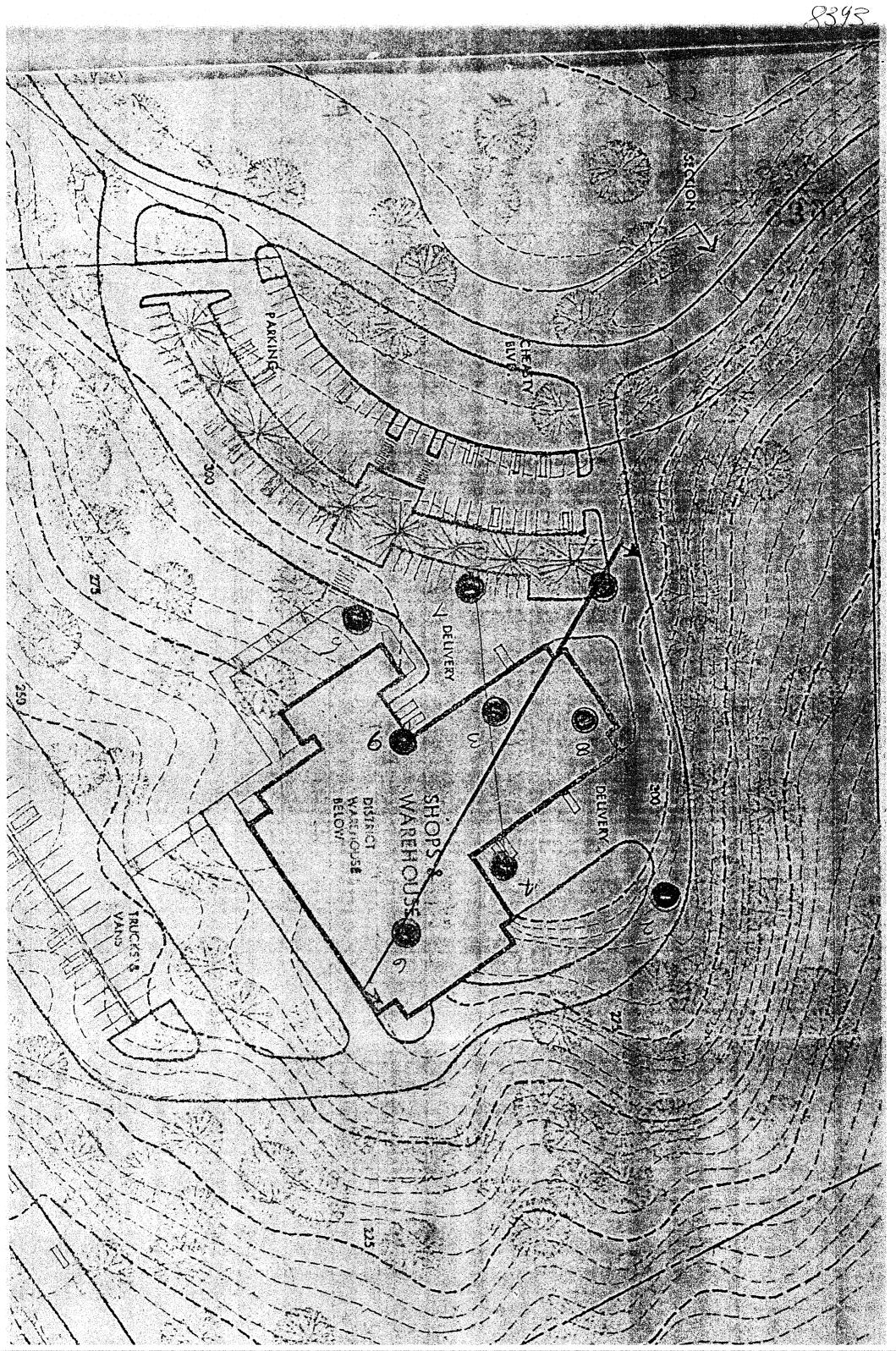
APPENDIX C EXISTING GEOTECHNICAL INFORMATION



1973 SEATTLE ENGINEERING DEPARTMENT 006221



CS 7.241

LOG OF TEST BORING

DATE 3-23-73 HOLE NO. Dept Cheasty Blrd GRD. ELEV. 302, Z LOCATION NORTH GRID LINE 4º North STA 5+08 DESCRIPTION OF MATERIAL SAMPLE NO. BLOW COUNT STRATA DEPTH WATER COMPOSITION CONSISTENCY MOISTURE COLOR SILTY SALLO -/ GRAVEL DIEGONIC 2 25 25 50 SUTY FINE SAND mo157 Bend 8 15 40 50 90 SIZY SAND W/GERLE-B0-1 Compact 16 32 35 67 SICT SAND W/ GOADEL V. COMP HUDIST BUN Bottom

CS 7.241

LOG OF TEST BORING

DATE 3-22-73		HOLE NO.
PROJECT PARK DOPT		GRD. ELEV. 290.9
LOCATION NORTH GRID LINE	Sta 5+50	

DEPTH	SA.	MPLE		BLOW	,	STD.	DESCRIPTION C	OF MATERIA	.L	
DEPTH		40.		COUN		PEN.	COMPOSITION	CONSISTENCY	MOISTURE	COLOR
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								Mich continued Acad	- 4-2	
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15		<u>C</u>	7	12	13	25	SILM SANOW/GRADE	FIRM	ויסיאנ	Benj
							& SAMOY LATTERS			
		<u> </u>								
_		<u> </u>								
		_		-	-	4.5	FUE SAND 4/SILT			
20-3		0	10	20	23	45	,	COMP	rwist	BRN
							+ TEALE GRAVEL			
							(1000)	<u> </u>		
							12' FILE SHOW/		no157	اله عاديم
		5	2	و	20		COMOSE SHUD LATRICE	COMP	100	
25							G" SILTY SAND W/GRAVE	—		BELL
<u> </u>										
-				~/						
30		1	16	36	30	66	SHET FILE SALLD	Vicemp	HOIST	sand 2

CS 7.241

LOG OF TEST BORING

DATE 3-23-73
PROJECT PARK DEPT

HOLE NO.

GRD. ELEV. 303,6

LOCATION MIO. GRID LLE STA 3+95

DEPTH SAMPLE SOLVE COUNTY FIND COMPOSITION CONSISTENCY MOISTUSE COLOR GRAPT CLART GRAPT CLART GRAPT CLART GRAPT EILL 10 B 1 2 3 S CLAT-SKE (DETORTED) SOLT MOIST GRAPT EILL 10 C 1 4 4 & CLAT-SKE (DETORTED) KNED MOST GRAPT FILL DRIVE CREED DRIVE MAGE DRIVE CREED DRIVE MAGE DRIVE CREED DRIVE MAGE C' X NOOT SKETT CLARE SAMPLD VICORP MOST GRAPT L' GRAPT 25 E 50 X X NOOT SKETT CLARE SAMPLD VICORP MOST GRAPT 27 TO RECEDE DRIVE GRAPT NOOTH MOST GRAPT L' GRAPT 27 SOL X NOOT SKETT CLARE SAMPLD VICORP MOST GRAPT 27 TO RECEDE DRIVE GRAPT NOOTH MOST GRAPT L' GRAPT 27 TO RECEDE SAMPLE NOOTH MOST GRAPT NOOTH MOST GRAP	ן ה	1						~/49	Acon	_				
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DIZ SO X 1004 SILET EINE SAME V. COMP HOST BENJ	و د -	-	_					~/ 60	عاسم	<u> </u>				
DIZ SX NOOF SILET FILE SALE V. CORP HOST BEAL	آج د		E	50	人	×	100+	SILTY E	me 5	AND		V. COMP	moist	BRN
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NO. COUNT PEN.	_													
	DEPTH							ļ <u>-</u>	COMPOSIT	ЮН		CONSISTENCY	MOISTURE	COLOR

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INSPECTOR Head Kokens CS 7.241

MATERIALS LABORATORY LOG OF TEST BORING

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DATE 3-22-73 GRD. ELEV. 301.7

SZA STIO LOCATION MIDDLE GRED LALE 8-5 DATE

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LOG OF TEST BORING

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LOG OF TEST BORING

DATE 3-23-73	HOLE NO.
PROJECT PARK DEPT.	GRD. ELEV. 303.7
LOCATION SOUTH GOLD LINE 10-H. & STA 3+00	

STRATA	DEPTH	SAME			BLOW		STD.	DESCRIPTION	OF MATERIA	L		WAT
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LOG OF TEST BORING

PROJECT PARE DEPT GRD. ELEV. 289.8

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LOG OF TEST BORING

PROJECT PARK DOFT

LOCATION MID. GREID LINE STA. 2+95

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7-18-73

LOG OF TEST BORING

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SILTY SANDY GRADEL

SAND TIP.

MOIST

BEN.

COMP.

CS 7.241

LOG OF TEST BORING

DATE 7-24-73

PROJECT PARK DEPT: CHEASTY

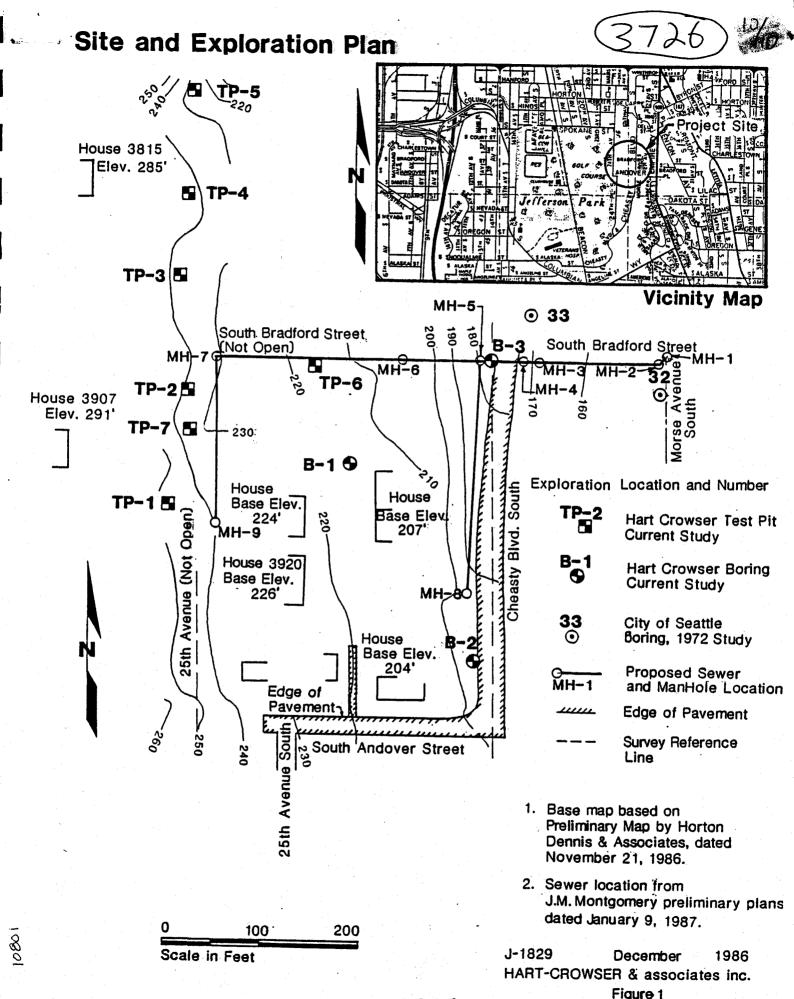
GRD. ELEV.

LOCATION PER PLAN 62' South #3

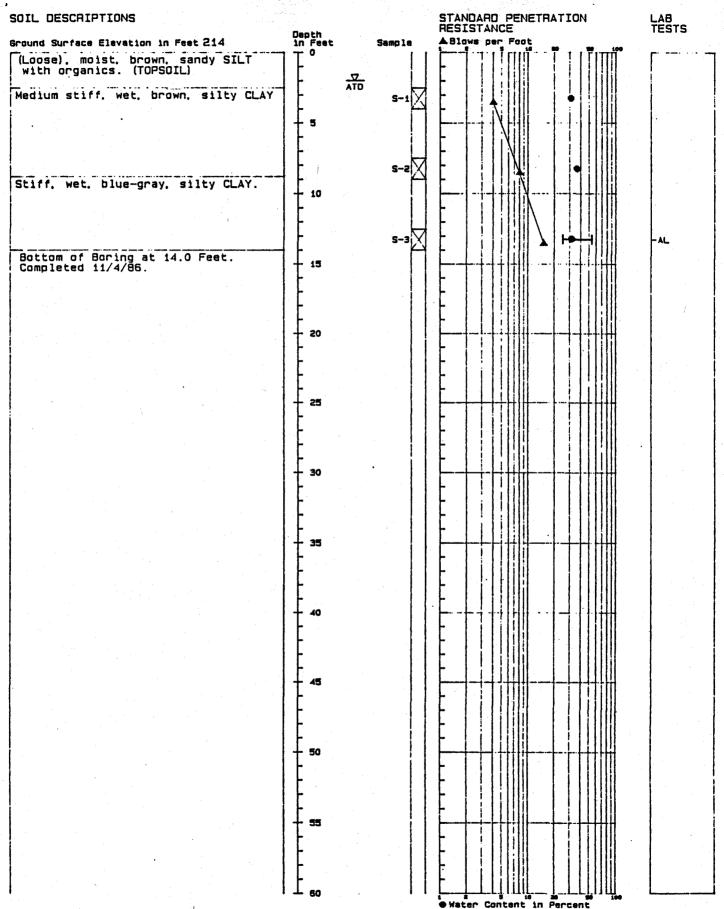
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INSPECTOR Marce

1986 HART CROWSER 003726



Boring Log H-1



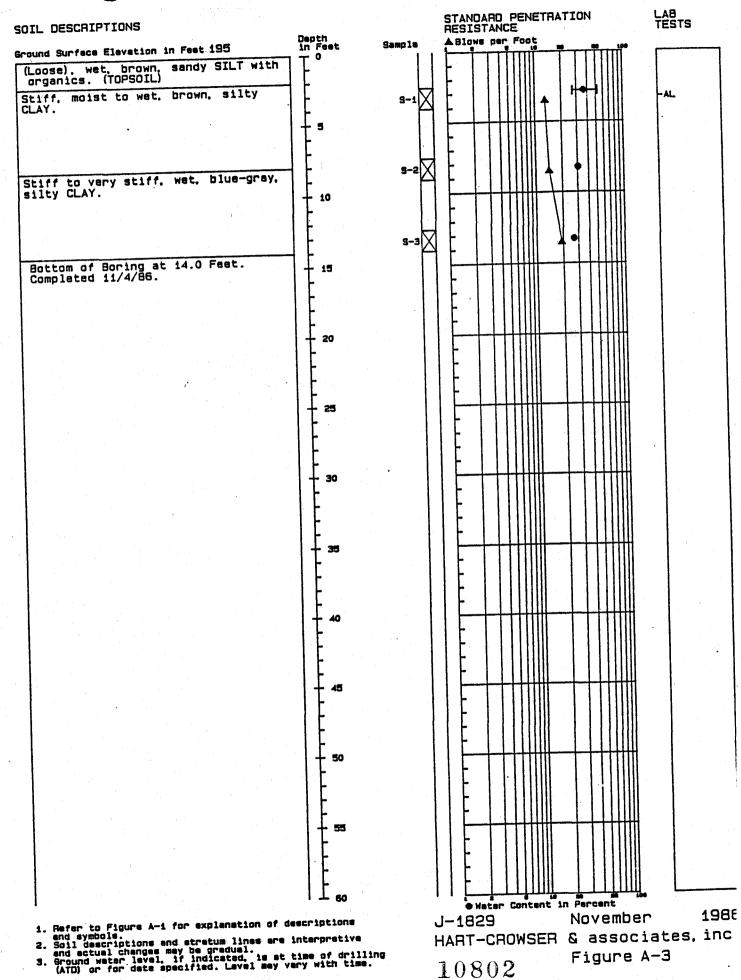
Refer to Figure A-1 for explanation of descriptions and symbols.

Soil descriptions and stratum lines are interpretive and actual changes may be gradual.

Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

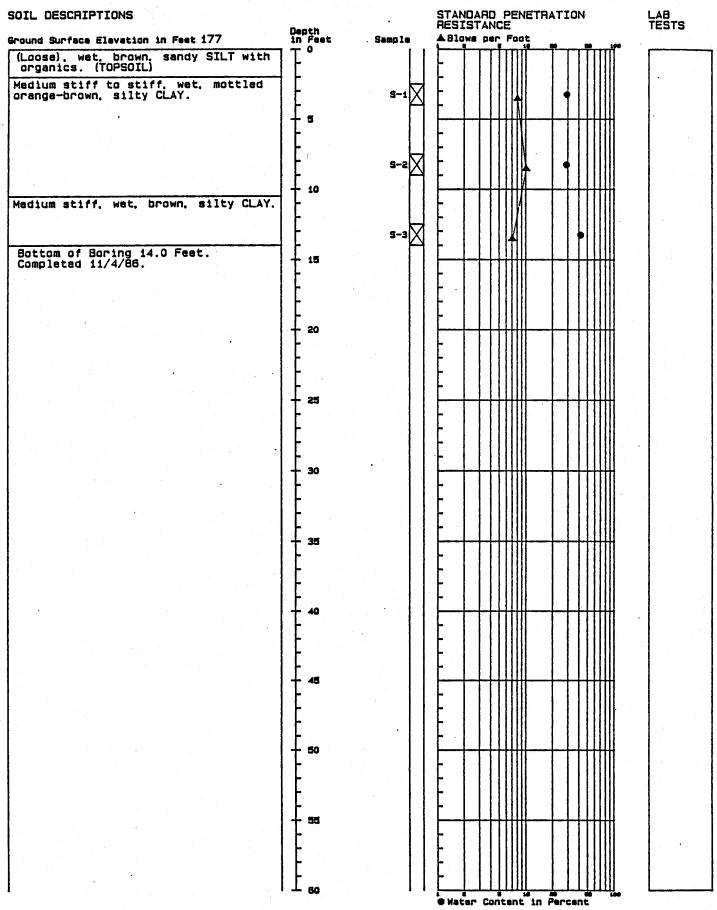
J-1829 1986 November HART-CROWSER & associates, inc. Figure A-2

Boring Log B-2



10802

Boring Log B-3



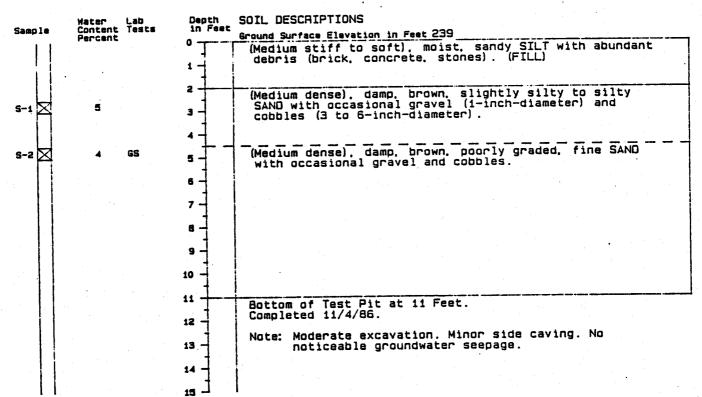
J-1829 1986 November HART-CROWSER & associates, inc. 10803 Figure A-4

Refer to Figure A-1 for explanation of descriptions and symbols.
 Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
 Ground water level, if indicated, is at time of drilling (ATD) or for data specified. Level may vary with time.

