



Science Applications International Corporation
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1622.20030416.001

April 17, 2003

Mr. Glen Beckham
U.S. Army Corps of Engineers, Louisville District
ATTN: CELRL-PM-M
Room 765
600 Martin Luther King, Jr. Place
P.O. Box 59
Louisville, Kentucky 40202-0059

Reference: Contract No. F44650-99-0007, ECAS 186, Phase II Remedial Investigations (RIs)
for Load Lines 2, 3, and 4 at the Ravenna Army Ammunition Plant (RVAAP),
Ravenna, Ohio

Subject: Transmittal of Geotechnical Laboratory Results

Dear Mr. Beckham:

Enclosed is a copy of the final geotechnical laboratory report for soil and sediment samples collected during the Phase II RI of Load Lines 2, 3, and 4 at RVAAP. In previous RI reports, geotechnical data were included in their entirety as appendices. Due to the volume of analyses conducted for the Phase II RI at Load Lines 2, 3, and 4, a summary of geotechnical data is to be included in the Phase II RI reports and the full geotechnical laboratory report provided separately to key data end users. Copies of the geotechnical laboratory report are being distributed concurrently to the recipients indicated below. SAIC appreciates the opportunity to perform this work for the U.S. Army Corps of Engineers, Louisville District and RVAAP.

If you have questions or comments, please feel free to contact me at (865) 481-4614.

Sincerely,

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

A handwritten signature in black ink, appearing to read "W. Kevin Jago", is written over the printed name.

Kevin Jago
Project Manager

Mr. Glen Beckham
April 17, 2003
Page 2 of 2



Enclosure

cc: Rick Callahan – MKM Engineering (1 copy)
Mark Patterson – RVAAP (1 copy)
Paul Zorko – USACE (1 copy)

cc w/o Enclosure: John Jent – USACE
Eileen Mohr – Ohio EPA
Bob Smith – SAIC
Martha Turpin – SAIC
Project File
SAIC CRF





September 28, 2001

Science Applications International Corporation
151 LaFayette Drive
P.O. Box 2501
Oak Ridge, Tennessee 37831

ATTENTION: Mr. Kevin Jago

REFERENCE: **GEOTECHNICAL LABORATORY SERVICES**
Phase II Remedial Investigation of Load Lines 2, 3, and 4
Ravenna Army Ammunition Plant (RVAAP)
Ravenna, Ohio
Subcontract 4400042493
Subproject 01-1622-34-3725-600
S&ME Project No. 1439-01-417

Dear Mr. Jago:

S&ME, Inc. has completed laboratory testing for the subject project. This testing program was conducted in general accordance with Subcontract No. 4400042493. The purpose of the testing program was to determine the requested properties of the soil samples received. The following report presents the activities and results of the testing program.

RECEIPT INSPECTION

Six (6) grab samples were received on August 13, 2001. Nine (9) grab samples were received on August 15, 2001. Nineteen (19) Shelby tube and eight (8) grab samples were received on August 22, 2001. Nineteen (19) grab samples were received on August 24, 2001. Nine (9) grab samples were received on August 28, 2001. Thirty-four (34) grab samples were received on August 29, 2001. Seventeen (17) grab samples were received on August 30, 2001. A minor discrepancy was noted on Chain-of-Custody no. LL3S&ME-03 versus the accompanying samples received on August 22, 2001, and was addressed in both in a telephone conversation with SAIC's Vicki Brumback on August 23, 2001, and in an e-mail to yourself (Mr. Jago) on August 24, 2001. Copies of our Receipt Inspection Reports and the Chain of Custody records are enclosed in Appendix A.

S&ME, Inc., Knoxville Branch
1413 Topside Road
Louisville, Tennessee 37777

(865) 970-0003
(865) 970-2312 fax
www.smeinc.com

SCOPE AND PROCEDURES

The testing program consisted of moisture content, grain size (sieve and hydrometer), Atterberg limits, USCS classification, bulk density, specific gravity, porosity, hydraulic conductivity, and pH. The tests assigned were performed in general accordance with American Society for Testing and Materials (ASTM) Methods D2216 for moisture content, D422 for grain size, D4318 for Atterberg limits, D2487 for USCS classification, D4531 for bulk density, D854 for specific gravity, D5084 for hydraulic conductivity, EM-1110-2-1906 for porosity, and SW846-9045 for pH. Please note that USCS classification by ASTM D2487 was requested on some samples that did not have a grain-size test assigned. Since this information is necessary to classify per D2487, these samples were classified using portions of ASTM D2488 as well as ASTM D2487. Also, bulk density and porosity tests were assigned on two baggie/grab samples. These tests cannot be performed on disturbed samples such as baggie/grab samples.

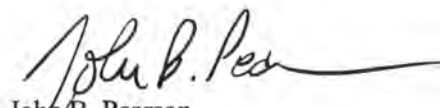
RESULTS

A summary of test results, along with test data sheets are included in the attachments.

S&ME, Inc., appreciates the opportunity to be of service in this project. If you have questions or require additional information, please contact us at your convenience.

Sincerely,

S&ME, Inc.



John B. Pearson
Laboratory Manager

JBP/trb

Attachments

TEST DATA SUMMARY
Phase II Remedial Investigation of Load Lines 2, 3, and 4
Ravenna Army Ammunition Plant (RVAAP)
Ravenna, Ohio
S&ME Project No. 1439-01-417

COC NO.:LL2S&ME-01

Received 8/13/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL21131	LL2sd-054(p)	0-0.5	-	6.4	17.4	36.4	39.8	-	-	-	-	-	-
LL21096	LL2-223	0-0.5	-	1.4	24.9	44.1	29.6	-	-	-	-	-	-
LL21113	LL2-245	0-0.5	-	5.9	76.0	12.2	5.9	-	-	-	-	-	-
LL21118	LL2-249	0-0.5	-	3.1	21.2	47.0	28.7	-	-	-	-	-	-
LL21125	LL2-252	0-0.5	-	2.8	36.6	41.5	19.1	-	-	-	-	-	-
LL21133	LL2sd-055(p)	0-0.5	-	42.7	51.2	3.9	2.2	-	-	-	-	-	-

COC NO.:LL3S&ME-01

Received 8/15/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL31086	LL3-222	0-0.5	-	55.4	35.7	6.4	2.5	-	-	-	-	-	-
LL31068	LL3-219	0-0.5	-	47.5	40.9	6.6	5.0	-	-	-	-	-	-
LL31077	LL3sd/sw-048(d)	0-0.5	-	29.1	29.6	25.1	16.2	-	-	-	-	-	-
LL31082	LL3sd/sw-049(d)	0-0.5	-	17.5	60.2	12.9	9.4	-	-	-	-	-	-
LL31071	LL3sd/sw-052(d)	0-0.5	-	12.0	49.3	22.6	16.1	-	-	-	-	-	-

COC NO.:LL3S&ME-02

Received 8/15/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL31073	LL3-053	0-0.5	-	0.0	35.0	38.6	26.4	-	-	-	-	-	-
LL31084	LL3-sd/sw-050(d)	0-0.5	-	5.4	28.2	41.6	24.8	-	-	-	-	-	-
LL31079	LL3-sd/sw-051(d)	0-1.0	-	2.7	48.9	26.6	21.8	-	-	-	-	-	-
LL31069	LL3sd/sw-047(d)	0-0.5	-	49.3	28.6	14.2	7.9	-	-	-	-	-	-

TEST DATA SUMMARY (continued)
Phase II Remedial Investigation of Load Lines 2, 3, and 4
Ravenna Army Ammunition Plant (RVAAP)
Ravenna, Ohio
S&ME Project No. 1439-01-417

COC NO.:LL2S&ME-02

Received 8/22/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL21160	LL2-268	8-10	15.8	1.7	15.7	40.1	42.5	-	30	14	-	2.715	Lean clay with sand, CL
LL21162	LL2-263	3-5	17.3	0.2	17.1	40.6	42.1	-	32	13	-	2.714	Lean clay with sand, CL
LL21163	LL2-265	6-8	13.5	20.3	47.9	25.2	6.6	-	17	6	-	2.731	Silty clayey sand with gravel, SC-SM
LL21129	LL2-053	0-0.5	-	3.3	22.3	39.5	34.9	-	-	-	-	-	-

COC NO.:LL3S&ME-03

Received 8/22/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL31116	LL3-239	3.5-5.5	14.3	0.3	12.9	36.9	49.9	-	36	19	-	2.743	Lean clay, CL
LL31114	LL3-234	1.5-3.0	16.9	0.6	17.6	37.3	44.5	-	38	19	-	2.706	Lean clay with sand, CL
LL31113	LL3-232	13.5-15.2	15.7	1.3	16.9	36.5	45.3	-	34	17	-	2.704	Lean clay with sand, CL
LL31118	LL3-243	6-6'11"	12.0	1.2	13.7	36.4	48.7	-	32	15	-	2.719	Lean clay, CL
LL31115	LL3-236	3.5-5.5	13.4	13.0	18.0	28.8	40.2	-	41	23	-	2.698	Sandy lean clay, CL

TEST DATA SUMMARY (continued)
Phase II Remedial Investigation of Load Lines 2, 3, and 4
Ravenna Army Ammunition Plant (RVAAP)
Ravenna, Ohio
S&ME Project No. 1439-01-417

COC NO.:LL4S&ME-01
Received 8/22/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Bulk Density (lb/ft ³)	Porosity (ft ³ /ft ³)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. cm/sec	Specific Gravity	Classification
						Gravel	Sand	Silt	Clay		LL	PI			
LL41123	LL4-194	12-14	19.4	113.4	0.359	0.7	19.4	45.5	34.4	7.98	20	8	3.1E-07	2.833	Lean clay with sand, CL
LL41124	LL4-194	16-18	22.0	103.4	0.412	-	-	-	-	7.04	NP	NP	-	2.816	Poorly graded sand w/silt, SP-SM
LL41121	LL4-193	16-18	22.1	114.8	0.335	2.2	17.8	45.2	34.8	7.87	28	12	9.2E-08	2.767	Lean clay with sand, CL
LL41122	LL4-193	20-22	16.9	110.9	0.370	-	-	-	-	7.58	25	10	-	2.817	Sandy lean clay, CL
LL41133	LL4-199	Not given	19.9	105.6	0.398	0.0	85.2	11.2	3.6	7.60	NP	NP	7.5E-04	2.810	Silty sand, SM
LL41134	LL4-199	20-22	19.1	*	*	-	-	-	-	7.66	NP	NP	-	2.754	Poorly graded sand, SP
LL41136	LL4-200	18-20	24.1	101.0	0.417	-	-	-	-	8.04	20	4	-	2.777	Silty clayey sand, SC-SM
LL41135	LL4-200	23-23'10"	9.2	100.1	0.424	1.2	48.5	47.4	2.9	6.88	NP	NP	7.6E-04	2.784	Sandy silt, ML
LL41129	LL4-197	Not given	12.9	123.3	0.292	2.8	19.7	47.5	30.0	7.68	26	11	1.4E-07	2.790	Lean clay with sand, CL
LL41125	LL4-195	10-12	17.9	110.9	0.346	0.0	62.6	33.8	3.6	8.18	NP	NP	3.8E-04	2.718	Silty sand, SM
LL41131	LL4-198	Not given	21.2	109.1	0.376	0.0	3.8	89.0	7.2	7.23	23	10	4.5E-05	2.801	Lean clay, CL
LL41127	LL4-196	18-20	17.9	*	*	0.0	44.6	48.2	7.2	7.89	18	5	-	2.758	Sandy silty clay, CL-ML
LL41126	LL4-195	14-16	18.3	120.7	0.300	-	-	-	-	8.06	20	7	-	2.762	Silty clayey sand, SC-SM
LL40967	LL4sd/sw-054 (p)	0-0.5	-	-	-	0.0	12.9	62.7	24.4	-	-	-	-	-	-
LL40973	LL4sd/sw-057(p)	0-0.5	-	-	-	5.5	69.8	16.4	8.3	-	-	-	-	-	-
LL40953	LL4sd/sw-013(d)	0-0.5	-	-	-	3.0	70.0	11.5	15.5	-	-	-	-	-	-
LL40971	LL4sd/sw-056(p)	0-0.5	-	-	-	7.8	39.7	35.0	17.5	-	-	-	-	-	-
LL40990	LL4-185	0-0.5	-	-	-	0.4	69.8	18.6	11.2	-	-	-	-	-	-

*Could not perform Bulk Density or Porosity since these were grab/baggie samples.

TEST DATA SUMMARY (continued)
Phase II Remedial Investigation of Load Lines 2, 3, and 4
Ravenna Army Ammunition Plant (RVAAP)
Ravenna, Ohio
S&ME Project No. 1439-01-417

COC NO.:LL2S&ME-03

Received 8/24/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL20732	LL2-082	0-1	22.3	-	-	-	-	6.79	-	-	-	-	-
LL20740	LL2-086	0-1	15.0	-	-	-	-	7.13	-	-	-	-	-
LL20865	LL2-131	0-1	19.6	-	-	-	-	7.42	-	-	-	-	-
LL20726	LL2-080	0-1	15.4	3.1	55.6	19.9	21.4	7.19	28	14	-	2.693	Clayey sand, SC
LL20887	LL2-141	0-1	15.8	10.3	41.2	29.1	19.4	7.13	35	15	-	2.645	Clayey sand, SC
LL20856	LL2-128	0-1	13.3	-	-	-	-	6.38	-	-	-	-	-
LL20980	LL2-176	0-1	11.7	45.8	43.2	6.4	4.6	7.50	18	7	-	2.711	Poorly graded gravel w/clay and sand, GP-GC
LL21016	LL2-188	0-1	20.5	-	-	-	-	7.15	-	-	-	-	-
LL20746	LL2-088	0-1	8.9	-	-	-	-	7.02	-	-	-	-	-
LL20986	LL2-178	Not given	22.1	0.8	17.1	38.2	43.9	7.26	33	17	-	2.745	Lean clay with sand, CL
LL20908	LL2-148	0-1	10.5	-	-	-	-	7.13	-	-	-	-	-
LL20757	LL2-093	0-1	18.9	-	-	-	-	6.14	-	-	-	-	-
LL20752	LL2-090	Not given	8.4	-	-	-	-	7.24	-	-	-	-	-
LL20986	LL2-178	Not given	30.2	-	-	-	-	7.23	-	-	-	-	-
LL20920	LL2-154	0-1	18.0	-	-	-	-	6.45	-	-	-	-	-
LL20832	LL2-118	0-1	12.7	-	-	-	-	6.85	-	-	-	-	-
LL20838	LL2-120	0-1	13.4	-	-	-	-	6.69	-	-	-	-	-
LL20826	LL2-116	0-1	12.1	-	-	-	-	6.97	-	-	-	-	-
LL20926	LL2-156	0-1	15.5	-	-	-	-	7.32	-	-	-	-	-

COC NO.:LL4S&ME-02

Received 8/28/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL40957	LL4sd/sw-048(d)	0-0.5	-	1.4	57.7	26.5	14.4	-	-	-	-	-	-
LL40975	LL4sd/sw-058(d)	0-0.5	-	17.9	79.2	0.7	2.2	-	-	-	-	-	-

TEST DATA SUMMARY (continued)
Phase II Remedial Investigation of Load Lines 2, 3, and 4
Ravenna Army Ammunition Plant (RVAAP)
Ravenna, Ohio
S&ME Project No. 1439-01-417

COC NO.:LL3S&ME-04

Received 8/28/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL30878	LL3-128	0-1	21.2	-	-	-	-	6.48	-	-	-	-	-
LL30713	LL3-065	0-1	17.0	-	-	-	-	6.27	-	-	-	-	-
LL30857	LL3-119	0-1	18.0	-	-	-	-	6.40	-	-	-	-	-
LL30866	LL3-122	0-1	17.2	-	-	-	-	5.99	-	-	-	-	-
LL30710	LL3-064	0-1	20.1	-	-	-	-	5.14	-	-	-	-	-
LL30863	LL3-121	0-1	17.3	-	-	-	-	6.92	-	-	-	-	-
LL30881	LL3-129	0-1	25.7	19.3	43.3	20.6	16.8	7.04	33	16	-	2.682	Clayey sand with gravel, SC

COC NO.:LL3S&ME-04

Received 8/29/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL30823	LL3-105	0-1	22.0	-	-	-	-	5.89	-	-	-	-	-
LL30781	LL3-089	Not given	13.9	8.0	25.6	33.5	32.9	5.59	34	16	-	2.686	Sandy lean clay, CL
LL30778	LL3-088	0-1	14.7	32.3	40.1	15.9	11.7	7.14	27	11	-	2.682	Clayey sand with gravel, SC
LL30814	LL3-102	0-1	15.9	-	-	-	-	6.40	-	-	-	-	-
LL30781	LL3-089	0-1	16.4	-	-	-	-	6.38	-	-	-	-	-
LL30793	LL3-093	0-1	17.1	-	-	-	-	3.90	-	-	-	-	-
LL30842	LL3-113	0-1	15.4	-	-	-	-	7.23	-	-	-	-	-
LL30817	LL3-103	0-1	19.6	23.8	48.6	19.3	8.3	7.04	30	11	-	2.703	Clayey sand with gravel, SC
LL30826	LL3-106	0-1	18.2	-	-	-	-	5.61	-	-	-	-	-
LL30775	LL3-087	0-1	9.8	-	-	-	-	6.83	-	-	-	-	-
LL30772	LL3-086	0-1	8.3	-	-	-	-	7.17	-	-	-	-	-
LL30693	LL3-057	0-1	16.7	-	-	-	-	6.63	-	-	-	-	-
LL30702	LL3-060	0-1	11.4	-	-	-	-	5.99	-	-	-	-	-

TEST DATA SUMMARY (continued)
Phase II Remedial Investigation of Load Lines 2, 3, and 4
Ravenna Army Ammunition Plant (RVAAP)
Ravenna, Ohio
S&ME Project No. 1439-01-417

COC NO.:LL4S&ME-03

Received 8/29/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. Cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL40723	LL4-083	0-1	23.1	0.0	33.7	35.9	30.4	4.71	36	11	-	2.641	Sandy silt, ML
LL40878	LL4-142	Not given	12.9	-	-	-	-	6.85	-	-	-	-	-
LL40720	LL4-082	0-1	17.7	-	-	-	-	7.43	-	-	-	-	-
LL40822	LL4-118	0-1	10.3	0.0	53.9	15.1	31.0	6.91	31	14	-	2.667	Clayey sand, SC
LL40698	LL4-074	0-1	23.2	0.0	16.1	43.5	40.4	6.81	41	14	-	2.635	Silt with sand, ML
LL40982	LL4-080	0-1	15.3	-	-	-	-	7.32	-	-	-	-	-
LL40819	LL4-117	0-1	20.3	-	-	-	-	5.86	-	-	-	-	-
LL40701	LL4-075	0-1	14.6	-	-	-	-	7.56	-	-	-	-	-
LL40707	LL4-077	0-1	16.6	-	-	-	-	7.26	-	-	-	-	-
LL40695	LL4-073	0-1	15.7	-	-	-	-	6.60	-	-	-	-	-
LL40830	LL4-122	0-1	16.2	-	-	-	-	6.22	-	-	-	-	-
LL40692	LL4-072	0-1	25.4	-	-	-	-	6.68	-	-	-	-	-
LL40827	LL4-121	0-1	16.2	-	-	-	-	4.98	-	-	-	-	-
LL40710	LL4-078	0-1	21.8	-	-	-	-	6.86	-	-	-	-	-
LL40717	LL4-081	0-1	19.7	-	-	-	-	7.13	-	-	-	-	-
LL40689	LL4-071	0-1	20.9	-	-	-	-	6.92	-	-	-	-	-
LL40801	LL4-111	0-1	15.8	-	-	-	-	7.01	-	-	-	-	-
LL40790	LL4-106	Not given	18.3	-	-	-	-	5.01	-	-	-	-	-
LL40793	LL4-107	0-1	13.1	-	-	-	-	4.70	-	-	-	-	-
LL40787	LL4-105	0-1	18.1	-	-	-	-	6.44	-	-	-	-	-
LL40798	LL4-110	0-1	42.0	0.0	33.2	32.8	34.0	5.84	28	6	-	2.670	Sandy silty clay, CL-ML

TEST DATA SUMMARY (continued)
Phase II Remedial Investigation of Load Lines 2, 3, and 4
Ravenna Army Ammunition Plant (RVAAP)
Ravenna, Ohio
S&ME Project No. 1439-01-417

COC NO.:LL2S&ME-04

Received 8/30/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. Cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL21066	LL2-220	4-4.5	19.9	3.0	42.0	34.8	20.2	4.84	30	13	-	2.728	Sandy lean clay, CL
LL21065	LL2-220	2-2.5	16.4	2.5	24.9	46.9	25.7	4.32	32	17	-	2.740	Lean clay with sand, CL
LL21064	LL2-220	1-1.5	16.5	4.7	22.2	47.6	25.5	3.91	31	14	-	2.781	Lean clay with sand, CL
LL21074	LL2-223	2.8-3.2	13.1	3.6	15.9	41.7	38.8	5.60	34	16	-	2.689	Lean clay with sand, CL
LL21073	LL2-223	7.3-7.6	14.1	1.8	57.6	35.7	4.9	7.23	20	7	-	2.782	Silty clayey sand, SC-SM
LL21075	LL2-223	9	14.4	7.7	22.2	47.0	23.1	7.29	23	9	-	2.759	Lean clay with sand, CL
LL20977	LL2-175	0-1	23.8	-	-	-	-	6.91	-	-	-	-	-

COC NO.:LL3S&ME-05

Received 8/30/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. Cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL31035	LL3-203	1.8-2.4	23.1	0.4	28.7	60.5	10.4	5.04	22	8	-	2.709	Lean clay with sand, CL
LL31036	LL3-203	3.5	12.9	5.5	25.9	41.6	27.0	5.44	28	11	-	2.819	Sandy lean clay, CL
LL31042	LL3-205	11.4	17.7	2.0	4.9	42.4	50.7	7.30	39	20	-	2.835	Lean clay, CL
LL31043	LL3-205	3.2-4.0	10.3	3.1	15.1	41.2	40.6	7.56	34	16	-	2.853	Lean clay with sand, CL

COC NO.:LL4S&ME-04

Received 8/30/01

Sample I.D.	Station No.	Depth (ft.)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. Cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL40935	LL4-171	3-3.5	13.8	0.0	60.5	36.4	3.1	4.93	NP	NP	-	2.717	Silty sand, SM
LL40936	LL4-171	10	23.4	0.0	72.1	27.9	0.0	4.84	NP	NP	-	2.743	Silty sand, SM
LL40923	LL4-168	2-2.5	27.2	0.2	13.9	42.6	43.3	4.02	44	25	-	2.837	Lean clay, CL
LL40924	LL4-168	7.0	16.2	2.6	15.0	42.8	39.6	7.81	35	16	-	2.750	Lean clay with sand, CL
LL40925	LL4-168	8.5-9	14.8	0.9	57.5	32.4	9.2	7.90	NP	NP	-	2.743	Silty sand, SM
LL40926	LL4-168	11	21.4	1.4	12.0	37.7	48.9	7.77	32	17	-	2.843	Lean clay, CL

TEST DATA

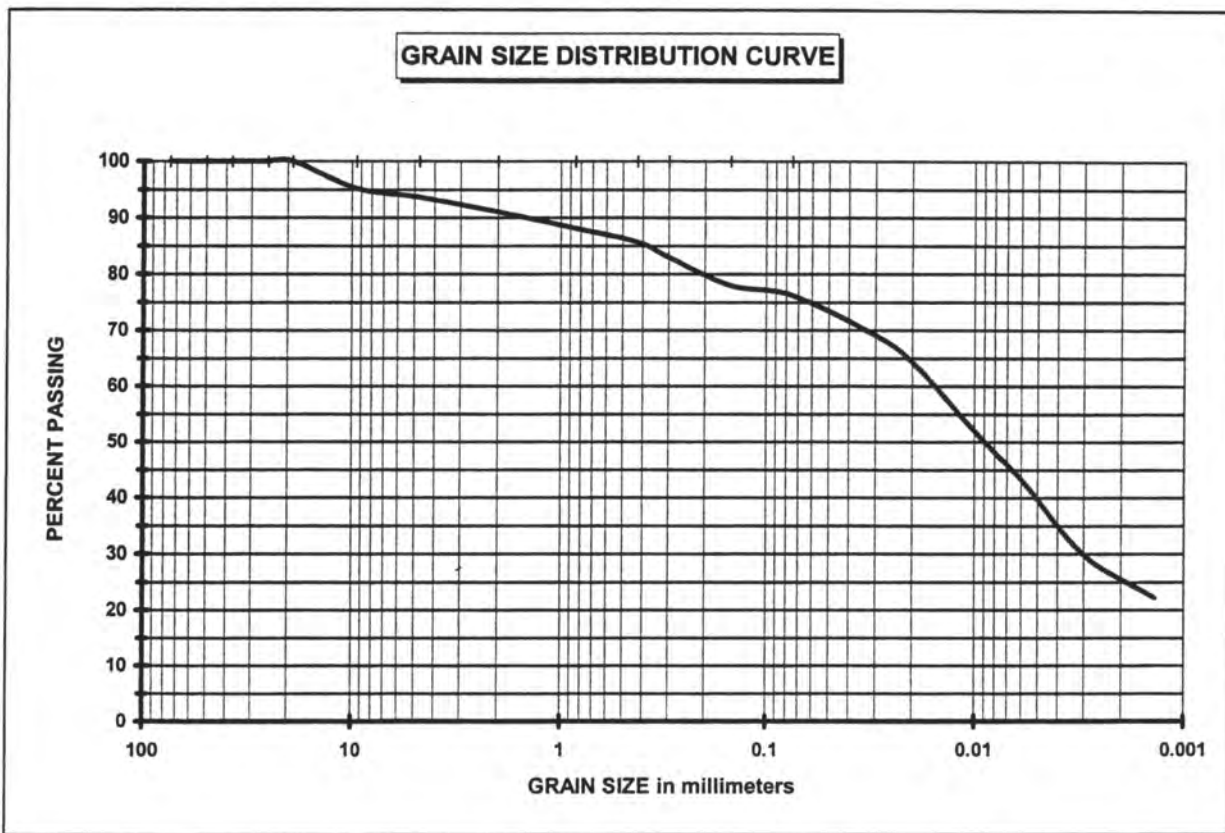
Chain-of-Custody No. LL2S&ME-01
Shipment Received 8/13/01



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/25/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL21131 Depth (ft): _____

Soil Description: Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	6.4
% SAND	17.4
% SILT	36.4
% CLAY	39.8



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21131

Date: 8/25/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 40.14
Wet + tare wt: 79.89
Dry + tare wt: 79.22
Solids wt: 39.08
Moist. wt: 0.67
Percent moisture: 1.71

Init wt, (g): 384.14
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.16
Rep. total wt: 53.99
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	18.42	4.80	95.20	
4	4.75	24.40	6.35	93.65	
10	2	34.40	8.96	91.04	
20	0.85	1.60	2.96	88.08	
40	0.425	2.90	5.37	85.67	
60	0.25	4.38	8.11	82.93	
140	0.106	7.05	13.06	77.99	
200	0.075	7.98	14.78	76.27	

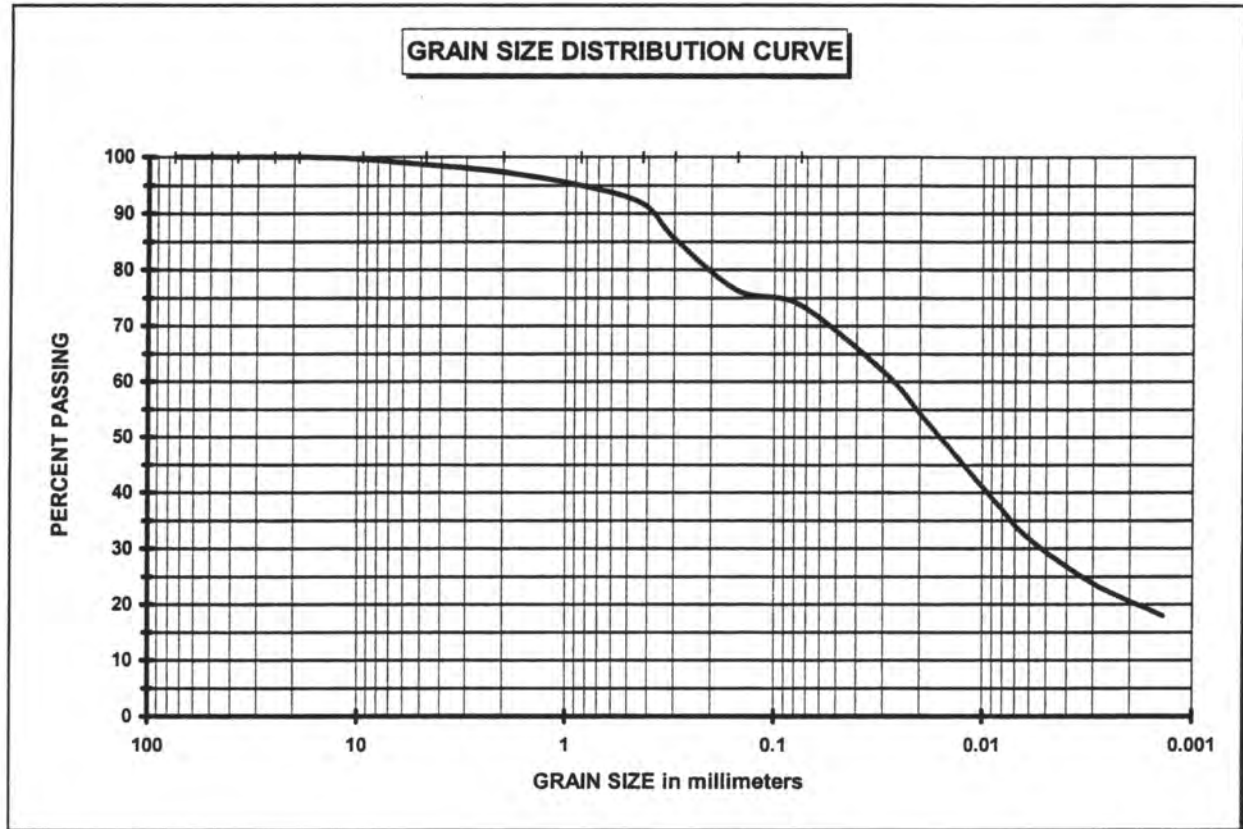
Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	42	5	37	43	9.3	0.01317	0.0284	68.53
5	23	39	5	34	40	9.8	0.01317	0.0184	62.97
15	23	34	5	29	35	10.6	0.01317	0.0111	53.71
30	23	31	5	26	32	11.1	0.01317	0.0080	48.16
60	23	28	5	23	29	11.6	0.01317	0.0058	42.60
250	23	21	5	16	22	12.7	0.01317	0.0030	29.63
1440	23	17	5	12	2	16.0	0.01317	0.0014	22.23

**S&ME****GRAIN SIZE DATA SHEET**

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/25/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL21096 Depth (ft): _____

Soil Description: Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	1.4
% SAND	24.9
% SILT	44.1
% CLAY	29.6



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21096

Date: 8/25/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>37.01</u>
Wet + tare wt:	<u>69.35</u>
Dry + tare wt:	<u>68.63</u>
Solids wt:	<u>31.62</u>
Moist. wt:	<u>0.72</u>
Percent moisture:	<u>2.28</u>

Sample Data:

Init wt, (g):	<u>246.27</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>48.89</u>
Rep. total wt:	<u>50.24</u>
Assumed Sp. Gr.	<u>2.65</u>
Sp. Gr. corr, (a):	<u>1</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.98	0.40	99.60	
4	4.75	3.41	1.38	98.62	
10	2	6.61	2.68	97.32	
20	0.85	1.18	2.35	94.97	
40	0.425	2.82	5.61	91.70	
60	0.25	5.95	11.84	85.47	
140	0.106	10.55	21.00	76.31	
200	0.075	11.85	23.59	73.73	

Hydrometer Analysis

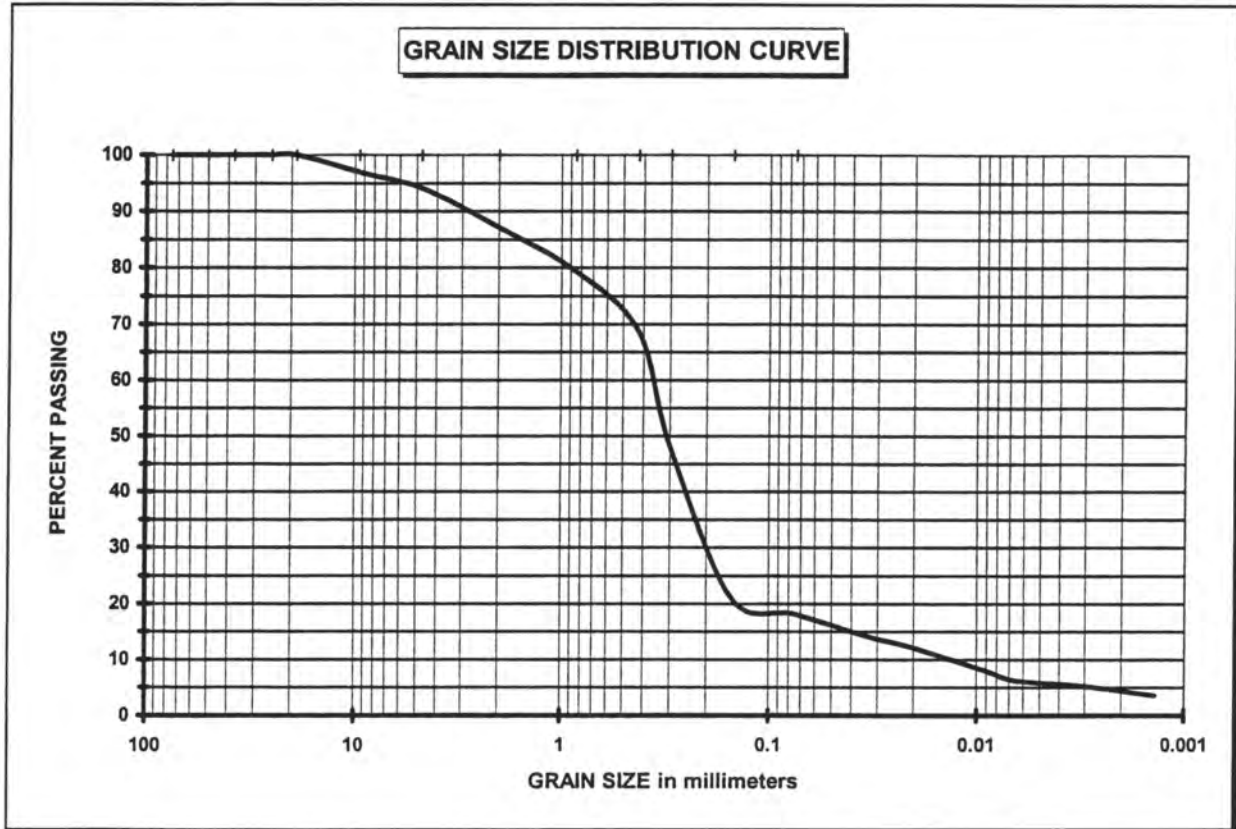
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	36	5	31	37	10.3	0.01317	0.0298	61.71
5	23	32	5	27	33	10.9	0.01317	0.0195	53.75
15	23	27	5	22	28	11.7	0.01317	0.0116	43.79
30	23	24	5	19	25	12.2	0.01317	0.0084	37.82
60	23	21	5	16	22	12.7	0.01317	0.0061	31.85
250	23	17	5	12	18	13.4	0.01317	0.0030	23.89
1440	23	14	5	9	2	16.0	0.01317	0.0014	17.92



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/25/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL21113 Depth (ft): _____

Soil Description: Brown with Black

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	5.9
% SAND	76.0
% SILT	12.2
% CLAY	5.9



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21113

Date: 8/25/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 29.43
Wet + tare wt: 66.37
Dry + tare wt: 65.98
Solids wt: 36.55
Moist. wt: 0.39
Percent moisture: 1.07

Init wt, (g): 238.60
Hydro spec wt, (g): 100.00
Dry hydro wt, (g): 98.94
Rep. total wt: 113.57
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	7.37	3.09	96.91	
4	4.75	14.03	5.88	94.12	
10	2	30.72	12.88	87.12	
20	0.85	8.82	7.77	79.36	
40	0.425	20.82	18.33	68.79	
60	0.25	44.40	39.10	48.03	
140	0.106	75.25	66.26	20.86	
200	0.075	78.33	68.97	18.15	

Hydrometer Analysis

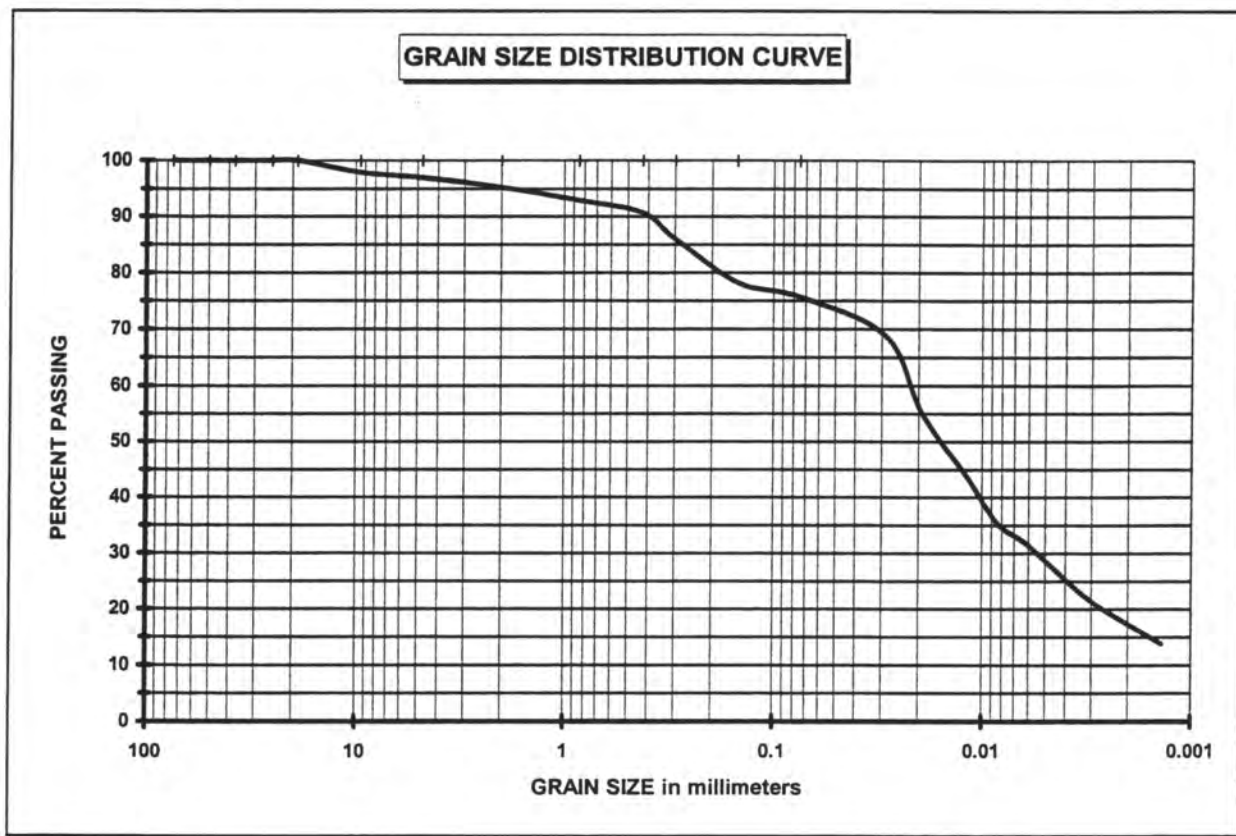
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	21	5	16	22	12.7	0.01317	0.0332	14.09
5	23	19	5	14	20	13.0	0.01317	0.0213	12.33
15	23	16	5	11	17	13.5	0.01317	0.0125	9.69
30	23	14	5	9	15	13.9	0.01317	0.0089	7.92
60	23	12	5	7	13	14.2	0.01317	0.0064	6.16
250	23	11	5	6	12	14.3	0.01317	0.0032	5.28
1440	23	9	5	4	2	16.0	0.01317	0.0014	3.52



