



**EXPLORATION LOG** SHEET 1 OF 2

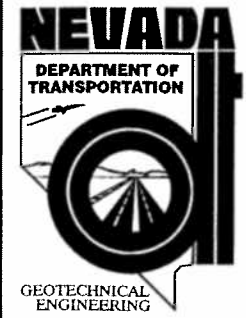
START DATE 10/6/11  
 END DATE 10/13/11  
 JOB DESCRIPTION Moana Interchange, I-1248  
 LOCATION Reno, Nevada  
 BORING MAI2  
 E.A. # 73657-1  
 GROUND ELEV. 4417.70 (ft)  
 HAMMER DROP SYSTEM Auto, ETR=87.5%

STATION S.W. Corner  
 OFFSET 4 feet from toe of the slope  
 ENGINEER Abbas Bafghi  
 EQUIPMENT Diedrich D-120, #1082  
 OPERATOR J.Rigsby  
 DRILLING METHOD 6" H.S.A/Rotary Mud  
 BACKFILLED Yes DATE 10/13/2011

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft
10/6/11	7.50	4410.2
10/13/11	5.00	4412.7

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
4412.7	1.00						SM	SILTY SAND (SM), dark brown, loose to med. dense, moist. gravel = 7%, sand = 46%, fines = 47%, LL = 38%, PL = 34%, natural moisture = 15%.	started: 8: 30 am.  weather: cloudy/rainy, 40 degrees.  Tri-Wing pilot bit	
	2.50	A	SPT	4	8	80				W, S, PI
	3.50			4						
4412.7	5.00	B	CMS	3	11	0	SM	SANDY LEAN CLAY (CL), grayish green, moist, v. stiff. gravel = 6%, sand = 41%, fines = 53%, LL = 41%, PL = 18%, natural moisture = 23%.	drill hole was terminated at 23 feet at 2 pm.	
	6.00			5						
4407.7	7.50	C	SPT	8	15	78	SC	CLAYEY SAND WITH GRAVEL (SC), grayish green, moist, stiff. gravel = 22%, sand = 48%, fines = 30%, LL = 42%, PL = 19%, natural moisture = 19%.	21.5 to 23 feet: very hard drilling. Drill bit got broken at 23 feet of depth and was lost in the hole.	
	8.50			7						
4407.7	10.00	D	CMS	4	33	100	SM	SILTY SAND WITH GRAVEL (SM), dark brown, dense, moist. gravel = 38%, sand = 49%, fines = 13%, LL = 23%, PL = NP, natural moisture = 13%.	New borehole (MAI2-A): started drilling a new borehole using rotary mud on 10/12/2011, 2 feet away.	
	11.00			11						
	12.50	E	SPT	10	35	100				W, S, PI
4402.7	13.50	F	CMS	13	20	100	CL	SANDY LEAN CLAY (CL), dark brown, moist, v. stiff, trace of oxidation. gravel = 0 to 2%, sand = 48 to 52%, fines = 48 to 50%, LL = 30 to 34%, PL = 19 to 21%, natural moisture = 24 to 29%.	This borehole was terminated at 12 feet due to loss of mud circulation. The mud in the new borehole (MAI2-A) found its way to the old borehole (MAI2) flowed up to the ground surface.	
	15.00			9						
	16.00	G	SPT	6	12	100				W, S, PI
	17.50			5			SC	CLAYEY SAND (SC), dark brown, moist, v. stiff. gravel = 10 to 35%, sand = 47 to 76%, fines = 14 to 36%, LL = 29 to 50%, PL = 18 to 21%, natural moisture = 11 to 20%.		
	18.50			7						
	20.00	H	CMS	11	53	100				W, S, PI, UW