Test Pit Log

Sample	Water Content Percent	Lab Tests	Depth SOIL DESCRIPTIONS in Feet Ground Surface Elevation in Feet 243 (Loose), damp, brown, sandy SILT with organics. (TOPSOIL)
S-1 🔀	11		2
S-2 🔀	16		(Stiff to very stiff). damp to moist. light brown. slightly sandy SILT with occasional cobbles and boulders.
S-3	8	65	(Medium dense to dense), damp, brown, slightly gravelly, silty SAND with occasional cobbles. Becomes cleaner and less gravelly with depth.
S-4 >3	16	AL	(Hard). damp. light brown. slightly sandy SILT with occasional roots.
			Bottom of Test Pit at 9 Feet. Completed 11/4/86.
			Note: Easy excavation to 2-foot-depth and moderate from 2 to 9-foot-depth. No noticeable groundwater seepage. Minor side caving.
			13 -
		r i e	14 -

Test Pit



Refer to Figure A-i for explanation of descriptions and symbols.
 Soil descriptions and stretum lines are interpretive and actual changes may be gradual.
 Ground water conditions, if indicated, are at time of excavation. Conditions may vary with time.

1986 J-1829 November HART-CROWSER & associates, inc. Figure A-5

Test Pit Log TP 3

Sample S-1	Water Lab Content Tests Percent	Depth in Feet	SOIL DESCRIPTIONS Ground_Surface Elevation in Feet 237 (Medium dense), moist to wet, brown-gray, gravelly, very silty SAND to gravelly, sandy SILT with occasional cobbles and debris (concrete, clay pipe). (FILL)
S-2	11	3 - 4 - 5 -	(Soft to medium stiff). wet. gray, gravelly, sandy SILT with occasional debris (wood, roots). (FILL) - Petroleum odor - like heating oil.
S-3 X	24	6 -	(Loose), damp to moist, brown, sandy SILT with organics. (TOPSOIL) (Medium dense), damp, brown, slightly silty to clean, fine SAND with some gravel and occasional cobble.
	e e e e e e e e e e e e e e e e e e e	8 -	The date with some 5 costs and some some some some some some some some
		10	Bottom of Test Pit at 10 Feet. Completed 11/4/86. Note: Moderate excavation. No noticeable groundwater seepage. Minor side caving.
		13 -	

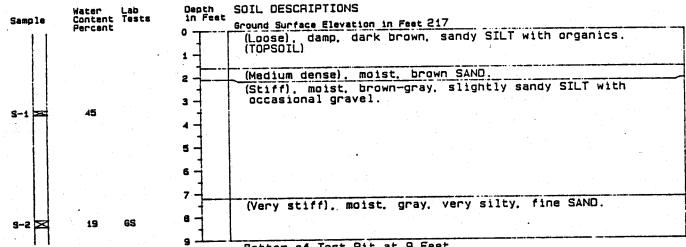
Sample	Water Lat Content Tes Percent		Ground Surface Elevation in Feet 243
			(Loose), moist, brown, silty SAND with organics.
S-1 X	10 · · · · · · · · · · · · · · · · · · ·	2 -	(Medium dense), moist, brown, poorly graded, fine SAND with occasional gravel and cobbles.
		3 -	
		5-	
		7 -	
		8 -	
		10	Bottom of Test Pit at 10 Feet. Completed 11/4/86.
		12 -	Note: Moderate excavation. No noticeable groundwater seepage. Minor side caving.
		13 -	

J-1829 November 1986 HART-CROWSER & associates, inc. Figure A-6

Refer to Figure A-i for explanation of descriptions and symbols.
 Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
 Ground water conditions, if indicated, are at time of excavation. Conditions may vary with time.

Test Pit Log

	Water	Lab	Depth in Feat	SOIL DESCRIPTIONS
Sample	Content	Tests	In reac	Ground Surface Elevation in Feet 226
	FGI GUITE			(Loose). moist. brown. slightly silty SAND with organics (TOPSOIL)
	,		2 -	(Medium dense), damp to moist, poorly graded, fine SAND with occasional gravel and cobbles.
			3 [
	•		- 4-	(Very stiff), damp, brown-gray, slightly sandy SILT with occasional gravel.
			5 -	
			7 -	Bottom of Test Pit at 6 Feet. Completed 11/4/86.
			8	Note: Moderate excavation. No noticeable groundwater seepage. Minor side caving.



Bottom of Test Pit at 9 Feet. Completed 11/4/86.

Note: Moderate excavation. No noticeable groundwater seepage. Minor side caving.

Sample	Water Lab Content Tests Percant	in Feet Ground Su	SCRIPTIONS rface Elevation in Feet 233
		(Loose)), moist, dark brown, sandy SILT with organics. IL)
		2 (Medius	m dense), damp to moist, brown, poorly graded, SAND with occasional gravel and cobble.
		4-	
		5	
		Bottom Comple	of Test Pit at 6 Feet. ted 11/4/86.
		8 Note:	Moderate excavation. No noticeable groundwater seepage. Minor side caving.
11		_ 1	

198E J--1829 November HART-CROWSER & associates, inc. Figure A-7

Refer to Figure A-1 for explanation of descriptions and symbols.
 Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
 Ground water conditions, if indicated, are at time of excavation. Conditions may vary with time.

LOG OF TEST BORING

DATE 9-14-72

HOLE NO 32

PROJECT NIP 13-9

GRD. ELEV.

LOCATION MOESE AUCS. & S. Beaprore 2005. & &

SIRAIA	DEPT	,,	AMPLE		BLOW	,	STD.	DESCRIPTION C	F MATERIAL	:		WATER
			NO.		COUN	iT :	PEN	MOITIADAMCT	CONSISTENCY	MOISTURE	COLOR	FEAET
								ben claret silt				
	5	A CONTRACTOR	\$	1	3	S	ස	SILT -/ cury	neo	wie 7	EPLL	
	/ 0 ·		B	3	5	3	8)	SILTY WATER OF	LOOSE	ero tool	8CH	
	15-		<u>-</u>	1	3	4	7	SILT W/CLASCUSE	hed	b-tenty/ Tro teamor	BRN	
	- - 20 -	A SHEET	1 2	2	4	ſζ	9	SILT	لمحجو	TO WET	Ben	
	- 25-		 	2	4	7	M	SILT	Fier	POSTS	een	9-15-7
			F	2	3	N	જ	CLAYEY SILT W/	WEO	72101	G24-7	
	_{පිට} -	1						CLAY LUMP			7	

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Mass. Coerce

MATERIALS LABORATORY

20=2

LOG OF TEST BORING

DATE 9-14-72

PROJECT 13-9

GRD. ELEV.

RATA	ОЕРТН	SA	MPLE NO.		BLOW	f T	STO. PEN.	DESCRIPTI	ON O	F MATERIAL	•	•	WATER
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lll	-												
	-1												SA
	10-	4	#	2	5	ප	13	CLAT - SILT Y	/	HED	HOIST		Y
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the Koyten

LOG OF TEST BORING

DATE 8-28-72		•	HOLE NO. 3.3
PROJECT MIP 13-9	•		GRD. ELEV.
LOCATION CHE ASSIG PLUS C.	LS. BO	LADENED C	120 H LEINE
LOCATION CHE ASSIGN PLUS !.	14 2 · 15 /	TV DEPINIO -	12- Pt 40-0-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1

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	7						12" FINE-SAND		SAT	BAH	
	9) E	1	7	8>	IS	CLAY-SILT	MEO	Hoise	<u> विस्त</u>	8
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										6.22	S
₩ L		5	3	7	8.	15	CLAY-SILT	MEG	F1015 K.	424-6	

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J-1829 Figure A-9

2000 ECI A 1.58 EARTH GEOTECH 010246 RAINIER VISTA DEVELOPMENT

DEC 1 3 2002

Dept. of Design Construction & Land Use ___

GEOTECHNICAL ENGINEERING STUDY PROPOSED RAINIER VISTA REDEVELOPMENT MARTIN LUTHER KING JR. WAY SOUTH

SEATTLE, WASHINGTON

732097

November 3, 2000

PREPARED FOR SEATTLE HOUSING AUTHORITY C/O TONKIN HOYNE LOKAN

Kristina M. Weller, P.E Project Engineer

Kyle R. Campbell, P.E. Manager of Geotechnical Serv

EXPINES 11 19/02

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GEOTECHNICAL ENGINEERING STUDY PROPOSED RAINIER VISTA REDEVELOPMENT MARTIN LUTHER KING JR. WAY SOUTH SEATTLE, WASHINGTON

E-9334

INTRODUCTION

General

This report presents the results of the geotechnical engineering study completed by Earth Consultants, Inc. (ECI) for the proposed Rainier Vista Redevelopment in Seattle, Washington. The general location of the site is shown on the Vicinity Map, Plate 1. The purpose of this study was to explore the subsurface conditions at the site and based on the conditions encountered to develop geotechnical recommendations for the proposed site development.

Project Description

We understand it is planned to redevelop the southern portion of the site with five and six story residential buildings with underground parking, a three story school northeast of the intersection of MLK Way South and South Oregon and two to three story townhouses on the remainder of the site. The buildings currently on site will be demolished as part of the project. The existing roadways will also be relocated as part of the project.

At the time our study was performed, the site, proposed building locations, and our exploratory locations were approximately as shown on the Boring Location Plan, Plate 2.

If the above design criteria are incorrect or change, we should be consulted to review the recommendations contained in this report. In any case, ECI should be retained to perform a general review of the final design.

SITE CONDITIONS

Surface

The subject site is located on both sides of Martin Luther King (MLK) Jr. Way South from Barberry Court South to South Alaska Street (see Plate 1, Vicinity Map). The site is bordered on the north and east by residential developments, on the south by retail and residential developments and on the west by a slope that is part of the Cheasty Greenbelt.

Earth Consultants, Inc.

GEOTECHNICAL ENGINEERING STUDY

Seattle Housing Authority c/o Tonkin Hoyne Lokan November 3, 2000

E-9334 Page 3

Southwest Section: Test pits TP-1, TP-2, TP-3 and TP-4 and boring B-7 are located on the southwest portion of the site. In our borings and test pits we encountered interbedded loose to medium dense silty sand and sandy silt (SM and ML) to the depth of the test pits and to about eleven (11) feet below grade in our boring. Very dense silty sand was encountered at about eleven (11) feet below grade in our boring.

Toe of Western Slope: Borings B-3, B-4, B-5 and B-6 were drilled at the toe of the slope on the west side of the site. In borings B-3 and B-4, we encountered twelve (12) to eighteen (18) feet of interbedded loose to medium dense silty sand, sandy silt, fat clay, and poorly graded sand with silt (SM, ML, CH and SP-SM). Lean clay and silt (CL and ML) with some water bearing sand lenses was encountered below the interbedded layers to the depth of our explorations. In boring B-5, we encountered fourteen (14) feet of elastic silt (MH) underlain by silty sand, sandy silt and poorly graded sand with silt (SM, ML and SP-SM). In boring B-6, we encountered medium dense to very dense silty sand with some gravel (SM).

Central and North Portion: Test pits TP-5, TP-6, TP-7, TP-8, TP-9, TP-14 and TP-15 were excavated in this area. We encountered one to four feet of fill in test pits TP-7, TP-14 and TP-15 consisting of silty sand and sandy silt (SM and ML). The fill or topsoil is underlain by medium dense to very dense silty sand with variable amounts of gravel.

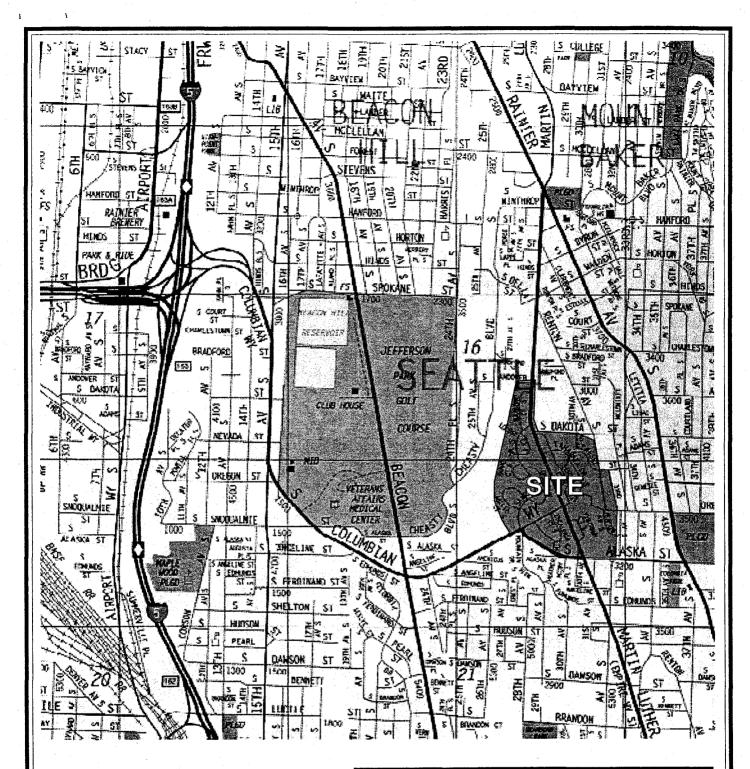
Eastern Portion: Test Pits TP-10, TP-11 and TP-13 were located on the eastern sloped portion of the site. We encountered layered medium dense to dense silty sand, silt and medium stiff to hard clay.

Groundwater

Groundwater seepage was observed while drilling in boring B-2 at thirteen (13) feet, boring B-3 at ten feet, boring B-4 at nineteen (19) feet, boring B-6 at four feet and boring B-7 at six feet below grade and are shown on the boring logs.

Since the groundwater levels did not have time to stabilize, slotted three-quarter inch standpipes were installed in Borings B-4, B-5 and B-6 along the toe of the slope on the west side of the site. A reading, taken eight days after the completion of the borings, is also shown on the boring logs.

Slight groundwater seepage was encountered in our test pits TP-2 and TP-3 at eight and nine feet below existing grade and are shown on the test pit logs.



Reference: Puget Sound Area King County / Map 595 By Thomas Brothers Maps Dated 2000

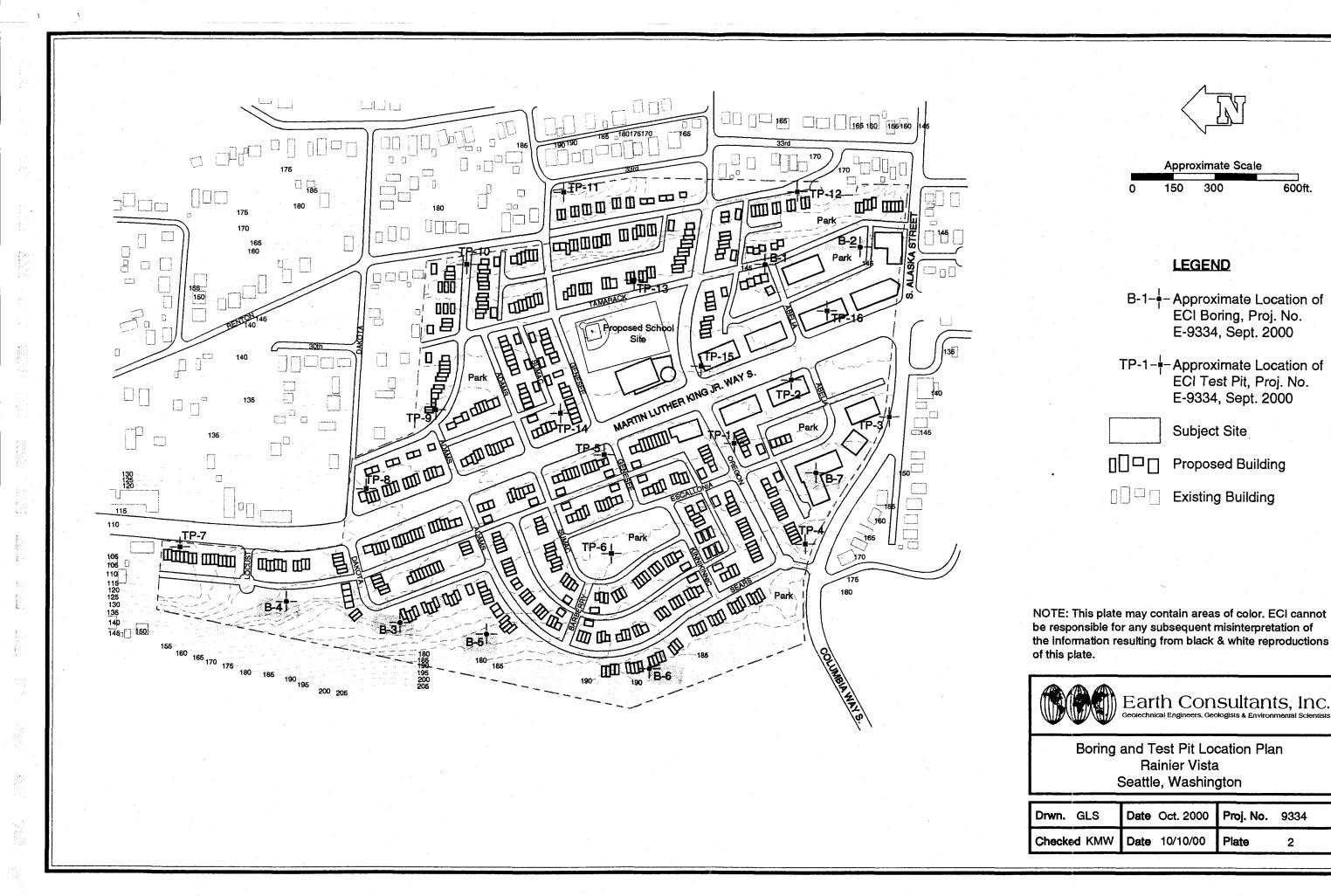


NOTE: This plate may contain areas of color. ECI cannot be responsible for any subsequent misinterpretation of the information resulting from black & white reproductions of this plate.



Vicinity Map
Proposed Rainier Vista
Seattle, Washington

Drwn. GLS	Date Oct. 2000	Proj. No. 9334
Checked KMW	Date 10/6/00	Plate 1



APPENDIX A FIELD EXPLORATION E-9334

Our field exploration was performed on September 25, 26 and 28, 2000. Subsurface conditions at the site were explored by drilling seven borings and excavating sixteen (16) test pits to a maximum depth of thirty one and one half (31.5) feet below the existing grade. The borings were drilled by Boretec, Inc. subcontracted to ECI, using a B-24 limited access drill. The test pits were excavated by Northwest Excavating subcontracted to ECI, using a rubber-tired backhoe

Approximate boring and test pit locations were determined by interpolating from site features. Approximate boring elevations were determined by locating on the site plan. The locations and elevations of the borings and test pits should be considered accurate only to the degree implied by the method used. These approximate locations are shown on the Boring and Test Pit Location Plan, Plate 2.