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/25/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL21118

Depth (ft): _____

Soil Description: Black

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	3.1
% SAND	21.2
% SILT	47.0
% CLAY	28.7



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21118

Date: 8/25/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 36.78
Wet + tare wt: 66.12
Dry + tare wt: 65.19
Solids wt: 28.41
Moist. wt: 0.93
Percent moisture: 3.27

Init wt, (g): 140.35
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 48.42
Rep. total wt: 50.84
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	2.96	2.11	97.89	
4	4.75	4.31	3.07	96.93	
10	2	6.69	4.77	95.23	
20	0.85	1.17	2.30	92.93	
40	0.425	2.34	4.60	90.63	
60	0.25	4.70	9.24	85.99	
140	0.106	8.62	16.96	78.28	
200	0.075	9.92	19.51	75.72	

Hydrometer Analysis

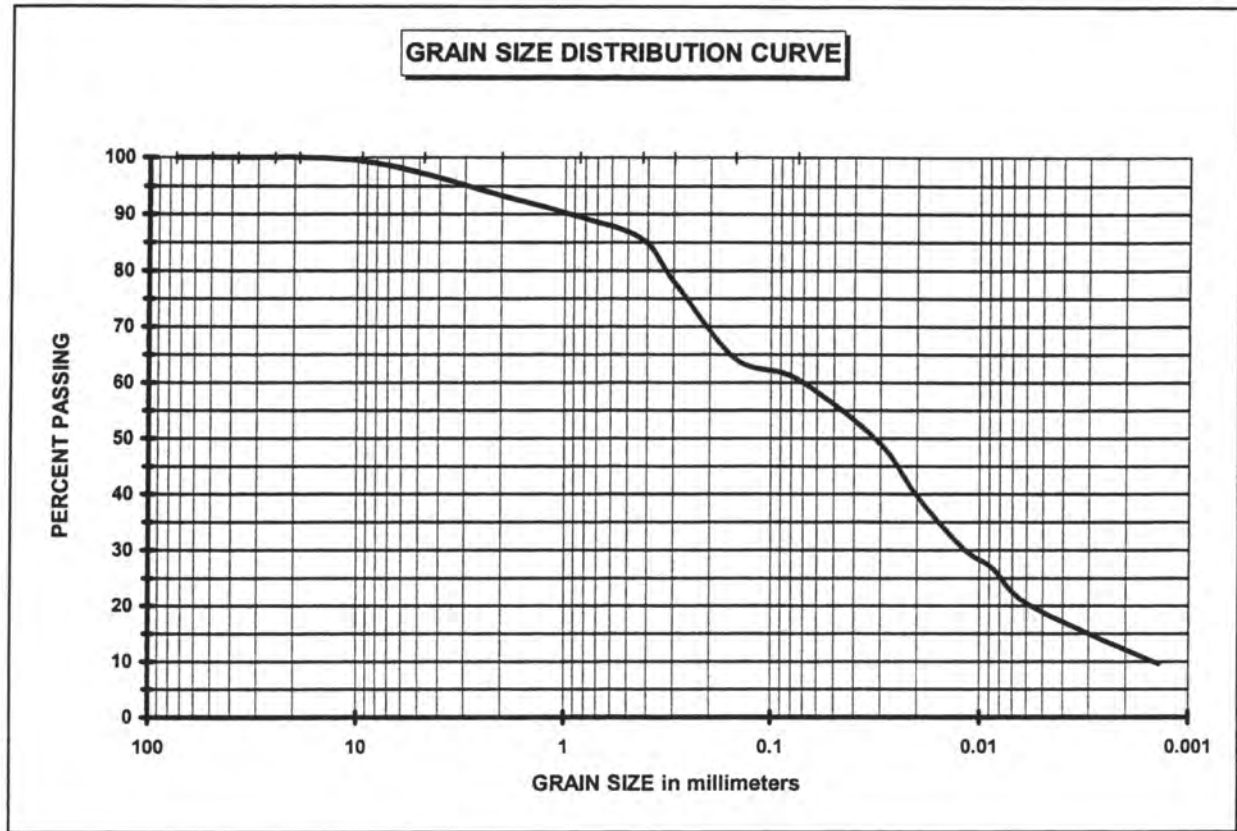
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	40	5	35	41	9.6	0.01317	0.0289	68.85
5	23	33	5	28	34	10.7	0.01317	0.0193	55.08
15	23	27	5	22	28	11.7	0.01317	0.0116	43.27
30	23	23	5	18	24	12.4	0.01317	0.0085	35.41
60	23	21	5	16	22	12.7	0.01317	0.0061	31.47
250	23	16	5	11	17	13.5	0.01317	0.0031	21.64
1440	23	12	5	7	2	16.0	0.01317	0.0014	13.77



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/25/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL21125 Depth (ft): _____

Soil Description: _____ Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	2.8
% SAND	36.6
% SILT	41.5
% CLAY	19.1



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21125

Date: 8/25/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 28.48
Wet + tare wt: 63.94
Dry + tare wt: 63.2
Solids wt: 34.72
Moist. wt: 0.74
Percent moisture: 2.13

Init wt, (g): 199.73
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 48.96
Rep. total wt: 52.49
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	1.23	0.62	99.38	
4	4.75	5.65	2.83	97.17	
10	2	13.44	6.73	93.27	
20	0.85	1.98	3.77	89.50	
40	0.425	4.07	7.75	85.52	
60	0.25	7.98	15.20	78.07	
140	0.106	15.22	29.00	64.27	
200	0.075	17.14	32.65	60.62	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	31	5	26	32	11.1	0.01317	0.0310	49.53
5	23	26	5	21	27	11.9	0.01317	0.0203	40.01
15	23	21	5	16	22	12.7	0.01317	0.0121	30.48
30	23	19	5	14	20	13.0	0.01317	0.0087	26.67
60	23	16	5	11	17	13.5	0.01317	0.0063	20.96
250	23	13	5	8	14	14.0	0.01317	0.0031	15.24
1440	23	10	5	5	2	16.0	0.01317	0.0014	9.53



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21133

Date: 8/25/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 38.29
Wet + tare wt: 74.39
Dry + tare wt: 74.02
Solids wt: 35.73
Moist. wt: 0.37
Percent moisture: 1.04

Init wt, (g): 603.18
Hydro spec wt, (g): 100.00
Dry hydro wt, (g): 98.98
Rep. total wt: 239.92
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	23.21	3.85	96.15	
.75 in	19	37.93	6.29	93.71	
0.375	9.5	129.00	21.39	78.61	
4	4.75	257.84	42.75	57.25	
10	2	354.35	58.75	41.25	
20	0.85	23.54	9.81	31.44	
40	0.425	45.27	18.87	22.38	
60	0.25	63.15	26.32	14.93	
140	0.106	82.24	34.28	6.98	
200	0.075	84.44	35.19	6.06	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	20	5	15	21	12.9	0.01317	0.0334	6.25
5	23	15	5	10	16	13.7	0.01317	0.0218	4.17
15	23	13	5	8	14	14.0	0.01317	0.0127	3.33
30	23	12	5	7	13	14.2	0.01317	0.0091	2.92
60	23	11	5	6	12	14.3	0.01317	0.0064	2.50
250	23	9	5	4	10	14.7	0.01317	0.0032	1.67
1440	23	8	5	3	2	16.0	0.01317	0.0014	1.25

TEST DATA

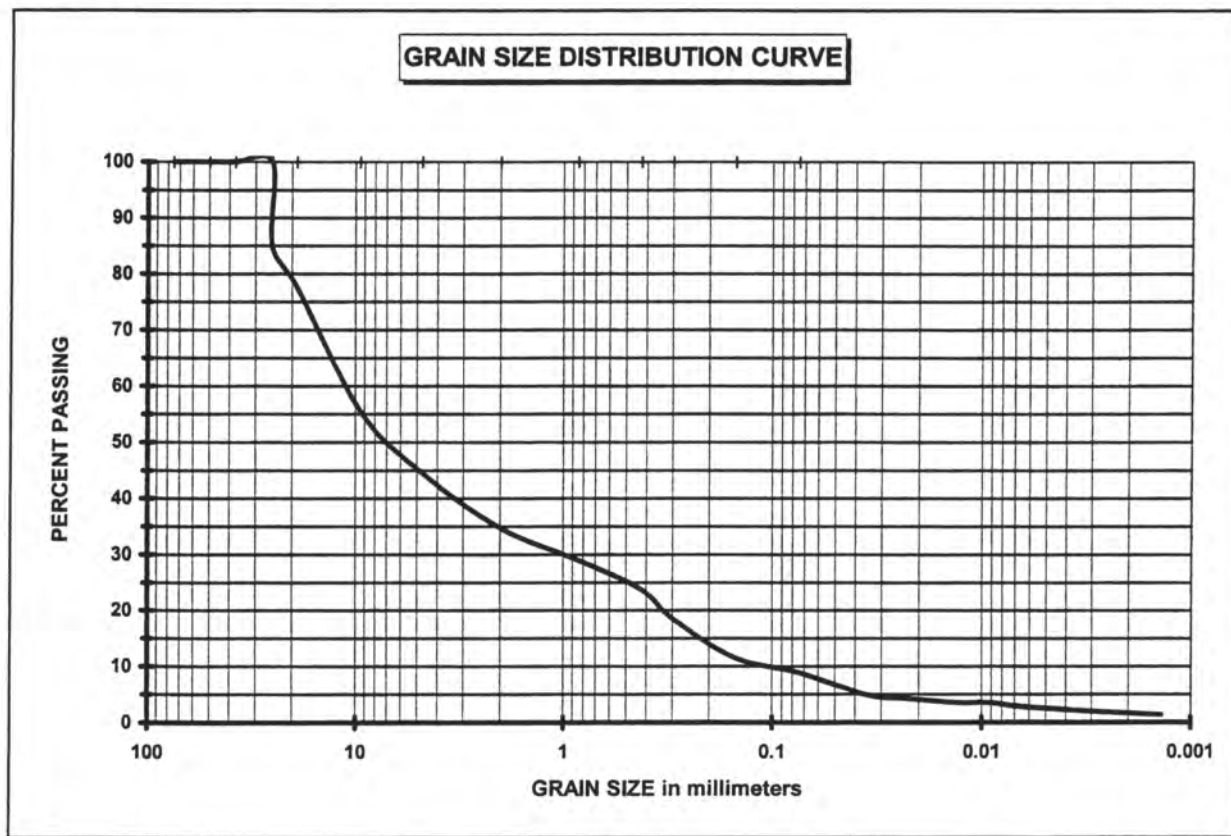
Chain-of-Custody No. LL3S&ME-01
Shipment Received 8/15/01



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/27/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31086 Depth (ft): _____

Soil Description: _____ Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	55.4
% SAND	35.7
% SILT	6.4
% CLAY	2.5



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31086

Date: 8/27/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>37.29</u>
Wet + tare wt:	<u>80.06</u>
Dry + tare wt:	<u>79.71</u>
Solids wt:	<u>42.42</u>
Moist. wt:	<u>0.35</u>
Percent moisture:	<u>0.83</u>

Sample Data:

Init wt, (g):	<u>878.91</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>49.59</u>
Rep. total wt:	<u>142.91</u>
Assumed Sp. Gr.	<u>2.65</u>
Sp. Gr. corr, (a):	<u>1</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	132.56	15.08	84.92	
.75 in	19	196.87	22.40	77.60	
0.375	9.5	389.81	44.35	55.65	
4	4.75	487.09	55.42	44.58	
10	2	573.92	65.30	34.70	
20	0.85	8.17	5.72	28.98	
40	0.425	15.63	10.94	23.76	
60	0.25	23.16	16.21	18.49	
140	0.106	33.23	23.25	11.45	
200	0.075	36.92	25.83	8.87	

Hydrometer Analysis

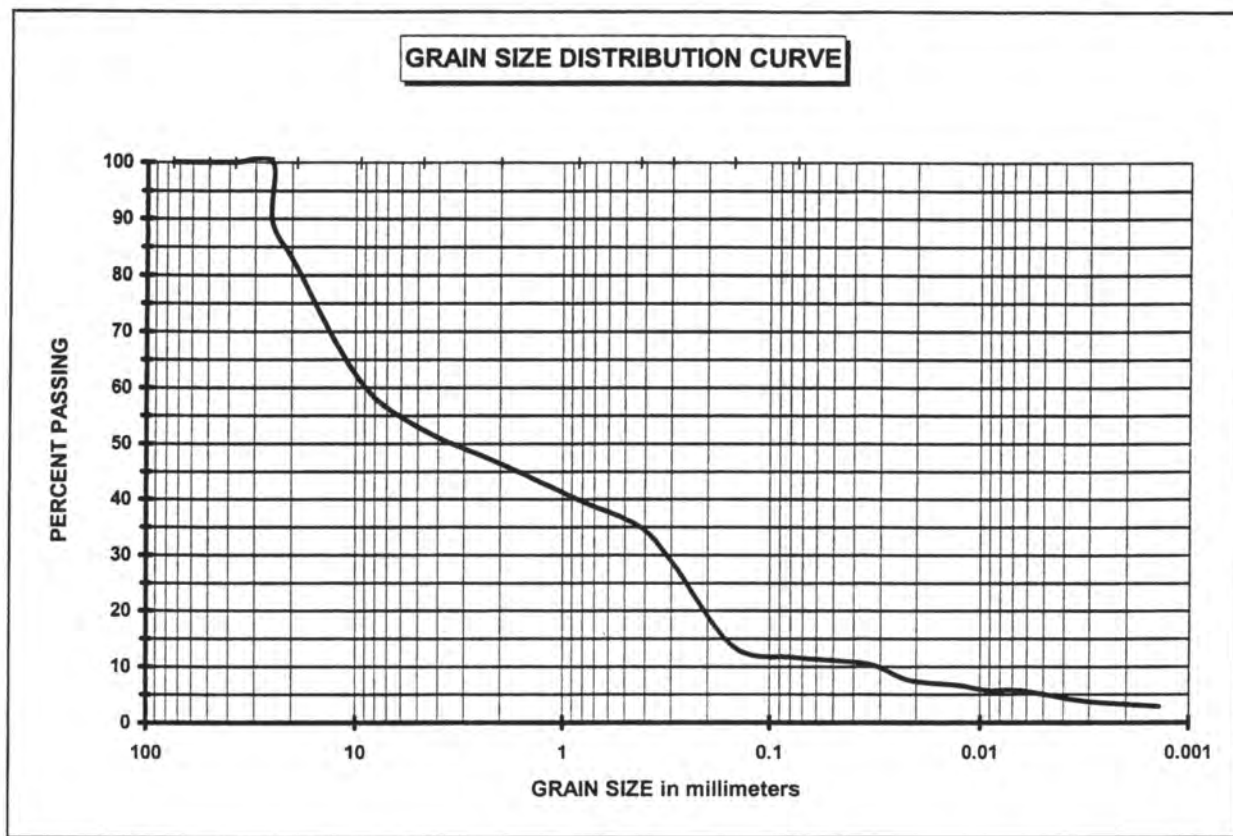
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	12	5	7	13	14.2	0.01317	0.0351	4.90
5	23	11	5	6	12	14.3	0.01317	0.0223	4.20
15	23	10	5	5	11	14.5	0.01317	0.0130	3.50
30	23	10	5	5	11	14.5	0.01317	0.0092	3.50
60	23	9	5	4	10	14.7	0.01317	0.0065	2.80
250	23	8	5	3	9	14.8	0.01317	0.0032	2.10
1440	23	7	5	2	2	16.0	0.01317	0.0014	1.40



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/27/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31068 Depth (ft): _____

Soil Description: _____ Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	47.5
% SAND	40.9
% SILT	6.6
% CLAY	5.0



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31068

Date: 8/27/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt: 37.55
Wet + tare wt: 70.52
Dry + tare wt: 69.75
Solids wt: 32.2
Moist. wt: 0.77
Percent moisture: 2.39

Sample Data:

Init wt, (g): 398.66
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 48.83
Rep. total wt: 105.18
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	42.84	10.75	89.25	
.75 in	19	74.14	18.60	81.40	
0.375	9.5	154.72	38.81	61.19	
4	4.75	189.30	47.48	52.52	
10	2	213.57	53.57	46.43	
20	0.85	6.71	6.38	40.05	
40	0.425	11.95	11.36	35.07	
60	0.25	18.45	17.54	28.89	
140	0.106	34.48	32.78	13.65	
200	0.075	36.62	34.82	11.61	

Hydrometer Analysis

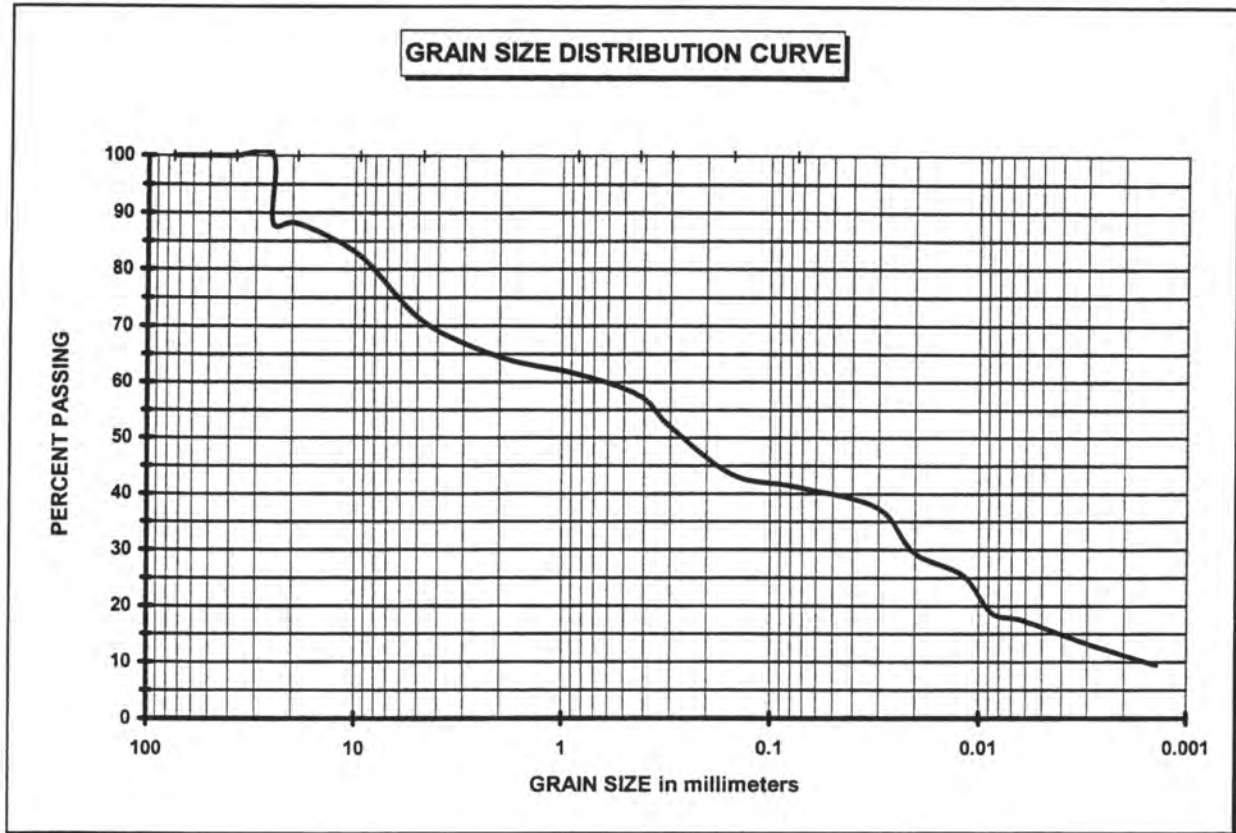
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	16	5	11	17	13.5	0.01317	0.0342	10.46
5	23	13	5	8	14	14.0	0.01317	0.0220	7.61
15	23	12	5	7	13	14.2	0.01317	0.0128	6.66
30	23	11	5	6	12	14.3	0.01317	0.0091	5.70
60	23	11	5	6	12	14.3	0.01317	0.0064	5.70
250	23	9	5	4	10	14.7	0.01317	0.0032	3.80
1440	23	8	5	3	2	16.0	0.01317	0.0014	2.85



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/27/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31077 Depth (ft): _____

Soil Description: _____ **Brown** _____

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	29.1
% SAND	29.6
% SILT	25.1
% CLAY	16.2



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31077

Date: 8/27/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>38.06</u>
Wet + tare wt:	<u>80.09</u>
Dry + tare wt:	<u>78.55</u>
Solids wt:	<u>40.49</u>
Moist. wt:	<u>1.54</u>
Percent moisture:	<u>3.80</u>

Sample Data:

Init wt, (g):	<u>542.44</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>48.17</u>
Rep. total wt:	<u>74.75</u>
Assumed Sp. Gr.	<u>2.65</u>
Sp. Gr. corr, (a):	<u>1</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	64.56	11.90	88.10	
.75 in	19	64.56	11.90	88.10	
0.375	9.5	95.61	17.63	82.37	
4	4.75	158.11	29.15	70.85	
10	2	192.92	35.57	64.43	
20	0.85	2.24	3.00	61.44	
40	0.425	5.15	6.89	57.55	
60	0.25	9.36	12.52	51.91	
140	0.106	15.73	21.04	43.39	
200	0.075	17.34	23.20	41.24	

Hydrometer Analysis

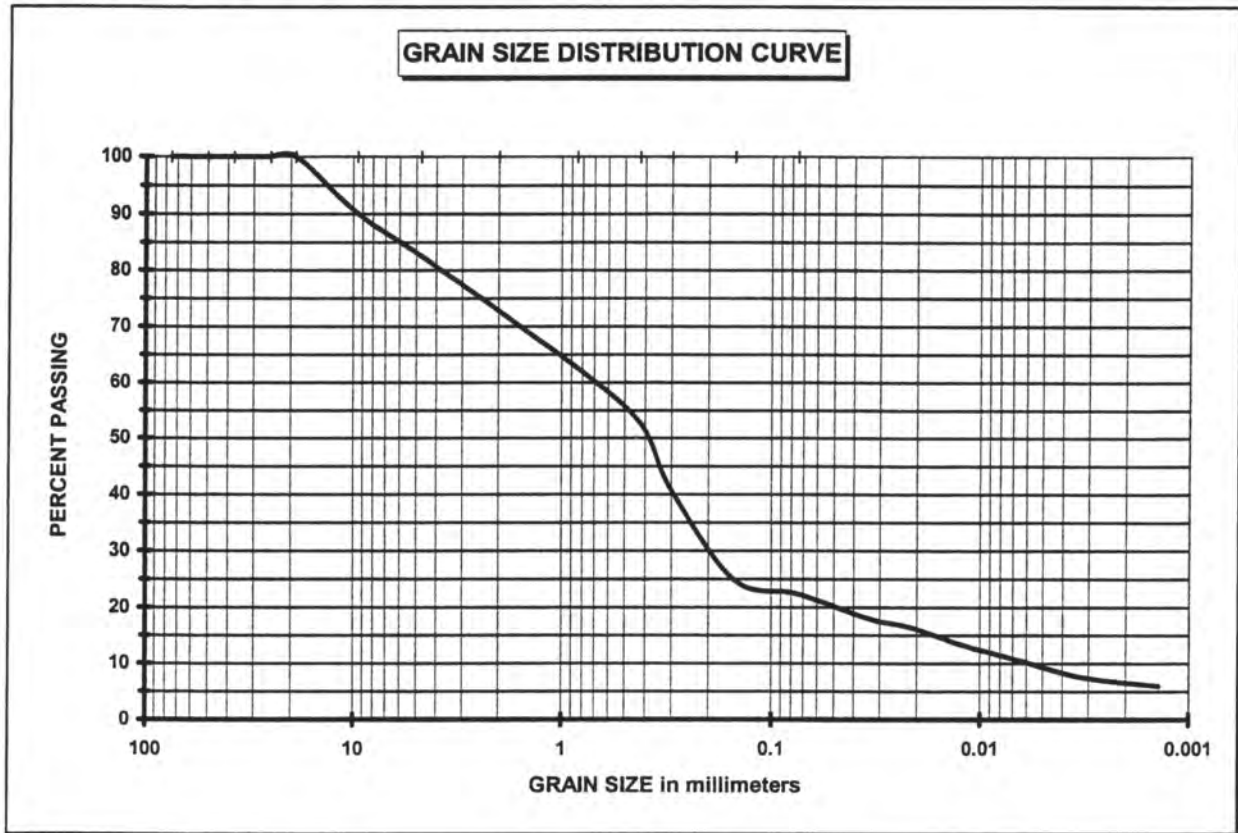
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	33	5	28	34	10.7	0.01317	0.0305	37.46
5	23	27	5	22	28	11.7	0.01317	0.0202	29.43
15	23	24	5	19	25	12.2	0.01317	0.0119	25.42
30	23	19	5	14	20	13.0	0.01317	0.0087	18.73
60	23	18	5	13	19	13.2	0.01317	0.0062	17.39
250	23	15	5	10	16	13.7	0.01317	0.0031	13.38
1440	23	12	5	7	2	16.0	0.01317	0.0014	9.36



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/27/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31082 Depth (ft): _____

Soil Description: _____ **Brown**

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	17.5
% SAND	60.2
% SILT	12.9
% CLAY	9.4



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31082

Date: 8/27/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>38.92</u>
Wet + tare wt:	<u>80.02</u>
Dry + tare wt:	<u>78.81</u>
Solids wt:	<u>39.89</u>
Moist. wt:	<u>1.21</u>
Percent moisture:	<u>3.03</u>

Sample Data:

Init wt, (g):	<u>371.60</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>48.53</u>
Rep. total wt:	<u>66.70</u>
Assumed Sp. Gr.	<u>2.65</u>
Sp. Gr. corr, (a):	<u>1</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	37.00	9.96	90.04	
4	4.75	64.86	17.45	82.55	
10	2	101.23	27.24	72.76	
20	0.85	6.77	10.15	62.61	
40	0.425	13.30	19.94	52.82	
60	0.25	21.37	32.04	40.72	
140	0.106	31.96	47.92	24.84	
200	0.075	33.61	50.39	22.37	

Hydrometer Analysis

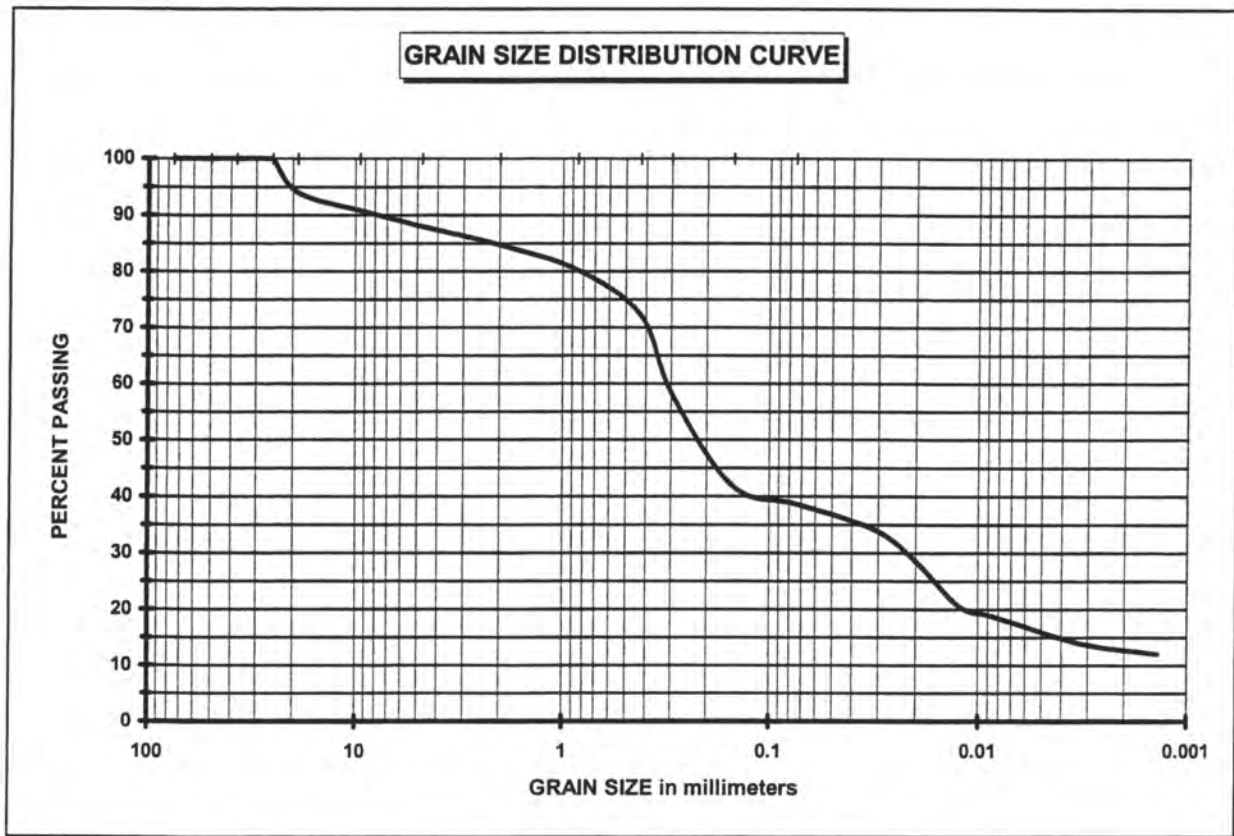
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	17	5	12	18	13.4	0.01317	0.0340	17.99
5	23	16	5	11	17	13.5	0.01317	0.0217	16.49
15	23	14	5	9	15	13.9	0.01317	0.0127	13.49
30	23	13	5	8	14	14.0	0.01317	0.0090	11.99
60	23	12	5	7	13	14.2	0.01317	0.0064	10.50
250	23	10	5	5	11	14.5	0.01317	0.0032	7.50
1440	23	9	5	4	2	16.0	0.01317	0.0014	6.00



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/27/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31071 Depth (ft): _____

Soil Description: _____ Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	12.0
% SAND	49.3
% SILT	22.6
% CLAY	16.1



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31071

Date: 8/27/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>37.29</u>
Wet + tare wt:	<u>82.78</u>
Dry + tare wt:	<u>82.11</u>
Solids wt:	<u>44.82</u>
Moist. wt:	<u>0.67</u>
Percent moisture:	<u>1.49</u>

Sample Data:

Init wt, (g):	<u>316.73</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>49.26</u>
Rep. total wt:	<u>58.16</u>
Assumed Sp. Gr.	<u>2.65</u>
Sp. Gr. corr, (a):	<u>1</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	19.16	6.05	93.95	
0.375	9.5	29.06	9.18	90.82	
4	4.75	38.03	12.01	87.99	
10	2	48.47	15.30	84.70	
20	0.85	2.60	4.47	80.23	
40	0.425	7.28	12.52	72.18	
60	0.25	15.32	26.34	58.36	
140	0.106	24.91	42.83	41.87	
200	0.075	26.74	45.97	38.72	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	25	5	20	26	12.1	0.01317	0.0323	34.39
5	23	22	5	17	23	12.5	0.01317	0.0209	29.23
15	23	17	5	12	18	13.4	0.01317	0.0124	20.63
30	23	16	5	11	17	13.5	0.01317	0.0088	18.91
60	23	15	5	10	16	13.7	0.01317	0.0063	17.19
250	23	13	5	8	14	14.0	0.01317	0.0031	13.75
1440	23	12	5	7	2	16.0	0.01317	0.0014	12.03

TEST DATA

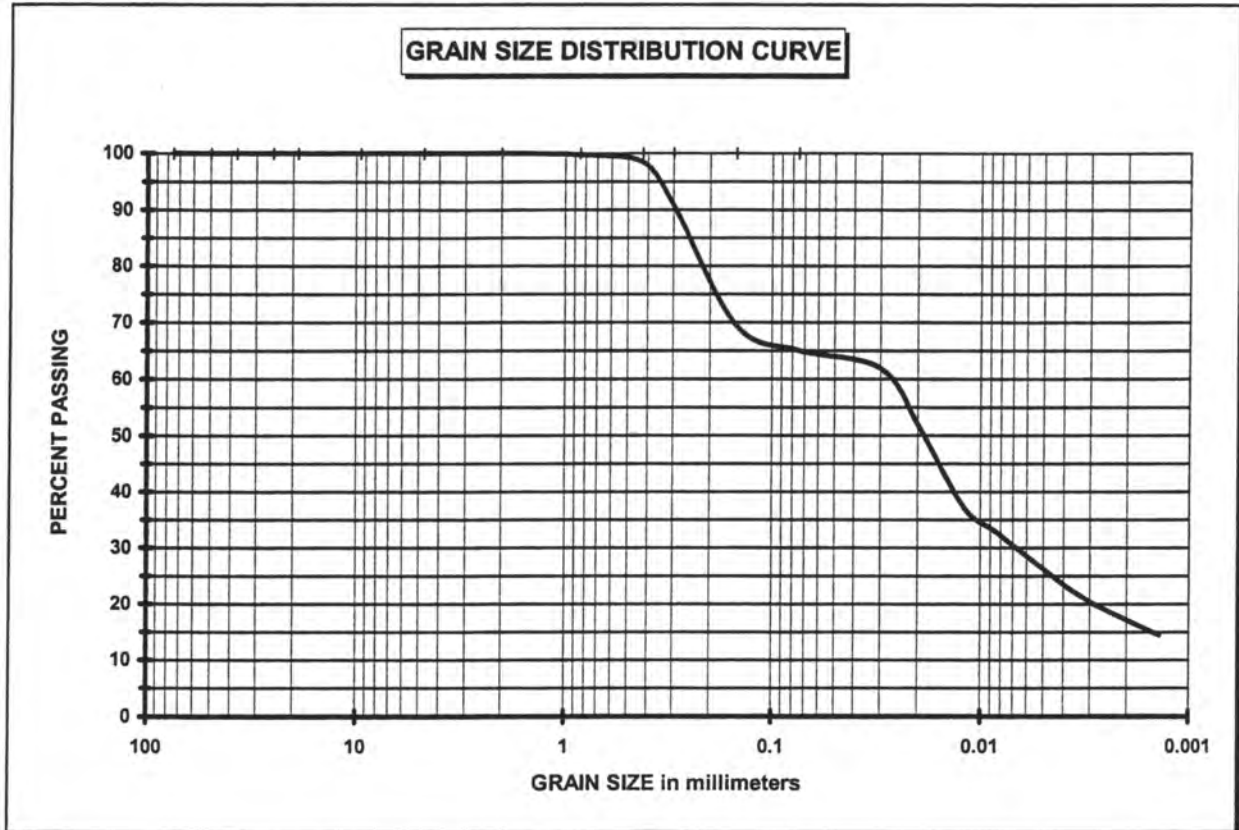
Chain-of-Custody No. LL3S&ME-02
Shipment Received 8/15/01



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/27/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31073 Depth (ft): _____

Soil Description: Brown & Gray

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	0.0
% SAND	35.0
% SILT	38.6
% CLAY	26.4



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31073

Date: 8/27/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>36.84</u>
Wet + tare wt:	<u>78.27</u>
Dry + tare wt:	<u>77.02</u>
Solids wt:	<u>40.18</u>
Moist. wt:	<u>1.25</u>
Percent moisture:	<u>3.11</u>

Sample Data:

Init wt, (g):	<u>237.07</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>48.49</u>
Rep. total wt:	<u>48.49</u>
Assumed Sp. Gr.	<u>2.65</u>
Sp. Gr. corr, (a):	<u>1</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.00	0.00	100.00	
10	2	0.00	0.00	100.00	
20	0.85	0.15	0.31	99.69	
40	0.425	0.79	1.63	98.37	
60	0.25	4.45	9.18	90.82	
140	0.106	14.81	30.54	69.46	
200	0.075	16.96	34.98	65.02	

Hydrometer Analysis

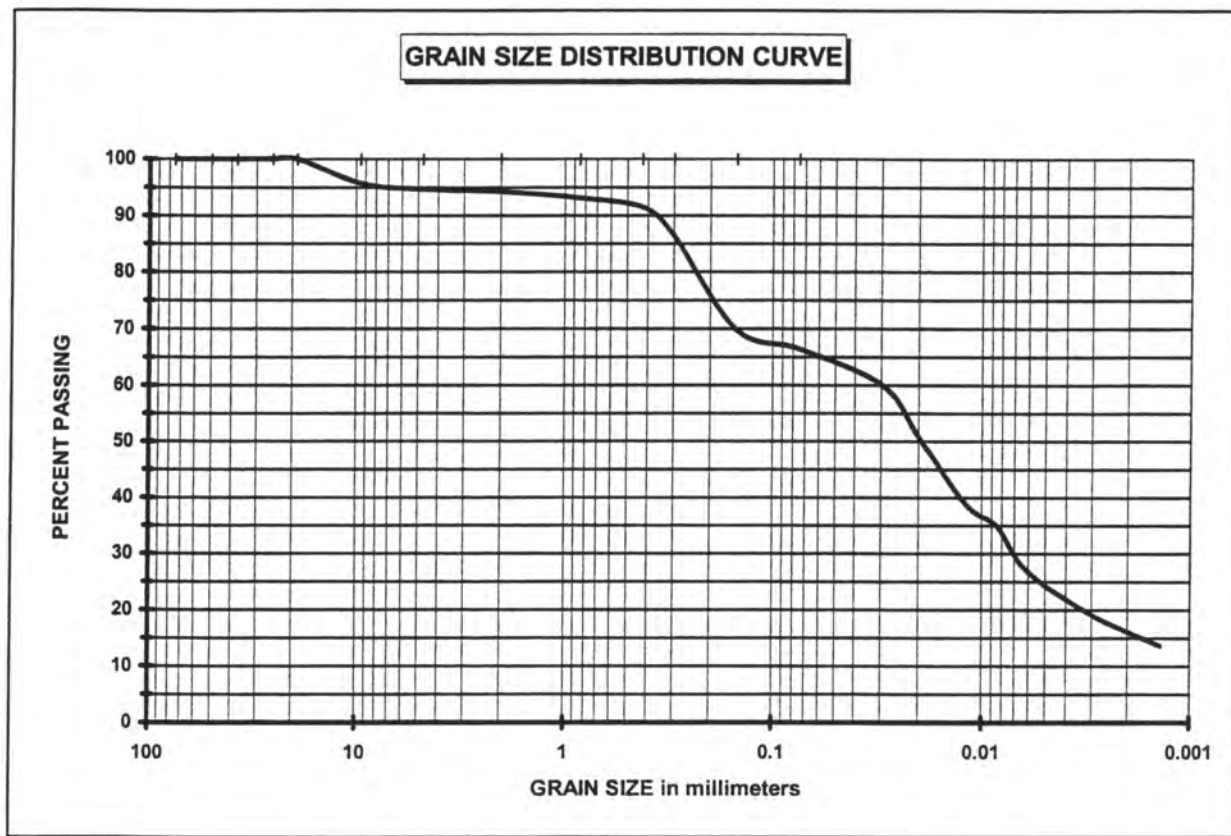
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	35	5	30	36	10.4	0.01317	0.0301	61.87
5	23	30	5	25	31	11.2	0.01317	0.0197	51.56
15	23	23	5	18	24	12.4	0.01317	0.0120	37.12
30	23	21	5	16	22	12.7	0.01317	0.0086	33.00
60	23	19	5	14	20	13.0	0.01317	0.0061	28.87
250	23	15	5	10	16	13.7	0.01317	0.0031	20.62
1440	23	12	5	7	2	16.0	0.01317	0.0014	14.44



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/27/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31084 Depth (ft): _____

Soil Description: _____ Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	5.4
% SAND	28.2
% SILT	41.6
% CLAY	24.8



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31084

Date: 8/27/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 38.67
Wet + tare wt: 79.81
Dry + tare wt: 78.74
Solids wt: 40.07
Moist. wt: 1.07
Percent moisture: 2.67

Init wt, (g): 261.87
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 48.70
Rep. total wt: 51.66
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	11.13	4.25	95.75	
4	4.75	14.02	5.35	94.65	
10	2	15.01	5.73	94.27	
20	0.85	0.60	1.16	93.11	
40	0.425	1.43	2.77	91.50	
60	0.25	4.09	7.92	86.35	
140	0.106	12.65	24.49	69.78	
200	0.075	14.38	27.84	66.43	