NV\_DOT\_MOANA.GPJ NV\_DOT\_GDT\_12/8/11



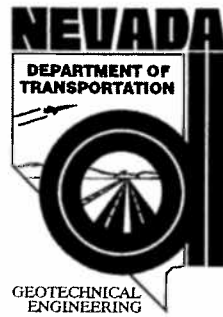
**EXPLORATION LOG** SHEET 2 OF 2

START DATE 10/6/11  
 END DATE 10/13/11  
 JOB DESCRIPTION Moana Interchange, I-1248  
 LOCATION Reno, Nevada  
 BORING MAI2  
 E.A. # 73657-1  
 GROUND ELEV. 4417.70 (ft)  
 HAMMER DROP SYSTEM Auto, ETR=87.5%

STATION S.W. Corner  
 OFFSET 4 feet from toe of the slope  
 ENGINEER Abbas Bafghi  
 EQUIPMENT Diedrich D-120, #1082  
 OPERATOR J.Rigsby  
 DRILLING METHOD 6" H.S.A/Rotary Mud  
 BACKFILLED Yes DATE 10/13/2011

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DATE	DEPTH ft	ELEV. ft
10/6/11	7.50	4410.2
10/13/11	5.00	4412.7

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
4392.7	21.00						SP	Sample G: Pocket Pen: 1.75 tsf, 2.5 tsf, 2.5 tsf.  Sample H: high blow count of 37 is due to presence of 2 inch rock.  POORLY-GRADED SAND WITH GRAVEL (SP) grey, med. dense, wet. gravel = 21%, sand = 75%, fines = 4%, LL = 20%, PL = NP, natural moisture = 22%.  SILTY SAND (SM) light brown, me. dense to dense, wet. gravel = 0%, sand = 66 to 89%, fines = 11 to 34%, LL = 20 to 28%, PL = NP, natural moisture = 20 to 40%.	New borehole (MAI2-B): started: drilling a new borehole 7 feet from Borehole MAI2-A, using HSA. soil sampling: from 21 feet to the bottom of the borehole.	
	22.50	I	SPT	1	13	100				W, S, PI
	23.50			8						
4392.7	25.00	J	CMS	3	21	100	SM	Very hard drilling from 21.5 to 22 feet (possible cobble).  Sample I: presence of rock fragment; SPT shoe got damaged.		
	26.00			10						
	27.50	K	SPT	16	35	100			W, S, PI	
4387.7	28.50			16			SM	End of boring at 30 feet.  backfilled with auger cuttings.  Groundwater was encountered at 7 feet.		
	30.00	L	SPT	16	35	100			W, S, PI	
	30.00			19						
4382.7	35.00						SM	Continuous sloughing of 6 to 12 inches in the borehole from 21 feet to the bottom of the explored borehole.  Sample K: trace of mica.		
	35.00									



START DATE 10/5/11  
 END DATE 10/5/11  
 JOB DESCRIPTION Moana Interchange, I-1248  
 LOCATION Reno, Nevada  
 BORING MAI1  
 E.A. # 73657-1  
 GROUND ELEV. 4417.70 (ft)  
 HAMMER DROP SYSTEM Auto, ETR=87.5%

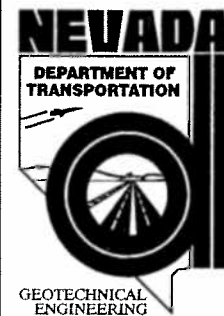
EXPLORATION LOG

STATION S.E. Corner  
 OFFSET 5 feet from toe of the slope  
 ENGINEER Abbas Bafghi  
 EQUIPMENT Diedrich D-120, #1082  
 OPERATOR O. Altamirano  
 DRILLING METHOD 6" H.S.A  
 BACKFILLED Yes DATE 10/6/2011