The field exploration was continuously monitored by a engineer from our firm who classified the soils encountered, maintained a log of each boring, obtained representative samples, measured groundwater levels, and observed pertinent site features. Samples were visually classified in accordance with the Unified Soil Classification System, which is presented on Plate A1, Legend. Representative soil samples were placed in closed containers and returned to our laboratory for further examination and testing.

Logs of the borings are presented on Plates A2 through A12. The final logs represent our interpretations of the field logs and the results of the laboratory examination and tests of field samples. The stratification lines on the logs represent the approximate boundaries between soil types. In actuality, the transitions may be more gradual.

The borings were drilled using hollow stem augers. In each boring, Standard Penetration Tests (SPT) were performed at selected intervals in general accordance with ASTM Test Designation D-1586. The split spoon samples were driven with a one hundred forty (140) pound hammer freely falling thirty (30) inches. The number of blows required to drive the last twelve (12) inches of penetration are called the "N-value". This value helps to characterize the site soils and is used in our engineering analyses. These results are recorded on the boring and test pit logs at the appropriate sample depths.

Test Pit Logs are presented on Plates A13 through A30. The final logs represent our interpretations of the field logs and the results of the laboratory tests of field samples. The stratification lines on the logs represent the approximate boundaries between soil types. In actuality, the transitions may be more gradual. The consistency of the soil shown on the logs was estimated based on the effort required to excavate the soil, the stability of the trench walls, and other factors.

Project Name: Rainier Vist	 а										heet 1	of 2
Job No. 9334	Lo	ogged by	<i>r</i> :		Start Date: 9/25/00	- 1	Completion Date: 9/25/00		Boring No.: B-1			
Drilling Contactor Boretec		1 44111	-		Drilling Me				Sampling Metho	od:		
Ground Surface	Elevation	n:			Hole Comp				-			
145'			· · · · · · · · · · · · · · · · · · ·		Monitor	ing Well	Piezometer	12	Abandoned, s	sealed with	bentoni	te
General Notes	(%)	No. Blows Ft.	Graphic Symbol	Depth Ft. Sample	USCS	Surface Con	ditions:					
	-		\bowtie		SP-SM	Gray poor	ly graded SAND	with s	ilt, dense, m	oist (Fili))	
	12.6	·		2								
		28	$\widetilde{\mathbb{M}}$	3	SM	Gray silty	SAND, medium d	lense	, moist			
				5	<u> </u>							
	17.1			1	-							
	4	3		6		-very loos	e and wet					
	27.2	2		7 8								
	4	145 g (r)	3	g 🗌]	-grades w	ith peat interbeds	3				
	30.6			10			.*		*			
	30.0	7		1.	СН	Gray fat C	LAY, medium sti	ff, mo	ist			
				11		-						
				12	1							·
	14.8	25		13	- -	-very stiff						
				14	-							
LL=53 PL=25 Pl=28	22.8	19		15								
		,		17								, K
	15.4	48		18		-hard						
				19								
	7730→1 1 1				ultant s & Extylronine	S Inc.		Se	Boring Lo Rainier Vist	ta		
Proj. No. 933	4	Dwn	. GL	s	Date N	Nov. 2000	Checked KMW		Date 11/1/0	0	Plate	A2

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this location.

Project Name: Rainier Vis	ta								Sheet 1	of 1
Job No. 9334	Lo	ogged by			Start Date 9/25/0	· . [Completion Date: 9/25/00	Boring No.:	<u> </u>	
Drilling Contactor Boretec					Drilling Me			Sampling Method: SPT		
Ground Surface	Elevation	n:				Hole Completion:				
145'			r		Monitor	ring Well	Piezometer	X Abandoned, sealed	with bentor	nite
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	USCS Symbol	Surface Cond				
				1	SP-SM			with silt, medium den	·.	(Fill)
	14.5	9		3 -	SM	Brown silty -39% fines		nedium dense, moist	to wet	
	26.7	12		5			J. DEAT John			
			77 77 7 77 7	7	PT		idy PEAT, loose, m ig sand content	10IST		
	52.1		7 77 7	8						
	19.7	5	<u> </u>	9	CL	Gray lean moist	CLAY with poorly	graded sand lenses,	medium :	stiff,
	29.0	8		10						
				12	СН	Brown and	i gray fat CLAY, m	edium stiff, moist		
	20.3	27		13	SM	Brown silt	y SAND with grave	I, medium dense, we	t	
	12.6	34		15 -						
·				17	ML		ly weathered gran T, dense, moist	ite lens or rock		
	34.8	50/5"	ЩЩ	18						
				-	SS	Boring ter	minated at 18.5 fee	SANDSTONE, hard et below eixsting grad 0 feet during drilling.	le. Groun	dwater
			<u> </u>					·		<u> </u>
	11 1 14 14 14 17				ultant	S Inc.		Boring Log Rainier Vista Seattle, Washington	n , , , , ,	
Proj. No. 933	34	Dwn	. GL	s	Date	Nov. 2000	Checked KMW	Date 11/1/00	Plate	e A4

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this location.

Project Name: Rainier Vist	ta			-							Sheet 2	of 2
Job No. 9334	L	ogged by			1	rt Date: 9/25/0		Completion 9/25/00		Boring No.: B-3		
Drilling Contacto Boretec) r :				Dril	lling Me				Sampling Method: SPT		
Ground Surface	Elevation	on:			Hol	Hole Completion: Monitoring Well Piezometer X Abandoned, sealed					with bentor	nite
General	w	No. Blows	Graphic Symbol	Depth Ft.		USCS						
Notes	(%)	Ft.	S S	مة -				AX () -				
	15.6	46		21		CL	Gray lean	CLAY, ha	rd, moist			
				22								
	17.9			1 +	\dashv							
		78/11"		23					<i>:</i>			
·				24			Boring ter seepage	minated at	24.0 feet ed at 10.0	t below existing grade feet during drilling.	. Groun	dwater
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		-										
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Earth Consultants Inc. Georect unit cal Pingline ears, Geologists & Environmental Scientists Boring Log Rainier Vista Seattle, Washington												
Proj. No. 933	4	Dwn.	GL	 s	T	ate N	lov. 2000	Checked	KMW	Date 11/1/00	Plate	e A6

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this location.

ſ	Project Name: Rainier Vi	sta									Sheet 2	of 2	
	Job No. 9334		ogged by			Start Date 9/25/0		Completion Date: Boring No.: 9/25/00 B-4					
	Drilling Contact Boretec	tor:				Drilling Me HSA	ethod:						
	Ground Surface 138'	e Elevatio	n:			Hole Com	pletion: ring Well	Piezo	meter	er X Abandoned, sealed with bentonite			
	General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft. Sample	USCS							
		21.5	9		21	CL.	Gray lean moist to w	CLAY with et	n water bea	aring sand lenses,	medium	stiff,	
		37.4	_		22	-							
			7		24								
		31.3	7		25								
					27								
					28	CL	Grav CLA	Y, very stif	f to hard, n	noist			
		20.4	29		30								
				777			Boring ter seepage of standpipe Boring ba	minated a encounter installed t ckfilled wit	t 31.5 feet ed at 19.0 f o bottom o h sand and	below existing grad eet during drilling. f boring. Lower 10 I bentonite.	de. Groun 3/4" PVC 0.0 feet slo	dwater otted.	
8													
ECI.GDT 11/2/													
Earth Consultants Inc. Georiechnical Engineers, Geologises & Errytronnenial Scientists Proj. No. 9334 Dwn. GLS Date Nov. 2000 Checked KMW Date 11/1/00 Plate A8											₩ ₩ ₩₩		
SORING	Proj. No. 93	Dwn.	GLS	 S	Date N	Nov. 2000	Checked	KMW	Date 11/1/00	Plate	e A8		

Boring Log

Project Name: Rainier Vist					<				Sheet 2	of 2
Job No. 9334		ogged by	:		Start Date:		Completion Date: 9/25/00	Boring No.: B-5	•	· · · · · · · · · · · · · · · · · · ·
Drilling Contactor	:	TOTAL			Drilling Me		0/20/00	Sampling Method:	· · · · · · · · · · · · · · · · · · ·	
Boretec Ground Surface I	Ilovati	on:			HSA Hole Comp	eletion		SPT		
172'	_icvau	OII.				ing Well	Piezometer	X Abandoned, sealed	with bentoni	ite
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft. Sample	USCS					
		50/0"				Boring ter groundwa installed to backfilled No water	minated at 20.0 fee ter encountered du b bottom of boring. with sand and bent bbserved in well on	t below existing grad ring drilling. 3/4" PVC Lower 5.0 feet slotted onite. 10/10/00.	e. No Standpip J. Boring	oe
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				-						
					ultant:	S Inc.		Boring Log Rainier Vista Seattle, Washingtor	· · · · · · · · · · · · · · · · · · ·	
Proj. No. 9334		Dwn.	GL:	S	Date N	lov. 2000	Checked KMW	Date 11/1/00	Plate	A10

Boring Log

Project Name: Rainier Vis	ta									Sheet 1	of 1
Job No. 9334	Lo	ogged by			Start Date: 9/25/0	1	Completion D 9/25/00	ate:	Boring No.:		
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Ground Surface	Elevation	n:			Hole Comp	pletion:					
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	16.3			8	SM	Gray silty	SAND, loos	e to medi	um dense, wet	1	
		10		9		-20% fines	5				
	15.4	17		10							
				11		5 -70	CAND	- danaa	es siet to wet		
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	16.4	60		15 -							
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							+	·			
	NYDM ((/				ultant			S	Boring Log Rainier Vista Seattle, Washingto	n	
Proj. No. 93	34	Dwn	ı. GL	.s	Date	Nov. 2000	Checked	KMW	Date 11/1/00	Plat	e A12

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this location.

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Project Name: Rainier Vista	a								1 1
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		\bowtie	1						
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	k	\bowtie				*	· · · · · · · · · · · · · · · · · · ·		·
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			6						
			"	SM	Reddish b	rown silty SAN	ID, loose, m	oist to wet	
.			7						
			8	SM	Gray silty	SAND, loose,	moist to wet		
			9	CL	Gray lean	CLAY, mediu	m stiff, mois	t	
		///4	10	<u> </u>	Test pit te	rminated at 10	0.0 feet belo	w existing grade. at 8.0 feet during	Slight excavation.
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Proj. No. 933	4	Dwn.	GLS		Date Nov. 20	00 Checked	KMW	Date 11/2/00	Plate A14

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this location.

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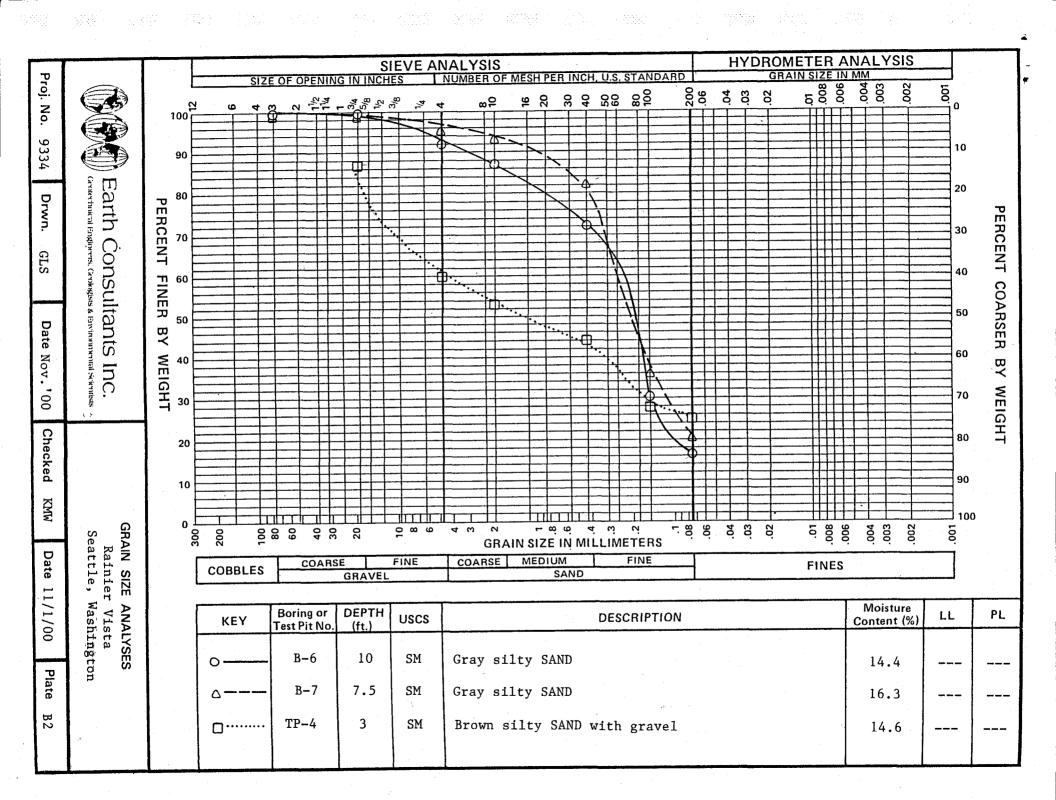
Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this location.

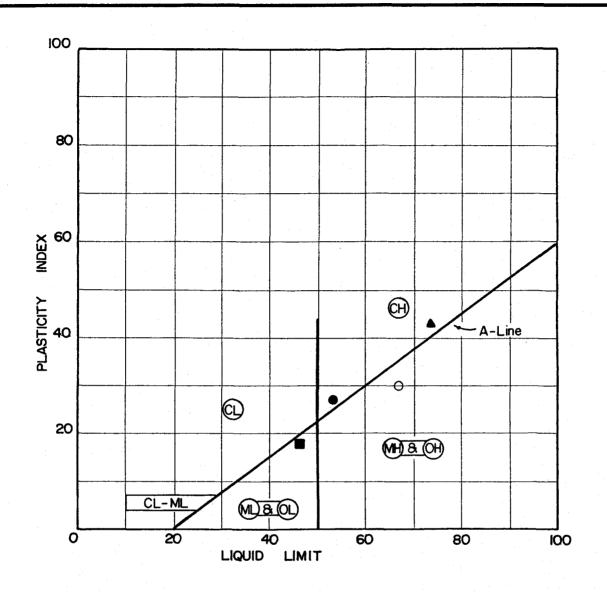
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APPENDIX B LABORATORY TEST RESULTS E-9334





Key	Boring/ Test Pit	Depth (ft.)	Soil Classification	USCS	L.L.	P.L.	P.I.	Natural Water Content
•	B-1	15	Brown fat CLAY	СН	52.9	25.1	27.8	22.8
•	В-3	5	Brown fat CLAY	СН	73.8	32.5	41.3	40.8
	B-4	12.5	Gray SILT	ML	47.6	29	18.6	32.5
0	B-5	5	Gray SILT	МН	67.8	27.8	30	29.9



Atterberg Limits Test Data

Rainier Vista Seattle, Washington

Proj. No. 9334

Date Nov.'00

Plate B4

2000 HEMPHILL 006059

- **FOUNDATION ENGINEERING**
- **SOIL TESTING-LAB & FIELD**
- SUBSURFACE EXPLORATIONS
- **EARTHWORK ENGINEERING**
- CONSTRUCTION INSPECTIONS
- WATER DETENTION DESIGN

<u>;</u>

- **GROUNDWATER STUDIES**
- DRAINAGE STUDIES
- SITE EVALUATIONS
- SLOPE STABILITY STUDIES
- LANDSLIDE INVESTIGATIONS
- STORMWATER STUDIES
- **ROCKERY DESIGN**
- **RETAINING WALL DESIGN**
 - **DAMAGE INVESTIGATIONS**

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CONSULTING

ENGINEERS

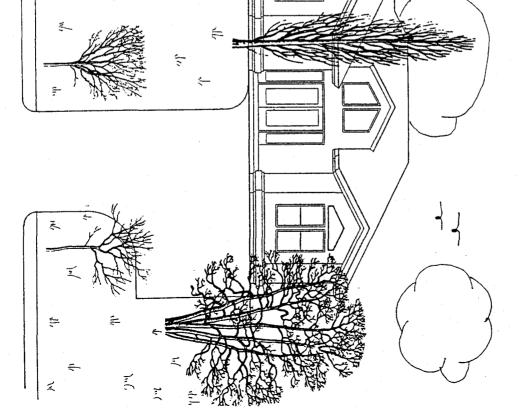
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FOR THE