Hydrometer Analysis

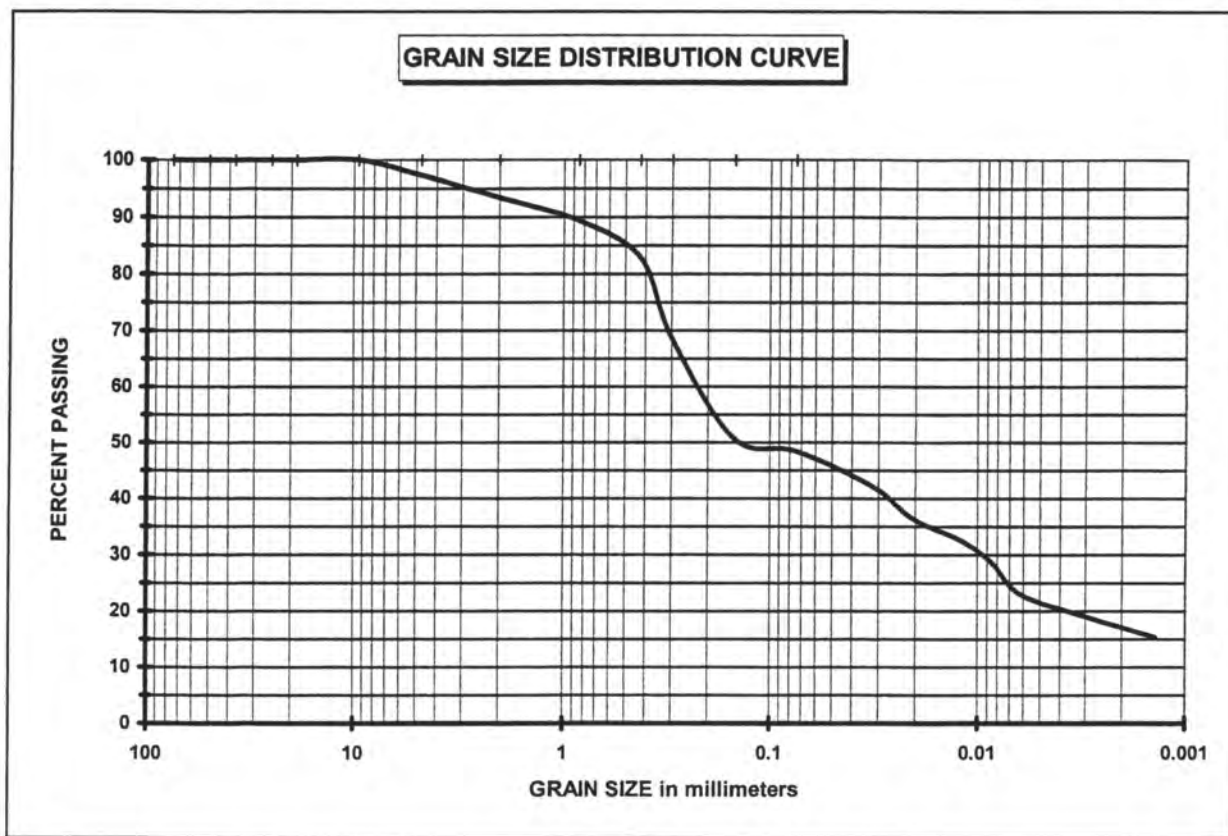
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	36	5	31	37	10.3	0.01317	0.0298	60.01
5	23	31	5	26	32	11.1	0.01317	0.0196	50.33
15	23	25	5	20	26	12.1	0.01317	0.0118	38.71
30	23	23	5	18	24	12.4	0.01317	0.0085	34.84
60	23	19	5	14	20	13.0	0.01317	0.0061	27.10
250	23	15	5	10	16	13.7	0.01317	0.0031	19.36
1440	23	12	5	7	2	16.0	0.01317	0.0014	13.55



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/27/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31079

Depth (ft): _____

Soil Description: _____

Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	2.7
% SAND	48.9
% SILT	26.6
% CLAY	21.8



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31079

Date: 8/27/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 39.13
Wet + tare wt: 82.61
Dry + tare wt: 81.54
Solids wt: 42.41
Moist. wt: 1.07
Percent moisture: 2.52

Init wt, (g): 355.19
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 48.77
Rep. total wt: 52.22
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	9.55	2.69	97.31	
10	2	23.48	6.61	93.39	
20	0.85	2.10	4.02	89.37	
40	0.425	5.49	10.51	82.88	
60	0.25	12.91	24.72	68.67	
140	0.106	22.30	42.70	50.69	
200	0.075	23.48	44.96	48.43	

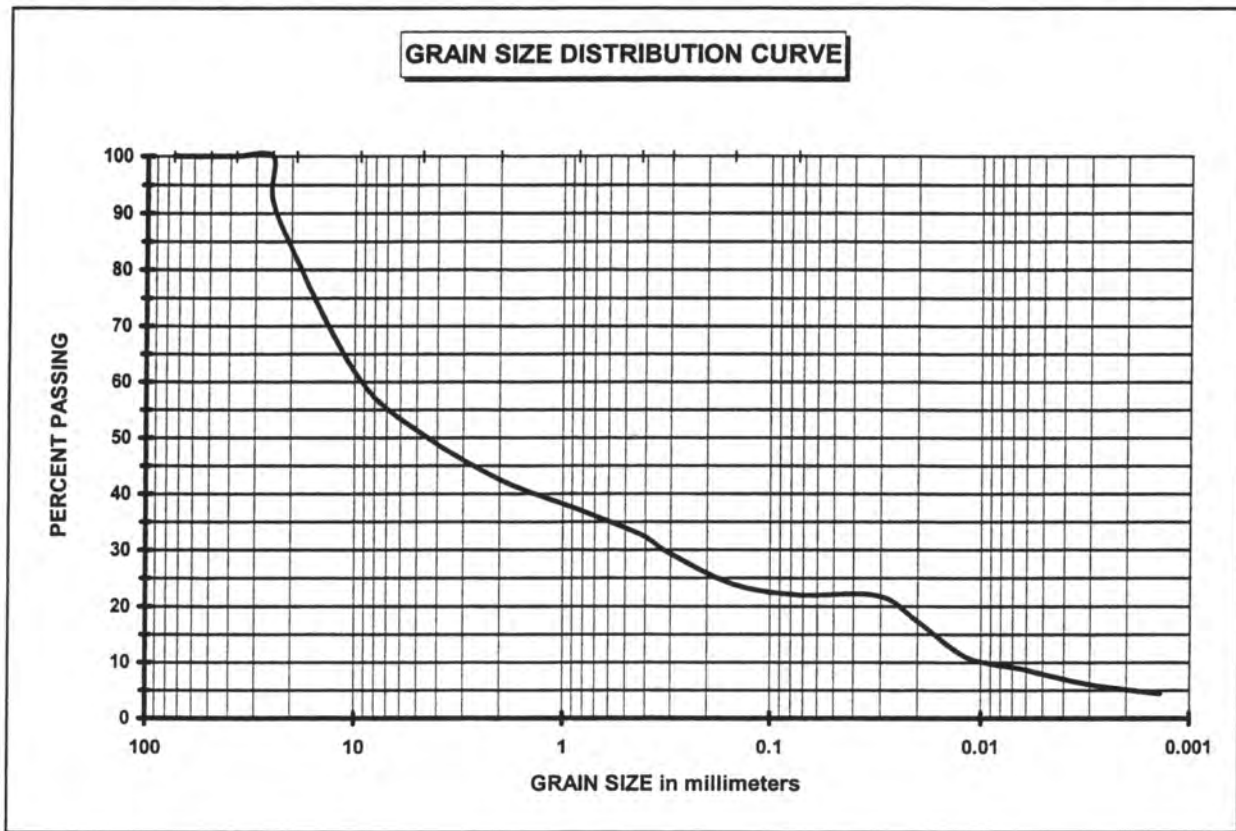
Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	27	5	22	28	11.7	0.01317	0.0319	42.13
5	23	24	5	19	25	12.2	0.01317	0.0206	36.38
15	23	22	5	17	23	12.5	0.01317	0.0120	32.55
30	23	20	5	15	21	12.9	0.01317	0.0086	28.72
60	23	17	5	12	18	13.4	0.01317	0.0062	22.98
250	23	15	5	10	16	13.7	0.01317	0.0031	19.15
1440	23	13	5	8	2	16.0	0.01317	0.0014	15.32

**S&ME****GRAIN SIZE DATA SHEET**

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/27/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31069 Depth (ft): _____

Soil Description: _____ Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	49.3
% SAND	28.6
% SILT	14.2
% CLAY	7.9



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31069

Date: 8/27/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>38.72</u>
Wet + tare wt:	<u>71.41</u>
Dry + tare wt:	<u>70.47</u>
Solids wt:	<u>31.75</u>
Moist. wt:	<u>0.94</u>
Percent moisture:	<u>2.96</u>

Sample Data:

Init wt, (g):	<u>402.21</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>48.56</u>
Rep. total wt:	<u>114.12</u>
Assumed Sp. Gr.	<u>2.65</u>
Sp. Gr. corr, (a):	<u>1</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	30.97	7.70	92.30	
.75 in	19	72.40	18.00	82.00	
0.375	9.5	158.84	39.49	60.51	
4	4.75	198.24	49.29	50.71	
10	2	231.06	57.45	42.55	
20	0.85	6.05	5.30	37.25	
40	0.425	11.15	9.77	32.78	
60	0.25	15.17	13.29	29.26	
140	0.106	21.24	18.61	23.94	
200	0.075	23.38	20.49	22.07	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	30	5	25	31	11.2	0.01317	0.0312	21.91
5	23	25	5	20	26	12.1	0.01317	0.0204	17.52
15	23	18	5	13	19	13.2	0.01317	0.0124	11.39
30	23	16	5	11	17	13.5	0.01317	0.0088	9.64
60	23	15	5	10	16	13.7	0.01317	0.0063	8.76
250	23	12	5	7	13	14.2	0.01317	0.0031	6.13
1440	23	10	5	5	2	16.0	0.01317	0.0014	4.38

TEST DATA

Chain-of-Custody No. LL2S&ME-02
Shipment Received 8/22/01



Job No: 1439-01-417

Name: **SAIC - Ravenna Load Line 2 Phase II**

Operator: DB Date: 9/6/01

S&ME, Inc., 1413 Topside Road, Louisville, Tennessee 37777, (865) 970-0003, Fax (865) 970-2312



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21160

Date: 9/11/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>37.89</u>
Wet + tare wt:	<u>73.78</u>
Dry + tare wt:	<u>73.09</u>
Solids wt:	<u>35.2</u>
Moist. wt:	<u>0.69</u>
Percent moisture:	<u>1.96</u>

Sample Data:

Init wt, (g):	<u>305.58</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>49.04</u>
Rep. total wt:	<u>50.77</u>
Sp. Gr:	<u>2.715</u>
Sp. Gr. corr, (a):	<u>0.98</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	1.49	0.49	99.51	
4	4.75	5.31	1.74	98.26	
10	2	10.44	3.42	96.58	
20	0.85	1.11	2.19	94.40	
40	0.425	2.12	4.18	92.41	
60	0.25	3.68	7.25	89.34	
140	0.106	6.36	12.53	84.06	
200	0.075	7.10	13.98	82.60	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	43	5	38	44	9.1	0.01297	0.0277	73.35
5	23	38	5	33	39	9.9	0.01297	0.0183	63.69
15	23	33	5	28	34	10.7	0.01297	0.0110	54.04
30	23	31	5	26	32	11.1	0.01297	0.0079	50.18
60	23	28	5	23	29	11.6	0.01297	0.0057	44.39
250	23	23	5	18	24	12.4	0.01297	0.0029	34.74
1440	23	19	5	14	2	16.0	0.01297	0.0014	27.02



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21163

Date: 9/11/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 37.62
Wet + tare wt: 76.06
Dry + tare wt: 75.84
Solids wt: 38.22
Moist. wt: 0.22
Percent moisture: 0.58

Init wt, (g): 274.95
Hydro spec wt, (g): 100.00
Dry hydro wt, (g): 99.43
Rep. total wt: 135.89
Sp. Gr: 2.731
Sp. Gr. corr, (a): 0.98

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	17.41	6.33	93.67	
0.375	9.5	40.33	14.67	85.33	
4	4.75	55.70	20.26	79.74	
10	2	73.77	26.83	73.17	
20	0.85	6.02	4.43	68.74	
40	0.425	12.66	9.32	63.85	
60	0.25	23.51	17.30	55.87	
140	0.106	49.93	36.74	36.43	
200	0.075	56.19	41.35	31.82	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	32	5	27	33	10.9	0.01279	0.0299	19.47
5	23	27	5	22	28	11.7	0.01279	0.0196	15.87
15	23	20	5	15	21	12.9	0.01279	0.0118	10.82
30	23	18	5	13	19	13.2	0.01279	0.0085	9.38
60	23	15	5	10	16	13.7	0.01279	0.0061	7.21
250	23	12	5	7	13	14.2	0.01279	0.0030	5.05
1440	23	9	5	4	2	16.0	0.01279	0.0013	2.88



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL21163

Date: 9/12/01

Flask No.	23
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	177.07
Wt. of Flask + Dry Soil, (g)	267.53
Wt. of Dry Soil, (g)	90.46
Wt. of Flask + Water, (g)	674.79
Wt. of Flask, Soil, & Water, (g)	732.15
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.731



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

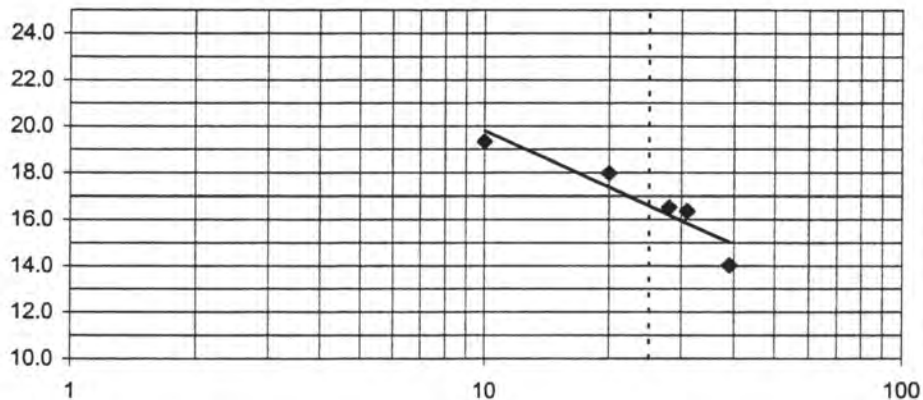
Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21163

Date: 09/13/01

LIQUID LIMIT DETERMINATION					
Tare No.	60	401	10	18	61
Soil & Tare Wet Wt.	16.77	16.89	15.78	14.32	13.49
Soil & Tare Dry Wt.	14.67	14.90	14.10	12.88	12.29
Tare Wt.	3.81	3.83	3.93	4.08	3.73
Moisture Content; %	19.3	18.0	16.5	16.4	14.0
No. of Blows; N	10	20	28	31	39



PLASTIC LIMIT DETERMINATION					
Tare No.	114		5		50
Soil & Tare Wet Wt.	17.75		16.88		14.10
Soil & Tare Dry Wt.	16.39		15.61		13.09
Tare Wt.	4.17		4.04		3.85
Moisture Content; %	11.1		11.0		10.9
<div> LL= 17 PL = 11 PI = 6 </div>					



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21160

Date: 9/11/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Sample Data:

Tare wt: 37.89
Wet + tare wt: 73.78
Dry + tare wt: 73.09
Solids wt: 35.2
Moist. wt: 0.69
Percent moisture: 1.96

Init wt, (g): 305.58
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.04
Rep. total wt: 50.77
Sp. Gr: 2.715
Sp. Gr. corr, (a): 0.98

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	1.49	0.49	99.51	
4	4.75	5.31	1.74	98.26	
10	2	10.44	3.42	96.58	
20	0.85	1.11	2.19	94.40	
40	0.425	2.12	4.18	92.41	
60	0.25	3.68	7.25	89.34	
140	0.106	6.36	12.53	84.06	
200	0.075	7.10	13.98	82.60	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	43	5	38	44	9.1	0.01297	0.0277	73.35
5	23	38	5	33	39	9.9	0.01297	0.0183	63.69
15	23	33	5	28	34	10.7	0.01297	0.0110	54.04
30	23	31	5	26	32	11.1	0.01297	0.0079	50.18
60	23	28	5	23	29	11.6	0.01297	0.0057	44.39
250	23	23	5	18	24	12.4	0.01297	0.0029	34.74
1440	23	19	5	14	2	16.0	0.01297	0.0014	27.02



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL21160

Date: 9/12/01

Flask No.	24
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	173.58
Wt. of Flask + Dry Soil, (g)	266.66
Wt. of Dry Soil, (g)	93.08
Wt. of Flask + Water, (g)	671.42
Wt. of Flask, Soil, & Water, (g)	730.24
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.715



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 2 Phase II

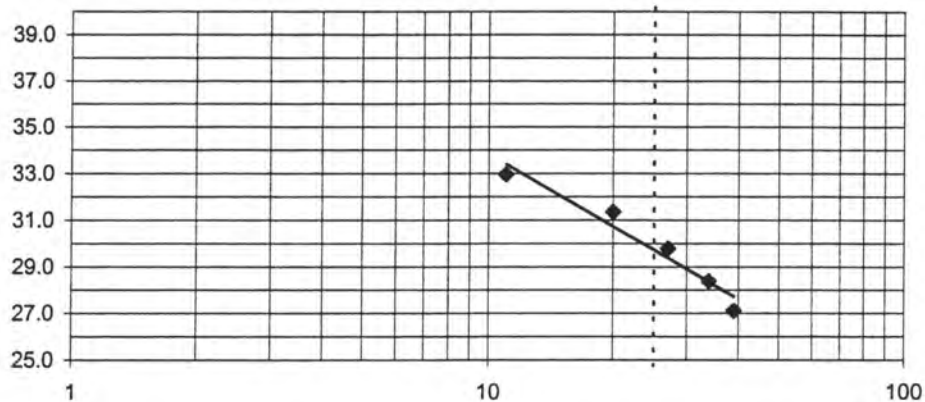
Operator: DB

Sample No: LL21160

Date: 09/13/01

LIQUID LIMIT DETERMINATION

Tare No.	m	14	26	35	15
Soil & Tare Wet Wt.	19.52	18.25	16.90	17.61	19.36
Soil & Tare Dry Wt.	15.68	14.88	13.91	14.59	16.10
Tare Wt.	4.03	4.13	3.87	3.95	4.08
Moisture Content; %	33.0	31.4	29.8	28.4	27.1
No. of Blows; N	11	20	27	34	39



PLASTIC LIMIT DETERMINATION

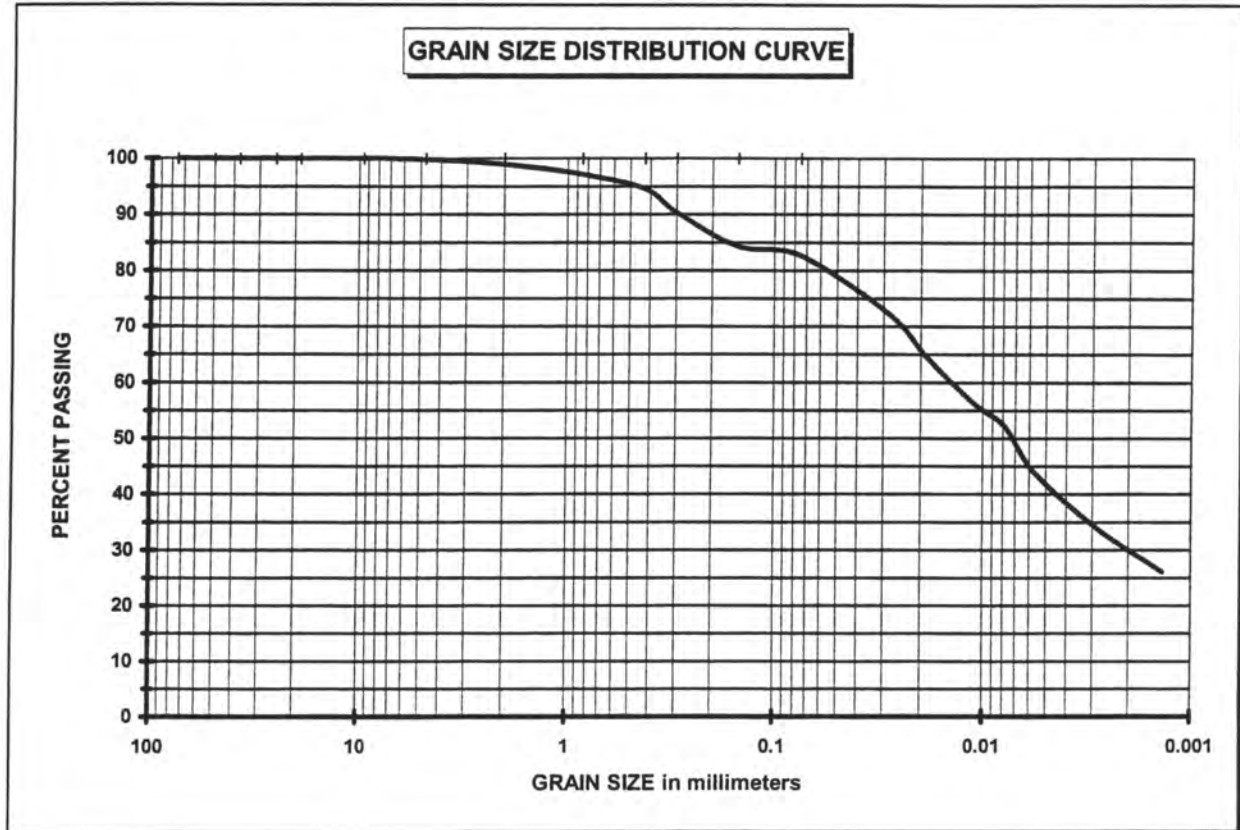
Tare No.	20		Z		D
Soil & Tare Wet Wt.	17.67		17.75		14.82
Soil & Tare Dry Wt.	15.74		15.85		13.33
Tare Wt.	3.98		4.08		4.02
Moisture Content; %	16.4		16.1		16.0
<div> <div>LL=</div> <div>30</div> <div>PL =</div> <div>16</div> <div>PI =</div> <div>14</div> </div>					



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/11/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL21162 Depth (ft): _____

Soil Description: Lean Clay with Sand, Brown with Gray

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	32
PLASTIC LIMIT	19
PLASTICITY INDEX	13
USC	CL

GRAIN SIZE DATA	
% GRAVEL	0.2
% SAND	17.1
% SILT	40.6
% CLAY	42.1



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21162

Date: 9/11/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>39.24</u>
Wet + tare wt:	<u>69.93</u>
Dry + tare wt:	<u>69.22</u>
Solids wt:	<u>29.98</u>
Moist. wt:	<u>0.71</u>
Percent moisture:	<u>2.37</u>

Sample Data:

Init wt, (g):	<u>230.45</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>48.84</u>
Rep. total wt:	<u>49.38</u>
Sp. Gr:	<u>2.714</u>
Sp. Gr. corr, (a):	<u>0.99</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.55	0.24	99.76	
10	2	2.50	1.08	98.92	
20	0.85	0.88	1.78	97.13	
40	0.425	2.17	4.39	94.52	
60	0.25	4.25	8.61	90.31	
140	0.106	7.22	14.62	84.29	
200	0.075	8.02	16.24	82.67	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	41	5	36	42	9.4	0.01297	0.0282	72.18
5	23	37	5	32	38	10.1	0.01297	0.0184	64.16
15	23	33	5	28	34	10.7	0.01297	0.0110	56.14
30	23	31	5	26	32	11.1	0.01297	0.0079	52.13
60	23	27	5	22	28	11.7	0.01297	0.0057	44.11
250	23	22	5	17	23	12.5	0.01297	0.0029	34.08
1440	23	18	5	13	2	16.0	0.01297	0.0014	26.06



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL21162

Date: 9/12/01

Flask No.	26
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	178.69
Wt. of Flask + Dry Soil, (g)	263.21
Wt. of Dry Soil, (g)	84.52
Wt. of Flask + Water, (g)	676.53
Wt. of Flask, Soil, & Water, (g)	729.93
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.714



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 2 Phase II

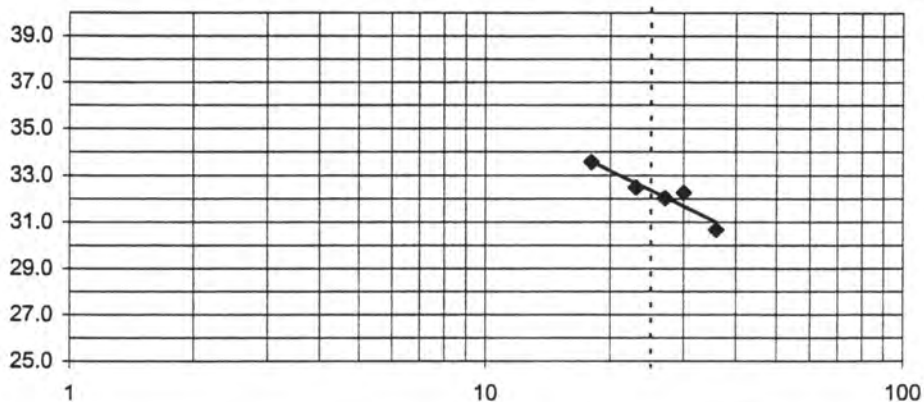
Operator: DB

Sample No: LL21162

Date: 09/13/01

LIQUID LIMIT DETERMINATION

Tare No.	19	6	Q	L	311
Soil & Tare Wet Wt.	16.92	18.14	17.03	17.74	18.22
Soil & Tare Dry Wt.	13.65	14.68	13.91	14.42	14.89
Tare Wt.	3.91	4.03	4.17	4.13	4.03
Moisture Content; %	33.6	32.5	32.0	32.3	30.7
No. of Blows; N	18	23	27	30	36



PLASTIC LIMIT DETERMINATION

Tare No.	1b		10		b1
Soil & Tare Wet Wt.	16.99		18.62		21.37
Soil & Tare Dry Wt.	14.97		16.32		18.63
Tare Wt.	4.10		4.02		3.81
Moisture Content; %	18.6		18.7		18.5

LL= 32

PL = 19

PI = 13



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21163

Date: 9/11/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>37.62</u>
Wet + tare wt:	<u>76.06</u>
Dry + tare wt:	<u>75.84</u>
Solids wt:	<u>38.22</u>
Moist. wt:	<u>0.22</u>
Percent moisture:	<u>0.58</u>

Sample Data:

Init wt, (g):	<u>274.95</u>
Hydro spec wt, (g):	<u>100.00</u>
Dry hydro wt, (g):	<u>99.43</u>
Rep. total wt:	<u>135.89</u>
Sp. Gr:	<u>2.731</u>
Sp. Gr. corr, (a):	<u>0.98</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	17.41	6.33	93.67	
0.375	9.5	40.33	14.67	85.33	
4	4.75	55.70	20.26	79.74	
10	2	73.77	26.83	73.17	
20	0.85	6.02	4.43	68.74	
40	0.425	12.66	9.32	63.85	
60	0.25	23.51	17.30	55.87	
140	0.106	49.93	36.74	36.43	
200	0.075	56.19	41.35	31.82	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	32	5	27	33	10.9	0.01279	0.0299	19.47
5	23	27	5	22	28	11.7	0.01279	0.0196	15.87
15	23	20	5	15	21	12.9	0.01279	0.0118	10.82
30	23	18	5	13	19	13.2	0.01279	0.0085	9.38
60	23	15	5	10	16	13.7	0.01279	0.0061	7.21
250	23	12	5	7	13	14.2	0.01279	0.0030	5.05
1440	23	9	5	4	2	16.0	0.01279	0.0013	2.88



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL21163

Date: 9/12/01

Flask No.	23
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	177.07
Wt. of Flask + Dry Soil, (g)	267.53
Wt. of Dry Soil, (g)	90.46
Wt. of Flask + Water, (g)	674.79
Wt. of Flask, Soil, & Water, (g)	732.15
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.731



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 2 Phase II

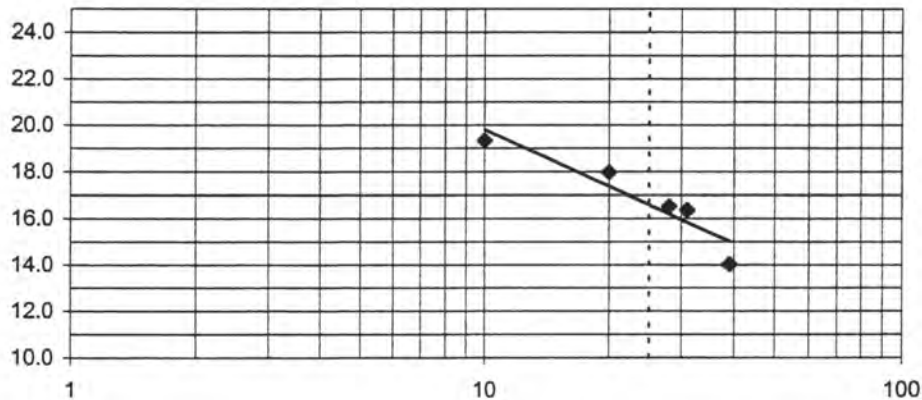
Operator: DB

Sample No: LL21163

Date: 09/13/01

LIQUID LIMIT DETERMINATION

Tare No.	60	401	10	18	61
Soil & Tare Wet Wt.	16.77	16.89	15.78	14.32	13.49
Soil & Tare Dry Wt.	14.67	14.90	14.10	12.88	12.29
Tare Wt.	3.81	3.83	3.93	4.08	3.73
Moisture Content; %	19.3	18.0	16.5	16.4	14.0
No. of Blows; N	10	20	28	31	39



PLASTIC LIMIT DETERMINATION

Tare No.	114		5		50
Soil & Tare Wet Wt.	17.75		16.88		14.10
Soil & Tare Dry Wt.	16.39		15.61		13.09
Tare Wt.	4.17		4.04		3.85
Moisture Content; %	11.1		11.0		10.9

LL= 17

PL = 11

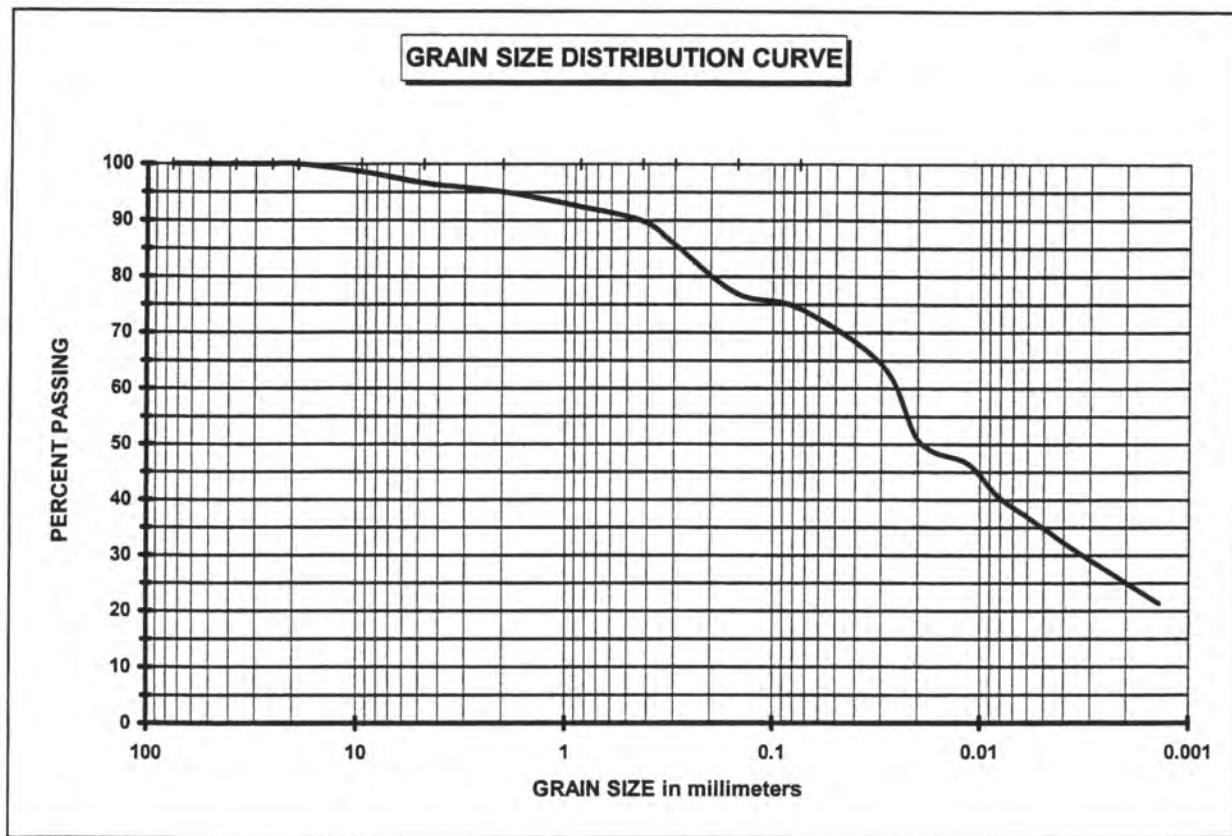
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
 Job Number: 1439-01-417

ASTM: D 422
 Date: 9/11/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL21129 Depth (ft): _____

Soil Description: Gray & Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	3.3
% SAND	22.3
% SILT	39.5
% CLAY	34.9



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21129

Date: 9/11/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>37.18</u>
Wet + tare wt:	<u>70.43</u>
Dry + tare wt:	<u>69.81</u>
Solids wt:	<u>32.63</u>
Moist. wt:	<u>0.62</u>
Percent moisture:	<u>1.90</u>

Sample Data:

Init wt, (g):	<u>250.01</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>49.07</u>
Rep. total wt:	<u>51.61</u>
Assumed Sp. Gr.	<u>2.65</u>
Sp. Gr. corr, (a):	<u>1</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	3.46	1.38	98.62	
4	4.75	8.36	3.34	96.66	
10	2	12.31	4.92	95.08	
20	0.85	1.37	2.65	92.42	
40	0.425	2.70	5.23	89.84	
60	0.25	4.84	9.38	85.70	
140	0.106	9.36	18.14	76.94	
200	0.075	10.71	20.75	74.32	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	38	5	33	39	9.9	0.01317	0.0293	63.94
5	23	31	5	26	32	11.1	0.01317	0.0196	50.38
15	23	29	5	24	30	11.4	0.01317	0.0115	46.50
30	23	26	5	21	27	11.9	0.01317	0.0083	40.69
60	23	24	5	19	25	12.2	0.01317	0.0059	36.82
250	23	20	5	15	21	12.9	0.01317	0.0030	29.06
1440	23	16	5	11	2	16.0	0.01317	0.0014	21.31

TEST DATA

Chain-of-Custody No. LL3S&ME-03
Shipment Received 8/22/01



Operator: DB Date: 9/6/01

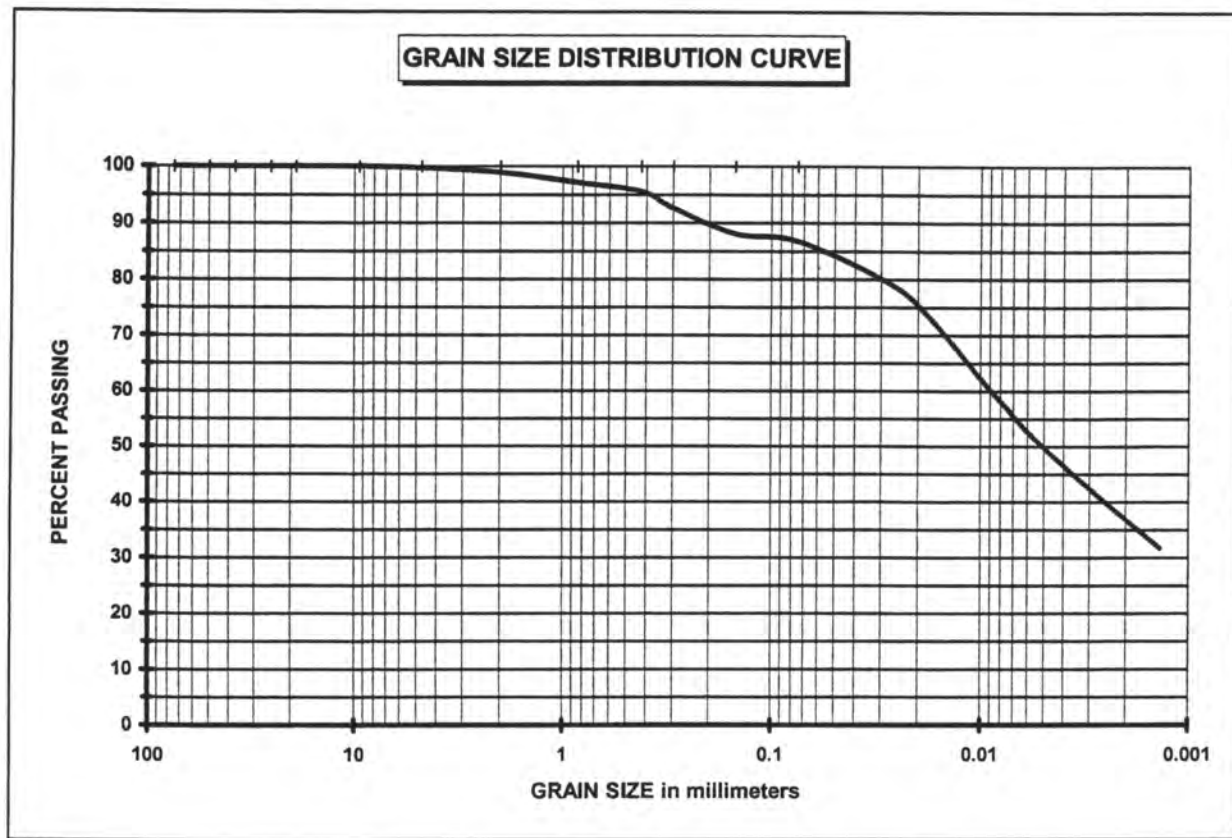
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/18/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31116 Depth (ft): _____

Soil Description: Lean Clay, brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	36
PLASTIC LIMIT	17
PLASTICITY INDEX	19
USC	CL

GRAIN SIZE DATA	
% GRAVEL	0.3
% SAND	12.9
% SILT	36.9
% CLAY	49.9



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31116

Date: 9/18/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Sample Data:

Tare wt: 39.34
Wet + tare wt: 79.43
Dry + tare wt: 78.61
Solids wt: 39.27
Moist. wt: 0.82
Percent moisture: 2.09

Init wt, (g): 321.42
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 48.98
Rep. total wt: 49.52
Sp. Gr: 2.743
Sp. Gr. corr, (a): 0.98

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.89	0.28	99.72	
10	2	3.54	1.10	98.90	
20	0.85	0.86	1.74	97.16	
40	0.425	1.63	3.29	95.61	
60	0.25	3.11	6.28	92.62	
140	0.106	5.35	10.80	88.10	
200	0.075	5.99	12.10	86.80	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	45	5	40	46	8.8	0.01297	0.0272	79.16
5	23	42	5	37	43	9.3	0.01297	0.0177	73.22
15	23	37	5	32	38	10.1	0.01297	0.0106	63.32
30	23	34	5	29	35	10.6	0.01297	0.0077	57.39
60	23	31	5	26	32	11.1	0.01297	0.0056	51.45
250	23	26	5	21	27	11.9	0.01297	0.0028	41.56
1440	23	21	5	16	2	16.0	0.01297	0.0014	31.66



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Specimen ID: LL31116

Date: 9/25/01

Flask No.	34
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	180.17
Wt. of Flask + Dry Soil, (g)	259.74
Wt. of Dry Soil, (g)	79.57
Wt. of Flask + Water, (g)	677.83
Wt. of Flask, Soil, & Water, (g)	728.41
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.743