GROUNDWATER LEVEL		
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10/5/11	7.50	4410.2
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ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
4412.7	1.00							ML	SANDY SILT (ML), light brown, dry, v. stiff. gravel = 11%, sand = 36%, fines = 53%, LL = 42%, PL = 28%, natural moisture = 26%. started: 8:30 am weather: 45 degrees, cloudy.	
	2.50	A	SPT	7	15	80	W, S, PI			
	2.50			8						
4412.7	3.50							CL	LEAN CLAY WITH SAND (CL), light brown, moist, v. stiff. gravel = 0 to 1%, sand = 24 to 31%, fines = 69 to 75%, LL = 38 to 42%, PL = 18 to 20%, natural moisture = 33%.	
	5.50	B	CMS	5	12	100	W, S, PI, UW, CU, OC, G			
	6.00			7						
4407.7	7.50	C	SPT	1	6	100	W, S, PI	ML	SANDY SILT (ML), light brown, dry, med. stiff. gravel = 0%, sand = 30%, fines = 70%, LL = 44%, PL = 34%, natural moisture = 34%. Color changes to grayish green. Pocket Pen = 0.75 tsf, 1.25 tsf.	
	8.50			2						
	9.50			4						
4407.7	10.50	D	CMS	8	44	100	W, S, PI, UW	SM	SILTY SAND (SM) grey, dense, wet, trace of oxidation. gravel = 7 to 9%, sand = 54 to 79%, fines = 14 to 16%, LL = 20 to 22%, PL = NP, natural moisture = 17%. WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM) grey, v. dense, wet. gravel = 34 to 41%, sand = 49 to 54%, fines = 10 to 12%, LL = 23%, PL = NP to 22%, natural moisture = 14.5%.	
	11.00			17						
	12.50	E	SPT	24	45	100	W, S, PI			
4402.7	13.50							SC	CLAYEY SAND WITH GRAVEL (SC), light brown, moist, stiff, trace of oxidation. gravel = 25%, sand = 43%, fines = 32%, LL = 32%, PL = 20%, natural moisture = 22%. Sample F: driven 22 inches	
	15.00	F	CMS	12	17	100	W, S, PI, DS, UU, OC, G			
	14.50			9						
4402.7	16.00							CL	SANDY LEAN CLAY (CL), light brown, moist, stiff. gravel = 0 to 4%, sand = 39 to 48%, fines = 51 to 57%, LL = 30 to 31%, PL = 21%, natural moisture = 27%. Trace of oxidation. Pocket Pen = 1.5 tsf, 2.2 tsf, 2.5 tsf. 2.0 inch lense of sand from 15.7 to 15.8 feet.	
	17.50	G	SPT	3	11	100	W, S, PI			
	18.50			4						
4402.7	19.00							SW	WELL-GRADED SAND WITH SILTY CLAY AND GRAVEL (SW-SC) grey, v. dense, wet. gravel = 19 to 42%, sand = 50 to 73%, fines =	
	20.00	H	CMS	7	56	100	W, S, PI			
	20.00			32						

NV\_DOT\_MOANA.GPJ NV\_DOT.GDT 12/8/11



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ELEV. (ft)	DEPTH (ft)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd				
4392.7	21.00							SM	8% , LL = 23 to 25%, PL = 18 to 19% , natural moisture = 16%. high blow count of 24 and 32 are due to presence of 2 inch gravel in the sampler shoe. / SILTY SAND (SM) grey, med. dense, wet. gravel = 1%, sand = 84%, fines = 15% , LL = 21%, PL = NP, natural moisture = 22%. Sample I: 6 inches of slough	
	22.50	I	SPT	1	11	100	W, S, PI			
	23.50			6						
4392.7	25.00	J	CMS	5	33	33	W, S, PI	SP SM	POORLY-GRADED SAND WITH SILT (SW-SM) grey, med. dense, wet. gravel = 0 to 8%, sand = 86%, fines = 6% , LL = 17 to 21%, PL = NP , natural moisture = 20 to 26%. Sample J: 4 inches of slough, lost the sample upon pull-up, recovery = 6 inches, no sand catcher was used. Sample K: 4 inches of slough	
	26.00			14						
	27.50	K	SPT	3	13	100	W, S, PI			
4387.7	30.00							SW	End of boring at 27.5 feet. backfilled with auger cuttings. Groundwater was encountered at 7 feet.	
	31.00									
	32.00									
4382.7	35.00									
	36.00									

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