Seattle, Washington 4030 25[™] Avenue Located at



Project Number 2470 14 February 2000

4041 WEST LAKE SAMMAMISH PARKWAY SOUTHEAST • PHONE 425 644 1080 FAX 425-643-3429 BELLEVUE

WASHINGTON . VASHINGTON • 98008 dchemphill@msn.com

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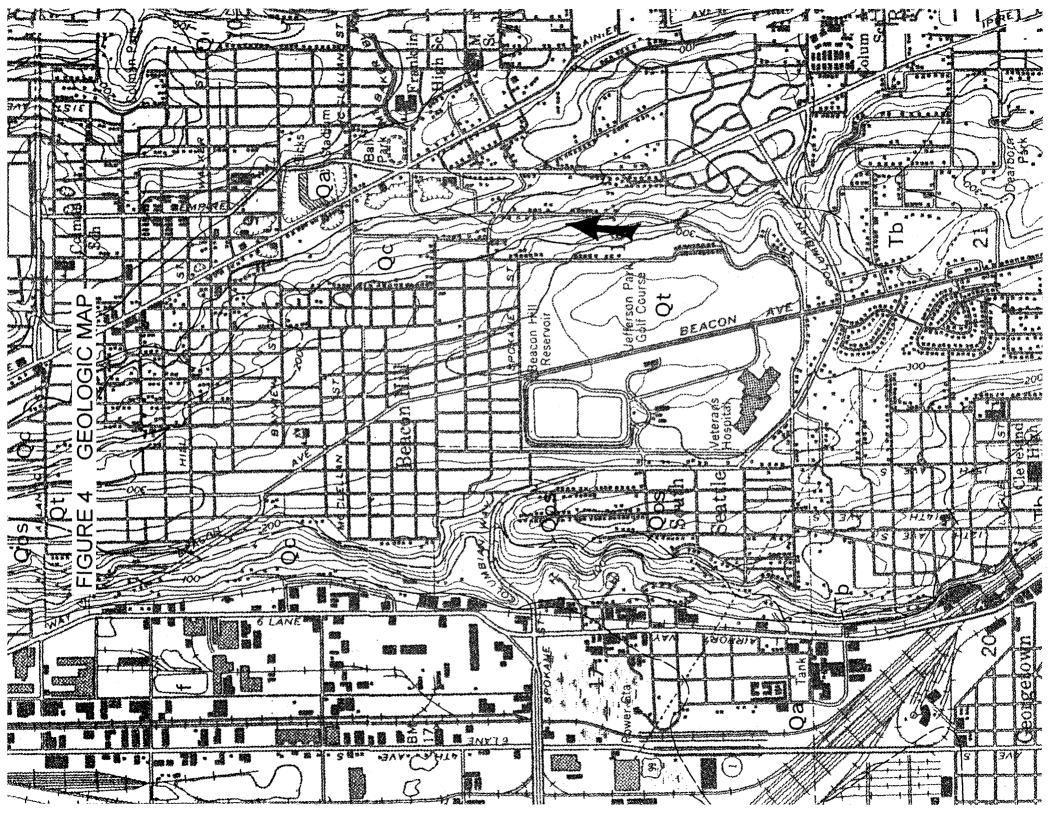
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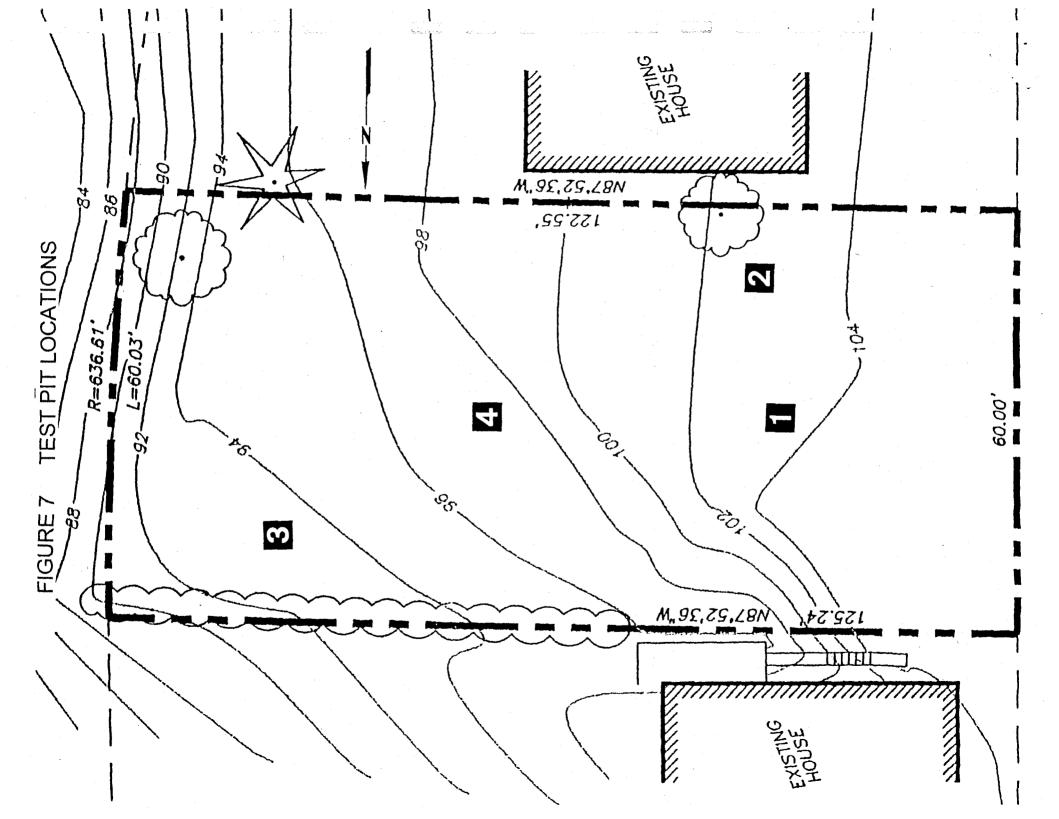


FIGURE 8 TEST PIT LOGS

DEPTH					DEPTH
1				GRAY BROWN	1
2				DENSE	2
3	GRAY BROWN	GRAY BROWN	GRAY BROWN DENSE	SILTY SAND	3
4	MEDIUM DENSE	MEDIUM DENSE	SILTY SAND		4
	SILTY FINE SAND	SILTY FINE SAND			
5				GRAY	5
6				STIFF	6
7			BLACK	GRACTURED SILTY CLAY	7
8		DARK GRAY SILT	MEDIUM DENSE SANDY SILT		8
	GRAY BROWN	GRAY	=======================================		Ū
9	VERY DENSE	DENSE			9
10	GLACIAL TILL	SILTY SAND			10
11					11
12					12

NOTES: 1. NO GROUNDWATER OBSERVED

2. HEAVY RAINFALL DURING and PRIOR to INVESTIGATION

LEGEND	
· · · · · · · · · · · · · · · · · · ·	ESTIMATED LOCATION of CHANGE of SOILS
·	KNOWN LOCATION of CHANGE of SOILS
	BOTTOM of TEST PIT
∇	TOP of GROUNDWATER

2001 GOLDER

Golder Associates Inc.

18300 NE Union Hill Road, Suite 200 Redmond, WA 98052-3333 Telephone (425) 883-0777 Fax (425) 882-5498





43/43

FINAL REPORT

CENTRAL LINK LIGHT RAIL GEOTECHNICAL DESIGN INVESTIGATION **DESIGN SEGMENTS 730 & 740** SOUTH HINDS STREET TO SOUTH NORFOLK STREET M. L. KING JR WAY

Prepared for:

May 2007]

Central Puget Sound Regional Transit Authority

Prepared by:

Golder Associates Inc. Terra Associates, Inc.

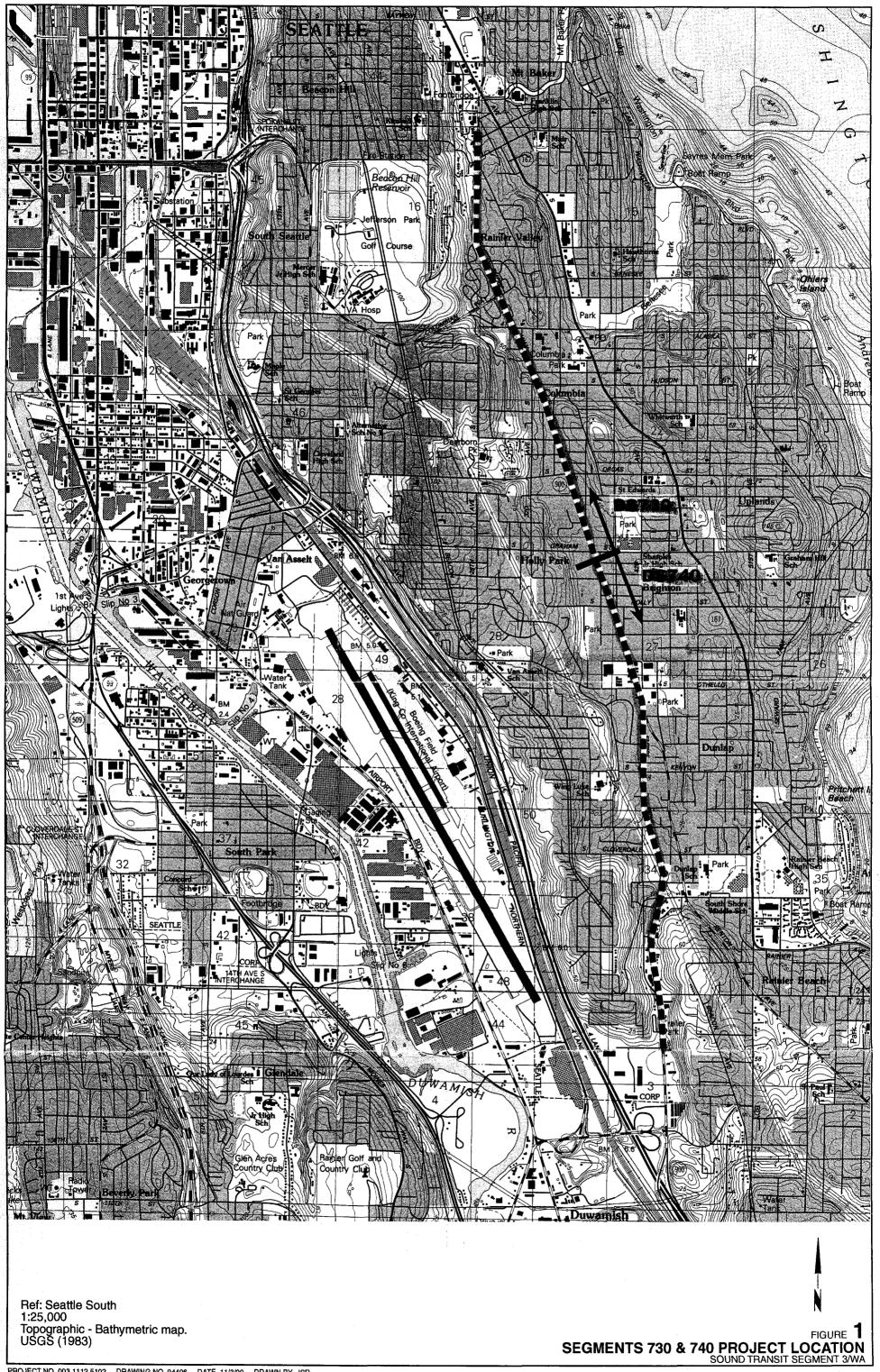
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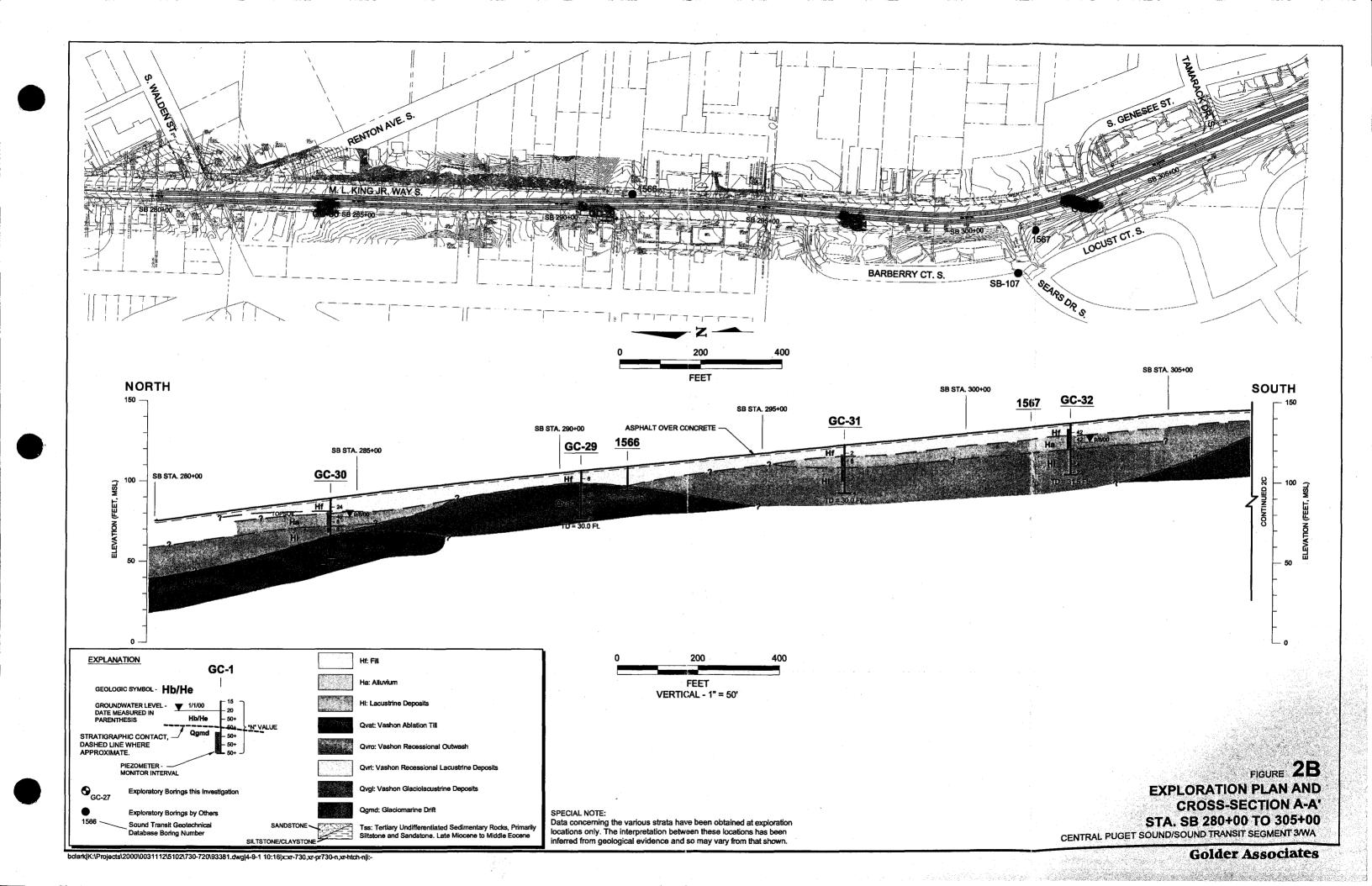
Principal sociates, Inc.

David P. Findley, P.G. Associate Engineering Geologist Golder Associates Inc.

003-1112.5300

0501 Final Report





	PRO	OJECT	: Sound Transit/ / WA DRILLIN NUMBER: 003-1112 DRILLIN	G MET	HOD: E: 8/23	HSA 3/00	ВС	RE	HOLE (DATUM: I AZIMUTH	Local/ : N/A	MSL		SHEET 1 ELEVATI	
	LOCATION: Segment #3 DRILL RIG: Mobile B-59 SOIL PROFILE						COORDINATES: not s SAMPLES				SURVEYED PENETRATION RESISTANCE			
	O DEPTH	BORING METHOD	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N	REC / ATT	10 2	OWS / ft ■ 20 30 40 NTENT (PERCENT) ————————————————————————————————————	NOTES WATER LEVELS GRAPHIC
	-		0.0 - 1.0 Asphalt/Concrete											
	-		1.0 - 6.0 Gravels/cobbles in drill action 1-2' Loose and very soft, moderate yellowish brown to orangish brown, mottled, non-stratified, fine to coarse sandy SILT, some fine to coarse subrounded to subangular gravel, trace charred debris,			1.0	1	SS	2-4-3	7	0.8	0		Concrete — — — — — — — — — — — — — — — — — —
	- 5		trace organics and SILTY CLAY, some fine to coarse sand, trace fine gravel, trace organics, trace charred debris, damp. (FILL) (Hf)	ML, CL, SP-SM			2	ss	1-1-1	2	1.1 1.5			Bentonite
	-		6.0 - 12.0 Loose, medium gray, iron oxide stained in horizontal zones, interbedded,			6.0		ee	122		1.3			
	-		non-stratified to stratified, fine to medium SAND, trace silt, trace organics and SILT to CLAYEY SILT, trace fine to medium sand, trace organics, moist to wet. (ALLUVIUM) (Qa) Note: Silt interbeds decrease with depth.				3	SS	1-2-2	4	1.3 1.5			
	-	PT Autohammer		SP-SM, ML		-	4	ss	3-3-5	8	1.2 1.5	0		1-inch PVC Riser
	- 10	4" I.D. HSA with SPT Autohammer								,				SAND -
	-		12.0 - 30.0 Very soft to soft and very loose to loose, medium gray, laminated to faintly laminated to massive, SILT and CLAY, trace to little fine to coarse sand, trace fine subangular gravel, trace silt in lenses, wet to moist. (RECESSIONAL LACUSTRINE			12.0								
	- 15		DEPOSIT) (Qvrl)				5	ss	2-4-3	7	1.2 1.5			1-inch PVC
WA.GDT 2/26/01	_			ML, CL			-	-						Screen
BOREHOLE RECORD BOREGC1.GPJ GLDR_WA.GDT_2/26/01	-						6	ss	2-2-1	3	1.5 1.5	•		
RECO	- 20		Log continued on next page		punt									. [·⊟·]_
3OREHOLE I	DRI		CONTRACTOR: Straightline Mike R.					ECK	D: C. Allen ED: D. Find	ley				Golder Associates



RECORD OF BOREHOLE GC-31 SHEET 2 of 2 DRILLING METHOD: HSA DRILLING DATE: 8/23/00 DRILL RIG: Mobile B-59 DATUM: Local/MSL AZIMUTH: N/A COORDINATES: not surveyed ELEVATION: INCLINATION: -90 PROJECT: Sound Transit//WA PROJECT NUMBER: 003-1112 LOCATION: Segment #3 PENETRATION RESISTANCE BLOWS / ft SAMPLES SOIL PROFILE BORING METHOD NOTES WATER LEVELS DEPTH (ft) 30 GRAPHIC LOG ELEV. NUMBER BLOWS WATER CONTENT (PERCENT) N DESCRIPTION per 6 in GRAPHIC REC/ DEPTH (ft) ow 140 lb hammer 30 inch drop 20 12.0 - 30.0 12.0 - 30.0 Very soft to soft and very loose to loose, medium gray, laminated to faintly laminated to massive, SILT and CLAY, trace to little fine to coarse sand, trace fine subangular gravel, trace silt in lenses, wet to moist. (RECESSIONAL LACUSTRINE DEPOSIT) (Qvrl) (Continued) Bentonite Chips and Cuttings 4" I.D. HSA with SPT Autohammer SS 1-0-2 2 - 25 Bentonite Chips and Cuttings SS 1-1-3 - 30 30.0 Boring completed at 30.0 ft. - 35 1 in to 3 ft LOGGED: C. Allen DRILLING CONTRACTOR: Straightline CHECKED: D. Findley Golder

DATE:

BOREHOLE RECORD BOREGC1.GPJ GLDR_WA.GDT 2/26/01

DRILLER: Mike R.

