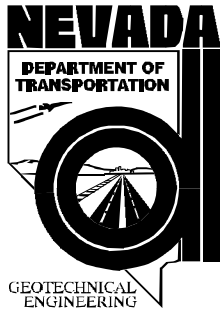
DRILLING METHOD 6" Solid Auger

BACKFILLED Yes DATE 5/12/2004

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				
2392.4	5							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									7.00	
2387.4	10							GP GM	<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, very dense	
									13.00	
2382.4	15							GW GM	<u>WELL GRADED GRAVEL with SILT and SAND</u> Dry, very dense	
									18.00	
2377.4	20							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									23.00	
2372.4	25							GW	<u>WELL GRADED GRAVEL</u> Dry, very dense	
									30.00	
										Cemented from 26'-26.5'.

NV_DOT_BLUE DIAMOND DETENTION BASIN.GPJ NV_DOT.GDT 11/17/06



EXPLORATION LOG

START DATE 5/12/04
 END DATE 5/12/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-15
 E.A. # 72495
 GROUND ELEV. 2397.40 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/12/2004

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				
2362.4	35							SW SM	<u>WELL GRADED SAND with SILT and GRAVEL</u> Dry, very dense	
									35.00	
									<u>B.O.H.</u>	
2357.4	40									
2352.4	45									
2347.4	50									
2342.4	55									

NV_DOT_BLUE DIAMOND DETENTION BASIN.GPJ NV_DOT.GDT 11/17/06



START DATE 5/12/04

END DATE 5/12/04

JOB DESCRIPTION Blue Diamond Detention Basin

LOCATION 1 mile North of SR 160; east of UPRR Tracks

BORING BDB-16

E.A. # 72495

GROUND ELEV. 2389.00 (ft)

HAMMER DROP SYSTEM N/A

EXPLORATION LOG

STATION _____

OFFSET _____

ENGINEER BOOMHOWER

EQUIPMENT MOBILE B-57

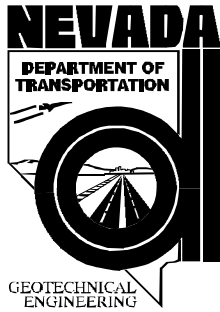
OPERATOR ALTAMIRANO

DRILLING METHOD 6" Solid Auger

BACKFILLED Yes DATE 5/12/2004

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				
2384.0	5							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	
									7.00	
2379.0	10							GP	<u>POORLY GRADED GRAVEL with SAND</u> Dry, very dense	Hard drilling from 9'-11'.
									13.00	
2374.0	15							GP GM	<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, very dense	
									18.00	
2369.0	20							SW SM	<u>WELL GRADED SAND with SILT and GRAVEL</u> Dry, very dense	
									23.00	
2364.0	25							GP GM	<u>POORLY GRADED GRAVEL with SILT and SAND</u> Dry, very dense	
									30.00	



EXPLORATION LOG

START DATE 5/12/04
 END DATE 5/12/04
 JOB DESCRIPTION Blue Diamond Detention Basin
 LOCATION 1 mile North of SR 160; east of UPRR Tracks
 BORING BDB-16
 E.A. # 72495
 GROUND ELEV. 2389.00 (ft)
 HAMMER DROP SYSTEM N/A

STATION _____
 OFFSET _____
 ENGINEER BOOMHOWER
 EQUIPMENT MOBILE B-57
 OPERATOR ALTAMIRANO
 DRILLING METHOD 6" Solid Auger
 BACKFILLED Yes DATE 5/12/2004

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				
2354.0	35							SP SM	<u>POORLY GRADED SAND with SILT and GRAVEL</u> Dry, very dense	
									35.00	
									<u>B.O.H.</u>	
2349.0	40									
2344.0	45									
2339.0	50									
2334.0	55									

E.A. NO.: 72495
 PIT NO.: CL 38-01
 DATE SAMPLED: 05/13/04
 LOCATION: Blue Diamond Detention Basin
 ROUTE, COUNTY, MILEPOST: SR 160, CL
 % OF WEAR (500 REVS): 26.9

LAB NO.: AO-12-04
 DATE REPORTED: 06/21/04
 MATERIAL: PIT AGGREGATE
 SP. GR. (% OF WEAR): 2.75
 REMARKS:

SODIUM SOUNDNESS
 CONCRETE: 3
 PLANTMIX: 3

COARSE FINES
 3 2
 3 2

HOLE NUMBER	1A	1B	5A	5B	8A	8B	8C	8D	8E	10A	10B	10C	10D	10E	12A	12B	12C	12D
SAMPLE DEPTH (FEET)	10-15	15-20	10-15	15-20	10-15	15-20	20-25	25-30	30-35	10-15	15-20	20-25	25-30	30-35	10-15	15-20	20-25	25-30
SAMPLE DEPTH (METERS)																		
% PASS. 75mm (3") SIEVE	100		100						100			100						
% PASS. 50mm (2") SIEVE	95	100	92		100	100	100	100	98	100	100	91	100		100	100	100	100
% PASS. 37.5mm (1 1/2") SIEVE	85	93	83	100	92	95	98	96	96	89	84	87	97	100	95	97	98	97
% PASS. 25mm (1") SIEVE	80	85	70	98	86	94	88	88	95	85	80	77	89	95	87	90	94	94
% PASS. 19mm (3/4") SIEVE	64	74	50	85	68	83	78	75	90	74	65	62	71	83	69	72	77	75
% PASS. 12.5mm (1/2") SIEVE	49	66	39	73	56	76	64	65	81	68	56	46	60	70	60	62	68	69
% PASS. 9.5mm (3/8") SIEVE	30	47	17	45	35	53	34	39	57	51	41	27	37	45	35	34	45	48
% PASS. 4.75mm (#4) SIEVE	20	33	9	27	23	36	22	26	41	37	30	19	22	30	18	17	26	35
% PASS. 2mm (#10) SIEVE	17	29	7	22	20	32	18	22	35	32	26	17	19	26	14	13	21	30
% PASS. 1.18mm (#16) SIEVE	15	24	6	18	17	26	15	19	29	27	22	14	16	22	11	11	17	25
% PASS. 425µm (#40) SIEVE	14	23	6	17	15	24	14	18	27	25	20	13	15	20	10	10	16	24
% PASS. 300µm (#50) SIEVE	9	13	3	9	8	12	8	9	16	13	10	7	8	11	6	6	9	15
% PASS. 150µm (#100) SIEVE	4	6	2	5	3	6	3	4	10	6	4	3	4	6	3	3	5	9
% PASS. 75µm (#200) SIEVE	14	14	15	15	17	16	16	16	17	17	17	16	17	17	15	14	14	16
LIQUID LIMIT	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
PLASTICITY INDEX	45	20	63	41	25	29	43	27	25	31	29	26	28	24	69	67	40	23
SAND EQUIVALENT	80	79	77	75	69	82	78	68	77	79	79	73	80	78	73	81	79	74
R-VALUE	3,247	1,350	4,695	4,149	2,747	2,653	3,509	2,618	3,086	2,500	2,331	2,165	1,980	2,242	4,115	4,237	3,676	2,631
RESISTIVITY	8.1	8.1	8.3	8.6	8.2	8.6	8.4	8.4	8.7	8.2	8.3	8.3	8.3	8.4	8.3	8.3	7.9	8.3
pH																		
SULPHATES																		
CHLORIDES																		

E.A. NO.: 72495

PIT NO.: CL 38-01

DATE SAMPLED: 05/13/04

LOCATION: Blue Diamond Detention Basin

ROUTE, COUNTY, MILEPOST: SR 160, CL

% OF WEAR (500 REVS): 26.9

LAB NO.: AO-12-04

DATE REPORTED: 06/21/04

MATERIAL: PIT AGGREGATE

SP. GR. (% OF WEAR): 2.75

REMARKS:

SODIUM SOUNDNESS
 CONCRETE: 3
 PLANTMIX: 3

COARSE FINES
 2
 2

HOLE NUMBER	12E	13A	13B	13C	13D	13E	14A	14B	14C	14D	14E	15A	15B	15C	15D	15E	16A	16B
SAMPLE DEPTH (FEET)	30-35	10-15	15-20	20-25	25-30	30-35	10-15	15-20	20-25	25-30	30-35	10-15	15-20	20-25	25-30	30-35	10-15	15-20
SAMPLE DEPTH (METERS)																		
% PASS. 75mm (3") SIEVE		100																
% PASS. 50mm (2") SIEVE		92			100										100			
% PASS. 37.5mm (1 1/2") SIEVE	100	92	100	100	96	100	100	100	100	100	100	100	100	100	98		100	
% PASS. 25mm (1") SIEVE	93	90	97	98	81	89	94	95	97	98		97	96	95	97		97	
% PASS. 19mm (3/4") SIEVE	87	90	94	97	68	79	90	90	90	95	100	95	85	88	90	100	95	100
% PASS. 12.5mm (1/2") SIEVE	76	85	72	91	42	62	74	70	81	90	92	84	78	72	73	95	85	89
% PASS. 9.5mm (3/8") SIEVE	64	76	62	82	32	52	58	60	76	81	81	72	69	56	56	87	73	76
% PASS. 4.75mm (#4) SIEVE	43	54	44	58	15	34	30	35	49	55	50	48	49	29	15	53	44	46
% PASS. 2mm (#10) SIEVE	28	37	34	38	10	23	18	20	29	34	31	31	35	17	5	23	27	28
% PASS. 1.18mm (#16) SIEVE	24	31	32	33	9	20	15	16	23	28	26	27	31	14	5	19	22	23
% PASS. 425µm (#40) SIEVE	20	26	28	28	9	17	12	13	18	22	20	21	26	12	4	16	17	19
% PASS. 300µm (#50) SIEVE	18	25	26	26	8	15	11	13	17	19	18	19	23	11	4	15	15	17
% PASS. 150µm (#100) SIEVE	11	14	14	14	5	8	6	8	9	10	11	10	13	6	3	9	6	10
% PASS. 75µm (#200) SIEVE	6	7	5	7	2	4	3	4	6	6	6	5	7	4	2	6	1	6
LIQUID LIMIT	16	13	15	14	15	15	14	16	15	14	14	14	17	16	17	16	15	16
PLASTICITY INDEX	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
SAND EQUIVALENT	22	34	53	34	42	42	54	32	30	28	26	28	26	24	28	40	29	26
R-VALUE	79	78	73	72	73	81	79	80	72	63	78	79	75	73	77	70	75	69
RESISTIVITY	2,646	2,825	3,922	3,067	3,030	3,105	6,211	4,405	4,348	4,348	4,329	2,597	1,942	2,096	1,410	2,220	2,075	1,667
pH	8.2	8.2	8.2	8.6	8.3	8.3	8.4	8.6	8.6	8.6	8.6	8.2	8.4	8.6	8.6	8.5	8.4	8.5
SULPHATES																		
CHLORIDES																		

E.A. NO.: 72495
PIT NO.: CL 38-01
DATE SAMPLED: 05/13/04
LOCATION: Blue Diamond Detention Basin
ROUTE, COUNTY, MILEPOST: SR 160, CL
% OF WEAR (500 REVS): 26.9
LAB NO.: AO-12-04
DATE REPORTED: 06/21/04
MATERIAL: PIT AGGREGATE
SP. GR. (% OF WEAR): 2.75
REMARKS:

SODIUM SOUNDNESS
CONCRETE: 3
PLANTMIX: 3
COARSE 3
FINES 2
2

HOLE NUMBER	16C	16D	16E
SAMPLE DEPTH (FEET)	20-25	25-30	30-35
SAMPLE DEPTH (METERS)			
% PASS. 75mm (3") SIEVE			
% PASS. 50mm (2") SIEVE			
% PASS. 37.5mm (1 1/2") SIEVE			
% PASS. 25mm (1") SIEVE	100		
% PASS. 19mm (3/4") SIEVE	100	96	100
% PASS. 12.5mm (1/2") SIEVE	97	92	99
% PASS. 9.5mm (3/8") SIEVE	92	84	92
% PASS. 4.75mm (#4) SIEVE	76	46	71
% PASS. 2mm (#10) SIEVE	46	23	48
% PASS. 1.18mm (#16) SIEVE	36	18	40
% PASS. 425µm (#40) SIEVE	28	14	31
% PASS. 300µm (#50) SIEVE	25	13	28
% PASS. 150µm (#100) SIEVE	14	8	17
% PASS. 75µm (#200) SIEVE	8	5	10
LIQUID LIMIT	15	14	15
PLASTICITY INDEX	NP	NP	NP
SAND EQUIVALENT	30	32	28
R-VALUE	75	66	70
RESISTIVITY	2,179	2,381	2,347
pH	8.4	8.5	8.5
SULPHATES			
CHLORIDES			