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 3 Phase II

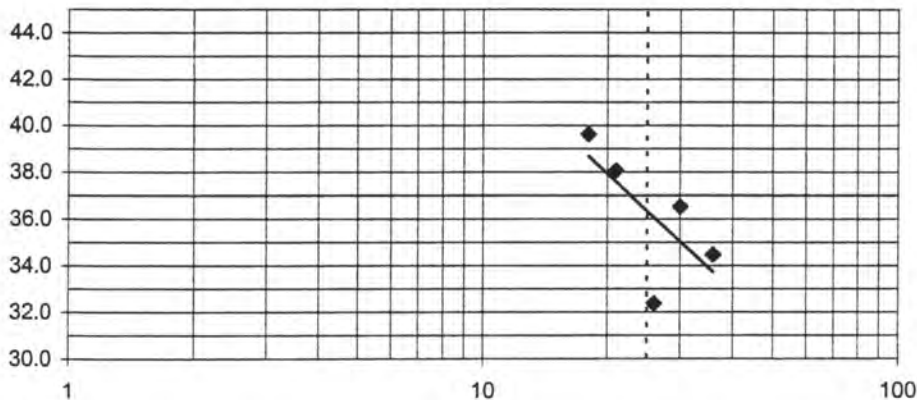
Operator: DB

Sample No: LL31116

Date: 09/13/01

LIQUID LIMIT DETERMINATION

Tare No.	28	1d	15	6	1
Soil & Tare Wet Wt.	15.94	17.21	16.48	16.87	17.24
Soil & Tare Dry Wt.	12.50	13.59	13.43	13.43	13.89
Tare Wt.	3.82	4.08	4.01	4.01	4.17
Moisture Content; %	39.6	38.1	32.4	36.5	34.5
No. of Blows; N	18	21	26	30	36



PLASTIC LIMIT DETERMINATION

Tare No.	u		57		11
Soil & Tare Wet Wt.	17.10		14.50		12.50
Soil & Tare Dry Wt.	15.19		12.98		11.28
Tare Wt.	4.05		3.87		3.96
Moisture Content; %	17.2		16.7		16.7

LL= 36

PL = 17

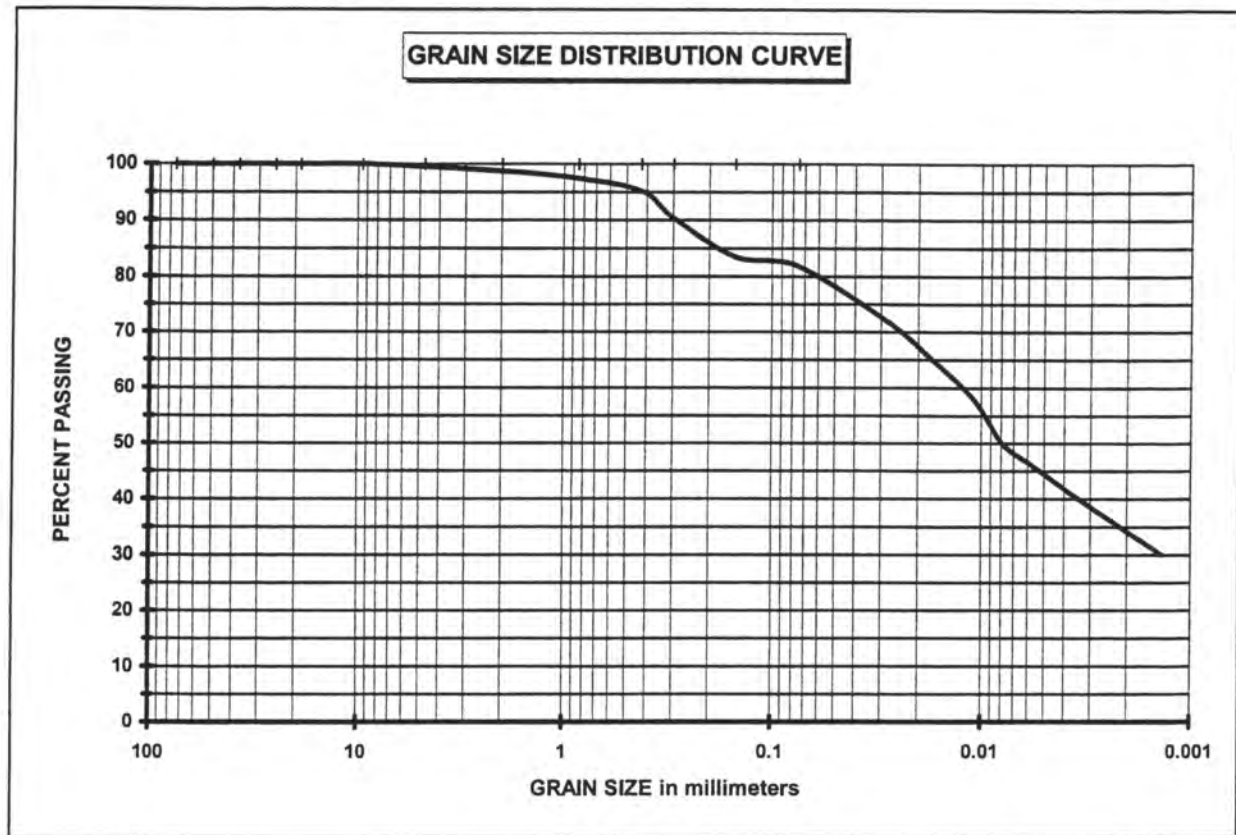
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/11/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31114 Depth (ft): _____

Soil Description: Lean Clay with Sand, Brown & Gray

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	38
PLASTIC LIMIT	19
PLASTICITY INDEX	19
USC	CL

GRAIN SIZE DATA	
% GRAVEL	0.6
% SAND	17.6
% SILT	37.3
% CLAY	44.5



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31114

Date: 9/11/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Sample Data:

Tare wt: 39.58
Wet + tare wt: 72.47
Dry + tare wt: 71.75
Solids wt: 32.17
Moist. wt: 0.72
Percent moisture: 2.24

Init wt, (g): 245.14
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 48.91
Rep. total wt: 49.53
Sp. Gr: 2.706
Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	1.35	0.55	99.45	
10	2	3.11	1.27	98.73	
20	0.85	0.64	1.29	97.44	
40	0.425	1.76	3.55	95.18	
60	0.25	4.15	8.38	90.35	
140	0.106	7.56	15.26	83.47	
200	0.075	8.38	16.92	81.81	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	41	5	36	42	9.4	0.01297	0.0282	71.95
5	23	38	5	33	39	9.9	0.01297	0.0183	65.95
15	23	34	5	29	35	10.6	0.01297	0.0109	57.96
30	23	30	5	25	31	11.2	0.01297	0.0079	49.97
60	23	28	5	23	29	11.6	0.01297	0.0057	45.97
250	23	24	5	19	25	12.2	0.01297	0.0029	37.97
1440	23	20	5	15	2	16.0	0.01297	0.0014	29.98



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

Job Name: Ravenna Load Line 3 Phase II

Specimen ID: LL31114

ASTM : D 854

Operator: DB

Date: 9/12/01

Flask No.	8
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	174.49
Wt. of Flask + Dry Soil, (g)	265.22
Wt. of Dry Soil, (g)	90.73
Wt. of Flask + Water, (g)	672.18
Wt. of Flask, Soil, & Water, (g)	729.41
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.706



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 3 Phase II

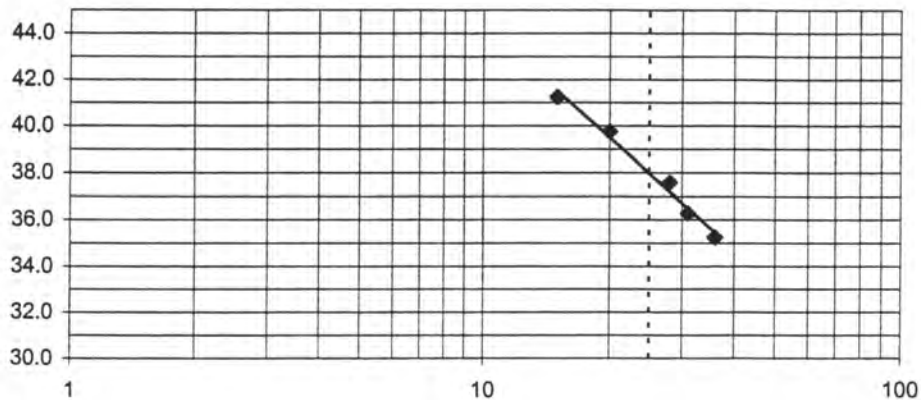
Operator: DB

Sample No: LL31114

Date: 09/13/01

LIQUID LIMIT DETERMINATION

Tare No.	7	s	39	9	18
Soil & Tare Wet Wt.	17.50	16.72	17.14	16.71	16.69
Soil & Tare Dry Wt.	13.61	13.13	13.49	13.39	13.37
Tare Wt.	4.18	4.10	3.78	4.24	3.95
Moisture Content; %	41.3	39.8	37.6	36.3	35.2
No. of Blows; N	15	20	28	31	36



PLASTIC LIMIT DETERMINATION

Tare No.	h		n		a
Soil & Tare Wet Wt.	18.86		14.35		14.89
Soil & Tare Dry Wt.	16.50		12.70		13.17
Tare Wt.	3.99		4.02		4.12
Moisture Content; %	18.9		19.0		19.0

LL= 38

PL = 19

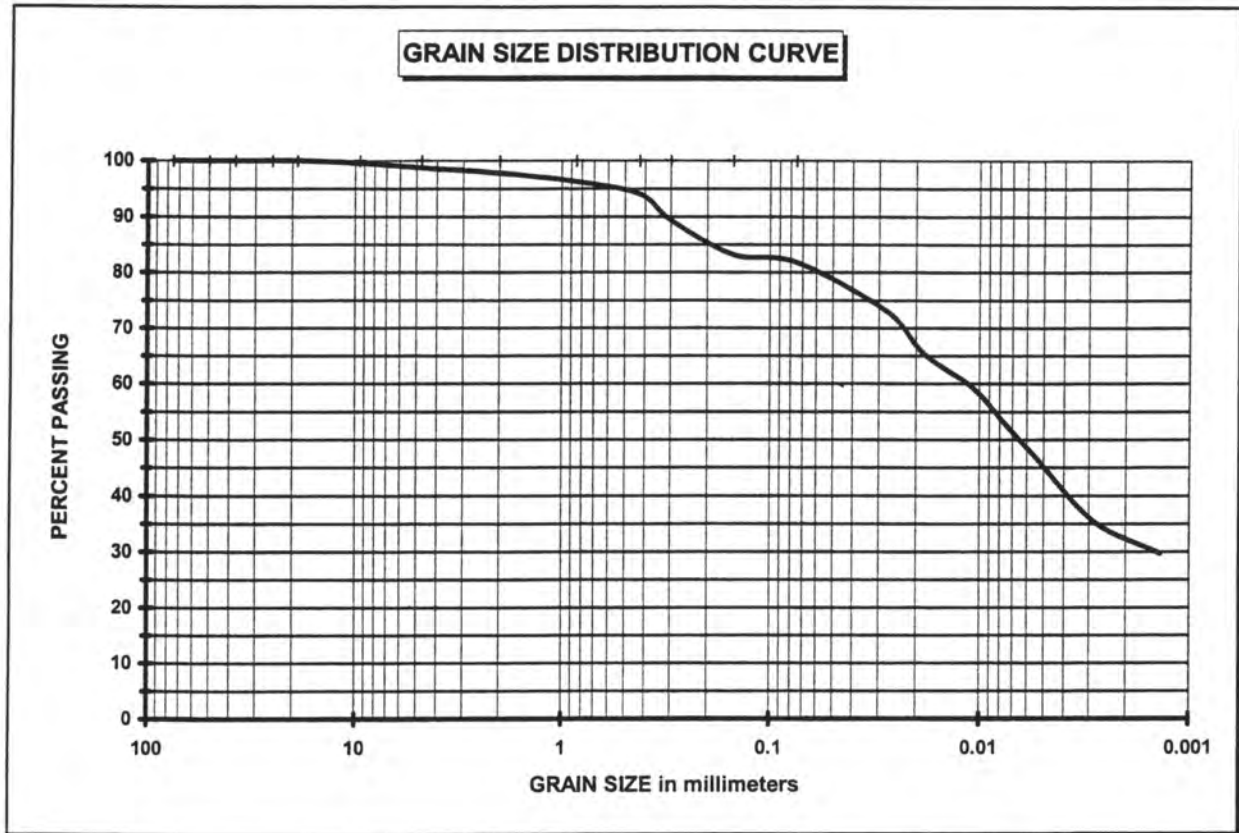
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/11/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31113 Depth (ft): _____

Soil Description: Lean Clay with Sand, Brown & Gray

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	34
PLASTIC LIMIT	17
PLASTICITY INDEX	17
USC	CL

GRAIN SIZE DATA	
% GRAVEL	1.3
% SAND	16.9
% SILT	36.5
% CLAY	45.3



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31113

Date: 9/11/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>39.64</u>
Wet + tare wt:	<u>77.05</u>
Dry + tare wt:	<u>76.26</u>
Solids wt:	<u>36.62</u>
Moist. wt:	<u>0.79</u>
Percent moisture:	<u>2.16</u>

Sample Data:

Init wt, (g):	<u>334.12</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>48.94</u>
Rep. total wt:	<u>50.06</u>
Sp. Gr:	<u>2.704</u>
Sp. Gr. corr, (a):	<u>0.99</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	1.57	0.47	99.53	
4	4.75	4.25	1.27	98.73	
10	2	7.42	2.22	97.78	
20	0.85	0.75	1.50	96.28	
40	0.425	1.88	3.76	94.02	
60	0.25	4.23	8.45	89.33	
140	0.106	7.31	14.60	83.18	
200	0.075	8.00	15.98	81.80	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	42	5	37	43	9.3	0.01297	0.0279	73.18
5	23	38	5	33	39	9.9	0.01297	0.0183	65.27
15	23	35	5	30	36	10.4	0.01297	0.0108	59.33
30	23	32	5	27	33	10.9	0.01297	0.0078	53.40
60	23	29	5	24	30	11.4	0.01297	0.0057	47.47
250	23	23	5	18	24	12.4	0.01297	0.0029	35.60
1440	23	20	5	15	2	16.0	0.01297	0.0014	29.67



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Specimen ID: LL31113

Date: 9/12/01

Flask No.	32
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	172.19
Wt. of Flask + Dry Soil, (g)	261.42
Wt. of Dry Soil, (g)	89.23
Wt. of Flask + Water, (g)	669.97
Wt. of Flask, Soil, & Water, (g)	726.22
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.704



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 3 Phase II

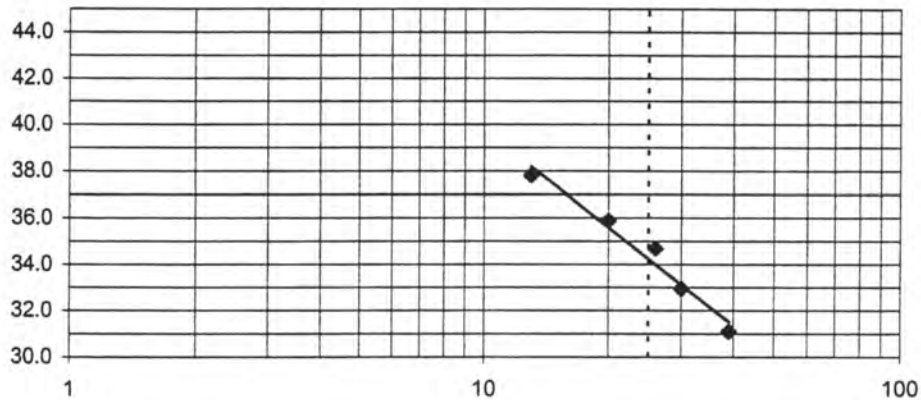
Operator: DB

Sample No: LL31113

Date: 09/13/01

LIQUID LIMIT DETERMINATION

Tare No.	38	16	2	g	F0
Soil & Tare Wet Wt.	17.71	17.46	17.11	16.72	17.01
Soil & Tare Dry Wt.	13.90	13.94	13.74	13.56	13.94
Tare Wt.	3.82	4.13	4.02	3.97	4.07
Moisture Content; %	37.8	35.9	34.7	33.0	31.1
No. of Blows; N	13	20	26	30	39



PLASTIC LIMIT DETERMINATION

Tare No.	31		p		3
Soil & Tare Wet Wt.	17.65		17.16		15.54
Soil & Tare Dry Wt.	15.65		15.28		13.90
Tare Wt.	3.87		4.08		4.07
Moisture Content; %	17.0		16.8		16.7

LL= 34

PL = 17

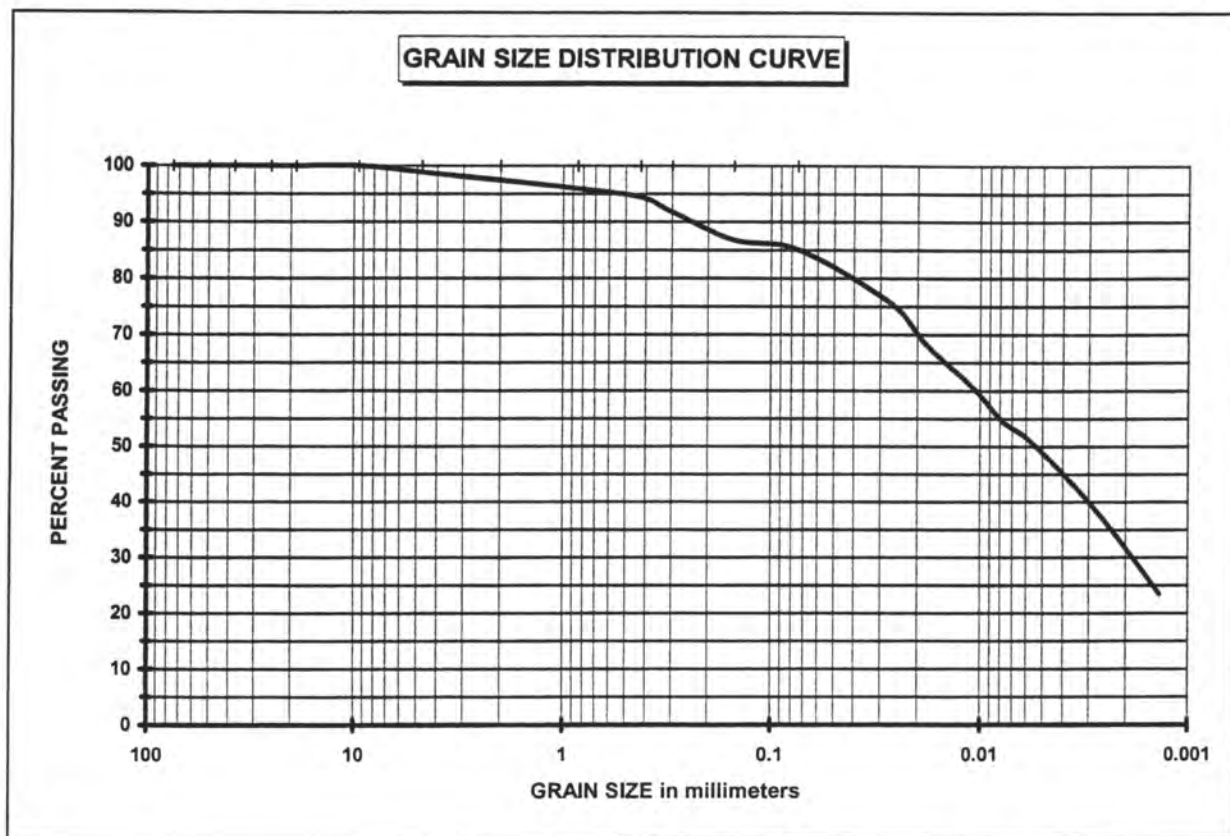
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/12/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31118 Depth (ft): _____

Soil Description: Lean Clay, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	32
PLASTIC LIMIT	17
PLASTICITY INDEX	15
USC	CL

GRAIN SIZE DATA	
% GRAVEL	1.2
% SAND	13.7
% SILT	36.4
% CLAY	48.7



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31118

Date: 9/12/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>40.43</u>
Wet + tare wt:	<u>67.36</u>
Dry + tare wt:	<u>66.86</u>
Solids wt:	<u>26.43</u>
Moist. wt:	<u>0.5</u>
Percent moisture:	<u>1.89</u>

Sample Data:

Init wt, (g):	<u>275.44</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>49.07</u>
Rep. total wt:	<u>50.36</u>
Sp. Gr:	<u>2.719</u>
Sp. Gr. corr, (a):	<u>0.98</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	3.25	1.18	98.82	
10	2	7.03	2.55	97.45	
20	0.85	0.76	1.51	95.94	
40	0.425	1.52	3.02	94.43	
60	0.25	2.87	5.70	91.75	
140	0.106	5.38	10.68	86.76	
200	0.075	6.22	12.35	85.10	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	44	5	39	45	9.0	0.01297	0.0274	75.90
5	23	40	5	35	41	9.6	0.01297	0.0180	68.11
15	23	36	5	31	37	10.3	0.01297	0.0107	60.33
30	23	33	5	28	34	10.7	0.01297	0.0078	54.49
60	23	31	5	26	32	11.1	0.01297	0.0056	50.60
250	23	25	5	20	26	12.1	0.01297	0.0028	38.92
1440	23	17	5	12	2	16.0	0.01297	0.0014	23.35



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

Job Name: Ravenna Load Line 3 Phase II

Specimen ID: LL31118

ASTM : D 854

Operator: DB

Date: 9/25/01

Flask No.	28
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	171.49
Wt. of Flask + Dry Soil, (g)	265.32
Wt. of Dry Soil, (g)	93.83
Wt. of Flask + Water, (g)	669.24
Wt. of Flask, Soil, & Water, (g)	728.58
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.719



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 3 Phase II

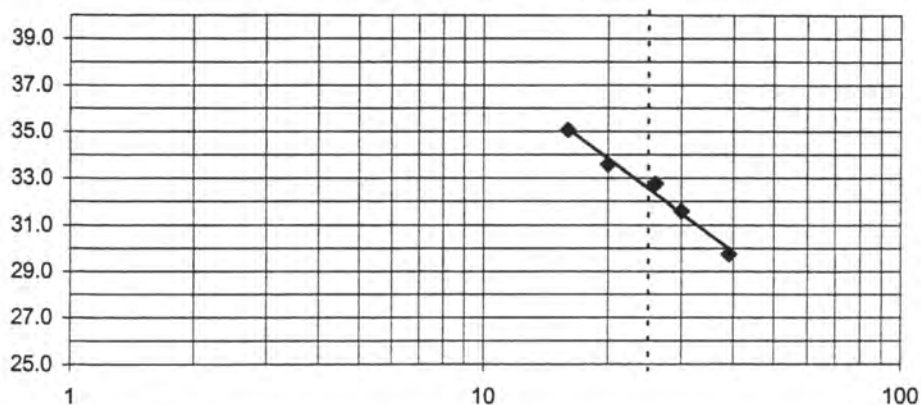
Operator: DB

Sample No: LL31118

Date: 09/13/01

LIQUID LIMIT DETERMINATION

Tare No.	25	4	c	5	20
Soil & Tare Wet Wt.	16.54	17.60	16.57	17.32	17.42
Soil & Tare Dry Wt.	13.25	14.16	13.48	14.11	14.33
Tare Wt.	3.87	3.92	4.05	3.95	3.94
Moisture Content; %	35.1	33.6	32.8	31.6	29.7
No. of Blows; N	16	20	26	30	39



PLASTIC LIMIT DETERMINATION

Tare No.	e		19		46
Soil & Tare Wet Wt.	15.38		15.87		13.83
Soil & Tare Dry Wt.	13.75		14.19		12.42
Tare Wt.	4.07		4.11		3.95
Moisture Content; %	16.8		16.7		16.7

LL= 32

PL = 17

PI = 15



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31115

Date: 9/12/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 29.28
Wet + tare wt: 58.3
Dry + tare wt: 54.86
Solids wt: 25.58
Moist. wt: 3.44
Percent moisture: 13.45

Init wt, (g): 780.66
Hydro spec wt, (g): 65.36
Dry hydro wt, (g): 57.61
Rep. total wt: 68.04
Sp. Gr: 2.698
Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	25.80	3.30	96.70	
0.375	9.5	70.49	9.03	90.97	
4	4.75	101.76	13.04	86.96	
10	2	119.65	15.33	84.67	
20	0.85	0.75	1.10	83.57	
40	0.425	1.74	2.56	82.12	
60	0.25	3.42	5.03	79.65	
140	0.106	8.35	12.27	72.40	
200	0.075	10.66	15.67	69.01	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	46	5	41	47	8.6	0.01297	0.0269	59.66
5	23	41	5	36	42	9.4	0.01297	0.0178	52.38
15	23	38	5	33	39	9.9	0.01297	0.0106	48.02
30	23	35	5	30	36	10.4	0.01297	0.0076	43.65
60	23	33	5	28	34	10.7	0.01297	0.0055	40.74
250	23	30	5	25	31	11.2	0.01297	0.0027	36.38
1440	23	27	5	22	2	16.0	0.01297	0.0014	32.01



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Specimen ID: LL31115

Date: 9/25/01

Flask No.	16
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	175.35
Wt. of Flask + Dry Soil, (g)	254.22
Wt. of Dry Soil, (g)	78.87
Wt. of Flask + Water, (g)	675.52
Wt. of Flask, Soil, & Water, (g)	725.18
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.698



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 3 Phase II

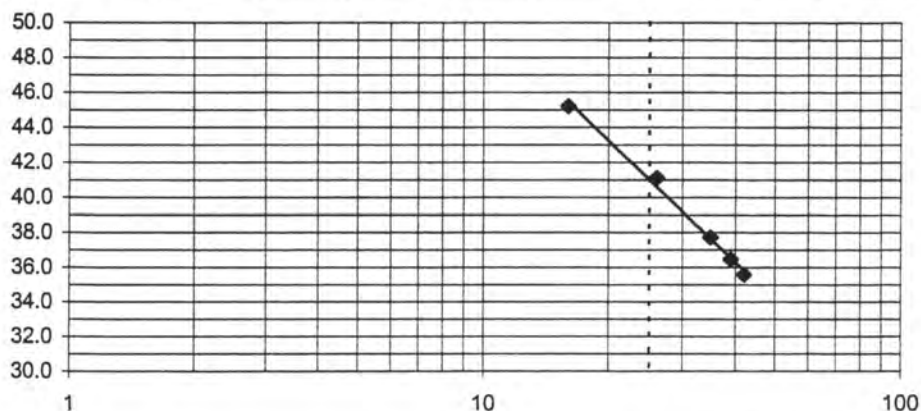
Operator: DB

Sample No: LL31115

Date: 09/13/01

LIQUID LIMIT DETERMINATION

Tare No.	8	6	40	38	17
Soil & Tare Wet Wt.	14.19	11.36	12.26	13.25	14.42
Soil & Tare Dry Wt.	10.17	8.42	9.25	10.05	11.67
Tare Wt.	1.28	1.27	1.27	1.27	3.94
Moisture Content; %	45.2	41.1	37.7	36.5	35.6
No. of Blows; N	16	26	35	39	42



PLASTIC LIMIT DETERMINATION

Tare No.	10		39		41
Soil & Tare Wet Wt.	10.69		9.83		11.81
Soil & Tare Dry Wt.	9.22		8.51		10.17
Tare Wt.	1.25		1.28		1.27
Moisture Content; %	18.4		18.3		18.4

LL= 41

PL = 18

PI = 23

TEST DATA

Chain-of-Custody No. LL4S&ME-01
Shipment Received 8/22/01



Date: 9/21/01

S&ME, Inc., 1413 Topside Road, Louisville, Tennessee 37777, (865) 970-0003, Fax (865) 970-2312



SOIL DENSITY & POROSITY

Job No: 1439-01-417

ASTM D4531

EM1110-2-1906

Job Name: Ravenna Load Line 4 Phase II

Operator: JTR

Date Tested: 9/25/01

Sample ID	LL41123	LL41124	LL41121	LL41122	LL41133
Soil Specific Gravity:	2.833	2.816	2.767	2.817	2.810
Specimen Wet Weight:	609.74	1161.30	967.80	1324.8	947.03
Moisture:					
Wet Weight + Tare (g):	70.17	72.97	107.51	94.05	79.61
Dry Weight + Tare (g):	58.99	60.03	88.25	80.61	66.61
Tare Weight (g):	1.27	1.27	1.27	1.27	1.27
Weight of Water (g):	11.18	12.94	19.26	13.44	13.00
Weight of Dry Soil (g):	57.72	58.76	86.98	79.34	65.34
Moisture Content (%):	19.37	22.02	22.14	16.94	19.90
Specimen Dry Weight:	510.80	951.72	792.35	1132.89	789.88
Spec. Volume:					
Dia. (cm):	7.183	7.251	7.214	7.284	7.301
Length (cm):	6.939	13.912	10.539	15.308	11.159
Area (cm ²):	40.523	41.294	40.874	41.671	41.865
Volume (cm ³):	281.19	574.48	430.77	637.90	467.17
Density:					
Wet Density (g/cm ³):	2.168	2.021	2.247	2.077	2.027
Dry Density (g/cm ³):	1.817	1.657	1.839	1.776	1.691
Wet Density (pcf):	135.4	126.2	140.3	129.7	126.6
Dry Density (pcf):	113.4	103.4	114.8	110.9	105.6
Porosity:					
Vol. Air (cm ³ /cm ³):	0.007	0.047	-0.072	0.069	0.062
Vol. Moisture (cm ³ /cm ³):	0.352	0.365	0.407	0.301	0.336
Vol. of Solids (cm ³ /cm ³):	0.641	0.588	0.665	0.630	0.602
Porosity (cm ³ /cm ³):	0.359	0.412	0.335	0.370	0.398



SOIL DENSITY & POROSITY

Job No: 1439-01-417

ASTM D4531
EM1110-2-1906

Job Name: Ravenna Load Line 4 Phase II

Operator: JTR

Date Tested: 9/25/01

Sample ID	LL41134	LL41136	LL41135	LL41129	LL41125
	Not Testable				
Soil Specific Gravity:	2.754	2.777	2.784	2.790	2.718
Specimen Wet Weight:		1172.31	695.75	998.02	1057.94
Moisture:					
Wet Weight + Tare (g):	83.38	85.08	74.72	81.23	87.66
Dry Weight + Tare (g):	70.22	68.81	68.54	72.10	74.53
Tare Weight (g):	1.27	1.27	1.27	1.27	1.27
Weight of Water (g):	13.16	16.27	6.18	9.13	13.13
Weight of Dry Soil (g):	68.95	67.54	67.27	70.83	73.26
Moisture Content (%):	19.09	24.09	9.19	12.89	17.92
Specimen Dry Weight:		944.73	637.21	884.06	897.15
Spec. Volume:					
Dia. (cm):		7.284	7.268	7.189	7.125
Length (cm):		14.008	9.583	11.032	12.664
Area (cm ²):		41.671	41.488	40.591	39.871
Volume (cm ³):		583.73	397.58	447.80	504.93
Density:					
Wet Density (g/cm ³):		2.008	1.750	2.229	2.095
Dry Density (g/cm ³):		1.618	1.603	1.974	1.777
Wet Density (pcf):		125.4	109.3	139.1	130.8
Dry Density (pcf):		101.0	100.1	123.3	110.9
Porosity:					
Vol. Air (cm ³ /cm ³):		0.027	0.277	0.038	0.028
Vol. Moisture (cm ³ /cm ³):		0.390	0.147	0.254	0.318
Vol. of Solids (cm ³ /cm ³):		0.583	0.576	0.708	0.654
Porosity (cm ³ /cm ³):		0.417	0.424	0.292	0.346
Page 2					



SOIL DENSITY & POROSITY

Job No: 1439-01-417

ASTM D4531
EM1110-2-1906

Job Name: Ravenna Load Line 4 Phase II

Operator: JTR

Date Tested: 9/25/01

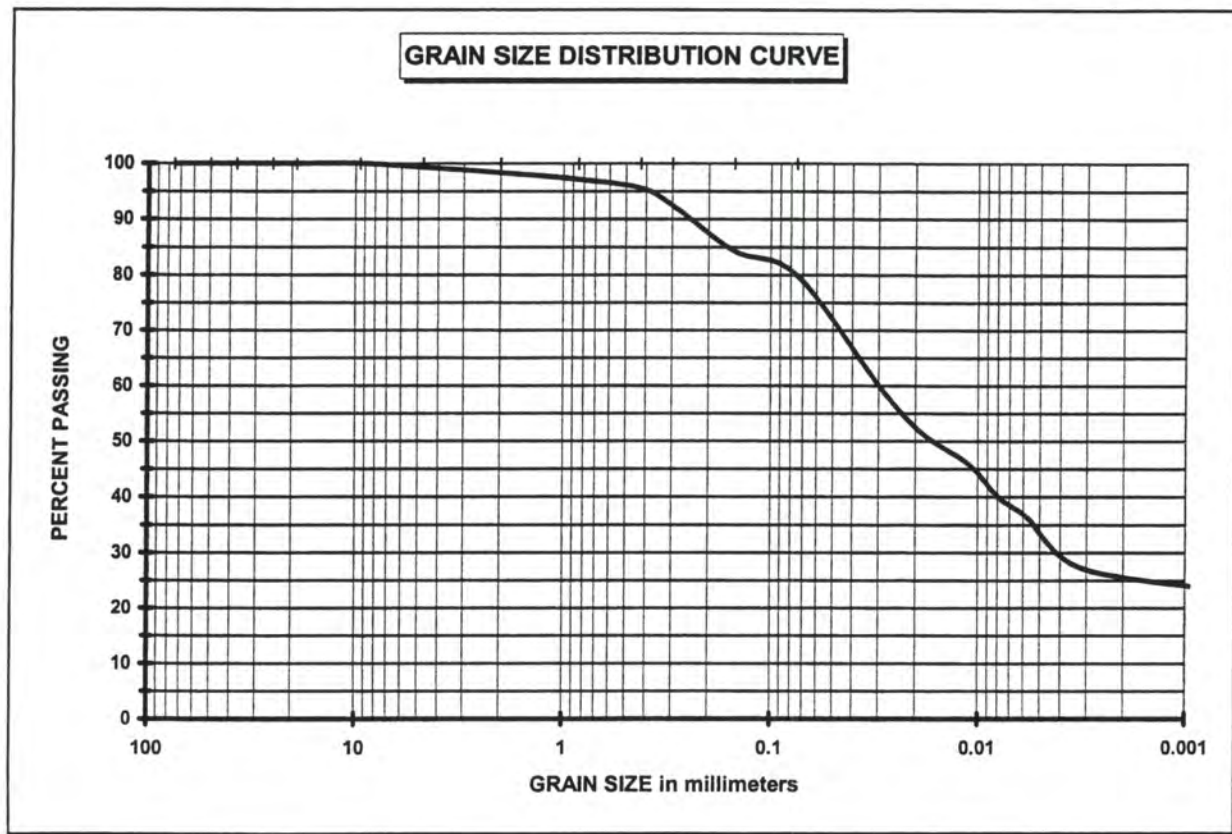
Sample ID	LL41131	LL41127	LL41126		
		Not Testable			
Soil Specific Gravity:	2.801	2.758	2.762		
Specimen Wet Weight:	858.31		1330.19		
Moisture:					
Wet Weight + Tare (g):	93.68	73.19	75.91		
Dry Weight + Tare (g):	77.51	62.27	64.39		
Tare Weight (g):	1.27	1.27	1.27		
Weight of Water (g):	16.17	10.92	11.52		
Weight of Dry Soil (g):	76.24	61.00	63.12		
Moisture Content (%):	21.21	17.90	18.25		
Specimen Dry Weight:	708.12		1124.89		
Spec. Volume:					
Dia. (cm):	7.202		7.175		
Length (cm):	9.947		14.390		
Area (cm ²):	40.738		40.433		
Volume (cm ³):	405.22		581.83		
Density:					
Wet Density (g/cm ³):	2.118		2.286		
Dry Density (g/cm ³):	1.748		1.933		
Wet Density (pcf):	132.2		142.7		
Dry Density (pcf):	109.1		120.7		
Porosity:					
Vol. Air (cm ³ /cm ³):	0.005		-0.053		
Vol. Moisture (cm ³ /cm ³):	0.371		0.353		
Vol. of Solids (cm ³ /cm ³):	0.624		0.700		
Porosity (cm ³ /cm ³):	0.376		0.300		
Page 3					



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/25/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL41123 Depth (ft): _____

Soil Description: Lean Clay with Sand, Gray

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	20
PLASTIC LIMIT	12
PLASTICITY INDEX	8
USC	CL

GRAIN SIZE DATA	
% GRAVEL	0.7
% SAND	19.4
% SILT	45.5
% CLAY	34.4



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL41123

Date: 9/25/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt: 37.67
Wet + tare wt: 70.95
Dry + tare wt: 70.67
Solids wt: 33
Moist. wt: 0.28
Percent moisture: 0.85

Sample Data:

Init wt, (g): 260.73
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.58
Rep. total wt: 50.42
Sp. Gr: 2.833
Sp. Gr. corr, (a): 0.96

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	1.77	0.68	99.32	
10	2	4.35	1.67	98.33	
20	0.85	0.60	1.19	97.14	
40	0.425	1.38	2.74	95.59	
60	0.25	2.95	5.85	92.48	
140	0.106	7.09	14.06	84.27	
200	0.075	9.28	18.41	79.93	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	36	5	31	37	10.3	0.01261	0.0286	59.02
5	23	32	5	27	33	10.9	0.01261	0.0186	51.41
15	23	29	5	24	30	11.4	0.01261	0.0110	45.70
30	23	26	5	21	27	11.9	0.01261	0.0079	39.98
60	23	24	5	19	25	12.2	0.01261	0.0057	36.18
250	23	19	5	14	20	13.0	0.01261	0.0029	26.66
1440	23	16	5	11	2	16.0	0.001261	0.0001	20.94



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL41123

Date: 9/25/01

Flask No.	9
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	173.60
Wt. of Flask + Dry Soil, (g)	227.32
Wt. of Dry Soil, (g)	53.72
Wt. of Flask + Water, (g)	674.90
Wt. of Flask, Soil, & Water, (g)	709.67
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.833



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

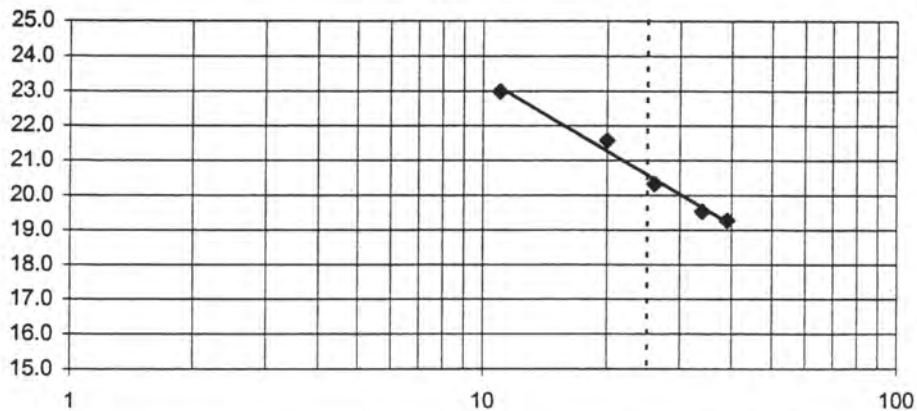
Operator: DB

Sample No: LL41123

Date: 09/21/01

LIQUID LIMIT DETERMINATION

Tare No.	46	19	B10	18	C
Soil & Tare Wet Wt.	18.83	19.15	18.74	21.39	20.02
Soil & Tare Dry Wt.	16.05	16.48	16.24	18.56	17.44
Tare Wt.	3.96	4.11	3.94	4.08	4.06
Moisture Content; %	23.0	21.6	20.3	19.5	19.3
No. of Blows; N	11	20	26	34	39



PLASTIC LIMIT DETERMINATION

Tare No.	A5		Z		D
Soil & Tare Wet Wt.	20.03		20.83		20.06
Soil & Tare Dry Wt.	18.36		19.09		18.40
Tare Wt.	3.95		4.08		4.02
Moisture Content; %	11.6		11.6		11.5

LL= 20

PL = 12

PI = 8



Hydraulic Conductivity

Job No: 1439-01-417

Spec ID: LL41123ASTM: D5084

Job Name: Ravenna - Load Line 4

Depth: _____

Operator: JTR

Soil Classification: Lean Clay with Sand, Gray

Avg. Hydraulic Conductivity: 3.1E-07 cm/s

Avg. Sample Height:	2.732 in
Avg. Sample Height:	6.939 cm
Avg. Sample Diameter:	2.828 in
Avg. Sample Diameter:	7.183 cm
Sample Area:	6.281 in ²
Sample Area:	40.522 cm ²
Sample Volume:	281.20 cc
Initial Sample Weight:	609.75 gms
Initial Moisture Content:	19.4 %