RECORD OF BOREHOLE GC-32 SHEET 1 of 2 PROJECT: Sound Transit//WAPROJECT NUMBER: 003-1112 DRILLING METHOD: HSA DATUM: Local/MSL **ELEVATION:** DRILLING DATE: 8/23/00 AZIMUTH: N/A INCLINATION: -90 LOCATION: Segment 3/MLK DRILL RIG: CME-75 COORDINATES: not surveyed SOIL PROFILE SAMPLES PENETRATION RESISTANCE BORING METHOD BLOWS / ft NOTES WATER LEVELS DEPTH (ft) GRAPHIC LOG ELEV. 20 30 NUMBER BLOWS WATER CONTENT (PERCENT) DESCRIPTION per 6 in N GRAPHIC REC/ DEPTH oW 140 lb hamme 30 inch drop W. F (ft) - 0 0.0 - 1.0 Concrete 1.5 1.5 1 GRAB 1.0 - 7.0 Compact to dense, nonstratified, orangish 1.0 brown with tan lenses, fine to medium SAND, little to some subangular gravel, trace silt, damp. (FILL) (Hf) Bentonite Chips 1-inch PVC 1.5 2 SS 5-8-11 19 0 rise SP-SM - 5 <u>0.7</u> 3 SS 15-20-22 42 7.0 - 21.0 7.0 7.0 - 21.0 Dense, stratified, orange-brown, silty fine to medium SAND, interbedded with tan fine sandy silt and clayey silt and fine to medium sand layers/lenses, moist to wet. (ALLUVIUM) (Ha) SS 7-7-12 19 10/20 Silica Sand 1-inch 10-slot PVC HSA 10 13-20-22 5 SS 42 1.0 1.5 SM, ML-CL SP-SM 15-17-20 37 - 15 BOREGC1.GPJ GLDR_WA.GDT 2/26/01 SS 16-29-30 >50 BOREHOLE RECORD 20 Log continued on next page 1 in to 3 ft LOGGED: M. Stiehler

DRILLING CONTRACTOR: Ramlo Drilling

DRILLER: Charlie

4.44

CHECKED: D. Findley

DATE:



RECORD OF BOREHOLE GC-32

PROJECT: Sound Transit//WA PROJECT NUMBER: 003-1112

DRILLING METHOD: HSA DRILLING DATE: 8/23/00 DRILL RIG: CME-75

DATUM: Local/MSL AZIMUTH: N/A

SHEET 2 of 2 **ELEVATION:** INCLINATION: -90

COORDINATES: not surveyed LOCATION: Segment 3/MLK PENETRATION RESISTANCE BLOWS / ft ■ SAMPLES SOIL PROFILE BORING METHOD NOTES WATER LEVELS DEPTH (ft) ELEV. NUMBER BLOWS WATER CONTENT (PERCENT) Ν DESCRIPTION per 6 in GRAPHIC REC / DEPTH (ft) _W 140 lb hammer 30 inch drop 20 SM ML-CL SP-SM 1.5 1.5 8 SS 5-5-6 11 21.0 - 31.5 21.0 21.0 - 31.5

Compact with loose zones, stratified, gray, silty fine SAND interbedded with fine sandy SILT and trace CLAYEY SILT, moist. (LACUSTRINE DEPOSIT) (HI) Bentonite Chips - 25 1.5 1.5 0 4 ASH. 9 SS 2-2-2 Soft, gray, laminated SILTY CLAY, interbedded with thin fine sand layers from SM, CL-ML 25.5' to ~28' 30 1.5 10 SS 8-10-12 22 Boring completed at 31.5 ft. 31.5 **–** 35 BOREHOLE RECORD BOREGC1.GPJ GLDR_WA.GDT_2/26/01

1 in to 3 ft

DRILLING CONTRACTOR: Ramlo Drilling

DRILLER: Charlie

LOGGED: M. Stiehler CHECKED: D. Findley

DATE:



2001 LSI ADAPT 014644





April 16, 2001 WA00-6172

Tandem Development Corporation

9122 Rainier Avenue South Seattle, Washington 98119

Attention:

Mr. Emiliano Fernandez

Subject:

Summary of General Construction Recommendations

Field Exploration and Geotechnical Engineering Evaluation

Proposed Residence 4042 - 25th Avenue South Seattle, Washington

Dear Mr. Fernandez:

LSI - ADAPT (ADAPT) is pleased to present the following summary of subsurface conditions and geotechnical recommendations for the proposed residence. This summary is presented for establishing general design recommendations for the development and should be used in conjunction with the geotechnical report for this project contained in our forthcoming report. Our final report will be issued within about one weeks time.

The property is characterized by an upper terrace that slopes gently to the east, with the slope steepening toward the eastern side of the property. The slope on the east side of the property had a gradient of approximately 50 percent, with an elevation change of about 10 feet. Beyond the base of the slope the gradient flattens to Cheasty Boulevard. Based upon the provided survey map, total topographic relief across the parcel is approximately 20 feet from west to east. The upper terrace portion of the site supports a manicured lawn and peripheral small trees and shrubs, and the eastern slope supports a thick growth of blackberries along with a few taller alder and maple trees. A small wooden shed resided on the central portion of the site. We observed wet near surface soil conditions at the base of the eastern slope and on the lower flat area to the east of the property line. However, we did not observe any obvious signs of slope instability at the time of our site visit.

City of Seattle Engineering Department and the Seattle Department of Construction and Land Use (DCLU) sensitive areas folios depict the slope located on the western portion of the parcel within their designated "landslide prone areas" boundaries. A review of the folios, as well as the updated 1996/97 reported landslide map at DCLU's offices revealed five slides that occurred within one-half mile of the site along the east slope of Beacon Hill, one of which appeared to be three or four addresses to the north, along 25th Avenue South. No files were available at DCLU for our review concerning these sites.

It is our understanding that single-family residential development is planned for the site. According to preliminary plans, the building footprint will cover about 2,000 square feet, and include two stories with an attached two-car garage. Based upon the proposed finished elevations, we anticipate that a significant amount of cut will be required for the proposed basement. In addition, the basement "cut" will extend to within five feet of the northern property boundary.

ADAPT's subsequently completed a subsurface assessment of the property, which included advancing two test borings on the property to depths of up to 34 feet below ground surface. Borings B-1 and B-2 disclosed loose, moist to wet, brown to dark brown silty fine sand with some gravel and organic that extended to about 9 feet (B-2) to 14 feet (B-1) bgs. The 10-11½ foot sample from B-1 showed wet black organic and brick fragments, suggesting that it may be man-placed fill. The near surface silty sands in boring B-2 may also be, in part, man-placed fill. These fill or possible fill soils were underlain in boring B-1 by damp to wet, medium stiff to very stiff, brown-tan grading to gray, silt to clayey silt that extended to the full depth explored (up to 34 feet bgs). The upper loose sands in boring B-2 were underlain by wet dense gray gravelly, silty fine sand that extended to a depth of about 18 feet bgs. These soils were underlain by very stiff or hard dark gray silt that extended the full depth explored (up to 21½ feet bgs). The lower silty or clayey silt unit in boring B-1 was massive in nature, and exhibited variable micro-fracturing throughout, but not obviously disturbed and we did not observe obvious zones of failure, such as slickensides.

Groundwater was encountered initially at a depth of 8 feet in boring B-1, and at a depth of about 22 feet after drilling was complete, and at a depth of about 14 feet in boring B-2. The shallow groundwater encountered in boring B-1 appears to be water perched above the underling silt unit, while water encountered at deeper depths in the borings may represent a more persistent near surface water table. Groundwater conditions can vary seasonally with changes in precipitation, and may fluctuate with changes in site utilization and other factors.

Conclusions and Recommendations

Based upon our visual and subsurface assessment, suitable bearing soils appear to be located between 1 to 3 feet below the proposed footing depth on the western side of the proposed structure. However, suitable bearing soils appear to be located at a depth of over 20 feet below the base of the east side of the proposed residence. Therefore, the eastern side of the structure would need to be supported by structural elements which extend into the underlying very stiff silts. This could be accomplished by the use of deep foundations such as augercast piles, or needle piles or timber piles. ADAPT's construction and foundation recommendations are forthcoming in our geotechnical site evaluation.

Based upon the site conditions encountered, we offer the following general construction recommendations:

• Temporary shoring will likely be necessary along the northern side of the cut for the proposed basement, which is proposed to be within 5 feet of the property line. The maximum anticipated excavation depth would be about 8 feet in depth. Given the generally loose nature of the upper sandy soils, we recommend, as a general guide, temporary slopes of 2H to 1V (Horizontal to Vertical) or flatter may be used for temporary cuts in the upper 9 or more feet of loose or medium dense sand soils. Portions of this temporary slope may extend onto the adjacent property to the north. Therefore, it may be necessary to obtain a temporary slope easement for usage of this property. Alternatively, temporary shoring could be utilized.

The contractor should be allowed to implement additional protective measures beyond those outlined herein depending upon conditions disclosed in the excavation once construction is under way. It is generally not the purpose of this letter to provide specific criteria for construction methods, materials or procedures. This should be the responsibility of the contractor to verify actual ground conditions at the site and determine construction methods and procedures needed for the installation of the appropriate shoring system.

• Given the presence of the near surface fill soils and underlying silts soils encountered in boring B-1, deep foundations, such as driven piles or drilled in place augercast piles will be necessary for



ADaPT

200603

October 23, 2001 LSI - ADAPT Job No. WA00-6172

City of Seattle Department of Construction and Landuse

700 Fifth Avenue, Suite 2000 Seattle, Washington 98104-1703

Attention:

Mr. William Bou

Subject:

Plan Review and Minimum Risk Statement

Project No. 2006037

4042 - 25th Avenue South

Seattle, Washington

Dear Mr. Bou,

LSI ADAPT (ADAPT) has reviewed the project plans provided to us for the above referenced site. Based on our review, the project plans appear to conform to the recommendations contained in our report and subsequent correspondence. Provided that the conditions and recommendations contained in our report and subsequent correspondence are satisfied during construction and use, the areas disturbed by construction will be stabilized and remain stable, and will not increase the potential for soil movement, and the risk of damage to the proposed development and from the development from soil instability will be minimal.

aubur

We have prepared this letter for use by The Engs, Tandem Development, Inc., and members of the design team, for use in the design of this project. If there are any changes in the loads, grades, locations, configurations or type of facilities to be constructed, the conclusions and recommendations presented in this letter may not be fully applicable. If such changes are made, we should be given the opportunity to review our recommendations and provide written modifications or verifications, as appropriate. Please contact us if you have any questions or require additional information.

Respectfully submitted,

LSI-ADAPT

Charles C. Cacek

Senior Engineering Geologist

Kurt W. Groesch PE

Senior Geotechnical Engineer

N. GROVASIMO C. T. STEER C. STEER CO. STEER CO

BORING LOG

Drilling Start Date:

04/05/01

LSI ADAPT

800 Maynard Avenue South, Suite 403 Seattle, Washington 98134

1 of 2

Logged By: C.C.C.

TEL: 206.654.7045 FAX: 206.654.7048 PROJECT: Eng Residence Job Number: WA01-6172 Boring No.: : 4042 25th Avenue South OCATION Seattle, Washington Tandem Development, Corporation Elevation Reference : Ground Surface Elevatio Weil Comple Casing Eleva N/A 238 ft. a.s.d. N/A N/A TESTING **AS-BUILT DESIGN** OVM READING GROUND WATER BLOW -0 Surface grass over loose locally medium dense, tan-gray with oxidation to dark brown, silty, fine SAND some small gravels, minor organics 3 2 5 .5 S-2 6 5 Damp to wet S-3 3 2 2 -10 With minor brick and wood fragments (Fill) 3 1 2 2 2 -15 Medium stiff to stiff, damp to wet, tan, clayey 3 SILT, massive with microfractures 2 2 3 -20-Grades to gray, clayey SILT, massive with 5 microfractured zones 04/05 2001 3 3 -25 3 -30 LEGEND 2-inch O. D. Split-Spoon Sample Type of Analytical Testing Used Page:

ATD

04/05/01

Drilling Completion Date:

At Time of Drilling

BORING LOG

800 Maynard Avenue South, Suite 403 Seattle, Washington 98134' TEL: 206.654.7045 FAX: 206.654.7048

PROJECT : Eng Residence

Job Number: WA01-6172

Boring No.:

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BORING LOG

LSI ADAPT

800 Maynard Avenue South, Suite 403 Seattle, Washington 98134 TEL: 206.654.7045 FAX: 206.654.7048

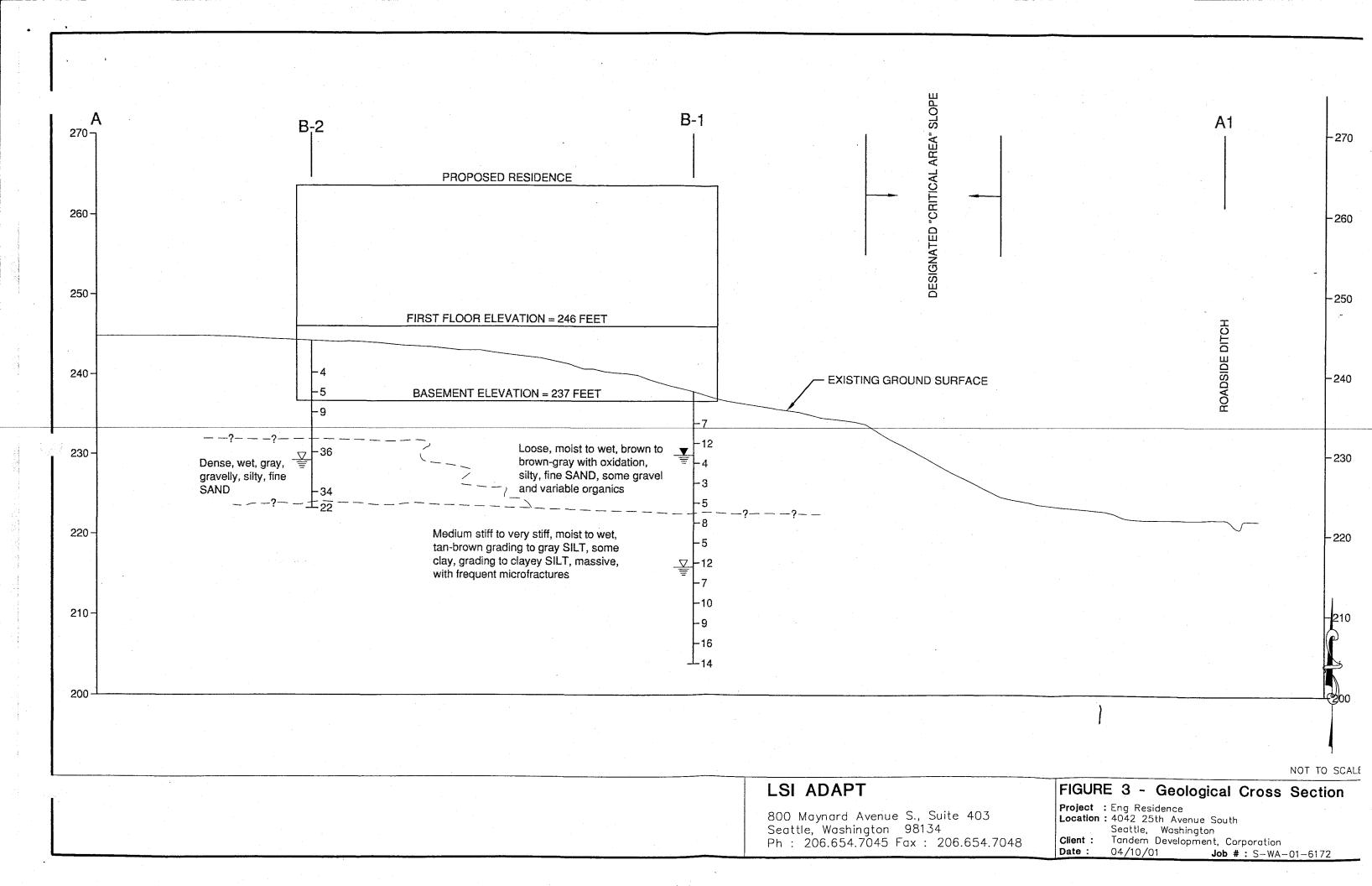
PROJECT: Eng Residence
OCATION: 4042 25th Avenue South

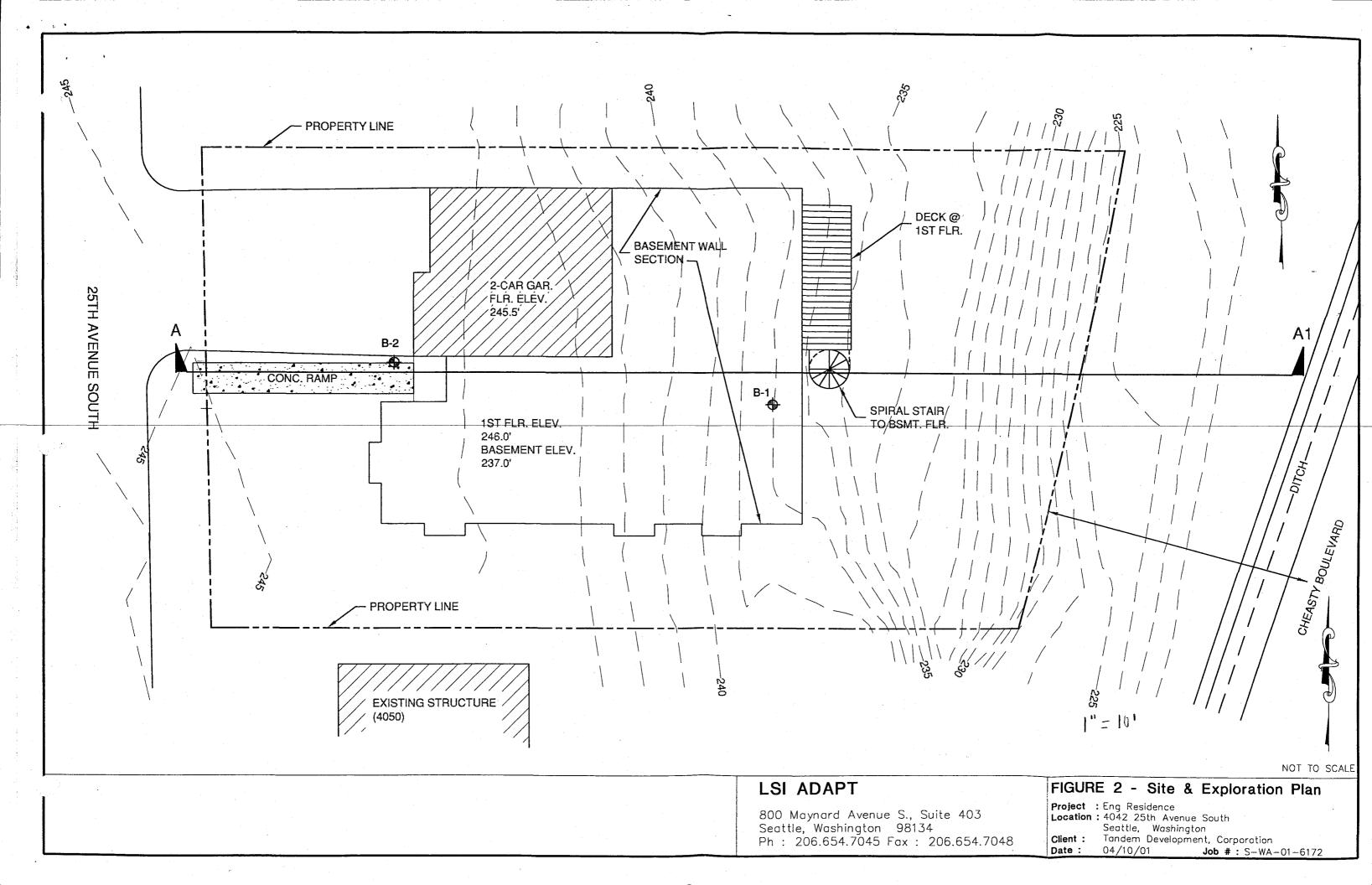
Job Number: WA01-6172

Boring No.:

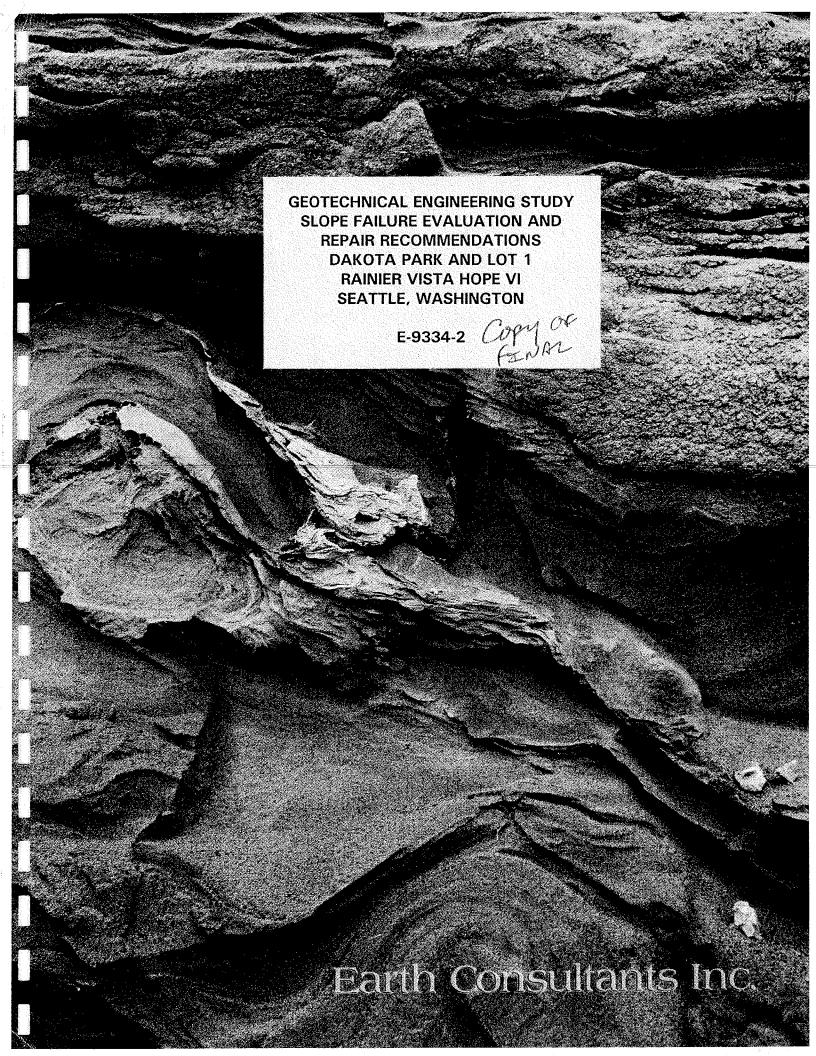
B-1

Seattle, Washington Tandem Development, Corporation Elevation Reference : Ground Surface Elevation : N/A 238 ft. a.s.d. TESTING **AS-BUILT DESIGN** DEPTH (feet) SAMPLE NUMBER BLOW COUNT OVM READING GROUND WATER -30 Very stiff, moist to wet, gray, clayey SILT, massive with microfracturing 9 S-13 No recovery 3 6 Boring terminated at 34.0 feet depth -35--40--50-·55· -60 Page: 2 of 2 **Drilling Start Date:** 04/05/01 **Drilling Completion Date:** 04/05/01 Logged By: C.C.C.