Avg. Confining Pressure:	35.0 psi
Avg. Differential Pressure:	1.0 psi
Influent Pipette Area:	0.3030 cm ²
Effluent Pipette Area:	0.3030 cm ²
Wet Density:	135.3 pcf
Wet Density:	2.168 g/cc
Dry Density:	113.4 pcf
Dry Density:	1.817 g/cc
Final Moisture Content:	20.8 %

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ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

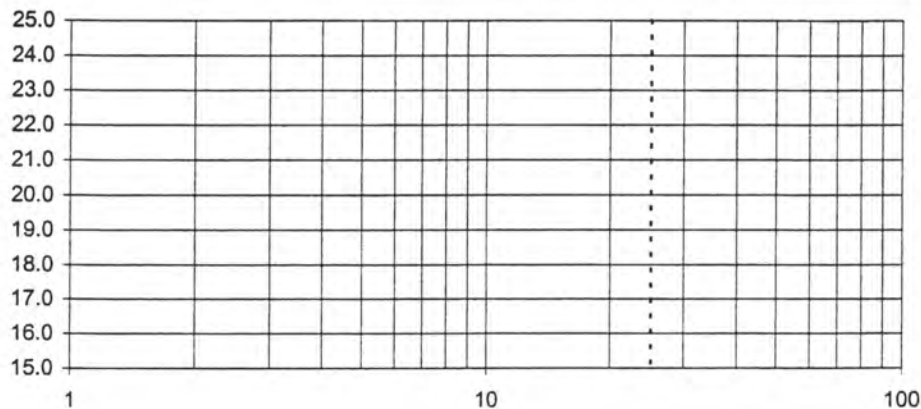
Operator: DB

Sample No: LL41124

Date: 09/21/01

LIQUID LIMIT DETERMINATION

Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %					
No. of Blows; N					



PLASTIC LIMIT DETERMINATION

Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %					

LL= NP PL = NP PI = NP

Soil Classification: Poorly Graded Sand with Silt, Gray



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL41124

Date: 9/25/01

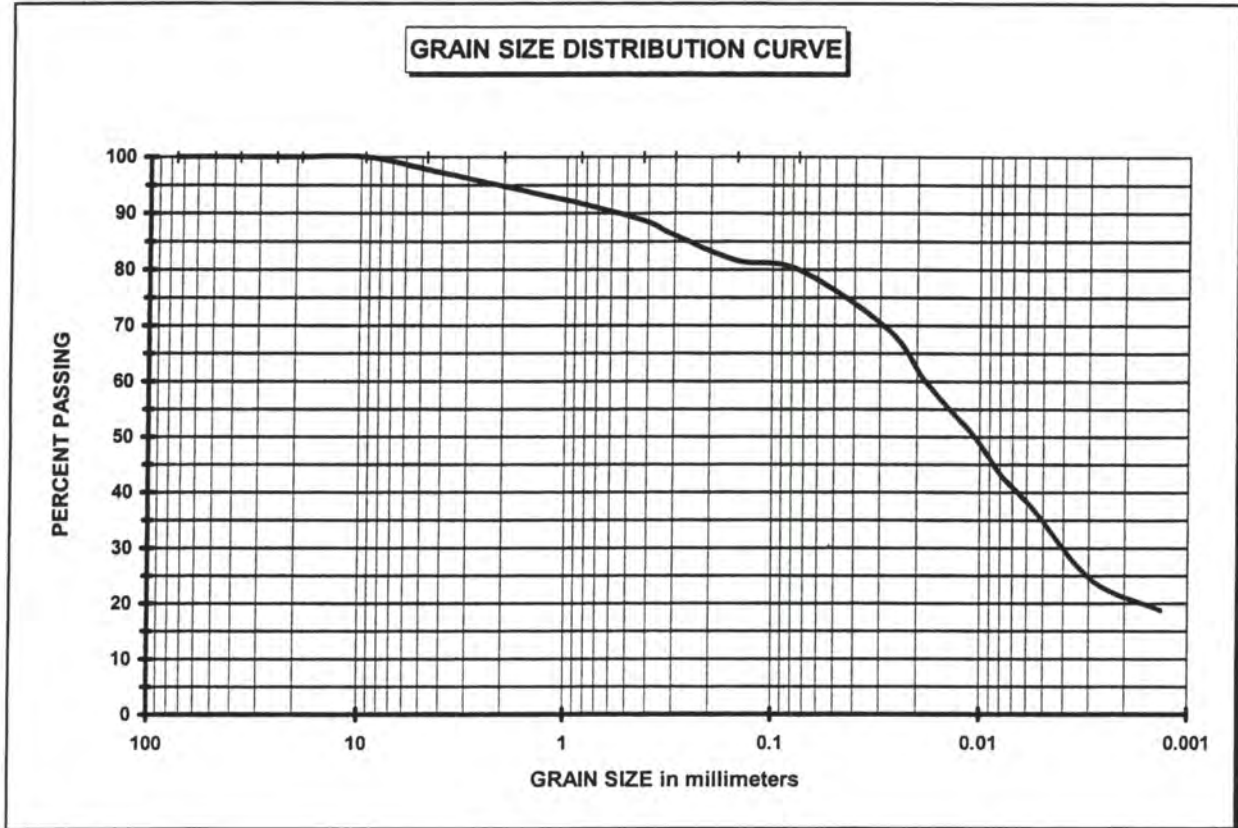
Flask No.	23
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	177.11
Wt. of Flask + Dry Soil, (g)	231.18
Wt. of Dry Soil, (g)	54.07
Wt. of Flask + Water, (g)	674.79
Wt. of Flask, Soil, & Water, (g)	709.67
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.816



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
 Job Number: 1439-01-417

ASTM: D 422
 Date: 9/25/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL41121 Depth (ft): _____

Soil Description: Lean Clay with Sand, Gray

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	28
PLASTIC LIMIT	16
PLASTICITY INDEX	12
USC	CL

GRAIN SIZE DATA	
% GRAVEL	2.2
% SAND	17.8
% SILT	45.2
% CLAY	34.8



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL41121

Date: 9/25/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>38.84</u>
Wet + tare wt:	<u>84.18</u>
Dry + tare wt:	<u>83.81</u>
Solids wt:	<u>44.97</u>
Moist. wt:	<u>0.37</u>
Percent moisture:	<u>0.82</u>

Sample Data:

Init wt, (g):	<u>426.51</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>49.59</u>
Rep. total wt:	<u>52.31</u>
Sp. Gr:	<u>2.767</u>
Sp. Gr. corr, (a):	<u>0.98</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	9.45	2.22	97.78	
10	2	22.19	5.20	94.80	
20	0.85	1.61	3.08	91.72	
40	0.425	3.17	6.06	88.74	
60	0.25	4.55	8.70	86.10	
140	0.106	6.91	13.21	81.59	
200	0.075	7.74	14.80	80.00	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	42	5	37	43	9.3	0.01279	0.0275	69.31
5	23	37	5	32	38	10.1	0.01279	0.0182	59.95
15	23	32	5	27	33	10.9	0.01279	0.0109	50.58
30	23	28	5	23	29	11.6	0.01279	0.0079	43.09
60	23	25	5	20	26	12.1	0.01279	0.0057	37.47
250	23	18	5	13	19	13.2	0.01279	0.0029	24.35
1440	23	15	5	10	2	16.0	0.01279	0.0013	18.73



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL41121

Date: 9/25/01

Flask No.	25
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	170.08
Wt. of Flask + Dry Soil, (g)	231.44
Wt. of Dry Soil, (g)	61.36
Wt. of Flask + Water, (g)	667.91
Wt. of Flask, Soil, & Water, (g)	707.11
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.767



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

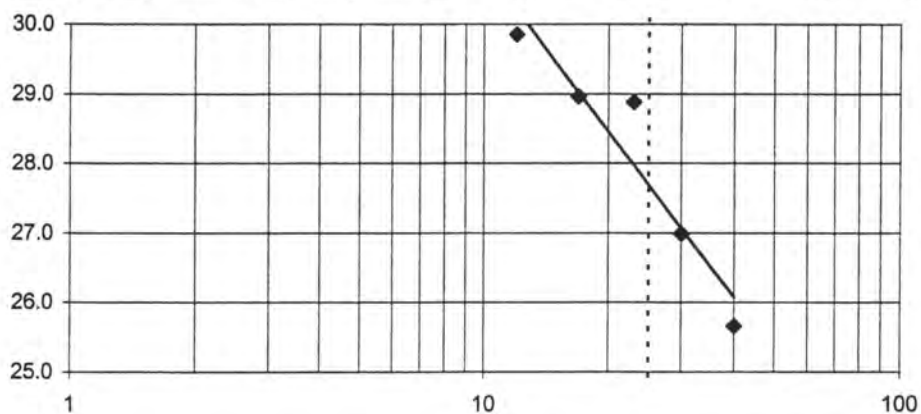
Operator: DB

Sample No: LL41121

Date: 09/20/01

LIQUID LIMIT DETERMINATION

Tare No.	A1	A2	a3	A4	A5
Soil & Tare Wet Wt.	12.30	14.49	11.12	9.24	17.37
Soil & Tare Dry Wt.	10.05	11.53	8.91	7.41	13.95
Tare Wt.	1.28	1.28	1.28	1.28	1.28
Moisture Content; %	25.7	28.9	29.0	29.9	27.0
No. of Blows; N	40	23	17	12	30



PLASTIC LIMIT DETERMINATION

Tare No.	6		7		8
Soil & Tare Wet Wt.	10.15		11.81		7.41
Soil & Tare Dry Wt.	8.91		10.33		6.59
Tare Wt.	1.28		1.28		1.28
Moisture Content; %	16.3		16.4		15.4

LL= 28

PL = 16

PI = 12



Hydraulic Conductivity

ASTM: D5084

Operator: JTR

Soil Classification: Lean Clay with Sand, Gray

Avg. Hydraulic Conductivity: 9.2E-08 cm/s

Avg. Sample Height:	4.149 in
Avg. Sample Height:	10.539 cm
Avg. Sample Diameter:	2.840 in
Avg. Sample Diameter:	7.214 cm
Sample Area:	6.335 in ²
Sample Area:	40.869 cm ²
Sample Volume:	430.73 cc
Initial Sample Weight:	967.80 gms
Initial Moisture Content:	22.1 %

Avg. Confining Pressure:	35.0 psi
Avg. Differential Pressure:	1.0 psi
Influent Pipette Area:	0.3030 cm ²
Effluent Pipette Area:	0.3030 cm ²
Wet Density:	140.2 pcf
Wet Density:	2.247 g/cc
Dry Density:	114.8 pcf
Dry Density:	1.840 g/cc
Final Moisture Content:	23.8 %

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ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

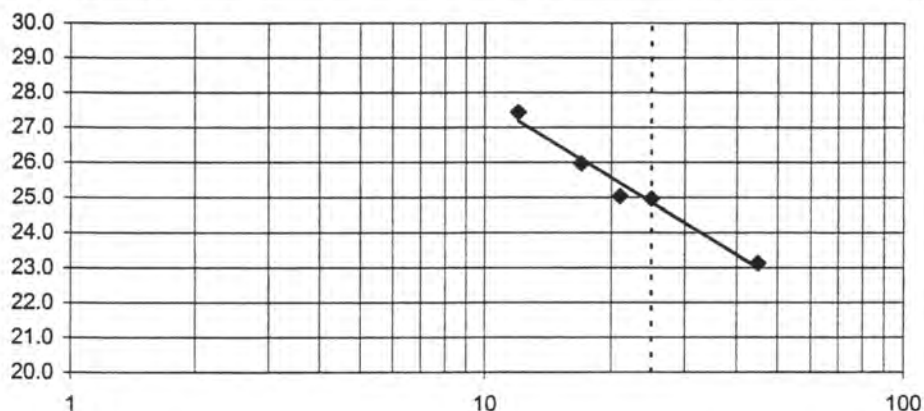
Operator: DB

Sample No: LL41122

Date: 09/20/01

LIQUID LIMIT DETERMINATION

Tare No.	17	18	19	20	21
Soil & Tare Wet Wt.	18.20	17.39	12.26	14.56	15.81
Soil & Tare Dry Wt.	15.02	14.17	10.06	11.82	12.68
Tare Wt.	1.27	1.27	1.27	1.27	1.27
Moisture Content, %	23.1	25.0	25.0	26.0	27.4
No. of Blows; N	45	25	21	17	12



PLASTIC LIMIT DETERMINATION

Tare No.	22		23		24
Soil & Tare Wet Wt.	10.34		14.10		9.90
Soil & Tare Dry Wt.	9.15		12.37		8.77
Tare Wt.	1.27		1.27		1.27
Moisture Content, %	15.1		15.6		15.1

LL= 25

PL = 15

PI = 10

USC=CL

Soil Classification : Sandy Lean Clay, Gray



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL41122

Date: 9/25/01

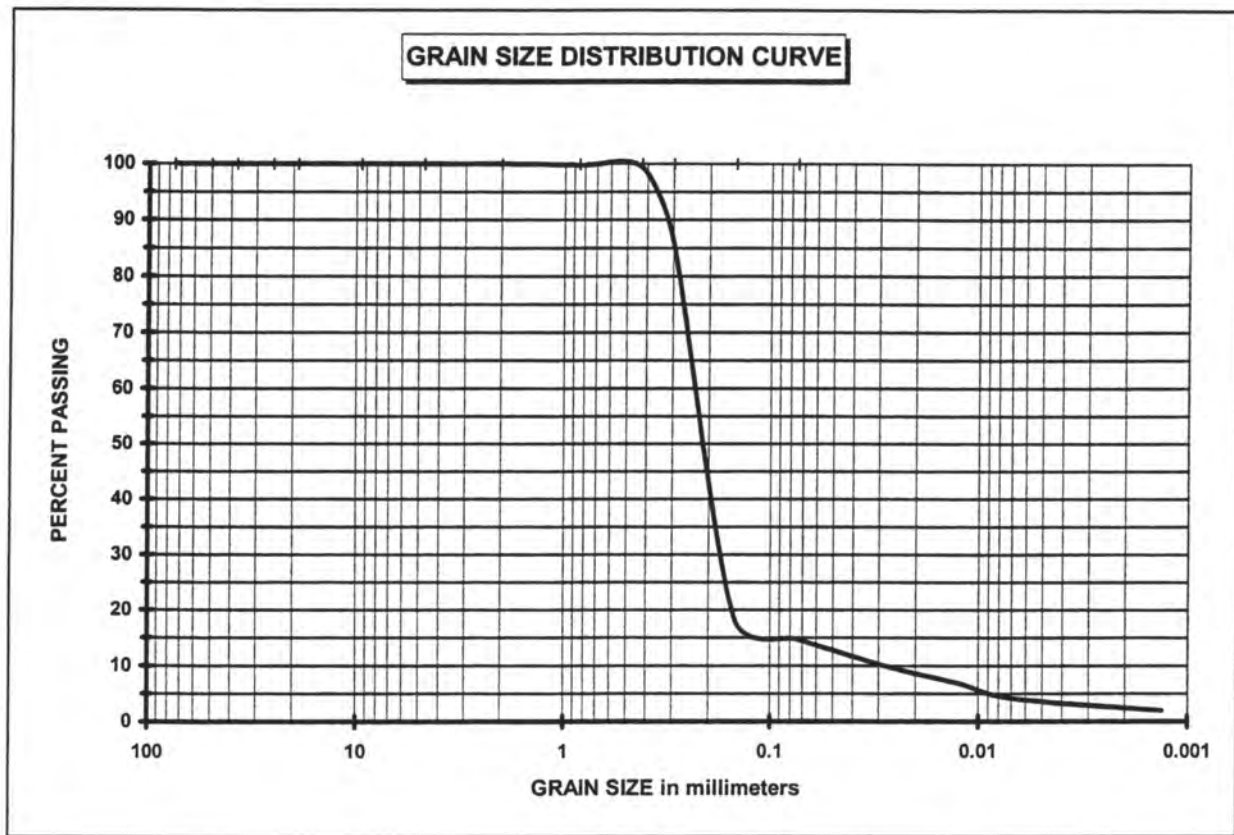
Flask No.	33
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	178.40
Wt. of Flask + Dry Soil, (g)	232.94
Wt. of Dry Soil, (g)	54.54
Wt. of Flask + Water, (g)	676.10
Wt. of Flask, Soil, & Water, (g)	711.29
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.817



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/18/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL41133 Depth (ft): _____

Soil Description: Silty Sand, Gray

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTICITY INDEX	NP
USC	SM

GRAIN SIZE DATA	
% GRAVEL	0.0
% SAND	85.2
% SILT	11.2
% CLAY	3.6



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL41133

Date: 9/18/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 26.79
Wet + tare wt: 65.13
Dry + tare wt: 65.03
Solids wt: 38.24
Moist. wt: 0.1
Percent moisture: 0.26

Init wt, (g): 615.33
Hydro spec wt, (g): 100.00
Dry hydro wt, (g): 99.74
Rep. total wt: 99.74
Sp. Gr: 2.81
Sp. Gr. corr, (a): 0.97

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.00	0.00	100.00	
10	2	0.00	0.00	100.00	
20	0.85	0.24	0.24	99.76	
40	0.425	0.71	0.71	99.29	
60	0.25	13.95	13.99	86.01	
140	0.106	81.33	81.54	18.46	
200	0.075	84.99	85.21	14.79	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	16	5	11	17	13.5	0.01261	0.0328	10.70
5	23	14	5	9	15	13.9	0.01261	0.0210	8.75
15	23	12	5	7	13	14.2	0.01261	0.0123	6.81
30	23	10	5	5	11	14.5	0.01261	0.0088	4.86
60	23	9	5	4	10	14.7	0.01261	0.0062	3.89
250	23	8	5	3	9	14.8	0.01261	0.0031	2.92
1440	23	7	5	2	2	16.0	0.01261	0.0013	1.95



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL41133

Date: 9/25/01

Flask No.	34
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	180.19
Wt. of Flask + Dry Soil, (g)	251.10
Wt. of Dry Soil, (g)	70.19
Wt. of Flask + Water, (g)	677.83
Wt. of Flask, Soil, & Water, (g)	723.06
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.810



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

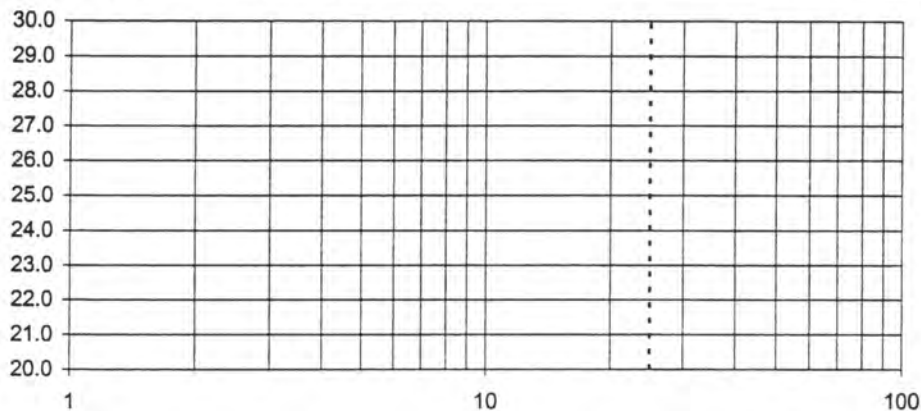
Operator: DB

Sample No: LL41133

Date: 09/18/01

LIQUID LIMIT DETERMINATION

Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
No. of Blows; N	45	25	21	17	12



PLASTIC LIMIT DETERMINATION

Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %	#DIV/0!		#DIV/0!		#DIV/0!
LL= NP PL = NP PI = NP					



Hydraulic Conductivity

ASTM: D5084

Operator: JTR

Soil Classssification: Silty Sand, Gray

Avg. Hydraulic Conductivity: 7.5E-04 cm/s

Avg. Sample Height:	4.393 in
Avg. Sample Height:	11.159 cm
Avg. Sample Diameter:	2.874 in
Avg. Sample Diameter:	7.301 cm
Sample Area:	6.489 in ²
Sample Area:	41.863 cm ²
Sample Volume:	467.15 cc
Initial Sample Weight:	947.03 gms
Initial Moisture Content:	19.9 %

Avg. Confining Pressure:	23.0 psi
Avg. Differential Pressure:	1.0 psi
Influent Pipette Area:	0.3030 cm ²
Effluent Pipette Area:	0.3030 cm ²
Wet Density:	126.5 pcf
Wet Density:	2.027 g/cc
Dry Density:	105.5 pcf
Dry Density:	1.691 g/cc
Final Moisture Content:	21.5 %

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ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

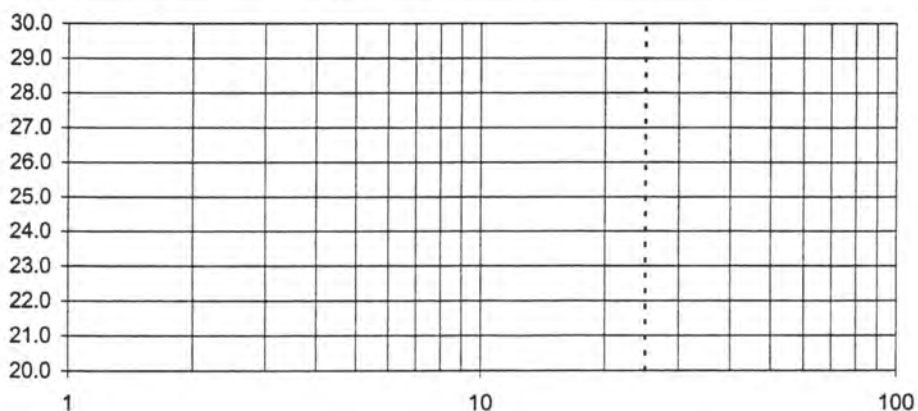
Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL41134

Date: 09/18/01

LIQUID LIMIT DETERMINATION					
Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
No. of Blows; N					



PLASTIC LIMIT DETERMINATION					
Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %					
LL= NP PL = NP PI = NP					

Soil Classification: Poorly Graded Sand, Gray



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL41134

Date: 9/25/01

Flask No.	34
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	178.80
Wt. of Flask + Dry Soil, (g)	251.10
Wt. of Dry Soil, (g)	72.30
Wt. of Flask + Water, (g)	672.56
Wt. of Flask, Soil, & Water, (g)	718.63
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.754



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

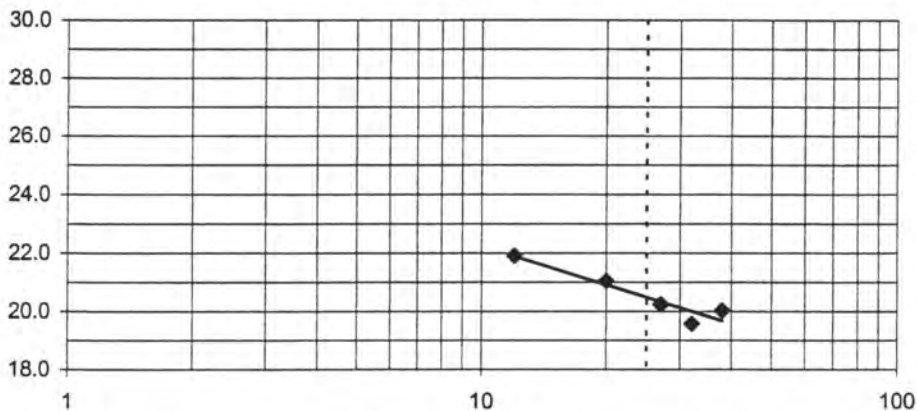
Operator: DB

Sample No: LL41136

Date: 09/18/01

LIQUID LIMIT DETERMINATION

Tare No.	33	34	35	36	37
Soil & Tare Wet Wt.	13.79	13.46	13.56	14.22	12.29
Soil & Tare Dry Wt.	11.54	11.34	11.49	12.10	10.45
Tare Wt.	1.27	1.27	1.27	1.27	1.27
Moisture Content; %	21.9	21.1	20.3	19.6	20.0
No. of Blows; N	12	20	27	32	38



PLASTIC LIMIT DETERMINATION

Tare No.	38		39		40
Soil & Tare Wet Wt.	13.73		12.39		16.52
Soil & Tare Dry Wt.	12.00		10.84		14.36
Tare Wt.	1.27		1.27		1.27
Moisture Content; %	16.1		16.2		16.5

LL= 20

PL = 16

PI = 4

USC=CL-ML

Soil Classification: Silty Clayey Sand, Grayish Brown



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL41136

Date: 9/25/01

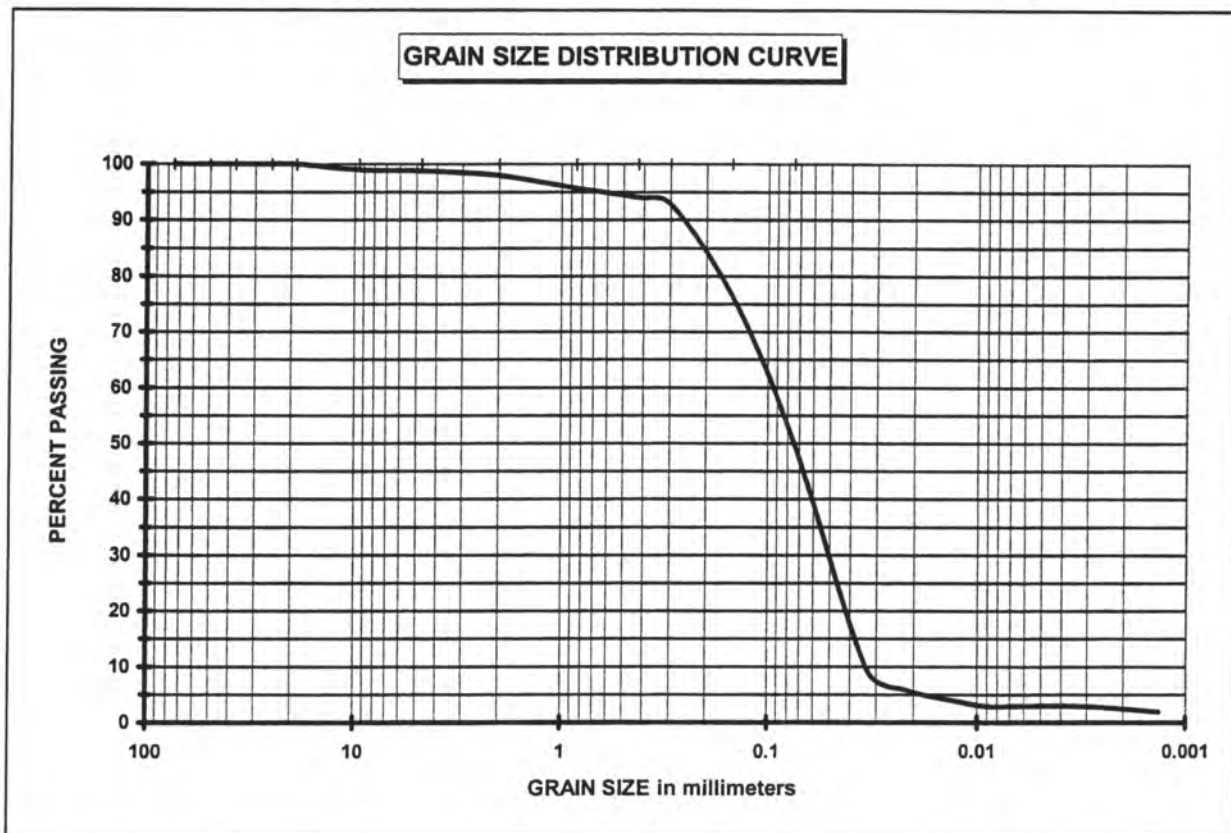
Flask No.	32
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	172.24
Wt. of Flask + Dry Soil, (g)	242.33
Wt. of Dry Soil, (g)	70.09
Wt. of Flask + Water, (g)	669.97
Wt. of Flask, Soil, & Water, (g)	714.84
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.777



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/19/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL41135 Depth (ft): _____

Soil Description: Sandy Silt, Dark Gray

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTICITY INDEX	NP
USC	ML

GRAIN SIZE DATA	
% GRAVEL	1.2
% SAND	48.5
% SILT	47.4
% CLAY	2.9



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL41135

Date: 9/19/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt: 38.28
Wet + tare wt: 72.48
Dry + tare wt: 72.36
Solids wt: 34.08
Moist. wt: 0.12
Percent moisture: 0.35

Sample Data:

Init wt, (g): 224.69
Hydro spec wt, (g): 100.00
Dry hydro wt, (g): 99.65
Rep. total wt: 101.73
Sp. Gr: 2.784
Sp. Gr. corr, (a): 0.98

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	2.34	1.04	98.96	
4	4.75	2.79	1.24	98.76	
10	2	4.60	2.05	97.95	
20	0.85	2.26	2.22	95.73	
40	0.425	3.97	3.90	94.05	
60	0.25	5.31	5.22	92.73	
140	0.106	21.80	21.43	76.52	
200	0.075	48.49	47.66	50.29	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	15	5	10	16	13.7	0.01279	0.0335	9.63
5	23	11	5	6	12	14.3	0.01279	0.0217	5.78
15	23	9	5	4	10	14.7	0.01279	0.0126	3.85
30	23	8	5	3	9	14.8	0.01279	0.0090	2.89
60	23	8	5	3	9	14.8	0.01279	0.0064	2.89
250	23	8	5	3	9	14.8	0.01279	0.0031	2.89
1440	23	7	5	2	2	16.0	0.01279	0.0013	1.93



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

Job Name: Ravenna Load Line 4 Phase II

Specimen ID: LL41135

ASTM : D 854

Operator: DB

Date: 9/25/01

Flask No.	8
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	174.59
Wt. of Flask + Dry Soil, (g)	228.11
Wt. of Dry Soil, (g)	53.52
Wt. of Flask + Water, (g)	672.18
Wt. of Flask, Soil, & Water, (g)	706.49
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.784



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

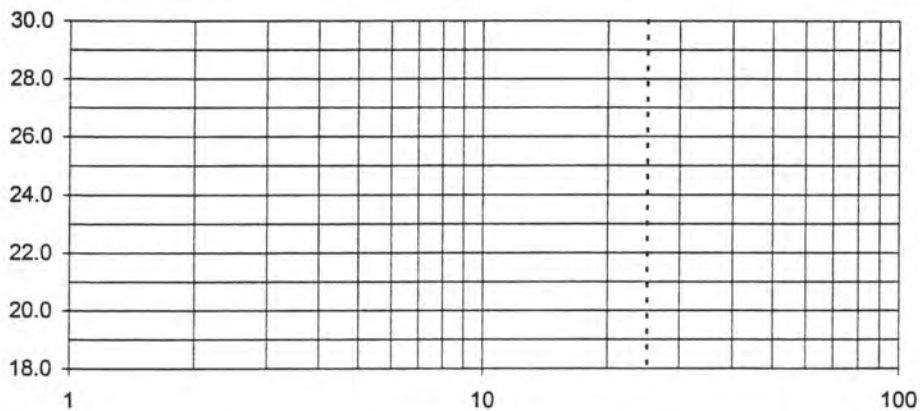
Operator: DB

Sample No: LL41135

Date: 09/18/01

LIQUID LIMIT DETERMINATION

Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %					
No. of Blows; N					



PLASTIC LIMIT DETERMINATION

Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %					

LL = NP PL = NP PI = NP



Hydraulic Conductivity

ASTM: D5084

Operator: JTR

Soil Classification: Sandy Silt, Dark Gray

Avg. Hydraulic Conductivity: 7.6E-04 cm/s

Avg. Confining Pressure:	23.0 psi
Avg. Differential Pressure:	1.0 psi
Influent Pipette Area:	0.3030 cm ²
Effluent Pipette Area:	0.3030 cm ²
Wet Density:	109.2 pcf
Wet Density:	1.750 g/cc
Dry Density:	100.0 pcf
Dry Density:	1.603 g/cc
Final Moisture Content:	12.7 %

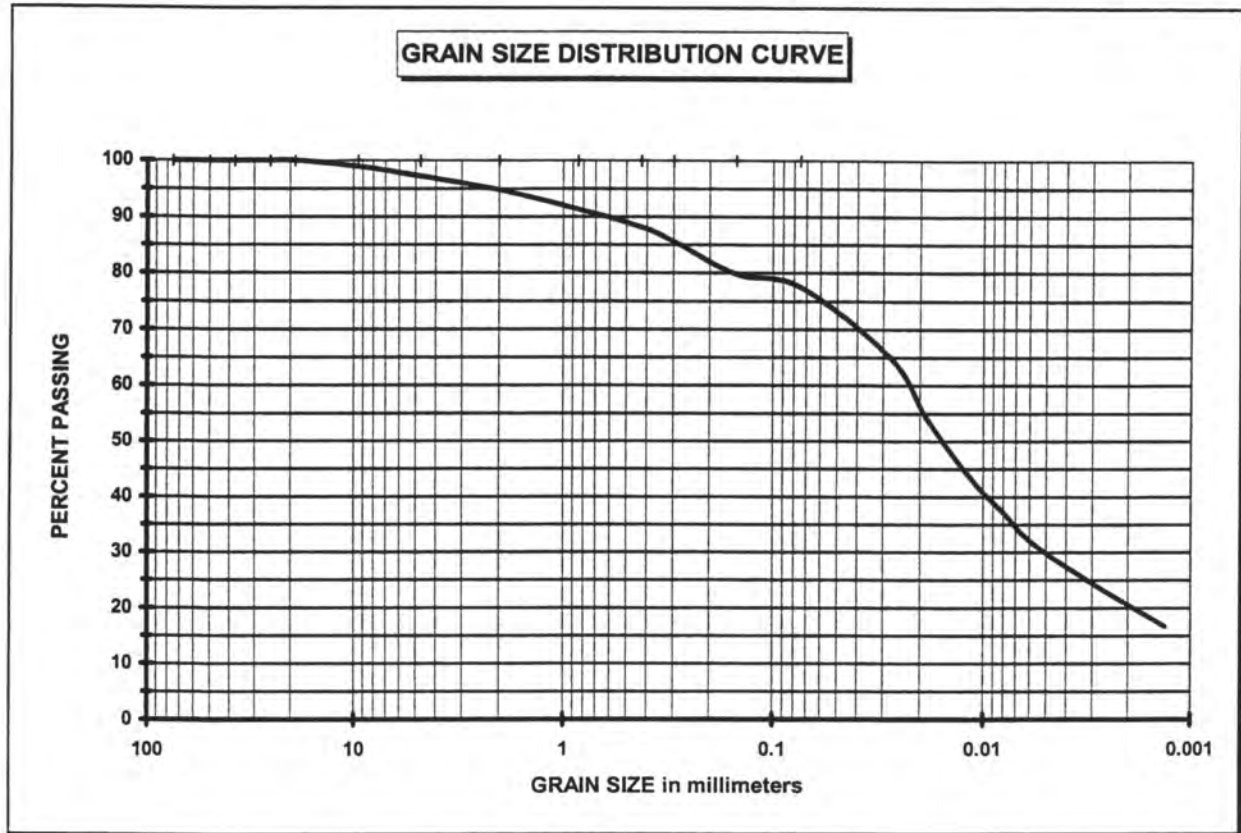
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/18/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL41129 Depth (ft): _____

Soil Description: Lean Clay with Sand, Gray

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	26
PLASTIC LIMIT	15
PLASTICITY INDEX	11
USC	CL

GRAIN SIZE DATA	
% GRAVEL	2.8
% SAND	19.7
% SILT	47.5
% CLAY	30.0



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL41129

Date: 9/18/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 38.76
Wet + tare wt: 70.37
Dry + tare wt: 70.11
Solids wt: 31.35
Moist. wt: 0.26
Percent moisture: 0.83

Init wt, (g): 250.95
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.59
Rep. total wt: 52.32
Sp. Gr: 2.79
Sp. Gr. corr, (a): 0.97

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	2.70	1.08	98.92	
4	4.75	6.91	2.75	97.25	
10	2	13.08	5.21	94.79	
20	0.85	1.83	3.50	91.29	
40	0.425	3.48	6.65	88.14	
60	0.25	4.83	9.23	85.56	
140	0.106	7.86	15.02	79.76	
200	0.075	9.02	17.24	77.55	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	40	5	35	41	9.6	0.01261	0.0276	64.89
5	23	34	5	29	35	10.6	0.01261	0.0183	53.77
15	23	28	5	23	29	11.6	0.01261	0.0111	42.65
30	23	25	5	20	26	12.1	0.01261	0.0080	37.08
60	23	22	5	17	23	12.5	0.01261	0.0058	31.52
250	23	18	5	13	19	13.2	0.01261	0.0029	24.10
1440	23	14	5	9	2	16.0	0.01261	0.0013	16.69



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL41129

Date: 9/25/01

Flask No.	22
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	176.17
Wt. of Flask + Dry Soil, (g)	231.31
Wt. of Dry Soil, (g)	55.14
Wt. of Flask + Water, (g)	673.89
Wt. of Flask, Soil, & Water, (g)	709.28
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.790



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

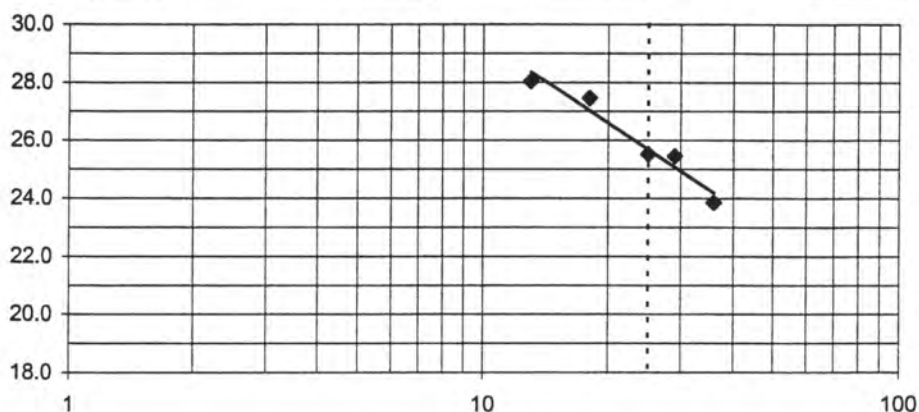
Operator: DB

Sample No: LL41129

Date: 09/20/01

LIQUID LIMIT DETERMINATION

Tare No.	12	13	14	15	16
Soil & Tare Wet Wt.	11.75	11.51	16.16	12.68	11.58
Soil & Tare Dry Wt.	9.73	9.43	13.13	10.22	9.32
Tare Wt.	1.26	1.26	1.26	1.26	1.26
Moisture Content; %	23.9	25.5	25.5	27.5	28.0
No. of Blows; N	36	29	25	18	13



PLASTIC LIMIT DETERMINATION

Tare No.	9		10		11
Soil & Tare Wet Wt.	11.86		7.96		11.62
Soil & Tare Dry Wt.	10.53		7.10		10.28
Tare Wt.	1.26		1.26		1.26
Moisture Content; %	14.4		14.7		14.9

LL= 26

PL = 15

PI = 11



Hydraulic Conductivity

ASTM: D5084

Operator: JTR

Soil Classification: Lean Clay with Sand, Gray

Avg. Hydraulic Conductivity: 1.4E-07 cm/s

Avg. Sample Height:	4.343 in
Avg. Sample Height:	11.032 cm
Avg. Sample Diameter:	2.830 in
Avg. Sample Diameter:	7.189 cm
Sample Area:	6.292 in ²
Sample Area:	40.591 cm ²
Sample Volume:	447.81 cc
Initial Sample Weight:	998.02 gms
Initial Moisture Content:	12.9 %

Avg. Confining Pressure:	35.0 psi
Avg. Differential Pressure:	1.0 psi
Influent Pipette Area:	0.3030 cm ²
Effluent Pipette Area:	0.3030 cm ²
Wet Density:	139.1 pcf
Wet Density:	2.229 g/cc
Dry Density:	123.2 pcf
Dry Density:	1.974 g/cc
Final Moisture Content:	16.3 %

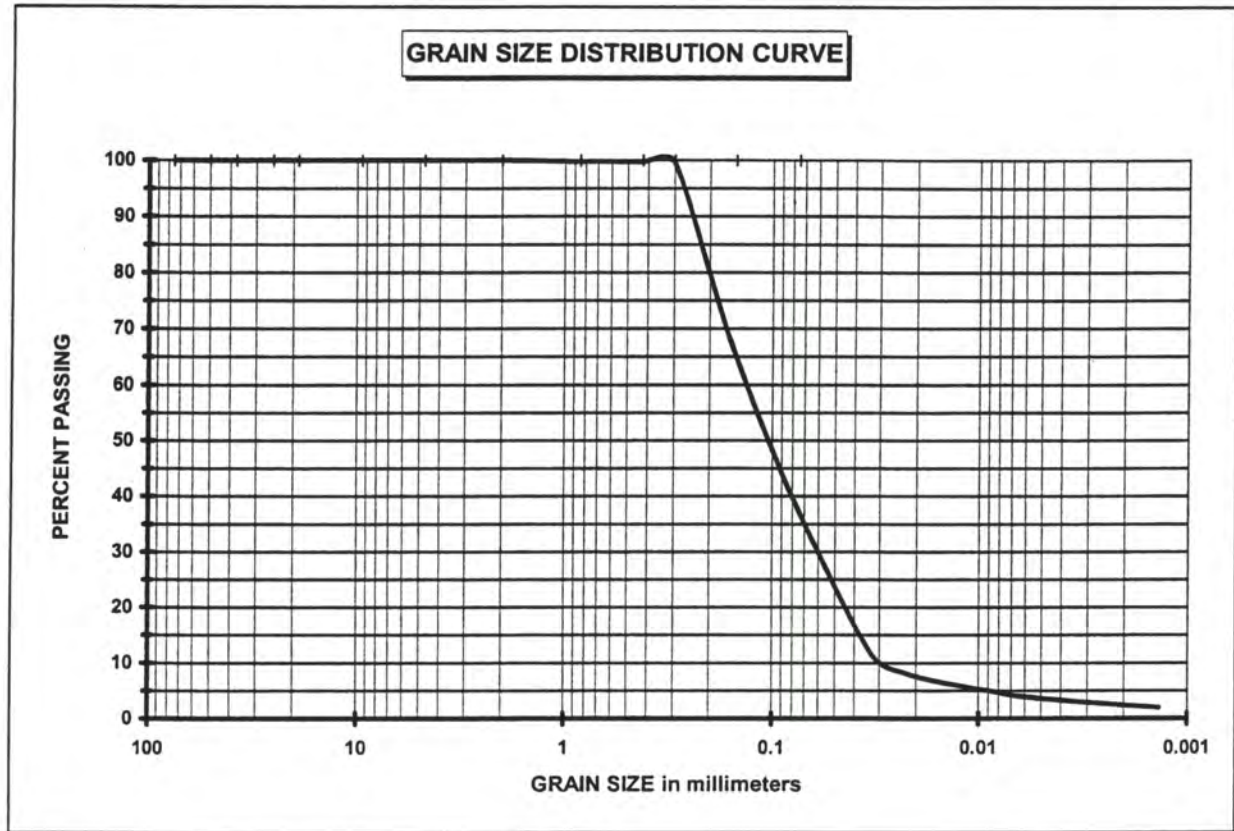
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/18/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL41125

Depth (ft): _____

Soil Description: Silty Sand, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTICITY INDEX	NP
USCS	SM

GRAIN SIZE DATA	
% GRAVEL	0.0
% SAND	62.6
% SILT	33.8
% CLAY	3.6



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL41125

Date: 9/18/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 39.04
Wet + tare wt: 81.39
Dry + tare wt: 81.24
Solids wt: 42.2
Moist. wt: 0.15
Percent moisture: 0.36

Init wt, (g): 876.62
Hydro spec wt, (g): 100.00
Dry hydro wt, (g): 99.65
Rep. total wt: 99.65
Sp. Gr: 2.718
Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.00	0.00	100.00	
10	2	0.00	0.00	100.00	
20	0.85	0.25	0.25	99.75	
40	0.425	0.30	0.30	99.70	
60	0.25	0.53	0.53	99.47	
140	0.106	34.62	34.74	65.26	
200	0.075	62.33	62.55	37.45	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	17	5	12	18	13.4	0.01297	0.0335	11.92
5	23	13	5	8	14	14.0	0.01297	0.0217	7.95
15	23	11	5	6	12	14.3	0.01297	0.0127	5.96
30	23	10	5	5	11	14.5	0.01297	0.0090	4.97
60	23	9	5	4	10	14.7	0.01297	0.0064	3.97
250	23	8	5	3	9	14.8	0.01297	0.0032	2.98
1440	23	7	5	2	2	16.0	0.01297	0.0014	1.99



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL41125

Date: 9/25/01

Flask No.	26
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	178.73
Wt. of Flask + Dry Soil, (g)	260.00
Wt. of Dry Soil, (g)	81.27
Wt. of Flask + Water, (g)	676.53
Wt. of Flask, Soil, & Water, (g)	727.92
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.718



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

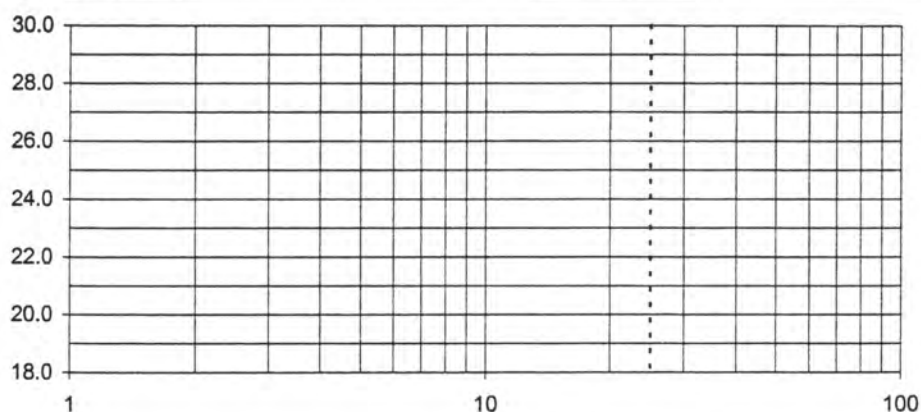
Operator: DB

Sample No: LL41125

Date: 09/18/01

LIQUID LIMIT DETERMINATION

Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %					
No. of Blows; N					



PLASTIC LIMIT DETERMINATION

Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %					

LL=

NP

PL =

NP

PI =

NP



Hydraulic Conductivity

Job No: 1439-01-417

Spec ID: LL41125

ASTM: D5084

Job Name: Ravenna - Load Line 4

Depth: _____

Operator: JTR

Soil Classification: Silty Sand, Brown

Avg. Hydraulic Conductivity: 3.8E-04 cm/s

Avg. Sample Height:	4.986 in
Avg. Sample Height:	12.664 cm
Avg. Sample Diameter:	2.805 in
Avg. Sample Diameter:	7.125 cm
Sample Area:	6.180 in ²
Sample Area:	39.868 cm ²
Sample Volume:	504.87 cc
Initial Sample Weight:	1057.94 gms
Initial Moisture Content:	17.9 %

Avg. Confining Pressure:	23.0 psi
Avg. Differential Pressure:	1.0 psi
Influent Pipette Area:	0.3030 cm ²
Effluent Pipette Area:	0.3030 cm ²
Wet Density:	130.8 pcf
Wet Density:	2.095 g/cc
Dry Density:	110.9 pcf
Dry Density:	1.777 g/cc
Final Moisture Content:	21.0 %

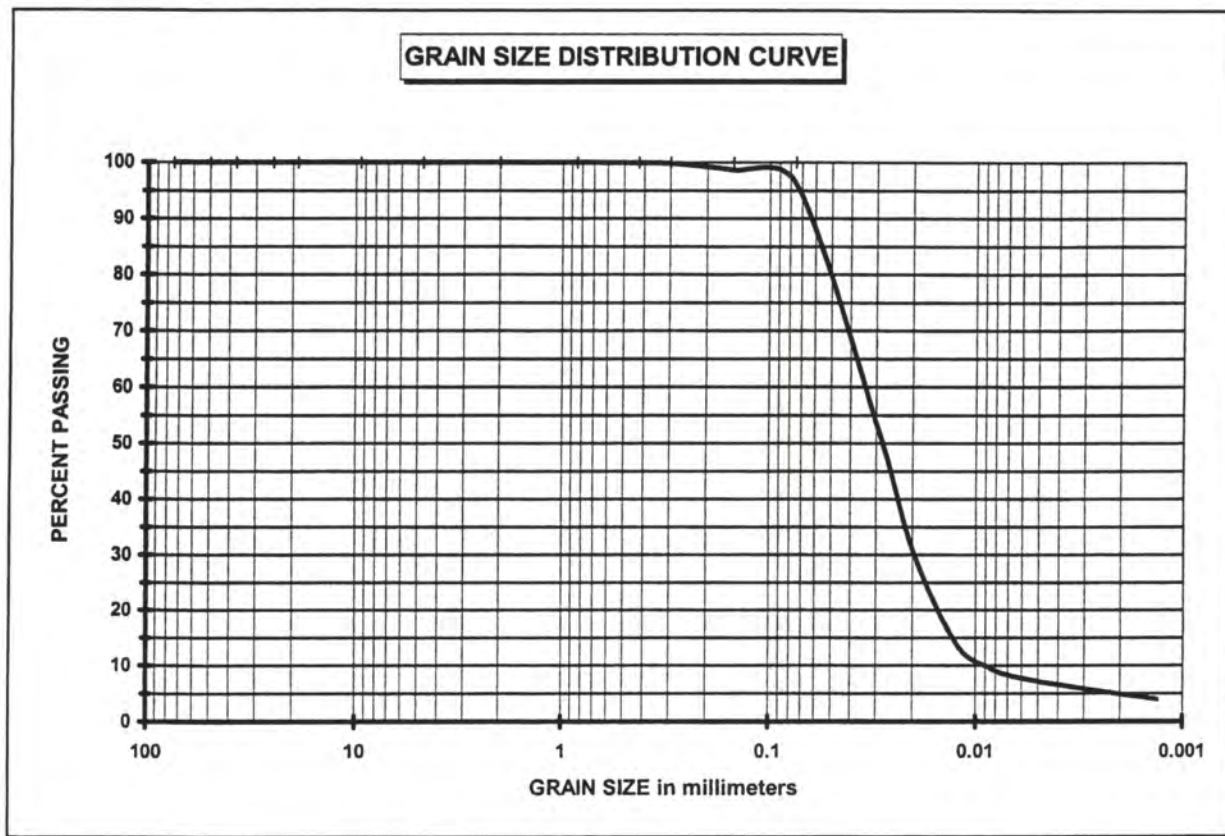
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL41131 Depth (ft): _____

Soil Description: Lean Clay, Gray

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	23
PLASTIC LIMIT	13
PLASTICITY INDEX	10
USC	CL

GRAIN SIZE DATA	
% GRAVEL	0.0
% SAND	3.8
% SILT	89.0
% CLAY	7.2



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL41131

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>38.24</u>
Wet + tare wt:	<u>75.59</u>
Dry + tare wt:	<u>75.45</u>
Solids wt:	<u>37.21</u>
Moist. wt:	<u>0.14</u>
Percent moisture:	<u>0.38</u>

Sample Data:

Init wt, (g):	<u>198.30</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>49.81</u>
Rep. total wt:	<u>49.81</u>
Sp. Gr:	<u>2.801</u>
Sp. Gr. corr, (a):	<u>0.97</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.00	0.00	100.00	
10	2	0.00	0.00	100.00	
20	0.85	0.00	0.00	100.00	
40	0.425	0.05	0.10	99.90	
60	0.25	0.12	0.24	99.76	
140	0.106	0.69	1.39	98.61	
200	0.075	1.91	3.83	96.17	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	32	5	27	33	10.9	0.01261	0.0295	52.58
5	23	21	5	16	22	12.7	0.01261	0.0201	31.16
15	23	12	5	7	13	14.2	0.01261	0.0123	13.63
30	23	10	5	5	11	14.5	0.01261	0.0088	9.74
60	23	9	5	4	10	14.7	0.01261	0.0062	7.79
250	23	8	5	3	9	14.8	0.01261	0.0031	5.84
1440	23	7	5	2	2	16.0	0.01261	0.0013	3.89



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL41131

Date: 9/25/01

Flask No.	27
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	180.62
Wt. of Flask + Dry Soil, (g)	232.25
Wt. of Dry Soil, (g)	51.63
Wt. of Flask + Water, (g)	679.29
Wt. of Flask, Soil, & Water, (g)	712.50
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.801



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

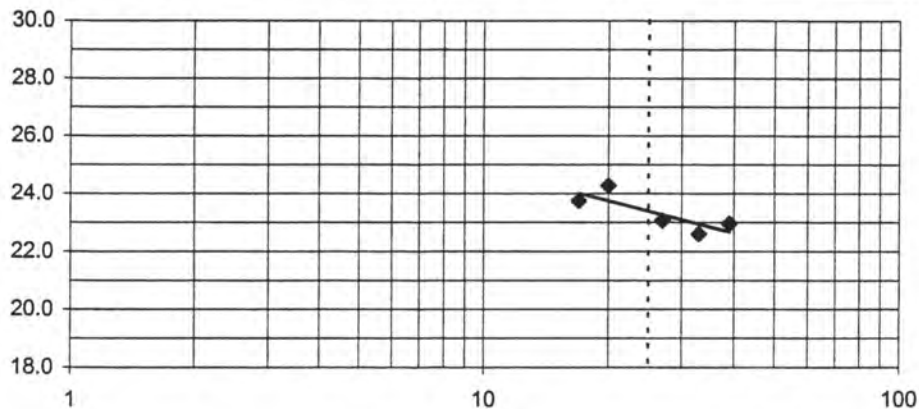
Operator: DB

Sample No: LL41131

Date: 09/20/01

LIQUID LIMIT DETERMINATION

Tare No.	M	14	26	35	T
Soil & Tare Wet Wt.	15.85	15.29	16.56	15.17	14.54
Soil & Tare Dry Wt.	13.58	13.11	14.18	13.10	12.58
Tare Wt.	4.02	4.13	3.86	3.94	4.04
Moisture Content; %	23.7	24.3	23.1	22.6	23.0
No. of Blows; N	17	20	27	33	39



PLASTIC LIMIT DETERMINATION

Tare No.	36		A3		12
Soil & Tare Wet Wt.	17.58		15.28		16.94
Soil & Tare Dry Wt.	16.03		14.01		15.50
Tare Wt.	3.81		3.95		4.22
Moisture Content; %	12.7		12.6		12.8

LL= 23

PL = 13

PI = 10



Hydraulic Conductivity

Job No: 1439-01-417

Spec ID: LL41131

ASTM: D5084

Job Name: Ravenna - Load Line 4

Depth: _____

Operator: JTR

Soil Classification: Lean Clay, Gray

Avg. Hydraulic Conductivity: 4.5E-05 cm/s

Avg. Sample Height:	3.916 in
Avg. Sample Height:	9.947 cm
Avg. Sample Diameter:	2.835 in
Avg. Sample Diameter:	7.202 cm
Sample Area:	6.314 in ²
Sample Area:	40.735 cm ²
Sample Volume:	405.17 cc
Initial Sample Weight:	858.31 gms
Initial Moisture Content:	21.2 %

Avg. Confining Pressure:	35.0 psi
Avg. Differential Pressure:	1.0 psi
Influent Pipette Area:	0.3030 cm ²
Effluent Pipette Area:	0.3030 cm ²
Wet Density:	132.2 pcf
Wet Density:	2.118 g/cc
Dry Density:	109.1 pcf
Dry Density:	1.748 g/cc
Final Moisture Content:	29.7 %

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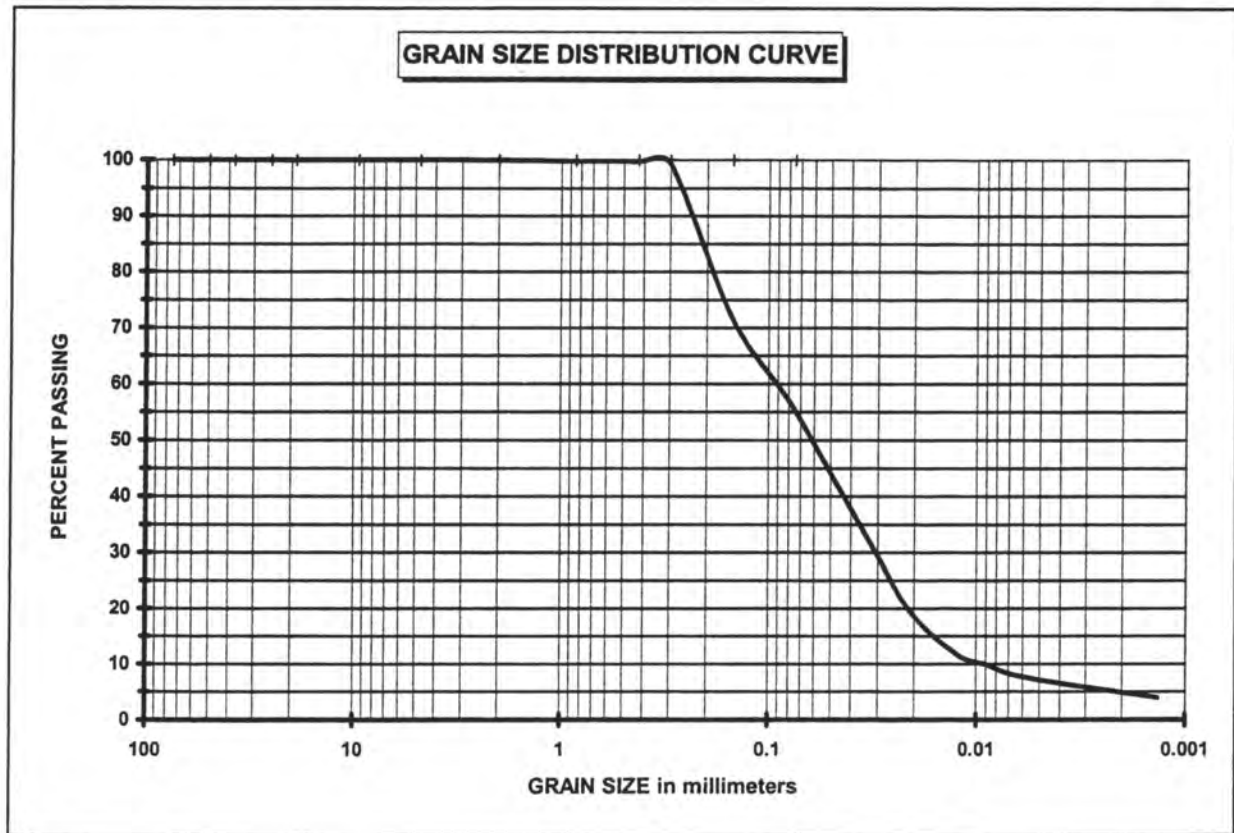
GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II

Job Number: 1439-01-417

ASTM: D 422

Date: 9/19/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL41127

Depth (ft): _____

Soil Description: Sandy Silty Clay, Grayish Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	18
PLASTIC LIMIT	13
PLASTICITY INDEX	5
USC	CL-ML

GRAIN SIZE DATA	
% GRAVEL	0.0
% SAND	44.6
% SILT	48.2
% CLAY	7.2



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL41127

Date: 9/19/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Sample Data:

Tare wt: 27.53
Wet + tare wt: 64.58
Dry + tare wt: 64.45
Solids wt: 36.92
Moist. wt: 0.13
Percent moisture: 0.35

Init wt, (g): 210.60
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.82
Rep. total wt: 49.87
Sp. Gr: 2.758
Sp. Gr. corr, (a): 0.98

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.00	0.00	100.00	
10	2	0.18	0.09	99.91	
20	0.85	0.07	0.14	99.77	
40	0.425	0.11	0.22	99.69	
60	0.25	0.34	0.68	99.23	
140	0.106	14.12	28.32	71.60	
200	0.075	22.20	44.52	55.40	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	21	5	16	22	12.7	0.01279	0.0322	31.44
5	23	15	5	10	16	13.7	0.01279	0.0212	19.65
15	23	11	5	6	12	14.3	0.01279	0.0125	11.79
30	23	10	5	5	11	14.5	0.01279	0.0089	9.83
60	23	9	5	4	10	14.7	0.01279	0.0063	7.86
250	23	8	5	3	9	14.8	0.01279	0.0031	5.90
1440	23	7	5	2	2	16.0	0.01279	0.0013	3.93



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL41127

Date: 9/25/01

Flask No.	24
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	173.62
Wt. of Flask + Dry Soil, (g)	250.55
Wt. of Dry Soil, (g)	76.93
Wt. of Flask + Water, (g)	671.42
Wt. of Flask, Soil, & Water, (g)	720.48
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.758



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

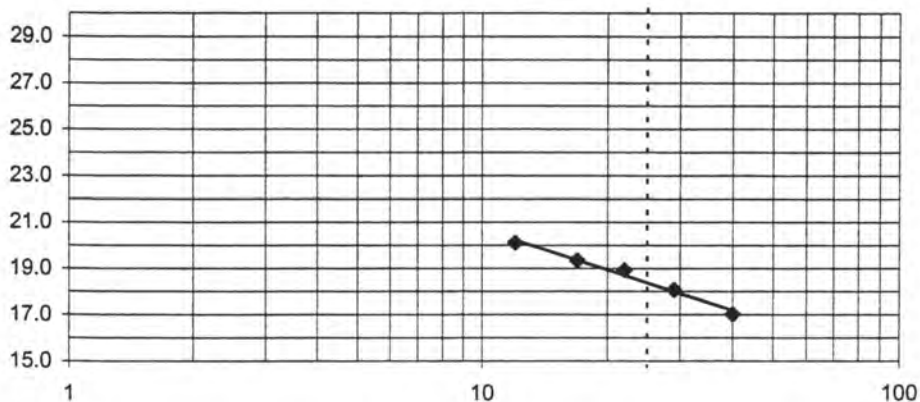
Operator: DB

Sample No: LL41127

Date: 09/21/01

LIQUID LIMIT DETERMINATION

Tare No.	M	26	27	28	29
Soil & Tare Wet Wt.	13.82	13.98	14.28	12.77	10.76
Soil & Tare Dry Wt.	11.72	11.92	12.21	11.01	9.38
Tare Wt.	1.27	1.27	1.27	1.27	1.27
Moisture Content; %	20.1	19.3	18.9	18.1	17.0
No. of Blows; N	12	17	22	29	40



PLASTIC LIMIT DETERMINATION

Tare No.	30		31		32
Soil & Tare Wet Wt.	13.51		12.32		16.86
Soil & Tare Dry Wt.	12.12		11.07		15.08
Tare Wt.	1.27		1.27		1.27
Moisture Content; %	12.8		12.8		12.9

LL= 18

PL = 13

PI = 5



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

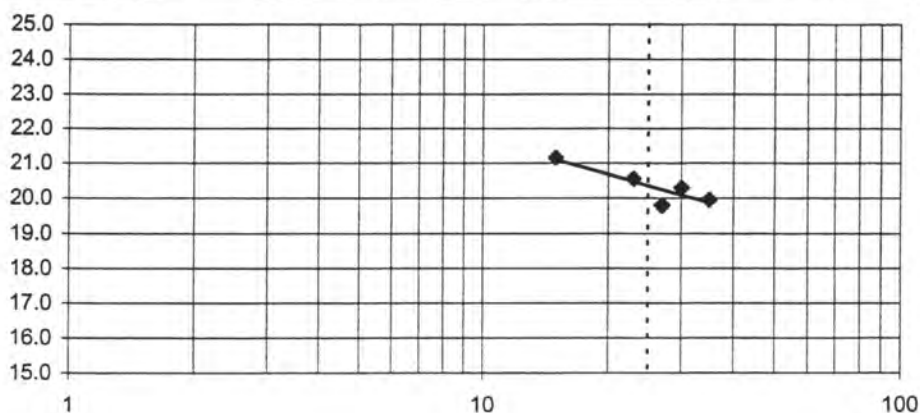
Operator: DB

Sample No: LL41126

Date: 09/18/01

LIQUID LIMIT DETERMINATION

Tare No.	4	20	25	15	60
Soil & Tare Wet Wt.	18.32	20.69	19.83	19.93	19.20
Soil & Tare Dry Wt.	15.81	17.84	17.19	17.25	16.64
Tare Wt.	3.95	3.98	3.86	4.05	3.81
Moisture Content; %	21.2	20.6	19.8	20.3	20.0
No. of Blows; N	15	23	27	30	35



PLASTIC LIMIT DETERMINATION

Tare No.	401		20		E
Soil & Tare Wet Wt.	19.06		17.80		19.40
Soil & Tare Dry Wt.	17.33		16.23		17.68
Tare Wt.	3.84		3.95		4.08
Moisture Content; %	12.8		12.8		12.7

LL= 20

PL = 13

PI = 7

USC=CL-ML

Soil Classification: Silty Clayey Sand, Gray



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL41126

Date: 9/25/01

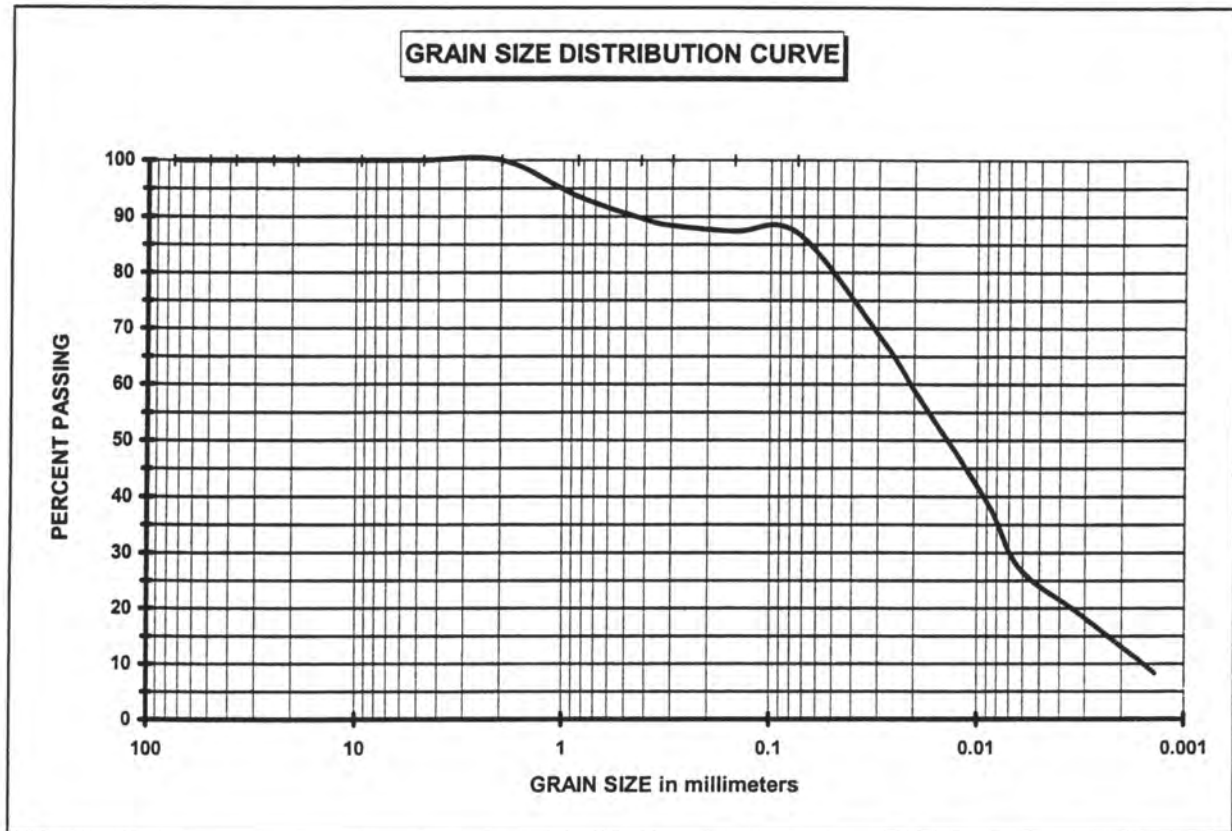
Flask No.	11
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	174.72
Wt. of Flask + Dry Soil, (g)	227.63
Wt. of Dry Soil, (g)	52.91
Wt. of Flask + Water, (g)	672.56
Wt. of Flask, Soil, & Water, (g)	706.33
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.762



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/12/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40967 Depth (ft): _____

Soil Description: Brown with Black

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	0.0
% SAND	12.9
% SILT	62.7
% CLAY	24.4



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40967

Date: 9/12/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 38.64
Wet + tare wt: 54.65
Dry + tare wt: 54.09
Solids wt: 15.45
Moist. wt: 0.56
Percent moisture: 3.62

Init wt, (g): 66.20
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 48.25
Rep. total wt: 48.25
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.00	0.00	100.00	
10	2	0.00	0.00	100.00	
20	0.85	3.11	6.45	93.55	
40	0.425	4.97	10.30	89.70	
60	0.25	5.62	11.65	88.35	
140	0.106	6.08	12.60	87.40	
200	0.075	6.22	12.89	87.11	

Hydrometer Analysis

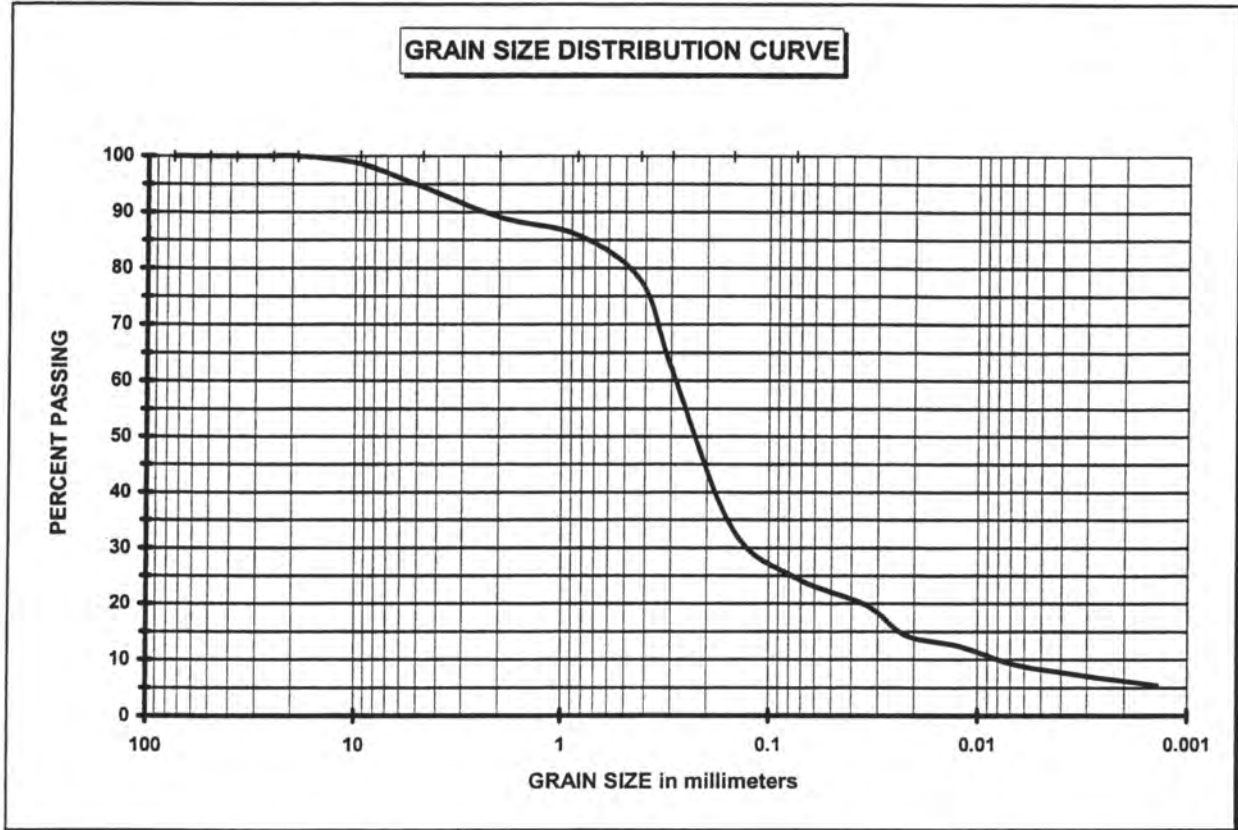
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	38	5	33	39	9.9	0.01317	0.0293	68.39
5	23	33	5	28	34	10.7	0.01317	0.0193	58.03
15	23	27	5	22	28	11.7	0.01317	0.0116	45.59
30	23	23	5	18	24	12.4	0.01317	0.0085	37.30
60	23	18	5	13	19	13.2	0.01317	0.0062	26.94
250	23	14	5	9	15	13.9	0.01317	0.0031	18.65
1440	23	9	5	4	2	16.0	0.01317	0.0014	8.29



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/11/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40973

Depth (ft): _____

Soil Description: _____

Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	5.5
% SAND	69.8
% SILT	16.4
% CLAY	8.3



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40973

Date: 9/11/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 38.89
Wet + tare wt: 71.6
Dry + tare wt: 71.37
Solids wt: 32.48
Moist. wt: 0.23
Percent moisture: 0.71

Init wt, (g): 336.62
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.65
Rep. total wt: 55.73
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	4.59	1.36	98.64	
4	4.75	18.51	5.50	94.50	
10	2	36.75	10.92	89.08	
20	0.85	1.79	3.21	85.87	
40	0.425	6.27	11.25	77.83	
60	0.25	14.95	26.82	62.26	
140	0.106	30.96	55.55	33.53	
200	0.075	35.89	64.40	24.69	

Hydrometer Analysis

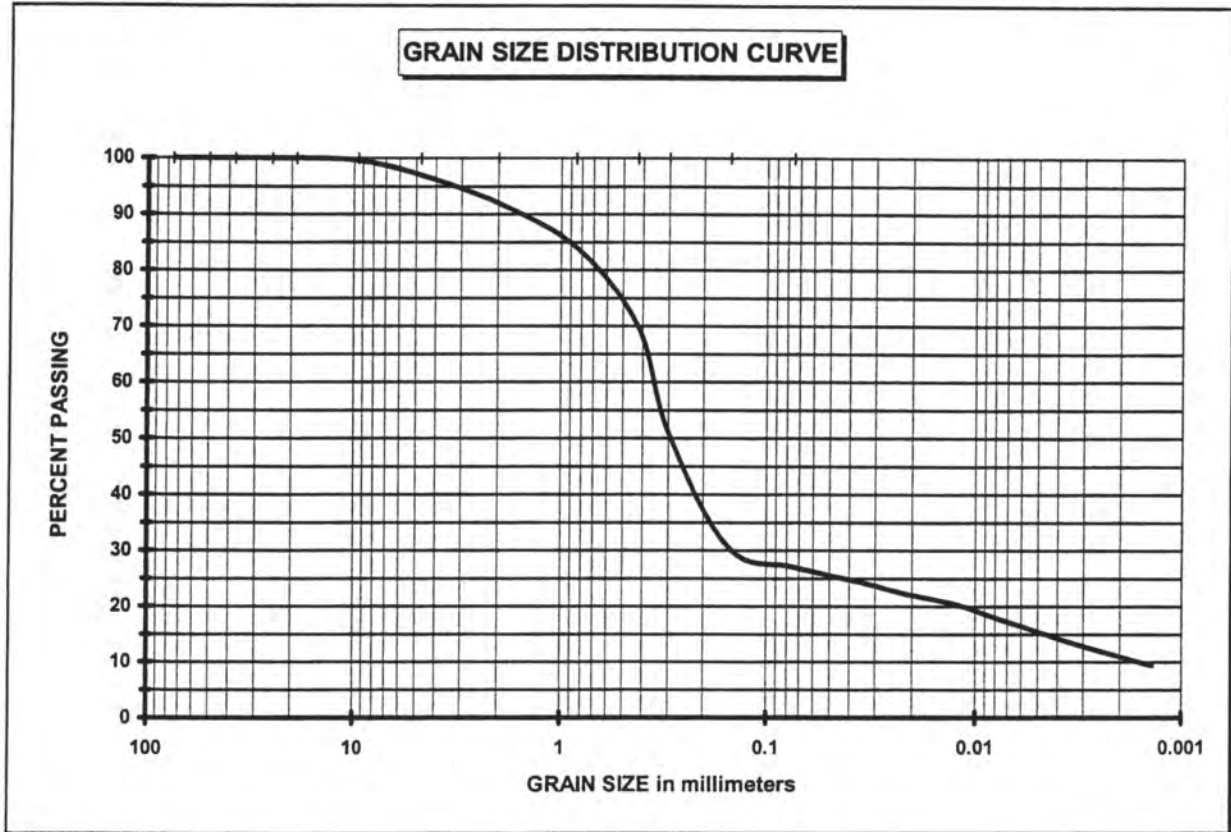
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	16	5	11	17	13.5	0.01317	0.0342	19.74
5	23	13	5	8	14	14.0	0.01317	0.0220	14.35
15	23	12	5	7	13	14.2	0.01317	0.0128	12.56
30	23	11	5	6	12	14.3	0.01317	0.0091	10.77
60	23	10	5	5	11	14.5	0.01317	0.0065	8.97
250	23	9	5	4	10	14.7	0.01317	0.0032	7.18
1440	23	8	5	3	2	16.0	0.01317	0.0014	5.38



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/11/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40953 Depth (ft): _____

Soil Description: _____ Greenish Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	3.0
% SAND	70.0
% SILT	11.5
% CLAY	15.5



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40953

Date: 9/11/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 37.41
Wet + tare wt: 81.44
Dry + tare wt: 81.03
Solids wt: 43.62
Moist. wt: 0.41
Percent moisture: 0.94

Init wt, (g): 394.94
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.53
Rep. total wt: 53.86
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	1.74	0.44	99.56	
4	4.75	11.82	2.99	97.01	
10	2	31.69	8.02	91.98	
20	0.85	4.25	7.89	84.08	
40	0.425	11.78	21.87	70.10	
60	0.25	22.10	41.04	50.94	
140	0.106	33.17	61.59	30.39	
200	0.075	34.97	64.93	27.04	

Hydrometer Analysis

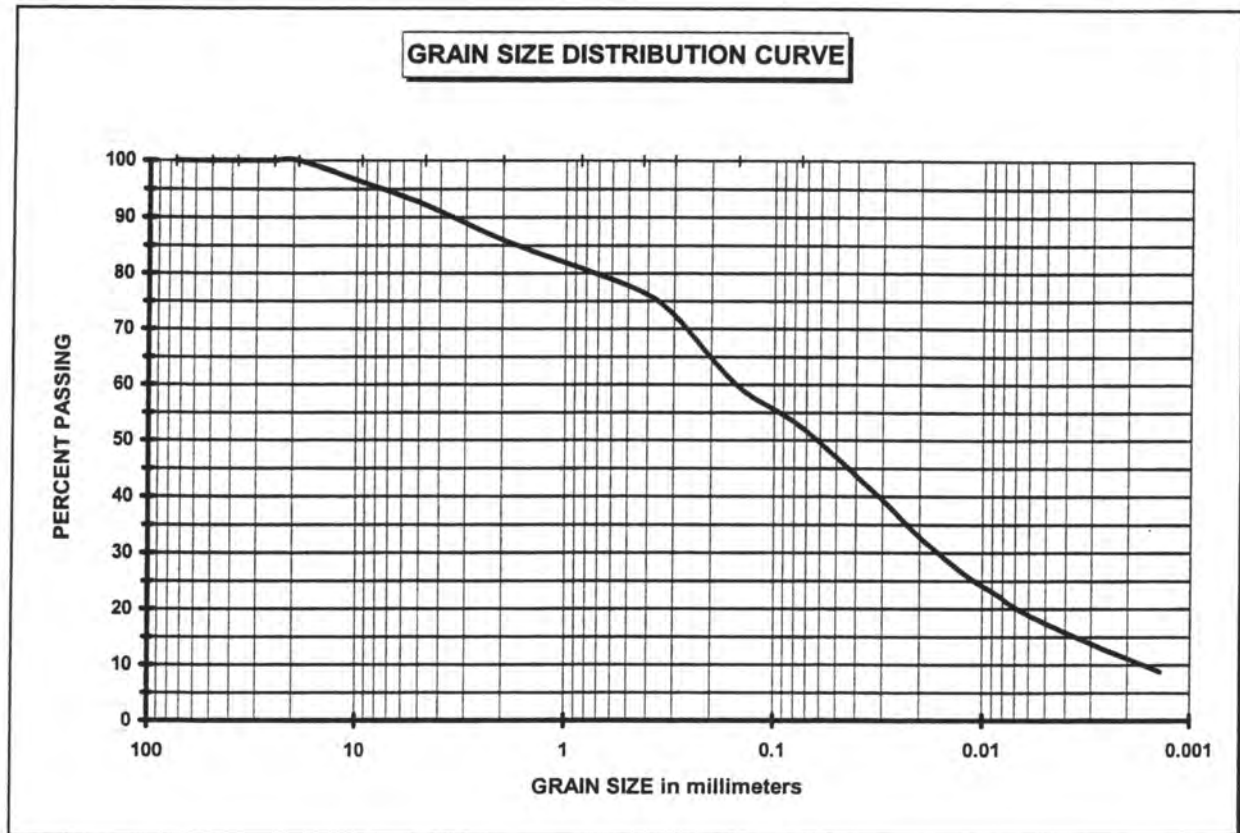
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	18	5	13	19	13.2	0.01317	0.0338	24.14
5	23	17	5	12	18	13.4	0.01317	0.0215	22.28
15	23	16	5	11	17	13.5	0.01317	0.0125	20.42
30	23	15	5	10	16	13.7	0.01317	0.0089	18.57
60	23	14	5	9	15	13.9	0.01317	0.0063	16.71
250	23	12	5	7	13	14.2	0.01317	0.0031	13.00
1440	23	10	5	5	2	16.0	0.01317	0.0014	9.28