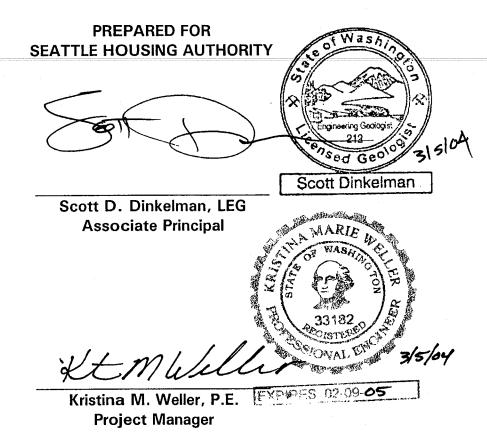
2004 ECI A 1.8 EARTH CONSULTANTS DAKOTA PARK SLOPE FAILURE ENGINEERING STUDY E-9334-2, MARCH 5, 2004



GEOTECHNICAL ENGINEERING STUDY
SLOPE FAILURE EVALUATION AND
REPAIR RECOMMENDATIONS
DAKOTA PARK AND LOT 1
RAINIER VISTA HOPE VI
SEATTLE, WASHINGTON

E-9334-2

March 5, 2004



Earth Consultants, Inc.

1805 - 136th Place Northeast, Suite 201
Bellevue, Washington 98005
(425) 643-3780
Toll Free 1-888-739-6670

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT

More construction problems are caused by site subsurface conditions than any other factor. As troublesome as subsurface problems can be, their frequency and extent have been lessened considerably in recent years, due in large measure to programs and publications of ASFE/The Association of Engineering Firms Practicing in the Geosciences.

The following suggestions and observations are offered to help you reduce the geotechnical-related delays, cost-overruns and other costly headaches that can occur during a construction project.

A GEOTECHNICAL ENGINEERING REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

A geotechnical engineering report is based on a subsurface exploration plan designed to incorporate a unique set of project-specific factors. These typically include: the general nature of the structure involved, its size and configuration; the location of the structure on the site and its orientation; physical concomitants such as access roads, parking lots, and underground utilities, and the level of additional risk which the client assumed by virtue of limitations imposed upon the exploratory program. To help avoid costly problems, consult the geotechnical engineer to determine how any factors which change subsequent to the date of the report may affect its recommendations.

Unless your consulting geotechnical engineer indicates otherwise, your geotechnical engineering report should not be used:

- When the nature of the proposed structure is changed, for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one;
- when the size or configuration of the proposed structure is altered;
- when the location or orientation of the proposed structure is modified;
- when there is a change of ownership, or
- for application to an adjacent site.

Geotechnical engineers cannot accept responsibility for problems which may develop if they are not consulted after factors considered in their report's development have changed.

MOST GEOTECHNICAL "FINDINGS" ARE PROFESSIONAL ESTIMATES

Site exploration identifies actual subsurface conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing are extrapolated by geotechnical engineers who then render an opinion about overall subsurface conditions, their likely reaction to proposed construction activity, and appropriate foundation design. Even under optimal circumstances actual conditions may differ from those inferred to exist, because no geotechnical engineer, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than a report indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimize their impact. For this reason, most experienced owners retain their geotechnical consultants through the construction stage, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

SUBSURFACE CONDITIONS CAN CHANGE

Subsurface conditions may be modified by constantly-changing natural forces. Because a geotechnical engineering report is based on conditions which existed at the time of subsurface exploration, construction decisions should not be based on a geotechnical engineering report whose adequacy may have been affected by time. Speak with the geotechnical consultant to learn if additional tests are advisable before construction starts.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes or ground-water fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical report. The geotechnical engineer should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND PERSONS

Geotechnical engineers' reports are prepared to meet the specific needs of specific individuals. A report prepared for a consulting civil engineer may not be adequate for a construction contractor, or even some other consulting civil engineer. Unless indicated otherwise, this report was prepared expressly for the client involved and expressly for purposes indicated by the client. Use by any other persons for any purpose, or by the client for a different purpose, may result in problems. No individual other than the client should apply this report for its intended purpose without first conferring with the geotechnical engineer. No person should apply this report for any purpose other than that originally contemplated without first conferring with the geotechnical engineer.

Established 1975

March 5, 2004

E-9334-2

Seattle Housing Authority P.O. Box 19028 Seattle, Washington 98109-1028

Attention

Mr. Jeff Saeger

Subject:

Department of Planning and Development Permit No. 735717

Dear Mr. Saeger:

Earth Consultants, Inc. (ECI) is pleased to submit our report titled "Slope Failure Evaluation and Repair Recommendations, Dakota Park and Lot 1, Rainier Vista Hope VI Seattle, Washington". The purpose of our study was to explore the subsurface conditions in the slide area and provide recommendations for repairing the slope.

ECI previously issued a preliminary version of this study in December 2003. Subsurface soil and groundwater conditions for the preliminary study were evaluated by drilling four borings in the vicinity of the slope failure. The borings were drilled to depths ranging from twenty-six and one-half (26.5) to fifty-five (55) feet below existing grade.

In preparing this final study, and in order to assess additional movement of the slope failure that occurred after our draft study was prepared, we advanced an additional eight borings and installed four slope inclinometers and four monitoring wells.

The attached study presents a summary of our previous and most recent explorations, the results of our slope monitoring, and our finalized slope repair recommendations. Included with this report are: Sheet 1.0, Repair Plans; Sheets K1.0 and K1.1, Keystone Wall Design; and Sheets S1.10 and S2.10, Structural Plans for the soldier pile wall.

ECI appreciates this opportunity to be of service to you. If you have any questions or if ECI can be of further assistance, please call.

Respectfully submitted,

EARTH CONSULTANTS, INC.

't MWeller

Kristina M. Weller, P.E.

Project Manager

SDD/KMW/csm

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ILLUSTRATIONS

Plate 1 Plate 2 Permanent Soldier Pile Wall Drainage

Toe Buttress

APPENDICES

Appendix A Plate A1

Plates A2 through A29

Field Exploration

Legend

Boring Logs

Appendix B

Plate B1

Plates B2 and B3

Laboratory Test Results

Grain Size Analysis

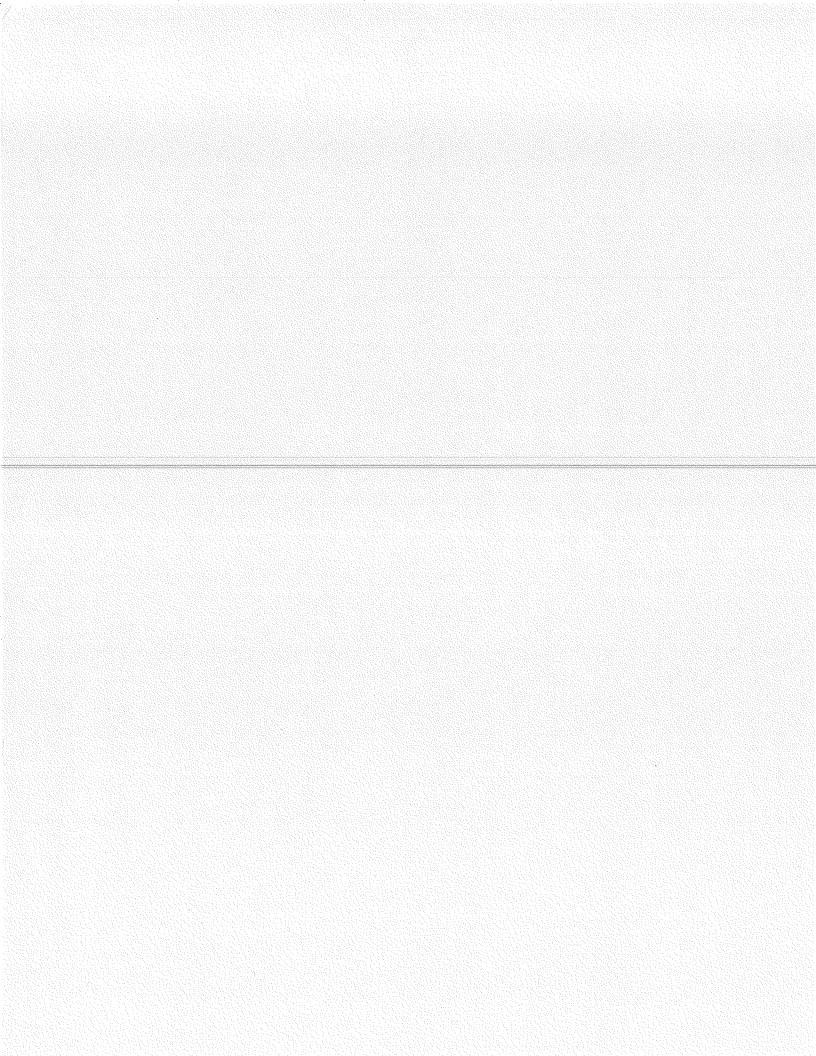
Atterberg Limits Test Data

Appendix C

Inclinometer Plots

Appendix D

PCStabl Slope Stability



APPENDIX A

FIELD EXPLORATION

E-9334-2

ECI's initial field exploration was performed on October 8, 2003. Subsurface conditions at the site were explored by drilling two borings to a maximum depth of thirty one and one-half (31.5) feet below the existing grade. Inclinometers were installed the full depth of the boring. The borings were drilled by Geologic Drill subcontracted to ECI, using a trailer-mounted drill.

Two additional borings were drilled on October 30, 2003, to a maximum depth of fifty-one and one-half (51.5) feet below the existing grade. The borings were drilled by Boretec Drilling subcontracted to ECI, using a track-mounted drill.

Eight additional borings were drilled on February in the vicinity of the recent slope failure. The borings were drilled to depths ranging from twenty-six and one-half (26.5) to fifty-five (55) feet below existing grade. To further assess changing subsurface conditions within and adjacent to the active landslide area, slope inclinometer casing was installed at four of the boring locations and monitoring wells were installed at the other four locations. The slope inclinometer casing was installed to depths ranging from forty-two (42) to fifty-three (53) feet below existing grade. The monitoring wells were installed to depths ranging from ten (10) to thirty-one (31) feet below existing grade.

Approximate boring locations were determined by interpolation from site features. Boring elevations were determined by locating on the site plan provided. The locations and elevations of the borings should be considered accurate only to the degree implied by the method used. These approximate locations are shown on Sheet 1.0 of the plans submitted with this report.

The field exploration was continuously monitored by a geologist from ECI who classified the soils encountered, maintained a log of each boring, obtained representative samples, measured groundwater levels, and observed pertinent site features. Samples were visually classified in accordance with the Unified Soil Classification System which is presented on Plate A1, Legend. Representative soil samples were placed in closed containers and returned to ECI's laboratory for further examination and testing.

Logs of the borings are presented on Plates A2 through A29. The final logs represent ECI's interpretations of the field logs and the results of the laboratory examination and tests of field samples. The stratification lines on the logs represent the approximate boundaries between soil types. In actuality, the transitions may be more gradual.

The borings were drilled using hollow stem augers. In each boring, Standard Penetration Tests (SPT) were performed at selected intervals in general accordance with ASTM Test Designation D-1586. The split spoon samples were driven with a one hundred forty (140) pound hammer freely falling thirty (30) inches. The number of blows required to drive the last twelve (12) inches of penetration are called the "N-value". This value helps to characterize the site soils and is used in ECI's engineering analyses. These results are recorded on the boring logs at the appropriate sample depths.

MAJ	OR DIVISIO	NS	GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTION
	Gravel		0000	GW gw	Well-Graded Gravels, Gravel-Sand Mixtures, Little Or No Fines
Coarse Grained Soils	And Gravelly Soils	Clean Gravels (little or no fines)		GP gp	Poorly - Graded Gravels, Gravel- Sand Mixtures, Little Or No Fines
	More Than 50% Coarse	Gravels With		GM gm	Silty Gravels, Gravel - Sand - Silt Mixtures
	Fraction Retained On No. 4 Sieve	Fines (appreciable amount of fines)		GC gc	Clayey Gravels, Gravel - Sand - Clay Mixtures
	Sand	Clean Sand	, , , , , , ,	SW sw	Well-Graded Sands, Gravélly Sands, Little Or No Fines
More Than 50% Material Larger Than No. 200 Sieve Size	And Sandy Soils	(little or no fines)	****	SP sp	Poorly-Graded Sands, Gravelly Sands, Little Or No Fines
	More Than 50% Coarse	Sands With		SM sm	Silty Sands, Sand - Silt Mixtures
	Fraction Passing No. 4 Sieve	Fines (appreciable amount of fines)		SC sc	Clayey Sands, Sand - Clay Mixtures
		<u> </u>		ML ml	Inorganic Silts & Very Fine Sands, Rock Flour, Silty Clayey Fine Sands; Clayey Silts w/ Slight Plasticity
Fine Grained	Silts And	Liquid Limit Less Than 50		CL cl	Inorganic Clays Of Low To Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean
Soils	Clays			OL ol	Organic Silts And Organic Silty Clays Of Low Plasticity
More Than				MH mh	Inorganic Silts, Micaceous Or Diatomaceous Fine Sand Or Silty Soils
50% Material Smaller Than No. 200 Sieve Size	Silts And Clays	Liquid Limit Greater Than 50		CH ch	Inorganic Clays Of High Plasticity, Fat Clays
	Jiays			OH oh	Organic Clays Of Medium To High Plasticity, Organic Silts
	Highly Organi	c Soils	77 77 77	PT pt	Peat, Humus, Swamp Soils With High Organic Contents

Topsoil

Fill

Humus And Duff Layer

Highly Variable Constituents

The discussion in the text of this report is necessary for a proper understanding of the nature of the material presented in the attached logs.

DUAL SYMBOLS are used to indicate borderline soil classification.

C qu W P *	TORVANE READING, tsf PENETROMETER READING, tsf MOISTURE, % dry weight SAMPLER PUSHED SAMPLE NOT RECOVERED DRY DENSITY, lbs. per cubic ft.
LL	LIQUID LIMIT, %
PI	PLASTIC INDEX

7 2" O.D. SPLIT SPOON SAMPLER

1 24" I.D. RING OR SHELBY TUBE SAMPLER

WATER OBSERVATION WELL

☑ DEPTH OF ENCOUNTERED GROUNDWATER DURING EXCAVATION

▼ SUBSEQUENT GROUNDWATER LEVEL W/ DATE



LEGEND

Proj. No. 9334-2 Date Feb. 2004

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Job No. 9334-2		gged by MGM	<i>[</i> :		1/27/04	1	1/27/04	B-201				
Drilling Contacto					Drilling Method: Sampling Method:							
Boretec	···				HSA			SPT				
Ground Surface ±213'	Elevatio	n:			Hole Comp	letion: ing Well	Piezometer	X Abandoned, seale	ed with bento	nite		
1213				Ţ			ditions: Forest Dut	if		,		
General Notes	(%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	USCS							
					SM	Dark brow	n silty SAND, very	loose, wet				
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:				2	1							
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		3		- -		-trace gra	vei					
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		4		6	ML	Mottled br	Mottled brown SILT, very loose, moist to wet					
				7								
	35.5 6					-fractured		fragments in silt mat	trix			
						-becomes						
				∥ ₉ ⊟								
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	37.2		 	10	ML	Brown Si	LT, medium dense	e, moist		<u></u>		
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	1			∥ ''			erbeds of fractured					
				12	_	-predomi	nantly thinly lamina	aleu				
	34.8			1.+	\dashv	-6" thick l	ayer of highly frac	of highly fractured silt at 12.5'				
		19		13					atainine et	12 E'		
				14	Ц	-6" long vertical hairline fracture with iron oxide staining at 13.5', laminated at 13'						
				+		-increase	in sand content, b	pecomes moist to we	et			
	31.1			15								
		20		16	СН	Brown fat	t CLAY, very stiff, ı	moist				
				17	-							
8	32.9			18			L=27 PI=41					
2/19/04		9				-appears	to be disturbed at	18'				
				19	CL	Blue gray	lean CLAY, stiff,	moist				
RING LOG 8334.2 GPJ ECI CODT				1		-thinly lar	minated to massiv	e, trace hairline frac	tures			
					•	_		Boring Log				
		Ear	th C	Cons	ultant	s Inc.		Rainier Vista Hop				
g		Geotechn	kal Engine	ers, Geologi	sts & Environme	ental Scientists	1	Seattle, Washing	ton			
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Drilling Contact Boretec						Drilling Method: Sampling Method: SPT						
Ground Surface ±213'	e Elevatio	n:				Hole Completion: Monitoring Well Piezometer X Abandoned, sealed with bentonic						
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	USCS							
	30.8	18		21	CL	Blue gray	lean CLAY, very	stiff, moist				
	30.2	16		22		-massive	an graver					
	32.7	15		25 -								
	29.5	18		28 29	ML		blue gray SILT, ed of wet silt at 28	medium dense, moist				
	31.7	14		30 -								
	32.9	18		32 - 33 - 34 -								
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Proj. No. 9334-2 **GLS** Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this location. Dwn.

Date Feb. 2004

Checked MGM

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General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft. Sample	USCS	Surface Cor	iditions: Forest D	Ouff			
	16.7	5		1 2 3 4	SM		y fine SAND, vei	ry loos	e to loose, wet		
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	39.2	6		12 13 14							
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		Ì		<i>\\\\\</i>	1 +	CL	Brown lea	an CLAY with sai	nd, sti	ff, moist			
					22				•				
	2	21.7			23	_	-contains		eilty eo	and with aravel			
	1		11		1 +	-		ed of saturated s noxide staining	only 50	ind with graver			
					24		20						
					25		Orester to	- brown Cli T	h con	d, loose, moist to	Wet		
	1	19.3	9			ML	Grades to	o drown SILT WIL	n san	u, 100se, moist to	WEI		
			3		26		-contains	interbeds of we	t, iron	oxide stained sar	nd		
		non-more Money or missions			27		-trace gravel						
		23.2			∦ ┼┐	SM	Brown sil	ty SAND, loose,	water	bearing			
	1	۷.۷	8		28		5104411 311	,, 10000,		- -			
					29		-trace gra						
	l				+	_	-25.5% fi	nes					
		15.9	!		30	-							
			20		31		<u> </u>	- 1.0" T "		noo moist			
					"-	ML	Brown sa	andy SILT, medi	um de	nse, moist		-	
					32		-blue gra	ay in tip of sample	er				
		26.9			33		-iron oxid	te staining, pock	ets of	sand			
			14		1 T	CL	Grades t	to blue gray lean	CLAY	r, stiπ, moist			
					34	닉	-trace sa	and					
					35								
		20.2			7 7		-become	es hard s small gravel, tr	ace fr	actures			
			68		36	H	LL=39 P	L=19 PI=20					·
				1//	1 +	<u> </u>	Boring to	erminated at 36 f	5 feet	below existing gra	ade. G	roun	dwater
				1			seepage	e encountered at ng well to 31.0 fe	et be	nd 27.5 feet durir low grade.	ıy uriili	ıy. II	istalieu
19/04								•		-			
12 12													
ORING LOG 9334-2.GPJ ECI.GDT 2/19/04			<u></u>							Darington			
34-26			Ear	th C	าดทร	ultan	ts Inc.	Boring Log Rainier Vista Hope VI					
8 (()			Eccl Georectin	(III \ Ical Engine	eers, Geologi	StS & Environn	nental Scientists	Seattle, Washington					
9										 T			
Proj. N	lo. 9334	-2	Dwi	n. Gl	_S	Date	Feb. 2004	Checked MG	M	Date 2/19/04		Plate	e A7

Boring Lo Project Name:									Sheet of 1 3
Rainier Vi								Desire No.	1 3
Job No.		ogged by	r:		Start Date:		Completion Date:	Boring No.: B-204	
9334-2		MGM			1/28/0		1/28/04	Sampling Method	
Drilling Contac	tor:				Drilling Me	ethod:		Sampling Method	•
Boretec					HSA			1 01 1	
Ground Surfac	æ Elevatio	n:			Hole Com	pietion: ring Well	Piezometer	X Abandoned, sea	aled with bentonite
±200'	1	<u> </u>					nditions: Forest Dut		
General Notes	(%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	USCS Symbol	Surface Co	Hallons. Torest Dan		
	-				SM	Dark brov	wn silty SAND, loos	se, moist to wet	
		1					,,,,,	,	
				1					
	1								
				2					
				3	_				
	1				_				
	1			4 -		Creder t	a mottled brown for	+CLAV madium et	iff moist
	ļ			1 +	СН	Grades to	o mottled brown fa	LOLAT, MEGIUM SI	m, most
	20.0			5	\vdash				
	38.6	_		+	\vdash				
		6		6	\vdash	-compris	ed of small angula	r clay clasts in clay	matrix
Maconomical to brow Mach female operations at the antique of the second		nate of the state		1 _					
				7					
•									
	1	1		8				•	
				9					
				1					
				10	ᅴ				
	33.5			1	\vdash	hasses	on your stiff		
		18		11 -	\vdash	-become	es very stiff tact, only trace frac	etures	
	-			1 +	4		iact, only trace frac inantly massive	Autos	
				12	-	-blue gra			
	1			1 +		Side gre	-, "' up		•
	1			13					
[1	_				
				14					
	ì			1		-become			
	34.9			15		-highly f	ractured from 15.5'	' - 16'	
		10		16	\perp	LL=68 F	PL=30 PI=36		
					Ц				
				17					
				18					
	1			7 +					
				19					
,				\mathbf{A}					
								Daring La	

Earth Consultants Inc. Geotechnical Engineers, Geologists & Environmental Scientists

Boring Log Rainier Vista Hope VI Seattle, Washington

Checked MGM Date Feb. 2004 Proj. No. 9334-2 **GLS** Dwn.

Date 2/19/04 Plate A8

Project Name:										Sheet	
Rainier Vist	а Нор	e VI					<u></u>	·		2	3
Job No. 9334-2	Lo	gged by MGM			Start Date 1/28/0		Completion Date: 1/28/04		Boring No.: B-204		
Drilling Contacto Boretec					Drilling Me				Sampling Method: SPT		
Ground Surface	Elevatio	 n:			Hole Com	pletion:		i			
±200'				1	Monito	ring Well	Piezometer	[]	Abandoned, sealed	with ben	tonite
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft. Sample	USCS						
	38.1	11			CL	Blue gray	lean CLAY, stiff,	moist			
		•		21							
				22		-trace frac	ctured interbeds				
				23							
				24							
				1 —							
	29.6	15		25	ML	Grades to	blue gray SILT,	mediu	um dense, moist		
		15		26			nd laminae and si	mall g	gravel		
				27	en Jamasen Amerikan da ame	-trace fra	ctures				
		<u> </u>		28							
				29	-						
				Ⅱ +							
	32.2	14		30							
		14		31							
				32 -							
				33							
				34	-						
	31.4	14		35	7						
		"		36	-						
				37	1						
9/04				38							
, TO 20				39	-						
EOC				-							
47.2 @		Га:	+lo C	lone:	ultore	to Inc			Boring Log		
Politing Pol						ts Inc.			ainier Vista Hope ' eattle, Washingto		
SING TO CO	24.2		ı. GL	9	Data	Feb. 2004	Checked MGM	— т	Date 2/19/04		Plate A9
୍ଥି Proj. No. 933) 4 -2	Dwi	ı. GL	ن.	Date	1 UD. 2004	CHECKED INICH		Date = 10/0-1		

Boring	Log
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	- \ //								Sheet 3	of 3
Lo	gged by	<i>/</i> :		1/28/0	04	Completion D)ate:	Boring No.: B-204		
or:				HSA				Sampling Method: SPT		
Elevation	า:	· · · · · · · · · · · · · · · · · · ·				Piezomo	eter	X Abandoned, seal	ed with bent	onite
W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	USCS						
20.8	25		41 42 43 44 45 46 47 48 49 50 51	ML	-trace gra	avel			ade. No Inclinomo	eter
		cal Fingine	eers, Geologis		its Inc.		R	Boring Log tainier Vista Hope Seattle, Washing	e VI ton	
34-2	Dwr	ı. Gl	LS	Date	Feb. 2004	Checked	MGM	Date 2/19/04	P	ate A10
	Elevation W (%) 27.1	## MGM File	Elevation: Variable No. Blows Ft. F	Elevation: Consider the constraint of the con	Elevation: No. Start Date Hole Con Monitor Mo	Start Date: 1/28/04 Drilling Method: HSA Hole Completion: Monitoring Well W (%) No. Blows Ft. 25	Completion E 1/28/04	Logged by: MGM	Logged by: Start Date: 1/28/04 1/28/04 Boring No: Burney No: Sampling Method: SPT	A Hope VI

Project Name:					· ·			·· ·· ·· ·· ·		She		of	
Rainier Vist							·		1 2	1 1		3	
Job No. 9334-2	1	ogged by	r:		Start Date: 1/29/04	1	Completion 1/29/04		Boring No.: B-205				
Drilling Contacto Boretec	Γ:				Drilling Met	thod:			Sampling Method: SPT				
Ground Surface ±185'	Elevati	ion:			Hole Comp	letion: ing Well	Piezor	neter	X Abandoned, sea	led with be	entonite		
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.		Surface Con		rest Duff					
					ML	Dark brow	n sandy S	ILT, very lo	oose, wet			:	
	39.7	7		2 3	CL	Brown lea	n CLAY, п	nedium stif	f, moist				
	12.3 7 -trace sand at 6'												
				1 1									
	38.4	5		8 9	++-								
	39.3	15		10		-california	ı sampler ι	used for sa	ample at 10'				
	14.6	27		12	SM	Brown sill	hy SAND in	nedium de	ense, moist				
	8.0	38		15 16		-contains -15.5% fir -becomes	gravel nes		2-,				
בכייסו 2 ושיסא	12.6	57		18	-becomes wet SM Grades to brown silty SAND with gravel, very dense, wet								
					ultant				Boring Log Rainier Vista Hop Seattle, Washing	e VI			
Proj No. 023	34-2	Dur	GI	s	Date F	eb 2004	Checked	MGM	Date 2/19/04		Plate	A11	

Project Name:										Sheet	of 2
Rainier Vist				T	<u> </u>	·····		D.1	Domino No.	2	3
Job No.		gged by	y:		Start Da		Completion		Boring No.:		
9334-2		MGM	· · -		1/29/		1/29/04	+	B-205		
Drilling Contacto	r:				Drilling N				Sampling Method:		
Boretec					HSA				SPT		
Ground Surface ±185'	Elevatio	n:				mpletion: toring Well	Piezo	meter	X Abandoned, sealed	with benton	ite
		Na	0 =		5						
General Notes	(%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	USCS						
	28.2		шш		ML	Grades to	brown SII	T with san	id, medium dense, i	moist	
	· ·	20		1 24	1						
				21		-becomes	s blue gray	1			
			11111111	22							
			ЩЩЦ								
	31.2		1///	23	CL-M	L Grades to	blue gray	, lean CLA	Y, stiff, moist		
		9		1 ~ [1						
			1///	24	_						,
			V///	1 - 1	_						
			1///	25	_[[
	32.4			<u> </u>	4						
		10		26	4						
1				1 1	_						
				27 -			AAANAMANAA OO QOO AAAAAAAAAAAAAAAAAAAAAAAAAAAA	mentermanan oleh Britania karakan kalenda di sampan di sampan di sampan di sampan di sampan di sampan di sampa Sampan di sampan di s			
	20.5			1 +-	4						
	32.5	1	1///	28	-						
		12	Y ///	1 ++	4						
]		}		29	-						
				1 +	-						
	16.5		1///	30							
	, 5.5	33			4	-california	a sampler	used for sa	imple at 30'		
		"		31	4		nd, stiff to		her make		
				} _ [1		brounded (
			1///	32	-		· ·····	-			
	24.1			1	7				:		
		17	1///	33	7	-become	s hard				
			V///	1,,11	7						
	}		1///	34	7						
1	1		1///	1 , 1							
	26.8			35							
		21	1///	36]						
1			1///	1 ™ □							
			1///	37							
1			1///	1 " [}					
\$	15.1			38							
273	1	62		վ "∐							
اَمَا				39	ML	Dark gra	y SILT with	sand and	gravel, very dense,	moist	
	1			" _							
2	<u> </u>										
A A			_		_				Boring Log		
		Ear	th C	onsu	ultan	its Inc.		F	Rainier Vista Hope V	/I	
						nental Scientists			Seattle, Washingtor		
ğ					 		ļ				
Proj. No. 933	4-2	Dwn	. GL	S	Date	Feb. 2004	Checked	MGM	Date 2/19/04	Plate	A12

Doining Lo											Τ οι	
Project Name: Rainier Vis	ta Hon	e VI									Sheet 3	of 3
Job No.	Lo	ogged by	ſ:		Start			Completion 1/29/04		Boring No.: B-205		
9334-2 Drilling Contacto		MGM			ļ	29/04 g Metl		1/28/04		Sampling Method:		
Boretec	л.				HS	SA				SPT		
Ground Surface ±185'	Elevation	on:				Compl onitorii	etion: ng Well	☐ Piezor	neter	X Abandoned, sealed	d with bento	onite
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	Sample	Symbol						
	13.5	90/11"		41	C	L	Gray lean					
	14.1	77		47							-	
J EC. GDT 2/19/04							Boring ter seepage of Inclinome with grout	minated a encountere ter installe	t 48.5 fee ed at 17.5 d to 46.0	t below existing gra 5 feet during drilling feet below grade, b	de. Grou Slope porehole	ndwater backfilled
							S Inc.			Boring Log Rainier Vista Hope Seattle, Washingto		
Ö Drei No O3	34-2	Duag	n Gl	S	Da	te F	eb 2004	Checked	MGM	Date 2/19/04	P	ate A13

Project Name: Rainier Vist	a Hor	ne VI							Sheet 1	of 3
Job No. 9334-2		ogged by MGM	r:		Start Date: 1/29/04	1	Completion Date: 1/29/04	Boring No.: B-206		
Drilling Contactor Boretec	 r:				Drilling Met			Sampling Method: SPT		
Ground Surface ±178'	Elevation	on:			Hole Comp Monitori		Piezometer	X Abandoned, sealed	with bentor	ite
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	USCS	Surface Con	ditions:	·		
	32.1	57		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 15	ML CL	-california Brown sil	brown lean CLAY, ed of angular clay cl a sampler used to ca ty SAND with grave	medium stiff, moist lasts in silt matrix	- 11.5'	
J ECIGDT 278/04	18.3	19		16 17 18 19	ML	-trace lar	ninae andy SILT, medium	dense, moist		
Mary 100 9334-7. Gen ed					ultant			Boring Log Rainier Vista Hope Seattle, Washingto		
ON Droi No. 93'	34-2	Dw	n GI	S	Date F	Feb. 2004	Checked MGM	Date 2/19/04	Pla	te A14

Borna	1 00
	Log
	_~9

Project Name: Rainier Vista	а Нор	e VI	·····							Sheet 2	of 3
Job No.	Lo	gged by	<i>r</i> :		Start Date	1	Completion Date 1/29/04):	Boring No.: B-206		
9334-2		MGM			1/29/0 Drilling Me		1129104		Sampling Method:		
Drilling Contactor Boretec	•				HSA				SPT		
Ground Surface I ±178'	Elevatio	n:			Hole Com	pletion: ring Well	Piezometer	r [X Abandoned, seale	ed with bento	onite
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	USCS Symbol						
	31.0	25		21	ML SM	Brown silt		nedium	nse, wet dense, wet		
	14.7	37		23		-pockets of	of poorly grade		an sand		
			ЩЩ	26		}	lean CLAY, ve				
	30.9	18		28 - 29 - 30 -	CL	blue gray	ican ob III, I	ory our,			
				31 32 33 34 34							
ECI.GDT 2/19/04	26.5	25		35 36 37 38 39		LL=41 PI	_=21 PI=20				
DRING LOG 9334-2.GPJ ECI.GDT 2/19/04		Eat	th C	CONS	sultan	ts Inc.			Boring Log tainier Vista Hope Seattle, Washing	e VI	
Proi No. 933	M_2	Dw	n. Gl	S	Date	Feb. 2004	Checked M	GM	Date 2/19/04	P	late A15

Proj. No. 9334-2 Dwn. GLS Date Feb. 2004 Checked MGM Date 2/13/04 Flate //10
Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this loca.

Rainier Vista Job No.		e VI ogged by	r:	T	Start Date		Completion Da	ate:	Boring No.:	3	3
9334-2		MGM			1/29/0		1/29/04		B-206		
Drilling Contactor Boretec	:				Drilling Me	thod:	-		Sampling Method: SPT		
Ground Surface I ±178'	Elevation	n:			Hole Com Monito	pletion: ring Well	Piezome	ter	X Abandoned, seale	d with bentor	nite
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	USCS						
Proj. No. 933	19.3	36		41 42 43 44 44 45 1	SM	Dark gra	to gray silty SA erminated at 4 e encountered eter installed	and, dens	gravel, very dens pelow existing gra and 20.5 feet during eet below grade, b	e, moist de. Groun ng drilling. corehole b	idwater Slope packfilled
						ts Inc.			Boring Log Rainier Vista Hope Seattle, Washingt		
Proj. No. 933	4-2	Dwr	ı. GL	S	Date	Feb. 2004	Checked I	MGM	Date 2/19/04	Pla	te A16

Project Name: Rainier Vis	ta Hon	e VI					· · · · · · · · · · · · · · · · · · ·		Sheet of 1 2
Job No. 9334-2	Lo	gged by MGM	r:		Start Date: 2/6/04		Completion Date: 2/6/04	Boring No.: B-207	
Drilling Contactor Geologic D	or:				Drilling Met HSA	hod:		Sampling Method: SPT	
Ground Surface ±150'	Elevation	n:		[Hole Comp Monitori		Piezometer	X Abandoned, seale	ed with bentonite
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft. Sample	USCS Symbol	Surface Cond	ditions: Toe of Slo	ope	
	15.3	14		1	SM	-iron oxide		el, medium dense, m	oist
	23.4	23		8 9	ML	-4" layer o	lish brown silty SA of water bearing, p SILT, medium de	poorly graded sand a	t 8.5'
	31.3	16		10		Blue gray	OILT, Modian de		
	24.3	16		13 14	-				
	35.4	12		15	CL		lean CLAY, stiff,		
:Ci.gDT_2/19/04	40.1	8		18			s medium stiff to s		
Proj. No. 933		Ear	th C	CONSU	ultant & Environme	S Inc.		Boring Log Rainier Vista Hope Seattle, Washingt	
Proj. No. 93	 34-2	Dwr	ı. GL	.S	Date F	eb. 2004	Checked MGM	Date 2/19/04	Plate A17

Project Name: Rainier Vist	а Нор	e VI									Sheet 2	of 2
Job No.	Lo	gged by	r:		S	Start Date		Completion	Date:	Boring No.:		
9334-2		MGM			<u> </u>	2/6/04		2/6/04		B-207 Sampling Method:		
Drilling Contacto Geologic D					[Orilling M HSA	eunoa:			SPT		
Ground Surface		u.			}	tole Corr	pletion:	··	<u> </u>			
±150'	Lictatio				Ė	_	oring Well	Piezon	neter	X Abandoned, sealed	with bent	onite
		No.	0 5	_	a	~ -						
General Notes	W (%)	Blows Ft.	Graphic Symbol	Depth F.	Sample	USCS Symbol						
	27.8		1777		т	CL	Gray lean	CLAY, stiff	f, moist			
		11		21		SM	Gray silty	SAND, me	dium dens	e, water bearing		
				22 -								
	21.0			-	П							
		7		23	П		-becomes	loose				
				24								
	25.0			25								
		10		26	\square							
		And the second section of the section of the second section of the section o		27		respect to community of the man between the community of the man and the community of the c						Makagayan ayan an a
	15.9			28 –	П		-become	s medium o	dense			
		16		+	-							
			326523	29	J		Boring te seepage Well insta	rminated at encounterealled to 10.0	t 29.0 feet l ed at 5.0 ar 0 feet belov	pelow existing grad nd 20.5 feet during w grade.	e. Grou drilling.	indwater Monitoring
						1						
4												
ORL/Z												
100												
Proj. No. 93								T				
		Ear	th C	ากกร	21 1	iltan	ts Inc.		r.	Boring Log tainier Vista Hope \	Л	
		Ceolectini	(11 C kcal Engine	ers, Geolog	gisas S	& Environi	nental Scientists			Seattle, Washingto		
NIN D	24.2	T		<u> </u>	7	Data	Feb. 2004	Checked	MGM	Date 2/19/04		ate A18
R Proj. No. 93	54-2	Dw	n. GL	.ა		Date	1 CD. 2004	CHECKEU	IVIOIVI	1 200 2 10/07		