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/11/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40971 Depth (ft): _____

Soil Description: _____ Gray with Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	7.8
% SAND	39.7
% SILT	35.0
% CLAY	17.5



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40971

Date: 9/11/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt: 37.92
Wet + tare wt: 62.97
Dry + tare wt: 62.58
Solids wt: 24.66
Moist. wt: 0.39
Percent moisture: 1.58

Sample Data:

Init wt, (g): 181.84
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.22
Rep. total wt: 57.25
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	6.87	3.78	96.22	
4	4.75	14.24	7.83	92.17	
10	2	25.50	14.02	85.98	
20	0.85	2.90	5.07	80.91	
40	0.425	5.39	9.41	76.56	
60	0.25	7.76	13.55	72.42	
140	0.106	15.01	26.22	59.76	
200	0.075	19.16	33.47	52.51	

Hydrometer Analysis

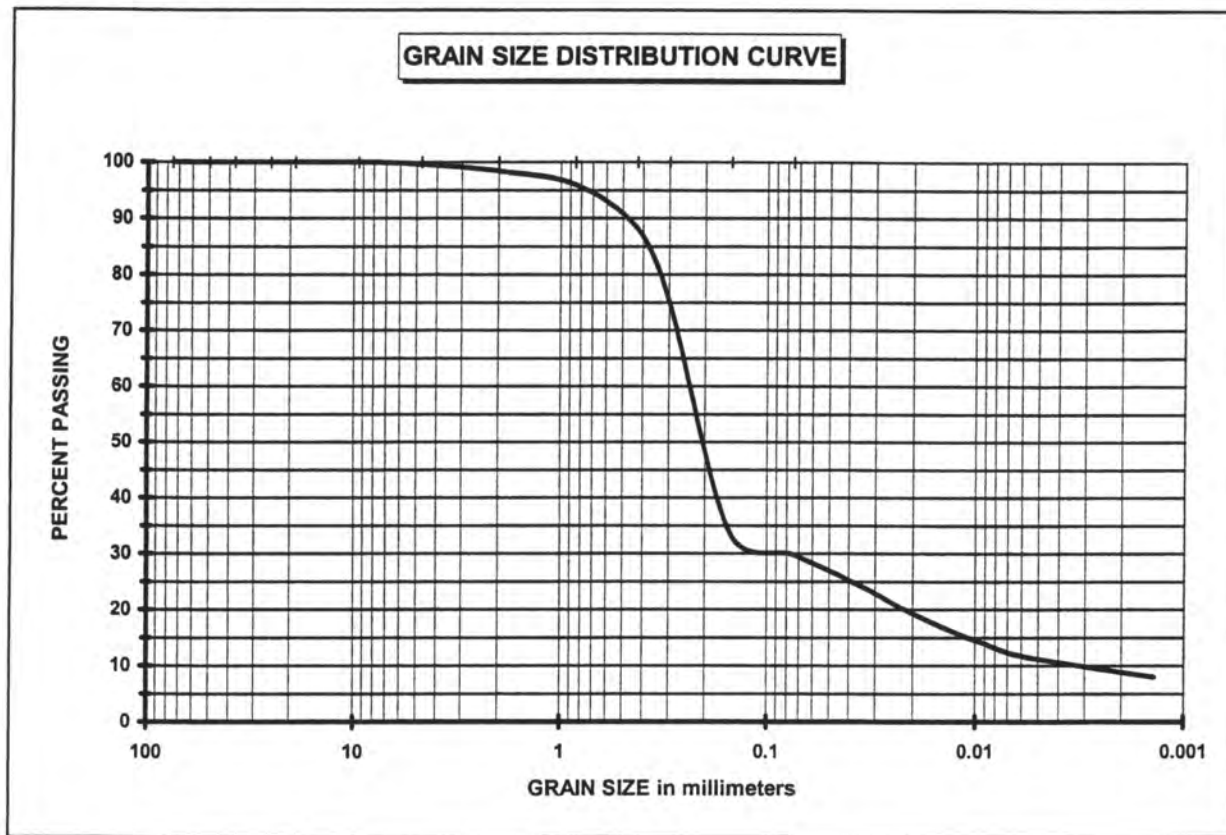
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	28	5	23	29	11.6	0.01317	0.0317	40.17
5	23	24	5	19	25	12.2	0.01317	0.0206	33.19
15	23	20	5	15	21	12.9	0.01317	0.0122	26.20
30	23	18	5	13	19	13.2	0.01317	0.0087	22.71
60	23	16	5	11	17	13.5	0.01317	0.0063	19.21
250	23	13	5	8	14	14.0	0.01317	0.0031	13.97
1440	23	10	5	5	2	16.0	0.01317	0.0014	8.73



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/11/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40990 Depth (ft): _____

Soil Description: _____ Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	0.4
% SAND	69.8
% SILT	18.6
% CLAY	11.2



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40990

Date: 9/11/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>36.44</u>
Wet + tare wt:	<u>66.31</u>
Dry + tare wt:	<u>65.93</u>
Solids wt:	<u>29.49</u>
Moist. wt:	<u>0.38</u>
Percent moisture:	<u>1.29</u>

Sample Data:

Init wt, (g):	<u>258.72</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>49.36</u>
Rep. total wt:	<u>50.16</u>
Assumed Sp. Gr.	<u>2.65</u>
Sp. Gr. corr, (a):	<u>1</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	1.04	0.40	99.60	
10	2	4.13	1.60	98.40	
20	0.85	1.23	2.45	95.95	
40	0.425	5.17	10.31	88.10	
60	0.25	11.66	23.24	75.16	
140	0.106	32.57	64.93	33.48	
200	0.075	34.41	68.59	29.81	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	17	5	12	18	13.4	0.01317	0.0340	23.92
5	23	15	5	10	16	13.7	0.01317	0.0218	19.93
15	23	13	5	8	14	14.0	0.01317	0.0127	15.95
30	23	12	5	7	13	14.2	0.01317	0.0091	13.95
60	23	11	5	6	12	14.3	0.01317	0.0064	11.96
250	23	10	5	5	11	14.5	0.01317	0.0032	9.97
1440	23	9	5	4	2	16.0	0.01317	0.0014	7.97

TEST DATA

Chain-of-Custody No. LL2S&ME-03
Shipment Received 8/24/01



**MOISTURE CONTENT - ASTM D2216
&
pH of SOILS - SW846-9045**

Job No: 1439-01-417

Name: SAIC - Ravenna Load Line 2 Phase II

Operator: DB

Date: 9/19/01

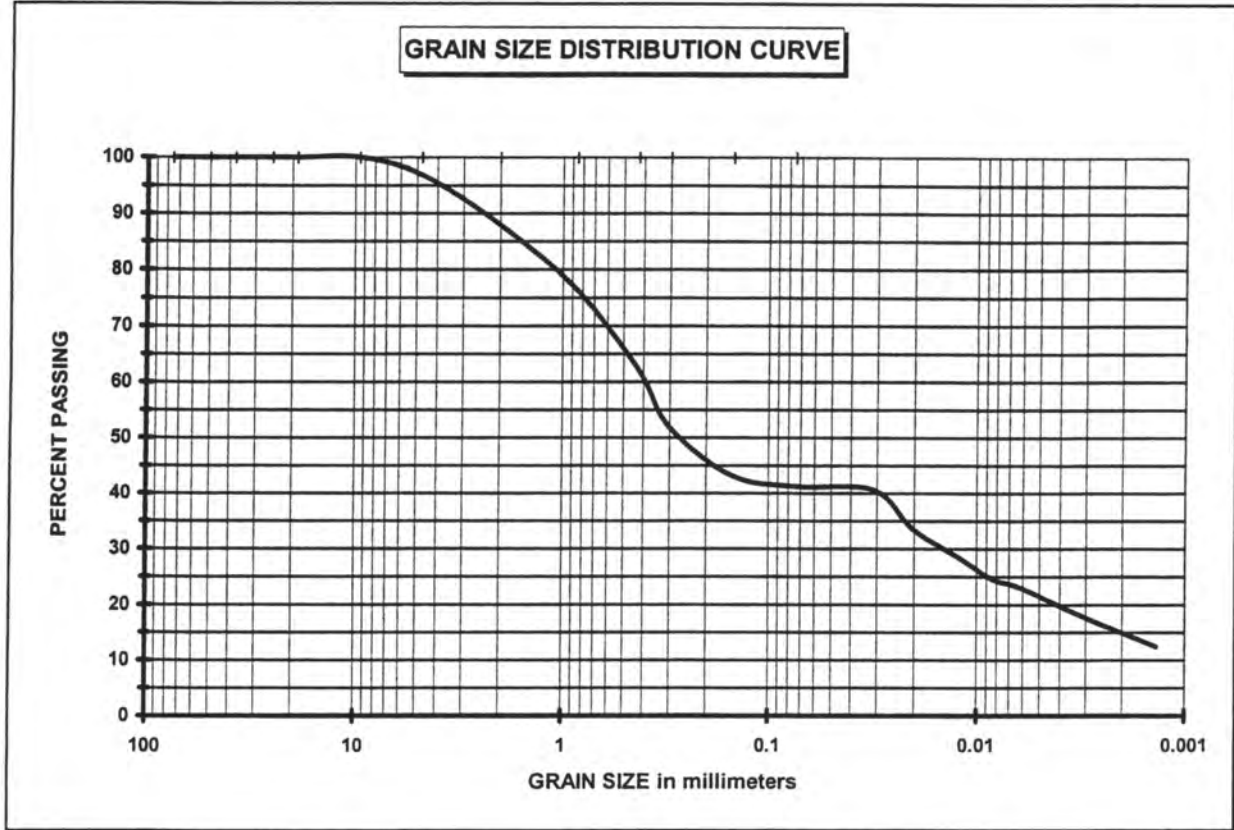
Specimen ID	pH	Natural Moisture Content (%)	Tare Weight	Wet Soil & Tare	Dry Soil & Tare
LL20 732	6.79	22.3%	1.27	70.01	57.47
LL20 740	7.13	15.0%	1.27	67.18	58.60
LL20 865	7.42	19.6%	1.27	69.14	58.04
LL20 726	7.19	15.4%	1.27	77.71	67.5
LL20 887	7.13	15.8%	1.27	51.72	44.85
LL20 856	6.38	13.3%	1.27	49.82	44.11
LL20 980	7.50	11.7%	1.27	61.24	54.96
LL2 1016	7.15	20.5%	1.27	62.67	52.24
LL20 746	7.02	8.9%	1.27	56.38	51.86
LL20 986	7.26	22.1%	1.27	135.12	110.85
LL20 908	7.13	10.5%	1.27	67.03	60.77
LL20 757	6.14	18.9%	1.27	78.42	66.15
LL20 752	7.24	8.4%	1.27	58.63	54.2
LL20 986	7.23	30.2%	1.27	96.84	74.7
LL20 920	6.45	18.0%	1.27	71.7	60.94
LL20 832	6.85	12.7%	1.27	53.38	47.51
LL20 838	6.69	13.4%	1.27	59.67	52.79
LL20 826	6.97	12.1%	1.27	64.14	57.36
LL20 926	7.32	15.5%	1.27	48.16	41.85



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL20726

Depth (ft): _____

Soil Description: Clayey Sand, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	28
PLASTIC LIMIT	14
PLASTICITY INDEX	14
USC	SC

GRAIN SIZE DATA	
% GRAVEL	3.1
% SAND	55.6
% SILT	19.9
% CLAY	21.4



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL20726

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 38.46
Wet + tare wt: 74.08
Dry + tare wt: 73.6
Solids wt: 35.14
Moist. wt: 0.48
Percent moisture: 1.37

Init wt, (g): 180.75
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.33
Rep. total wt: 56.11
Sp. Gr: 2.693
Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	5.66	3.13	96.87	
10	2	21.85	12.09	87.91	
20	0.85	6.51	11.60	76.31	
40	0.425	14.44	25.74	62.18	
60	0.25	20.28	36.14	51.77	
140	0.106	25.12	44.77	43.14	
200	0.075	26.19	46.68	41.23	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	28	5	23	29	11.6	0.01297	0.0312	40.58
5	23	24	5	19	25	12.2	0.01297	0.0203	33.52
15	23	21	5	16	22	12.7	0.01297	0.0119	28.23
30	23	19	5	14	20	13.0	0.01297	0.0085	24.70
60	23	18	5	13	19	13.2	0.01297	0.0061	22.94
250	23	15	5	10	16	13.7	0.01297	0.0030	17.64
1440	23	12	5	7	2	16.0	0.01297	0.0014	12.35



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL20726

Date: 9/23/01

Flask No.	28
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	171.61
Wt. of Flask + Dry Soil, (g)	232.59
Wt. of Dry Soil, (g)	60.98
Wt. of Flask + Water, (g)	669.24
Wt. of Flask, Soil, & Water, (g)	707.59
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.693



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM: D 4318

Job Name: Ravenna Load Line 2 Phase II

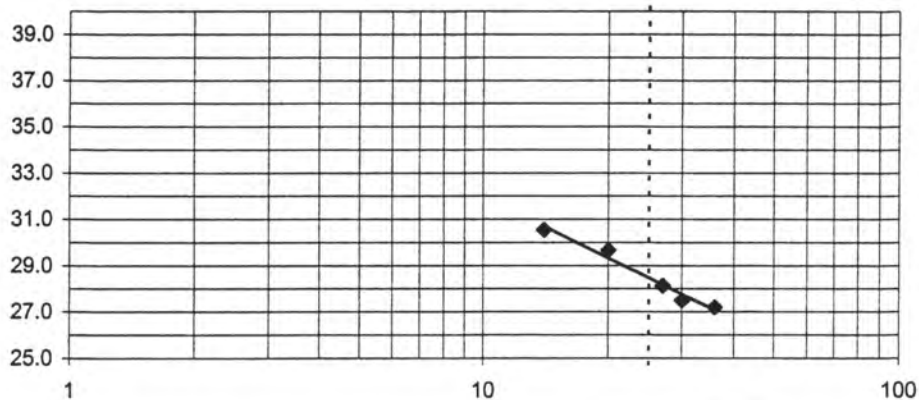
Operator: DB

Sample No: LL20726

Date: 09/24/01

LIQUID LIMIT DETERMINATION

Tare No.	311	B6	Q	I	A19
Soil & Tare Wet Wt.	16.04	16.50	17.70	18.45	17.95
Soil & Tare Dry Wt.	13.23	13.65	14.73	15.36	14.95
Tare Wt.	4.03	4.04	4.17	4.12	3.92
Moisture Content; %	30.5	29.7	28.1	27.5	27.2
No. of Blows; N	14	20	27	30	36



PLASTIC LIMIT DETERMINATION

Tare No.	16		10		B-1
Soil & Tare Wet Wt.	16.72		14.37		15.05
Soil & Tare Dry Wt.	15.12		13.06		13.65
Tare Wt.	4.09		4.02		3.82
Moisture Content; %	14.5		14.5		14.2

LL = 28

PL = 14

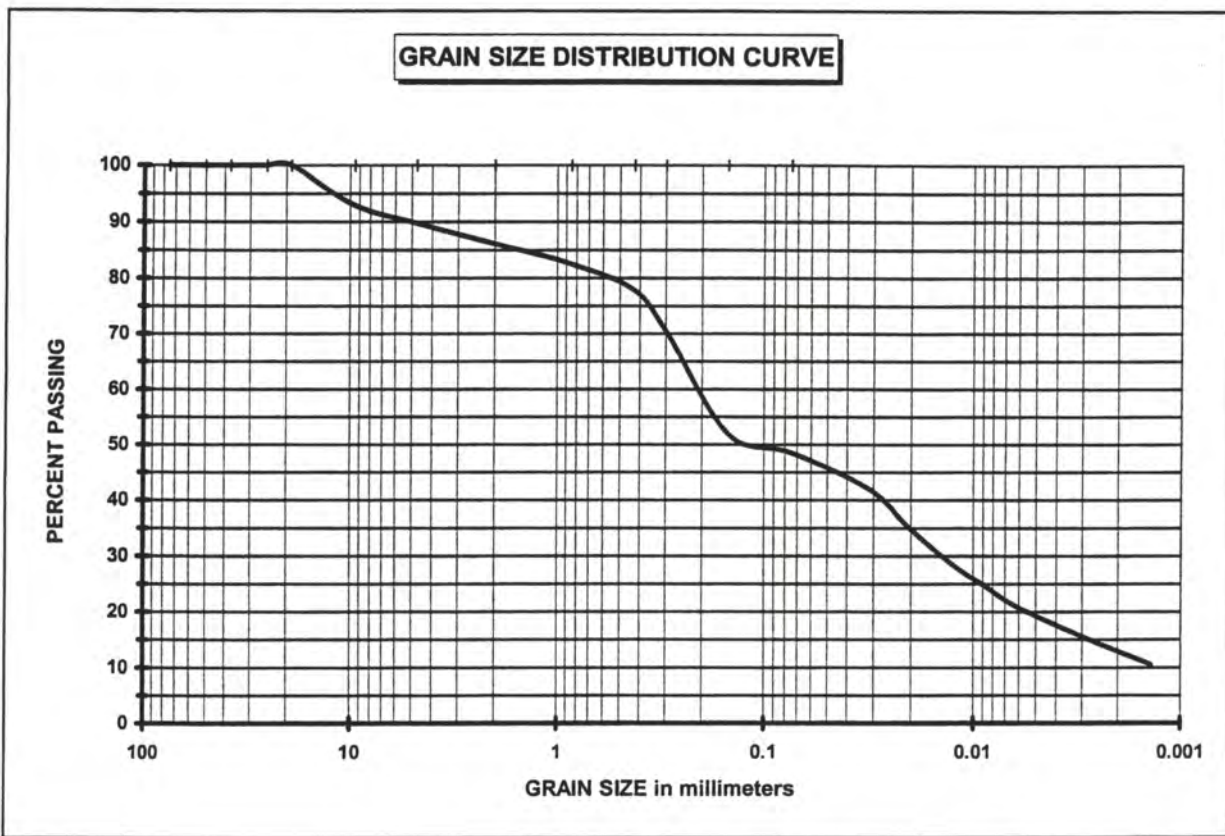
PI = 14



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL20887 Depth (ft): _____

Soil Description: Clayey Sand, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	35
PLASTIC LIMIT	20
PLASTICITY INDEX	15
USC	SC

GRAIN SIZE DATA	
% GRAVEL	10.3
% SAND	41.2
% SILT	29.1
% CLAY	19.4



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL20887

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Sample Data:

Tare wt: 38.4
Wet + tare wt: 68.3
Dry + tare wt: 67.8
Solids wt: 29.4
Moist. wt: 0.5
Percent moisture: 1.70

Init wt, (g): 140.10
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.16
Rep. total wt: 57.13
Sp. Gr: 2.645
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	9.91	7.07	92.93	
4	4.75	14.42	10.29	89.71	
10	2	19.53	13.94	86.06	
20	0.85	2.04	3.57	82.49	
40	0.425	4.73	8.28	77.78	
60	0.25	8.90	15.58	70.48	
140	0.106	19.49	34.12	51.94	
200	0.075	21.46	37.57	48.49	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	29	5	24	30	11.4	0.01317	0.0314	42.01
5	23	25	5	20	26	12.1	0.01317	0.0204	35.01
15	23	21	5	16	22	12.7	0.01317	0.0121	28.01
30	23	19	5	14	20	13.0	0.01317	0.0087	24.51
60	23	17	5	12	18	13.4	0.01317	0.0062	21.01
250	23	14	5	9	15	13.9	0.01317	0.0031	15.75
1440	23	11	5	6	2	16.0	0.01317	0.0014	10.50



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL20887

Date: 9/23/01

Flask No.	20
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	169.46
Wt. of Flask + Dry Soil, (g)	221.92
Wt. of Dry Soil, (g)	52.46
Wt. of Flask + Water, (g)	667.12
Wt. of Flask, Soil, & Water, (g)	699.76
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.645



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM: D 4318

Job Name: Ravenna Load Line 2 Phase II

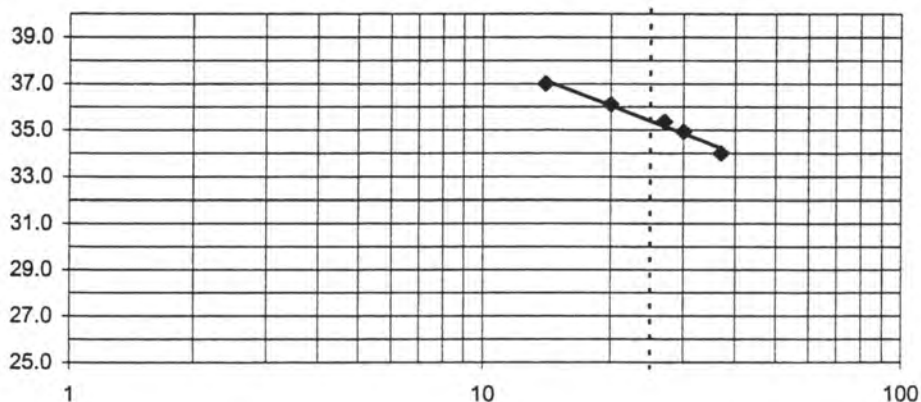
Operator: DB

Sample No: LL20887

Date: 09/24/01

LIQUID LIMIT DETERMINATION

Tare No.	A4	20	25	15	60
Soil & Tare Wet Wt.	16.84	16.19	16.44	16.76	17.25
Soil & Tare Dry Wt.	13.35	12.95	13.16	13.47	13.84
Tare Wt.	3.92	3.98	3.89	4.05	3.81
Moisture Content; %	37.0	36.1	35.4	34.9	34.0
No. of Blows; N	14	20	27	30	37



PLASTIC LIMIT DETERMINATION

Tare No.	401		A20		E
Soil & Tare Wet Wt.	16.09		15.30		16.58
Soil & Tare Dry Wt.	14.02		13.40		14.50
Tare Wt.	3.83		3.95		4.07
Moisture Content; %	20.3		20.1		19.9

LL = 35

PL = 20

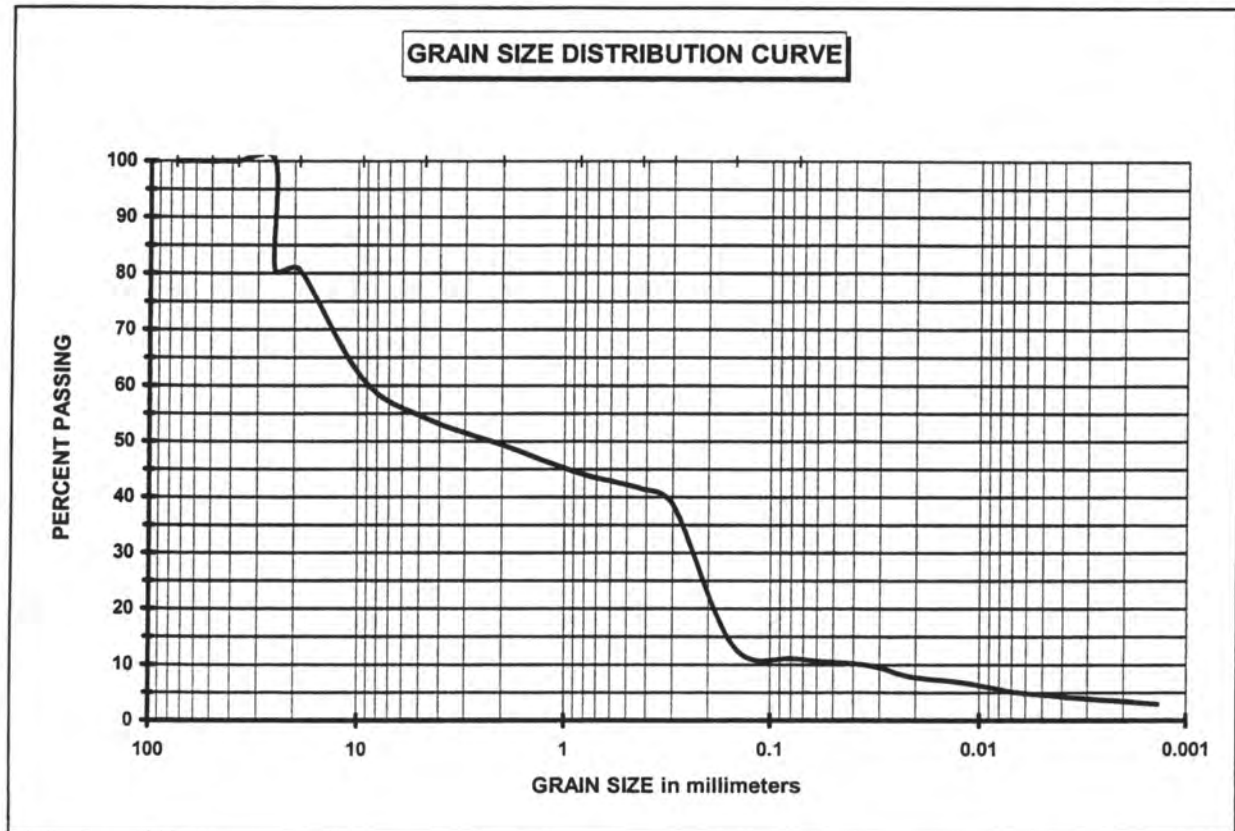
PI = 15



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL20980 Depth (ft): _____

Soil Description: Poorly Graded Gravel with Clay and Sand, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	18
PLASTIC LIMIT	11
PLASTICITY INDEX	7
USC	GP-GC

GRAIN SIZE DATA	
% GRAVEL	45.8
% SAND	43.2
% SILT	6.4
% CLAY	4.6



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL20980

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt: 38.49
Wet + tare wt: 63.13
Dry + tare wt: 62.94
Solids wt: 24.45
Moist. wt: 0.19
Percent moisture: 0.78

Sample Data:

Init wt, (g): 168.38
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.61
Rep. total wt: 100.54
Sp. Gr: 2.711
Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	32.68	19.41	80.59	
.75 in	19	32.68	19.41	80.59	
0.375	9.5	65.20	38.72	61.28	
4	4.75	77.09	45.78	54.22	
10	2	85.29	50.65	49.35	
20	0.85	5.07	5.04	44.30	
40	0.425	7.85	7.81	41.54	
60	0.25	10.72	10.66	38.68	
140	0.106	36.25	36.05	13.29	
200	0.075	38.51	38.30	11.04	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	15	5	10	16	13.7	0.01297	0.0339	9.85
5	23	13	5	8	14	14.0	0.01297	0.0217	7.88
15	23	12	5	7	13	14.2	0.01297	0.0126	6.89
30	23	11	5	6	12	14.3	0.01297	0.0090	5.91
60	23	10	5	5	11	14.5	0.01297	0.0064	4.92
250	23	9	5	4	10	14.7	0.01297	0.0031	3.94
1440	23	8	5	3	2	16.0	0.01297	0.0014	2.95



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL20980

Date: 9/23/01

Flask No.	19
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	182.58
Wt. of Flask + Dry Soil, (g)	234.64
Wt. of Dry Soil, (g)	52.06
Wt. of Flask + Water, (g)	680.26
Wt. of Flask, Soil, & Water, (g)	713.13
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.711



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM: D 4318

Job Name: Ravenna Load Line 2 Phase II

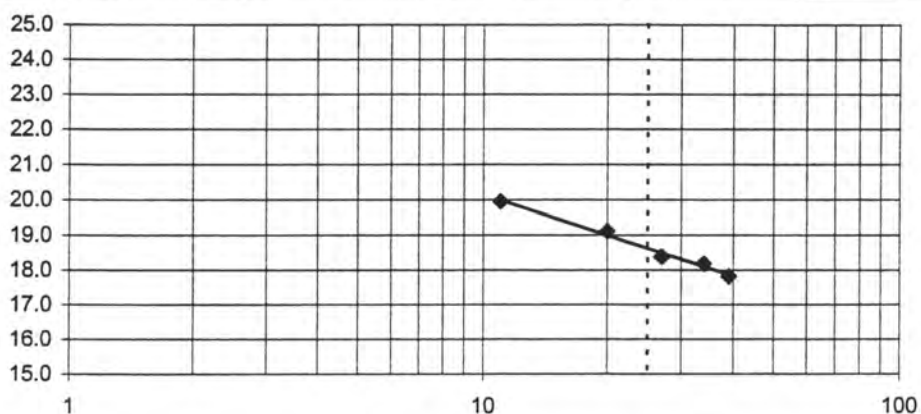
Operator: DB

Sample No: LL20980

Date: 09/24/01

LIQUID LIMIT DETERMINATION

Tare No.	M	14	26	35	12
Soil & Tare Wet Wt.	19.83	20.90	20.94	20.13	17.98
Soil & Tare Dry Wt.	17.20	18.21	18.29	17.64	15.90
Tare Wt.	4.02	4.13	3.87	3.94	4.23
Moisture Content; %	20.0	19.1	18.4	18.2	17.8
No. of Blows; N	11	20	27	34	39



PLASTIC LIMIT DETERMINATION

Tare No.	40		13		44
Soil & Tare Wet Wt.	21.08		22.37		20.50
Soil & Tare Dry Wt.	19.34		20.52		18.81
Tare Wt.	3.81		4.06		3.72
Moisture Content; %	11.2		11.2		11.2

LL = 18

PL = 11

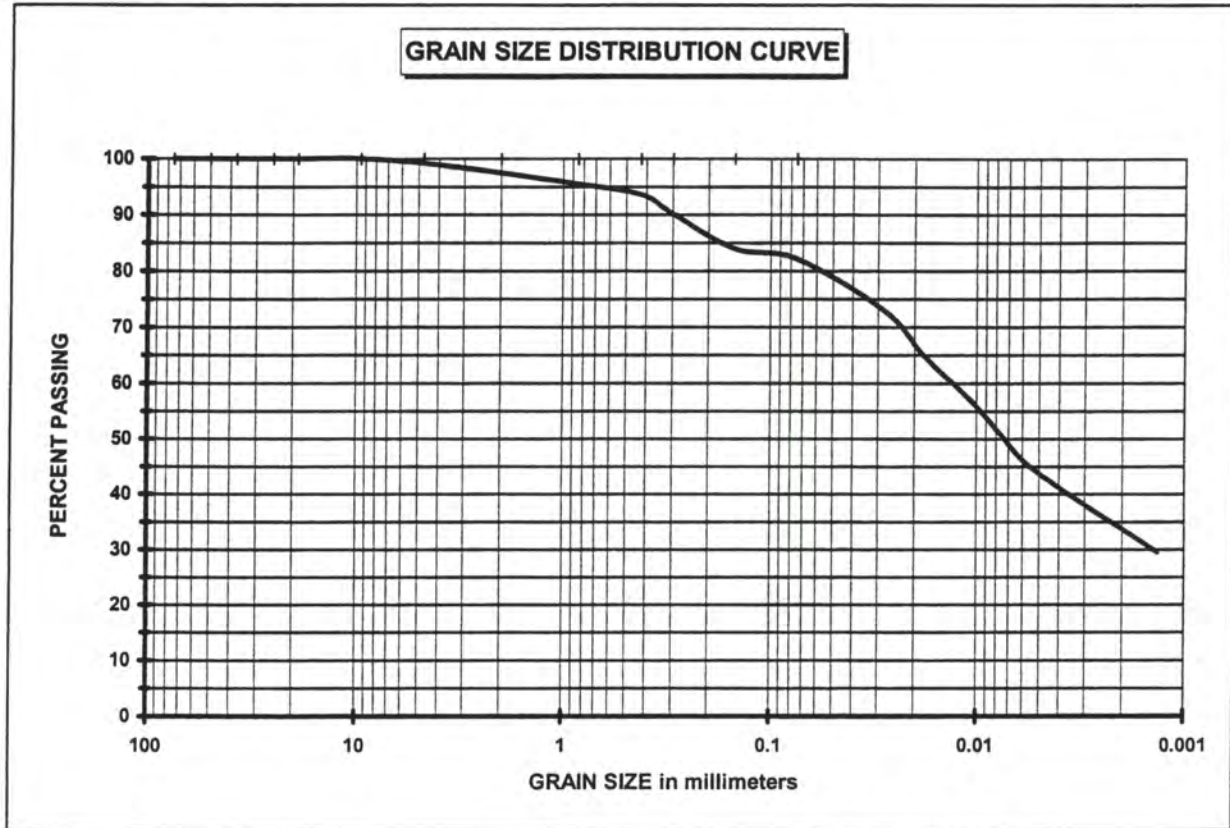
PI = 7



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL20986 Depth (ft): _____

Soil Description: Lean Clay with Sand, Light Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	33
PLASTIC LIMIT	16
PLASTICITY INDEX	17
USC	CL

GRAIN SIZE DATA	
% GRAVEL	0.8
% SAND	17.1
% SILT	38.2
% CLAY	43.9



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL20986

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Sample Data:

Tare wt: 38.75
Wet + tare wt: 67.99
Dry + tare wt: 67.47
Solids wt: 28.72
Moist. wt: 0.52
Percent moisture: 1.81

Init wt, (g): 151.28
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.11
Rep. total wt: 50.36
Sp. Gr: 2.745
Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	1.19	0.79	99.21	
10	2	3.75	2.48	97.52	
20	0.85	1.00	1.99	95.54	
40	0.425	1.96	3.89	93.63	
60	0.25	3.72	7.39	90.13	
140	0.106	6.85	13.60	83.92	
200	0.075	7.74	15.37	82.15	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	42	5	37	43	9.3	0.01279	0.0275	72.74
5	23	38	5	33	39	9.9	0.01279	0.0180	64.87
15	23	34	5	29	35	10.6	0.01279	0.0107	57.01
30	23	31	5	26	32	11.1	0.01279	0.0078	51.11
60	23	28	5	23	29	11.6	0.01279	0.0056	45.22
250	23	24	5	19	25	12.2	0.01279	0.0028	37.35
1440	23	20	5	15	2	16.0	0.01279	0.0013	29.49



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL20986

Date: 9/23/01

Flask No.	21
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	168.83
Wt. of Flask + Dry Soil, (g)	222.45
Wt. of Dry Soil, (g)	53.62
Wt. of Flask + Water, (g)	666.48
Wt. of Flask, Soil, & Water, (g)	700.58
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.745



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM: D 4318

Job Name: Ravenna Load Line 2 Phase II

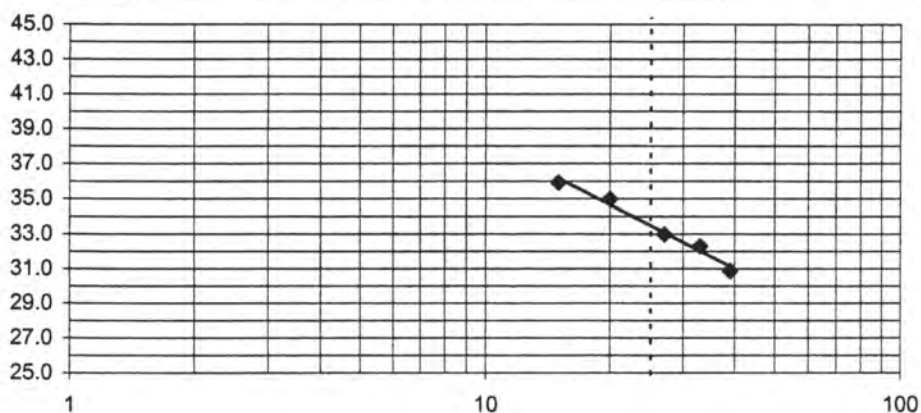
Operator: DB

Sample No: LL20986

Date: 09/24/01

LIQUID LIMIT DETERMINATION

Tare No.	A19	B6	Q	1	311
Soil & Tare Wet Wt.	15.95	18.20	17.60	18.05	16.95
Soil & Tare Dry Wt.	12.77	14.53	14.27	14.65	13.90
Tare Wt.	3.92	4.04	4.17	4.12	4.02
Moisture Content; %	35.9	35.0	33.0	32.3	30.9
No. of Blows; N	15	20	27	33	39



PLASTIC LIMIT DETERMINATION

Tare No.	1b		10		B-1
Soil & Tare Wet Wt.	17.43		15.76		18.65
Soil & Tare Dry Wt.	15.60		14.15		16.62
Tare Wt.	4.09		4.02		3.82
Moisture Content; %	15.9		15.9		15.9

LL = 33

PL = 16

PI = 17

TEST DATA

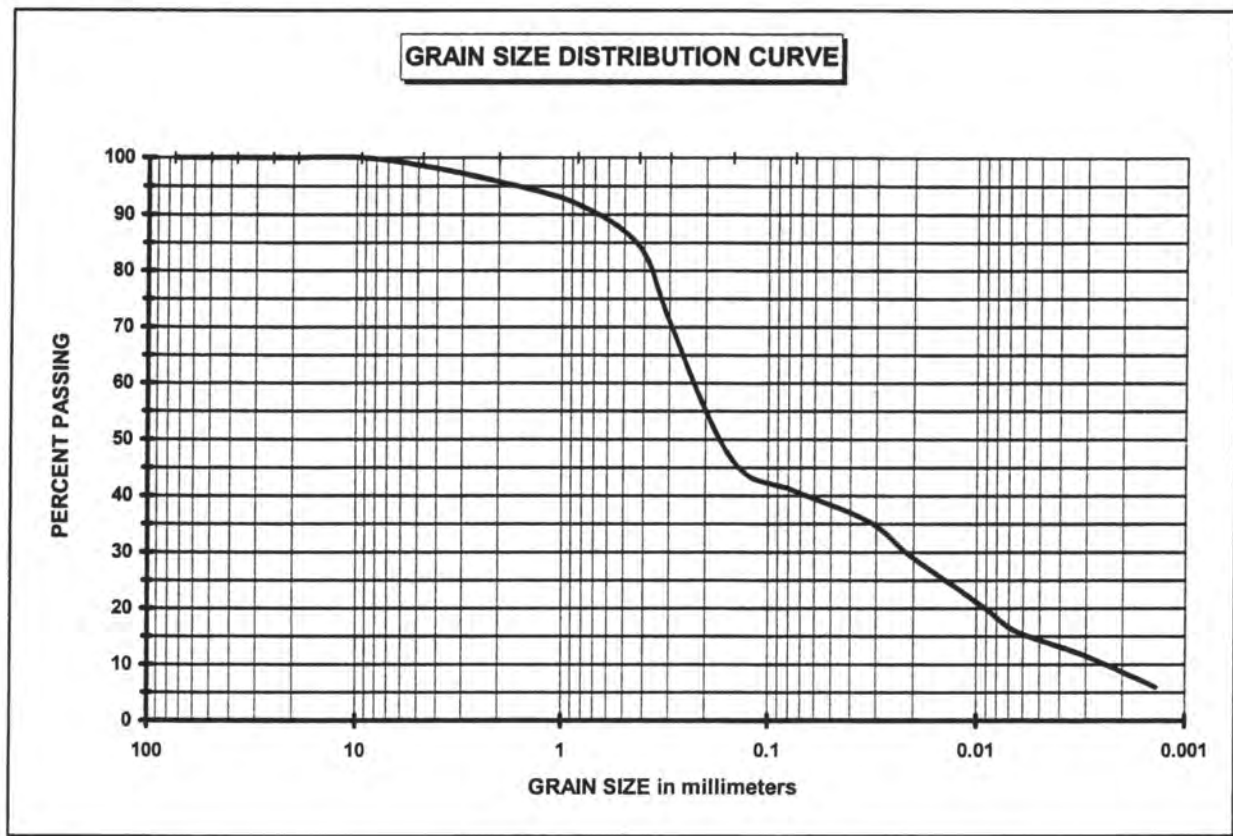
Chain-of-Custody No. LL4S&ME-02
Shipment Received 8/28/01