Boring L	og
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	roject Name										of.	of
Project Name: Rainier Vist	а Нор	e VI								She . 1		3
Job No.		gged by	<i>r</i> :		Start Date:		Completion I	Date:	Boring No.:			
9334-2		MGM			2/6/04		2/6/04		B-208			
Drilling Contacto	r:				Drilling Me	thod:			Sampling Method			
Geologic D	rill				HSA		· · · · · · · · · · · · · · · · · · ·		SPT			
Ground Surface	Elevation	n:		- 1	Hole Comp			. 6	X Abandoned, sea	alad with h	ontonit	_
±240'				1		ing Well	Piezom				CITOTIC	
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	I	Surface Cond			along Cheasty l		/F-1143	
	16.1	4		1 2 3 4 5 6	SM	Brown silty -pockets o		h gravel, ve	ery loose to loo	se, wet ((Fill)	
	13.0	9		7 8 8 10	SM	-becomes		ose, wet				
2/19/04	14.9	16		11 12 13 14 15 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18	CL		an CLAY, v	ery stiff, m	oist			
ORING LOG 9334-2.6PJ ECI.GDT 2/19/04	34.8	7		19				ottled at 19				
d o					•		1		Boring Lo			
g /TOYT		Ear	th C	Cons	ultan	ts Inc.		F	Rainier Vista Ho	pe VI		
ğ Wildelin		Geotechi	ıkcal Engine	ers, Geolog	sis & Environm	ental Scientists		(Seattle, Washir	gton		
<u> </u>						<u></u>						
Proj. No. 93	34-2	Dw	n. Gl	_S	Date	Feb. 2004	Checked	MGM	Date 2/19/04	1	Plate	∍ A19

Boring	Log		

Project Name: Rainier Vis	ta Hon	e VI								Sheet 2	of 3
Job No.		ogged by	/:		Start Date	I	Completion Date:		Boring No.:		
9334-2		MGM			2/6/04		2/6/04		B-208		
Drilling Contacto Geologic D					Drilling Me HSA				Sampling Method: SPT		
Ground Surface	Elevation	n:			Hole Com		Piezometer	12	Abandoned, sealed	with hento	nite
±240'	Γ	Τ	ſ		T	ring Well		1/2	Mandoned, sealed	With Done	
General Notes	(%)	No. Blows Ft.	Graphic Symbol	Depth Ft. Sample							
				21	CL	Blue gray	lean CLAY, stiff, r	noist			
	32.4			23	-						
	32.4	13		24	-	-massive					
	ET TO BOOK OF THE STREET TO THE THE STREET			26						T T T 1 0 0 T 1 1 1 1 1 1 1 1 1 1 1 1 1	
	31.0			28	-						
	31.0	23		30		-trace sar -becomes					
				31 32							
	31.8	27		33		-3" interb	ed of sandy silt wi	th gra	avel		
				35				ŭ			
				37							
Proj. No. 93	33.8	20		38	-	-1/8" to 1 -contains	/4" thick laminae (1/2" thick zones (dippii of fra	ng at 15 degrees actured polished c	lay	
77 PER 8007 PER 900 PE		Ear	th C	CONSI	ultan	ts Inc.			Boring Log ainier Vista Hope eattle, Washingto		
Proj. No. 93	34-2	Dw	n. GL	_S	Date	Feb. 2004	Checked MGM		Date 2/19/04	PI	ate A20

Boring Lo	og
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Project Name: Rainier Vis	ta Hop	e VI							1		Sheet 3	of 3
Job No.		ogged by	<i>f</i> :.		Start Date:		Completion Date:		Boring N			
9334-2		MGM			2/6/04	1	2/6/04		B-20			
Drilling Contacto					Drilling Method: Sampling Method: SPT							
Geologic D Ground Surface					Hole Completion:							
±240'	Clevalit	н.				ing Well	Piezometer		X Abano	loned, sealed	with benton	ite
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.		USCS Symbol						
	32.1	19		41 — 42 — 43 — 44 — 45 — 46 — 47 — 47 — 47 — 47 — 47 — 47 — 47	CL	-thinly lam	CLAY, very stiff					
	31.3	19		48 — 49 — 50 — 51 — 52 — 53 — 54 —	ML	-thinly lam	medium dens ninated to mass minated at 55.0 encountered at ter installed to	ive		disting grad ng drilling. w grade, b	de. Grour Slope orehole b	ndwater packfilled
Earth Consultants Inc. Geotechnical Engineers, Geologists & Environmental Scientists						S Inc.			Rainier V	n g Log ista Hope ' Washingto		
Broi No. 933	34-2	Dwn	GL	S	Date F	eb. 2004	Checked MG	VI	Date :	2/19/04	Plat	e A21

roject Name: Rainier Vis	ta								Sheet 1	of 1
ob No.	Lo	gged by	:		Start Date:		Completion Date:	Boring No.:		
9334-2		SSR			10/30/0		10/30/03	B-101		
orilling Contactorian Boretec	or:				Drilling Method: Sampling Method: SPT					·
Ground Surface	Elevation	n:			Hole Comp	oletion: ing Well	☐ Piezometer	X Abandoned, seal	ed with bentonite	e
General Notes	W	No. Blows	Graphic Symbol	Depth Ft.		Surface Con	· · · · · · · · · · · · · · · · · · ·			
Notes	(%)	Ft.	Ö δ		SM	Brown sil	by SAND with grave	el, medium dense, n	noist	
	16.3	4		1 2 3 4	SIVI	-very loos		a, mediam dende, m		
	39.8	8		5	CL-CH		an CLAY, medium	stiff, moist		
				1		-fracture	d texture			
	34.2	11		8 9		-gray				Touristics of Experience
	20.2			10	SM	Gray silty	r fine to medium SA	AND, medium dense	e, wet	
		11		11		-modera	te seepage at 11			
	11.6	54		12						
	10.2	50		15 -		ļ ·	seepage at 15.5'			
				16		Boring te seepage with ben	erminated at 16.0 for encountered at 11 tonite and cuttings.	eet below existing gr .0 feet during drillin	ade. Ground g. Boring bad	lwate ckfill

Earth Consultants Inc. Rainier Vista Georechnical Engineers, Geologisis & Environmental Scientists Seattle, Washington 11/5/03 KMW Date 11/6/03 Plate **GLS** Checked

Date

Dwn.

Proj. No. 9334-2 Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this location.

A22

Boring Lo	g								····
Project Name:									Sheet of 1 3
Rainier Vis					Start Date:		Completion Date:	Boring No.:	1 3
Job No. 9334-2		ogged by SSR	y :		10/30/0		10/30/03	B-102	
Drilling Contact	or.	331			Drilling Me		10.00,00	Sampling Method:	
Boretec	.01.				HSA			SPT	
Ground Surface	e Elevati	on:			Hole Comp			™	
±166'			τ		☐ Monitor	ing Well	Piezometer	X Abandoned, sea	led with Dentonite
General Notes	(%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	Sample USCS Symbol	Surface Cor			
				3 - 4 - 5	SM			AND, loose to med	·
		-		1 +	ML/CL	Brown sill	ty CLAY / SILT, SOT	t to medium stiff, m	IOISI
		l		6	-				
				7	ALL STATE OF THE S				
				9 - 10 - 11 -					
OG 9334-4.GPJ ECI.GDT 2/19/04	29.0	4		12 13 14 15 16 17 18		-groundv	vater seepage at 10		
OS 93344.0F		Eat	th (lkal Engin	Cons	Sultant	S Inc.		Boring Log Rainier Vista Seattle, Washing	

Proj. No. 9334-2 Dwn. Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this location.

KMW

Checked

Date

11/6/03

11/5/03

Date

GLS

A23

Plate

В	ori	na	Log
_	VI II	9	_~9

Project Name: Rainier Visi	ta									Sheet 2	of 3
Job No.	Lo	ogged by	' :		Start Date:		Completion		Boring No.:		
9334-2		SSR			10/30/ Drilling Me		10/30/0	3	B-102 Sampling Method:		
Drilling Contacto Boretec	Л.			;	HSA				SPT		
Ground Surface	Elevation	n:				Hole Completion: Monitoring Well Piezometer X Abandoned, sealed with					
±166'				<u> </u>		ring Well	☐ Piezon	neter	Abandoned, sealed	with benton	ite
General Notes	(%)	No. Blows Ft.	Graphic Symbol	Depth Ft.							
	30.7	11		21	ML GL/CH	-silty sand	Γ, loose, mo				
	25.8	9		29 — 30 — 31 — 32 — 33 —							
83344, GPJ ECI, GDT 2/19/04	17.9	50/6"		35 36 37 38 39	SM-MI	Gray silty	y fine to me	dium SAN	D / fine sandy SILT	Γ, very der	nse, moist
Earth Consultants Inc. Georectinical Engineers, Geologists & Environmental Scientists								Rainier Vista Seattle, Washingto	on		
Proj. No. 93	34-2	Dwr	ı. GL	.s	Date	11/5/03	Checked	KMW	Date 11/6/03	Plat	e A24

Rainier Vis Job No. 9334-2										3 3
9334-2		ogged by	;		1	Date:		Completion Date:	Boring No.:	
		SSR)/30/0		10/30/03	B-102 Sampling Method:	
Drilling Contact	OF:					ng Met SA				
Boretec Ground Surface	- Elovatio	n.				Comp	letion:		0	
±166'	e clevatit	л.					ng Well	Piezometer	X Abandoned, sea	aled with bentonite
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft.	<u> </u>	Symbol				
	31.2		////)L	Gray CLA	Y, hard, moist to v	vet	
		50/5"		41			-			
				-7'↓		Ì				
	1			42	\dashv					
				+	\dashv	Ì				
				43						
		Ì		44						
				"" _	_					
				45 -						
		50/4"		+	+					
		30/4		46	H					
	***************************************			47 -						
					_					
				48						
				_+						
				49						
				50						
	18.1	70		1 +		ļ				
		78		51	+					
	-		Y///				Boring ter seepage with bent	rminated at 51.5 fe encountered at 16 onite and cuttings.	eet below existing g 3.0 feet during drilling	rade. Groundwat ng. Boring backfil

Earth Consultants Inc.
Georectinical Engineers, Geologisis & Environmental Scientists

Boring Log

Rainier Vista Seattle, Washington

Proj. No. 9334-2 Dwn. GLS Date 11/5/03 Checked KMW Date 11/6/03 Plate A25

Project Name: Rainier Vis	ta	,								Sheet 1	of 2
Job No.		ogged by			Start Date:		Completion	Date:	Boring No.:		
9334-2		MGM			10/8/03	3	10/8/03	<u> </u>	B-1		
Drilling Contacto	or:				Drilling Me	thod:			Sampling Method:		
Geologic E	Orill		····		HSA				SPT		
Ground Surface	Elevation	n:			Hole Comp		<u> П</u> в:		X Abandoned, sealed	t with bonto	nite
±167'	π		Т	 _	Monitor	ing Well	Piezor	neter	Abandoned, sealed	3 WILLI DEI ILO	inte
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft. Sample	USCS	Surface Con					
					ML.	Brown SIL	T with gra	vel, mediur	n dense, moist		
	6.0	26		3 4 5		-mottled -contains	large grave	el and cobb	bles		
	12.2	18		6 7							
	16.1	11		8	SM		_		lium dense, wet		
	34.8			10			small grav	·			
		20		11	CL/ML			ery stiff, mo	ŧ.	200	
	31.3			∦ ∤,	SM	-small po	THE SAND W	an sanu, ç ith oravel r	groundwater seep medium dense, sa	aye aturated	
	31.3	32		13	ML		LT, dense,				
				14							
				-	-	-4" lens o	of saturated	ı sanay silt			
	19.7			15							
		33		16	R #1	Brown co	ndy SILT	dense, moi	st to wet		
				║╻┼	ML	DIOWII Sa	ii iuy SIL1, (uciise, 11101	SE TO MACE		
			0333304	17				ID			
500	12.4	85		18	SM	Brown sit	ty tine SAN	וט, very de	nse, saturated		
3				19	1	-become	s gray				
					-						
			1-1-1-1-1-1-1-1-1			w <u></u>			Boring Log	<u> </u>	
		Ear	th C	Consu	ultant	s Inc.			Rainier Vista		
						ntal Scientists		5	Seattle, Washingto	on	
2					т		-				300
Proj. No. 93	34-2	Dwr	ı. GL	.S	Date 1	11/5/03	Checked	KMW	Date 11/6/03	Pla	ite A26

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Doining Lot	7		<u> </u>							
Project Name: Rainier Vista	a								Sheet 2	of 2
Job No. 9334-2	L	ogged by			Start Date		Completion Date: 10/8/03	Boring No.: B-1		
Drilling Contactor Geologic Di					Drilling M HSA			Sampling Method: SPT		
Ground Surface I ± 167'		on:			Hole Com	npletion: pring Well	Piezometer	X Abandoned, sealed	d with bentonit	<u> </u>
		No.	. <u>5</u> _0	ے		Jing Weii		ZS Abandoned, scale	3 Will bentonia	<u> </u>
General Notes	(%)	Blows Ft.	Graphic Symbol	Depth Ft.	Sample USCS Symbol					
	10.6	87			SM	Gray silty	SAND, very dense,	saturated		
				21	ML	Blue gray	SILT, very dense, n	noist		
				22 -						
				23		Crow fat (NI AN ALIES TOTAL			
				24 -	CH	Gray rat C	CLAY, stiff, moist			
	34.4			25 –		LL=56 PL	=28 PI=28			
		10		26						
		and the second s		27			этээ хэвэг оны этом оны			
	25.3			28						
		11		29 –						
	21.7			30						
	21.7	51		31	ML	Dark gray	SILT with sand, ver	y dense, moist		
						Boring tel seepage with bent	rminated at 31.5 fee encountered at 12.5 onite and cuttings.	t below existing grad feet during drilling.	de. Ground Boring bac	water kfilled
						·				
		E								
							 			
Earth Consu					ultant	ts Inc.		Boring Log Rainier Vista		
Georecturical Engineers, Geologists & i										
Proj. No. 9334	1-2	Dwn	. GL	 S	Date	11/5/03	Checked KMW	Date 11/6/03	Plate	A27

B	oring	J Log
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Project Name:									Sheet of
Rainier Vista	a						·		1 2
Job No.		ogged by	<i>/</i> :		Start Date		Completion Date:	Boring No.:	
9334-2		MGM			10/8/0		10/8/03	B-2	
Drilling Contactor					Drilling Mo	ethod:		Sampling Method:	
Geologic Dr					HSA Com	unlation:	<u></u>	SPT	
Ground Surface I	=ievatio	on:			Hole Com	ipietion: oring Well	Piezometer	X Abandoned, sealed	with bentonite
		N	0 =			Surface Con			
General Notes	W (%)	No. Blows Ft.	Graphic Symbol	Depth Ft. Sample	USCS				
				1	ML	Brown sar	ndy SILT with grave	I, loose to medium d	ense, moist
			 	-	ML	Mottled br	own SILT with sand	I, loose to medium d	ense, moist
				2	<u> </u>				
[3 ├─	-				
					-				
				4	1	į.			
]				5					
	35.6	15			ML	Brown SII	_T, medium dense,	moist	
		'3		6	IVIL	DIOWII OIL	_ 1, modum dense,		
				7		-fractured	l, appears disturbed		
	44.0			`-	-				
	44.9			8	MH	Brown ela	astic SILT, very stiff,	moist to wet	
		18		9]		•	· 	
		-			4	-highly fra	actured	alaska in fire serie - d	ma mbriss
	38.4			10	-	-comprise	eo or small angular	clasts in fine grained	mauix
	50.4	11] _;++	1 .				
				11]	LL=58 PL	.=31 PI=27		
				12	-				
	33.1			+-	-				
	JJ. 1	14		13					
				14					
				'-	_	-pockets	of wet sand		
1	31.3			15	ML	Mottled b	rown SILT, loose, w	ret	
		8						•	
				16					
				17	-				
	17.6			1 +	-				
		22		18	SM	Brown sil	ty SAND with grave	, medium dense, wa	ter bearing
100				19	1				
					-				
		——	868888	<u> </u>			T	Boring Log	
		Far	th C	ัดทรเ	ıltanı	ts Inc.		Rainier Vista	
	TO 1					ental Scientists		Seattle, Washington	า
									
Proj. No. 9334	4-2	Dwn	. GL	.S	Date	11/5/03	Checked KMW	Date 11/6/03	Plate A28

Boring	Log
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Project Name: Rainier Vist	ta								Sheet of 2 2	
Job No. 9334-2		ogged by	r:		Start Date: 10/8/03		Completion Date: 10/8/03	Boring No.: B-2		
Drilling Contactor: Geologic Drill					Drilling Method: Sampling Method: SPT			Sampling Method: SPT	·	
Ground Surface Elevation:					Hole Completion: Monitoring Well Piezometer X Abandoned, sealed with bentonite					
					T	ing von				
General Notes	(%)	Blows Ft.	Graphic Symbol	Depth Ft. Sample	USCS					
	15.1	54			SM	Brown silt	y SAND with grave	el, very dense, water	bearing	
	21					-15.6% fines -6" zone of coarse sand at 20'				
				22		-dark iron oxide staining at 21.5'				
	24.8	9		23	CL	Blue gray	silty CLAY, stiff, m	oist to wet		
				24	1	LL=31 PL	=18 PI=13		-	
				25						
	19.7	15		1 ++	CL/ML Blue gray silty CLAY, stiff, moist to wet					
				26						
				27			OI T ''		maint to wat	
	18.4 ML Grades to gray SILT with sand, medium dense, moist to wet 28							moist to wet		
				30	- 					
		40		31		-no recovery				
					<u> </u>	Boring terminated at 31.5 feet below existing grade. Groundwater seepage encountered at 18.0 feet during drilling. Boring backfilled				
						with bentonite and cuttings.				
900										
5										
EGI										
							Boring Log			
Boring Log Rainier Vista Georiectunical Engineers, Geologists & Environmental Scientists Proj. No. 9334-2 Dwn. GLS Date 11/5/03 Checked KMW Date 11/6/03 Plate A2										
Proj. No. 93	Dwr	Dwn. GLS			11/5/03	Checked KMW	Date 11/6/03	Plate A29		