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/27/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40957 Depth (ft): _____

Soil Description: Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	1.4
% SAND	57.7
% SILT	26.5
% CLAY	14.4



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40957

Date: 8/27/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 38.72
Wet + tare wt: 71.41
Dry + tare wt: 70.47
Solids wt: 31.75
Moist. wt: 0.94
Percent moisture: 2.96

Init wt, (g): 192.56
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 48.56
Rep. total wt: 50.72
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	2.77	1.44	98.56	
10	2	8.18	4.25	95.75	
20	0.85	2.01	3.96	91.79	
40	0.425	5.75	11.34	84.41	
60	0.25	12.58	24.80	70.95	
140	0.106	25.02	49.33	46.42	
200	0.075	27.83	54.87	40.88	

Hydrometer Analysis

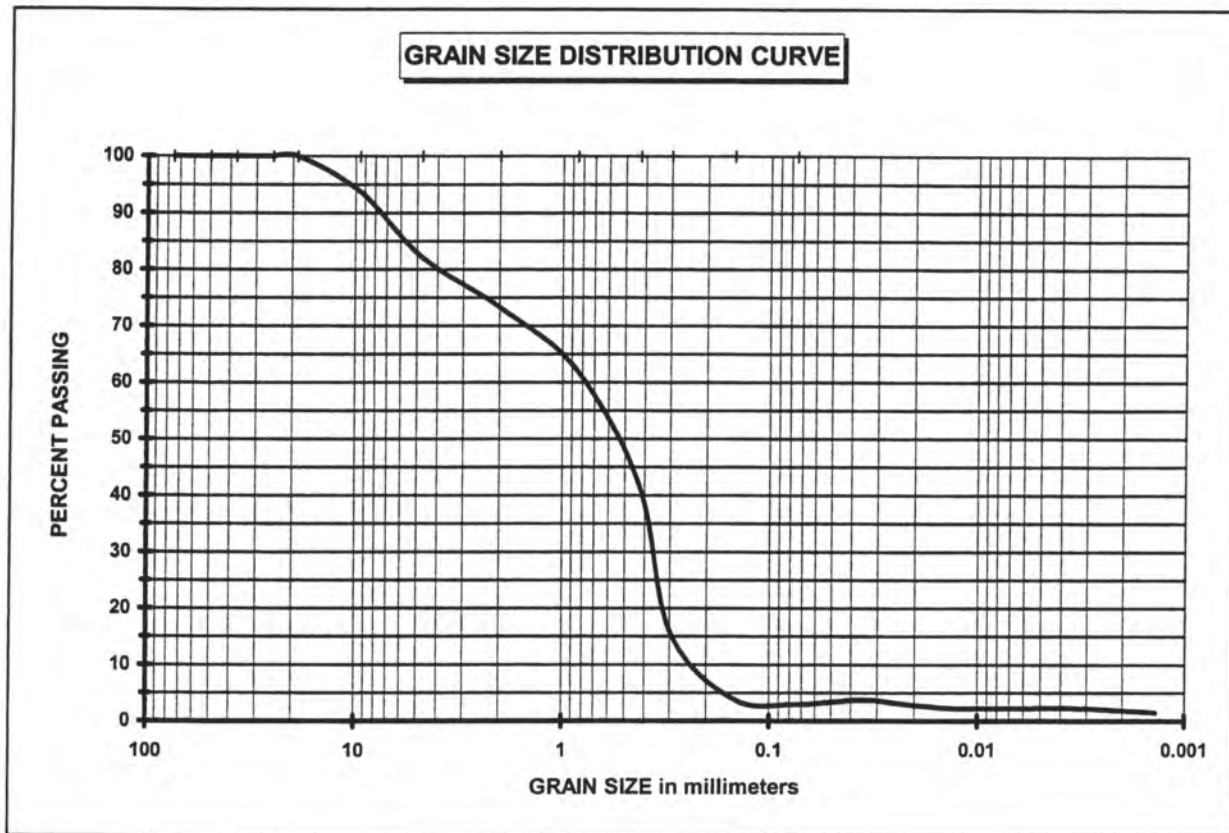
Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	23	5	18	24	12.4	0.01317	0.0328	35.49
5	23	20	5	15	21	12.9	0.01317	0.0211	29.58
15	23	17	5	12	18	13.4	0.01317	0.0124	23.66
30	23	15	5	10	16	13.7	0.01317	0.0089	19.72
60	23	13	5	8	14	14.0	0.01317	0.0064	15.77
250	23	11	5	6	12	14.3	0.01317	0.0032	11.83
1440	23	8	5	3	2	16.0	0.01317	0.0014	5.92



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 8/27/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40975

Depth (ft): _____

Soil Description: _____

Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
USC	

GRAIN SIZE DATA	
% GRAVEL	17.9
% SAND	79.2
% SILT	0.7
% CLAY	2.2



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40975

Date: 8/27/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 38.72
Wet + tare wt: 72.15
Dry + tare wt: 71.67
Solids wt: 32.95
Moist. wt: 0.48
Percent moisture: 1.46

Init wt, (g): 381.96
Hydro spec wt, (g): 100.00
Dry hydro wt, (g): 98.56
Rep. total wt: 134.60
Assumed Sp. Gr. 2.65
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	23.89	6.25	93.75	
4	4.75	68.33	17.89	82.11	
10	2	102.25	26.77	73.23	
20	0.85	15.03	11.17	62.06	
40	0.425	42.58	31.64	41.59	
60	0.25	77.23	57.38	15.85	
140	0.106	93.28	69.30	3.93	
200	0.075	94.61	70.29	2.94	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	10	5	5	11	14.5	0.01317	0.0355	3.71
5	23	9	5	4	10	14.7	0.01317	0.0226	2.97
15	23	8	5	3	9	14.8	0.01317	0.0131	2.23
30	23	8	5	3	9	14.8	0.01317	0.0093	2.23
60	23	8	5	3	9	14.8	0.01317	0.0065	2.23
250	23	8	5	3	9	14.8	0.01317	0.0032	2.23
1440	23	7	5	2	2	16.0	0.01317	0.0014	1.49

TEST DATA

Chain-of-Custody No. LL3S&ME-04
Shipment Received 8/28/01



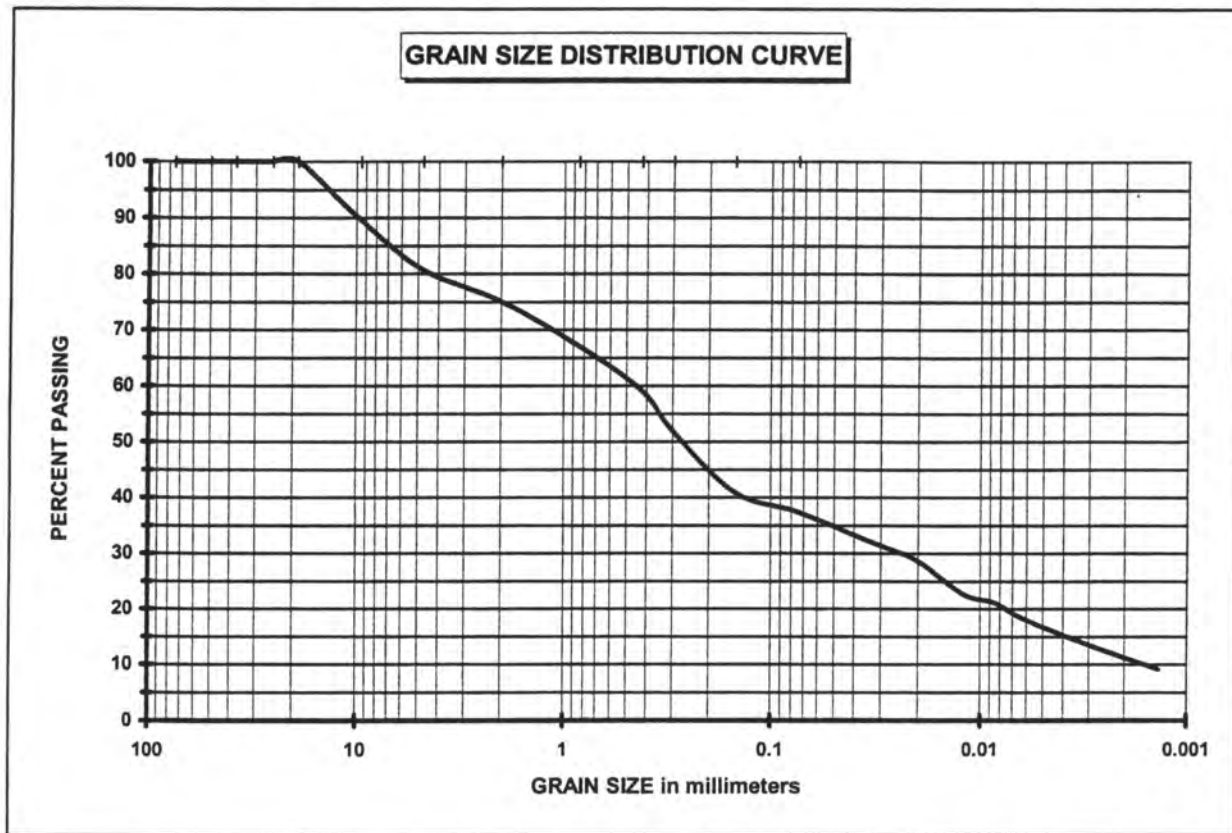
Operator: DB Date: 9/19/01



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL30881 Depth (ft): _____

Soil Description: Clayey Sand with Gravel

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	33
PLASTIC LIMIT	17
PLASTICITY INDEX	16
USC	SC

GRAIN SIZE DATA	
% GRAVEL	19.3
% SAND	43.3
% SILT	20.6
% CLAY	16.8



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL30881

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt: 38.21
Wet + tare wt: 71.82
Dry + tare wt: 71.31
Solids wt: 33.1
Moist. wt: 0.51
Percent moisture: 1.54

Sample Data:

Init wt, (g): 190.23
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.24
Rep. total wt: 65.64
Sp. Gr: 2.682
Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	19.75	10.38	89.62	
4	4.75	36.77	19.33	80.67	
10	2	47.53	24.99	75.01	
20	0.85	5.19	7.91	67.11	
40	0.425	10.37	15.80	59.22	
60	0.25	15.18	23.13	51.89	
140	0.106	22.39	34.11	40.91	
200	0.075	24.71	37.64	37.37	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	26	5	21	27	11.9	0.01297	0.0316	31.67
5	23	24	5	19	25	12.2	0.01297	0.0203	28.66
15	23	20	5	15	21	12.9	0.01297	0.0120	22.62
30	23	19	5	14	20	13.0	0.01297	0.0085	21.11
60	23	17	5	12	18	13.4	0.01297	0.0061	18.10
250	23	14	5	9	15	13.9	0.01297	0.0031	13.57
1440	23	11	5	6	2	16.0	0.01297	0.0014	9.05



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Specimen ID: LL30881

Date: 9/23/01

Flask No.	35
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	181.09
Wt. of Flask + Dry Soil, (g)	238.56
Wt. of Dry Soil, (g)	57.47
Wt. of Flask + Water, (g)	678.62
Wt. of Flask, Soil, & Water, (g)	714.68
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.682



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM: D 4318

Job Name: Ravenna Load Line 3 Phase II

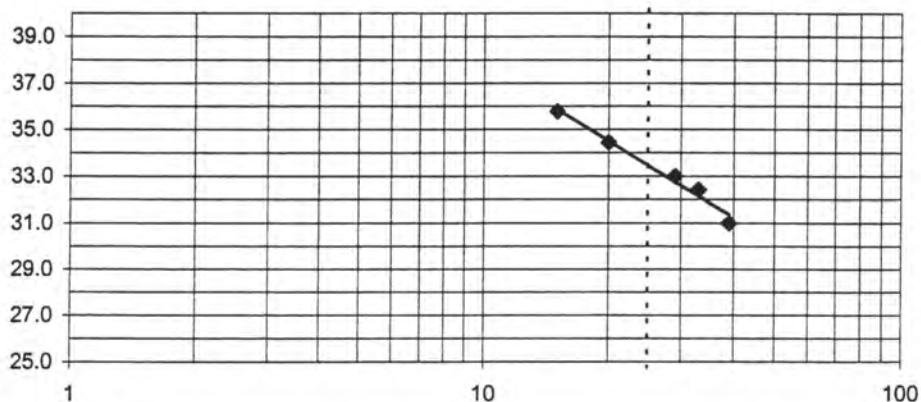
Operator: DB

Sample No: LL30881

Date: 09/24/01

LIQUID LIMIT DETERMINATION

Tare No.	46	19	B10	18	C
Soil & Tare Wet Wt.	15.79	16.17	17.27	17.52	17.75
Soil & Tare Dry Wt.	12.67	13.08	13.96	14.23	14.51
Tare Wt.	3.95	4.11	3.93	4.08	4.06
Moisture Content; %	35.8	34.5	33.0	32.4	31.0
No. of Blows; N	15	20	29	33	39



PLASTIC LIMIT DETERMINATION

Tare No.	A5		Z		D
Soil & Tare Wet Wt.	15.46		17.07		17.32
Soil & Tare Dry Wt.	13.81		15.21		15.41
Tare Wt.	3.95		4.08		4.02
Moisture Content; %	16.7		16.7		16.8

LL = 33

PL = 17

PI = 16

TEST DATA

Chain-of-Custody No. LL3S&ME-04
Shipment Received 8/29/01

**MOISTURE CONTENT - ASTM D2216
&
pH of SOILS - SW846-9045**

Job No: 1439-01-417

Name: SAIC - Ravenna Load Line 3 Phase II

Operator: DB

Date: 9/19/01

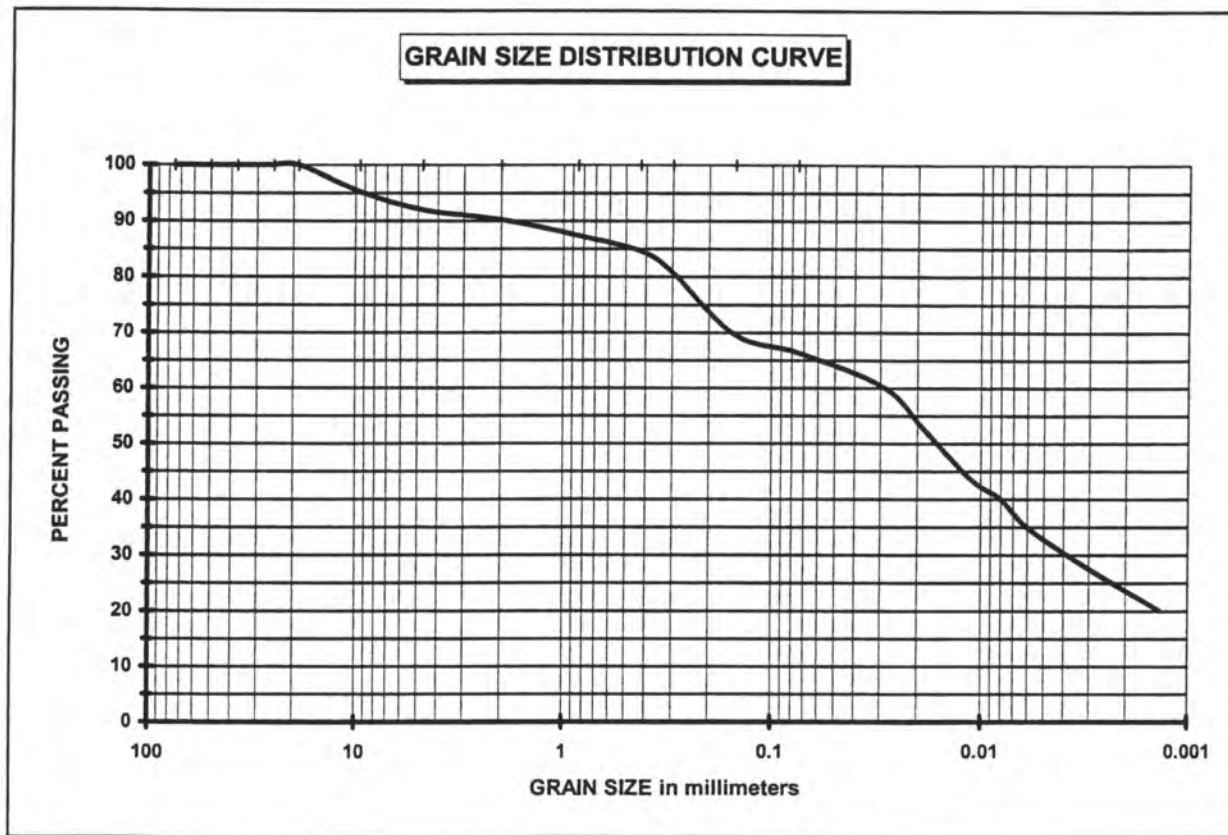
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL30781

Depth (ft): _____

Soil Description: Sandy Lean Clay, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	34
PLASTIC LIMIT	18
PLASTICITY INDEX	16
USC	CL

GRAIN SIZE DATA	
% GRAVEL	8.0
% SAND	25.6
% SILT	33.5
% CLAY	32.9



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL30781

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	36.84
Wet + tare wt:	71.56
Dry + tare wt:	70.91
Solids wt:	34.07
Moist. wt:	0.65
Percent moisture:	1.91

Sample Data:

Init wt, (g):	175.24
Hydro spec wt, (g):	50.00
Dry hydro wt, (g):	49.06
Rep. total wt:	54.37
Sp. Gr:	2.686
Sp. Gr. corr, (a):	0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	8.32	4.75	95.25	
4	4.75	14.03	8.01	91.99	
10	2	17.10	9.76	90.24	
20	0.85	1.54	2.83	87.41	
40	0.425	3.07	5.65	84.60	
60	0.25	5.13	9.44	80.81	
140	0.106	11.23	20.66	69.59	
200	0.075	12.97	23.86	66.39	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	38	5	33	39	9.9	0.01297	0.0289	60.09
5	23	34	5	29	35	10.6	0.01297	0.0189	52.81
15	23	29	5	24	30	11.4	0.01297	0.0113	43.70
30	23	27	5	22	28	11.7	0.01297	0.0081	40.06
60	23	24	5	19	25	12.2	0.01297	0.0059	34.60
250	23	20	5	15	21	12.9	0.01297	0.0029	27.31
1440	23	16	5	11	2	16.0	0.01297	0.0014	20.03



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Specimen ID: LL30781

Date: 9/23/01

Flask No.	16
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	177.65
Wt. of Flask + Dry Soil, (g)	232.19
Wt. of Dry Soil, (g)	54.54
Wt. of Flask + Water, (g)	675.52
Wt. of Flask, Soil, & Water, (g)	709.77
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.686



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 3 Phase II

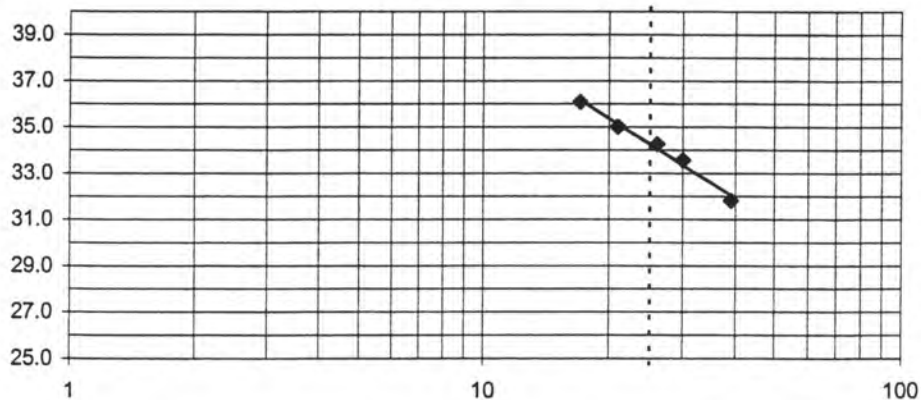
Operator: DB

Sample No: LL30781

Date: 09/24/01

LIQUID LIMIT DETERMINATION

Tare No.	1	U	57	A11	7
Soil & Tare Wet Wt.	17.20	17.12	16.25	17.17	15.77
Soil & Tare Dry Wt.	13.75	13.73	13.09	13.85	12.97
Tare Wt.	4.19	4.05	3.87	3.96	4.17
Moisture Content; %	36.1	35.0	34.3	33.6	31.8
No. of Blows; N	17	21	26	30	39



PLASTIC LIMIT DETERMINATION

Tare No.	S		39		9
Soil & Tare Wet Wt.	15.58		13.32		15.59
Soil & Tare Dry Wt.	13.83		11.88		13.90
Tare Wt.	4.10		3.79		4.25
Moisture Content; %	18.0		17.8		17.5

LL = 34

PL = 18

PI = 16

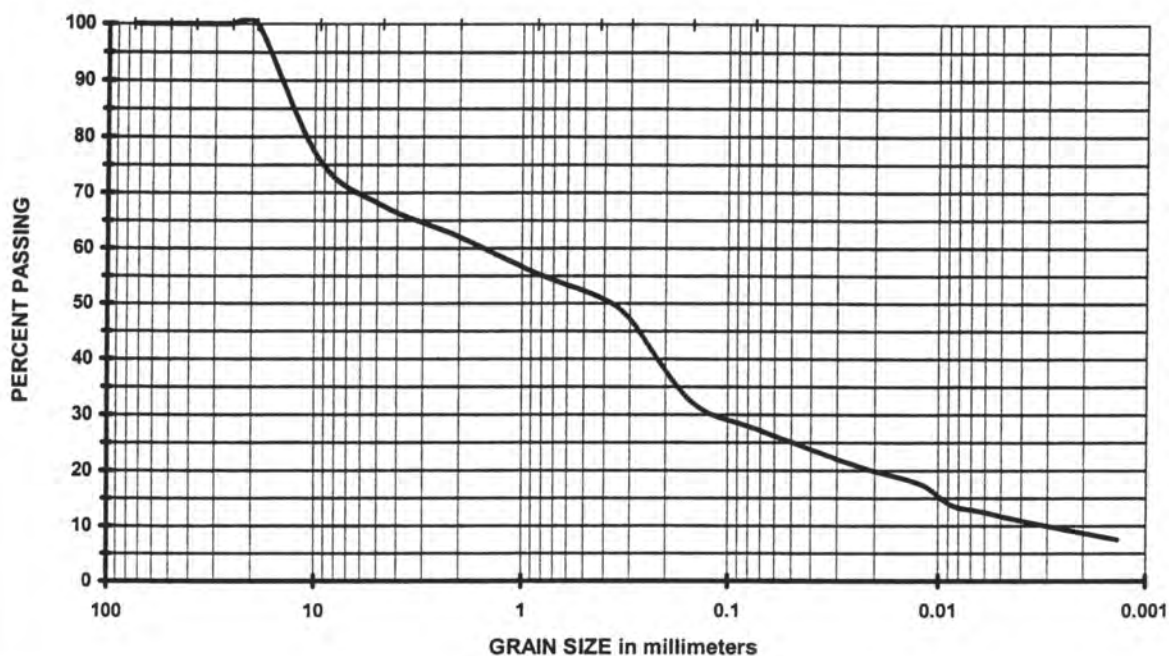


GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01

GRAIN SIZE DISTRIBUTION CURVE



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL30778

Depth (ft): _____

Soil Description: Clayey Sand with Gravel, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	27
PLASTIC LIMIT	16
PLASTICITY INDEX	11
USC	SC

GRAIN SIZE DATA	
% GRAVEL	32.3
% SAND	40.1
% SILT	15.9
% CLAY	11.7



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL30778

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Sample Data:

Tare wt: 37.71
Wet + tare wt: 63.53
Dry + tare wt: 63.11
Solids wt: 25.4
Moist. wt: 0.42
Percent moisture: 1.65

Init wt, (g): 220.41
Hydro spec wt, (g): 50.00
Dry hydro wt, (g): 49.19
Rep. total wt: 79.32
Sp. Gr: 2.682
Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	53.21	24.14	75.86	
4	4.75	71.28	32.34	67.66	
10	2	83.74	37.99	62.01	
20	0.85	5.18	6.53	55.48	
40	0.425	8.61	10.85	51.15	
60	0.25	11.84	14.93	47.08	
140	0.106	23.52	29.65	32.36	
200	0.075	27.31	34.43	27.58	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	23	5	18	24	12.4	0.01297	0.0323	22.46
5	23	21	5	16	22	12.7	0.01297	0.0207	19.97
15	23	19	5	14	20	13.0	0.01297	0.0121	17.47
30	23	16	5	11	17	13.5	0.01297	0.0087	13.73
60	23	15	5	10	16	13.7	0.01297	0.0062	12.48
250	23	13	5	8	14	14.0	0.01297	0.0031	9.98
1440	23	11	5	6	2	16.0	0.01297	0.0014	7.49



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Specimen ID: LL30778

Date: 9/23/01

Flask No.	30
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	174.98
Wt. of Flask + Dry Soil, (g)	229.12
Wt. of Dry Soil, (g)	54.14
Wt. of Flask + Water, (g)	672.57
Wt. of Flask, Soil, & Water, (g)	706.54
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.682



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 3 Phase II

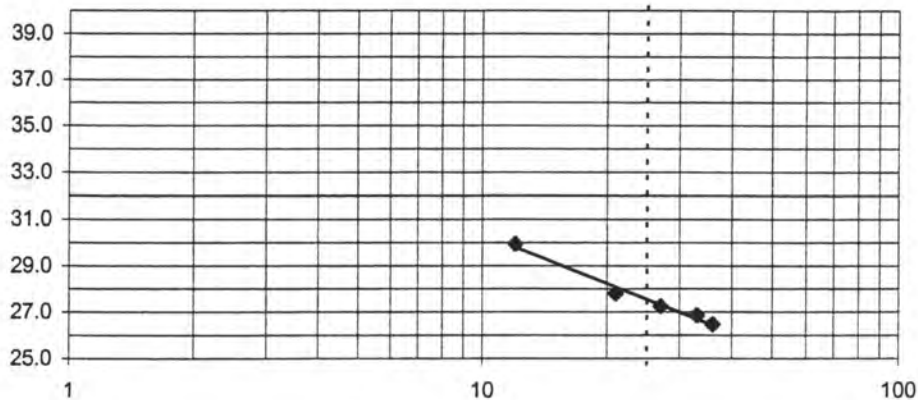
Operator: DB

Sample No: LL30778

Date: 09/22/01

LIQUID LIMIT DETERMINATION

Tare No.	A18	H	N	A	38
Soil & Tare Wet Wt.	15.05	15.85	17.46	17.39	15.77
Soil & Tare Dry Wt.	12.49	13.27	14.58	14.58	13.27
Tare Wt.	3.94	3.99	4.01	4.12	3.83
Moisture Content; %	29.9	27.8	27.3	26.9	26.5
No. of Blows; N	12	21	27	33	36



PLASTIC LIMIT DETERMINATION

Tare No.	16		2		G
Soil & Tare Wet Wt.	16.52		13.84		12.67
Soil & Tare Dry Wt.	14.82		12.49		11.49
Tare Wt.	4.13		4.01		3.96
Moisture Content; %	15.9		15.9		15.7

LL= 27

PL = 16

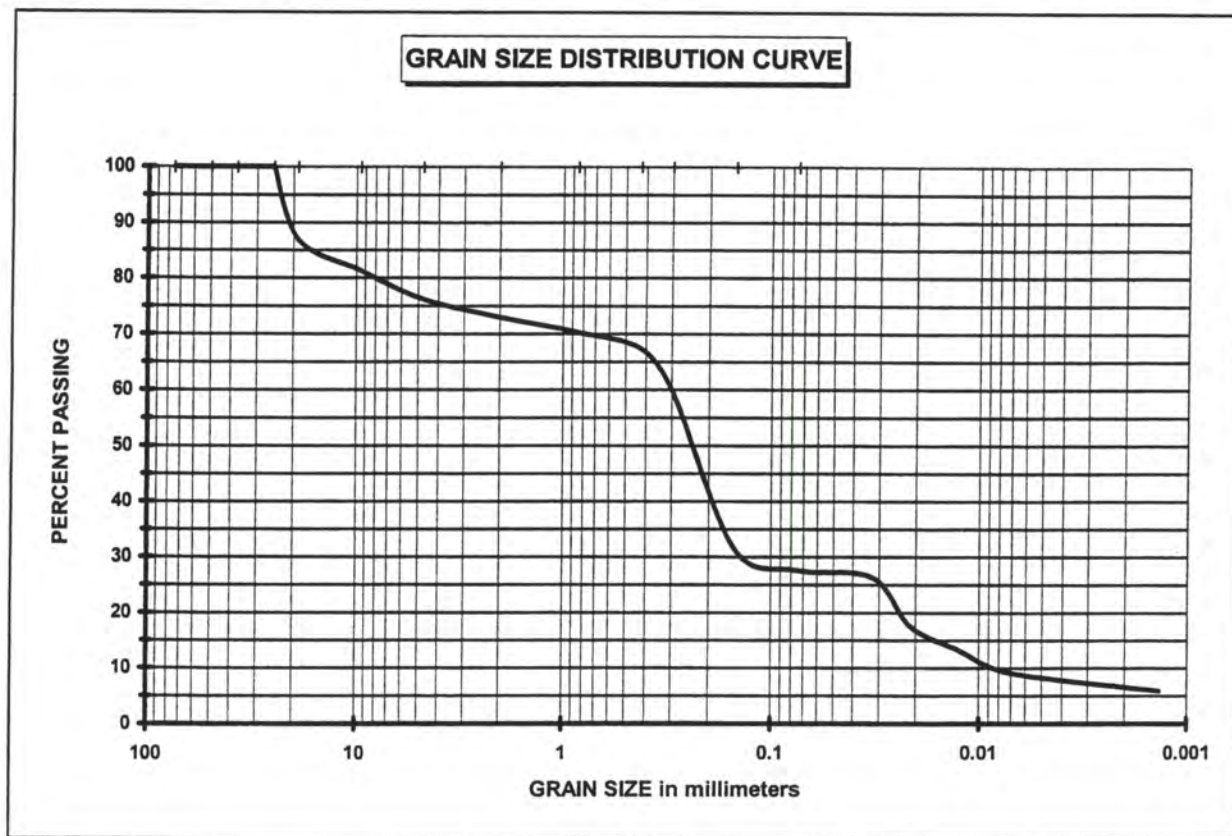
PI = 11



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL30817 Depth (ft): _____

Soil Description: Clayey Sand with Gravel, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	30
PLASTIC LIMIT	19
PLASTICITY INDEX	11
USC	SC

GRAIN SIZE DATA	
% GRAVEL	23.8
% SAND	48.6
% SILT	19.3
% CLAY	8.3



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL30817

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>39.07</u>
Wet + tare wt:	<u>64.19</u>
Dry + tare wt:	<u>63.88</u>
Solids wt:	<u>24.81</u>
Moist. wt:	<u>0.31</u>
Percent moisture:	<u>1.25</u>

Sample Data:

Init wt, (g):	<u>154.76</u>
Hydro spec wt, (g):	<u>50.00</u>
Dry hydro wt, (g):	<u>49.38</u>
Rep. total wt:	<u>67.72</u>
Sp. Gr:	<u>2.703</u>
Sp. Gr. corr, (a):	<u>0.99</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	20.30	13.12	86.88	
0.375	9.5	28.93	18.69	81.31	
4	4.75	36.88	23.83	76.17	
10	2	41.90	27.07	72.93	
20	0.85	1.79	2.64	70.28	
40	0.425	3.76	5.55	67.37	
60	0.25	8.83	13.04	59.89	
140	0.106	28.13	41.54	31.39	
200	0.075	30.71	45.35	27.58	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	23	5	18	24	12.4	0.01297	0.0323	26.32
5	23	17	5	12	18	13.4	0.01297	0.0212	17.54
15	23	14	5	9	15	13.9	0.01297	0.0125	13.16
30	23	12	5	7	13	14.2	0.01297	0.0089	10.23
60	23	11	5	6	12	14.3	0.01297	0.0063	8.77
250	23	10	5	5	11	14.5	0.01297	0.0031	7.31
1440	23	9	5	4	2	16.0	0.01297	0.0014	5.85



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Specimen ID: LL30817

Date: 9/23/01

Flask No.	15
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	179.58
Wt. of Flask + Dry Soil, (g)	233.32
Wt. of Dry Soil, (g)	53.74
Wt. of Flask + Water, (g)	677.12
Wt. of Flask, Soil, & Water, (g)	710.99
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.703



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 3 Phase II

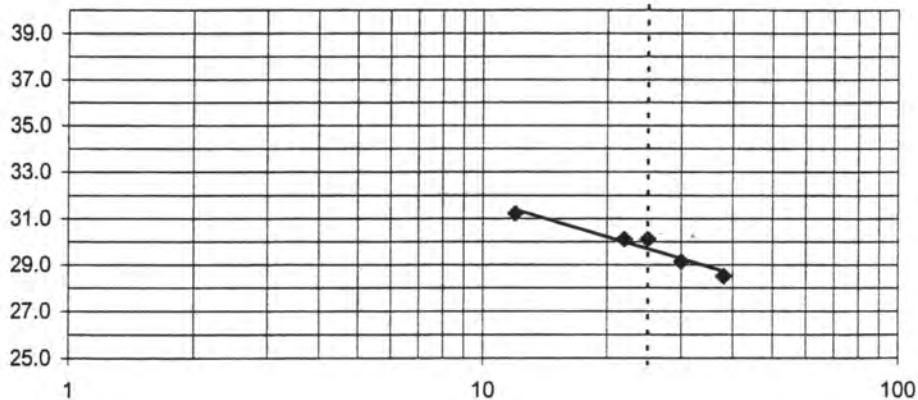
Operator: DB

Sample No: LL30817

Date: 09/22/01

LIQUID LIMIT DETERMINATION

Tare No.	161	114	5	50	28
Soil & Tare Wet Wt.	15.94	16.37	16.14	15.65	14.57
Soil & Tare Dry Wt.	13.04	13.55	13.34	12.99	12.19
Tare Wt.	3.75	4.18	4.04	3.86	3.84
Moisture Content; %	31.2	30.1	30.1	29.1	28.5
No. of Blows; N	12	22	25	30	38



PLASTIC LIMIT DETERMINATION

Tare No.	1D		A15		6
Soil & Tare Wet Wt.	16.15		15.30		16.96
Soil & Tare Dry Wt.	14.25		13.52		14.92
Tare Wt.	4.09		3.99		4.02
Moisture Content; %	18.7		18.7		18.7

LL = 30

PL = 19

PI = 11

TEST DATA

Chain-of-Custody No. LL4S&ME-03
Shipment Received 8/29/01



**MOISTURE CONTENT - ASTM D2216
&
pH of SOILS - SW846-9045**

Job No: 1439-01-417

Name: SAIC - Ravenna Load Line 4 Phase II

Operator: DB

Date: 9/19/01

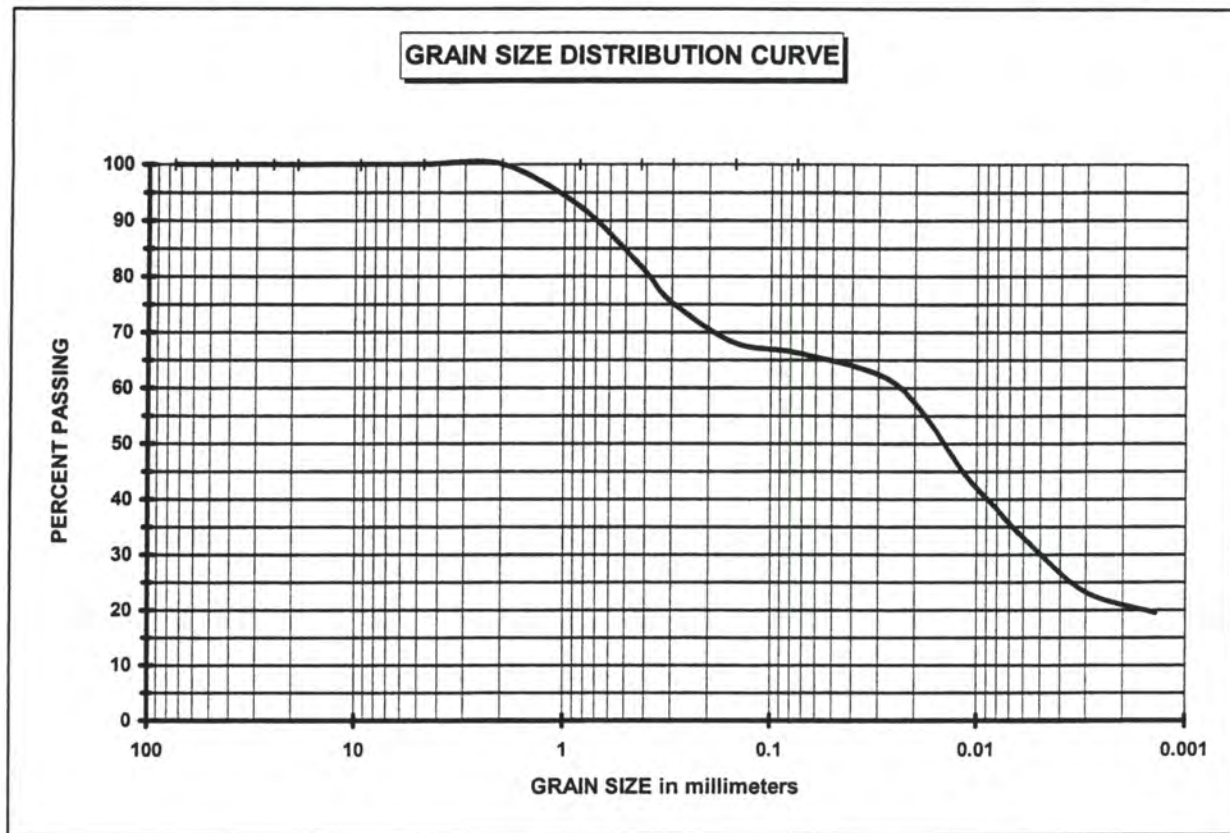
Specimen ID	pH	Natural Moisture Content (%)	Tare Weight	Wet Soil & Tare	Dry Soil & Tare
LL40 723	4.71	23.1%	1.27	41.85	34.24
LL40 878	6.85	12.9%	1.27	42.59	37.88
LL40 720	7.43	17.7%	1.27	40.86	34.91
LL40 822	6.91	10.3%	1.27	42.3	38.48
LL40 698	6.81	23.2%	1.27	41.81	34.18
LL40 982	7.32	15.3%	1.27	41.82	36.43
LL40 819	5.86	20.3%	1.27	41.19	34.44
LL40 701	7.56	14.6%	1.27	40.85	35.81
LL40 707	7.26	16.6%	1.27	40.79	35.17
LL40 695	6.60	15.7%	1.27	41.29	35.85
LL40 830	6.22	16.2%	1.27	41.99	36.3
LL40 692	6.68	25.4%	1.27	46.64	37.44
LL40 827	4.98	16.2%	1.27	40.13	34.72
LL40 710	6.86	21.8%	1.27	40.64	33.59
LL40 717	7.13	19.7%	1.27	44.7	37.54
LL40 689	6.92	20.9%	1.27	42.63	35.47
LL40 801	7.01	15.8%	1.27	41.47	35.99
LL40 790	5.01	18.3%	1.27	41.24	35.05
LL40 793	4.70	13.1%	1.27	42.61	37.83
LL40 787	6.44	18.1%	1.27	42.13	35.87
LL40 798	5.84	42.0%	1.27	41.67	29.73



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40723 Depth (ft): _____

Soil Description: Sandy Silt, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	36
PLASTIC LIMIT	25
PLASTICITY INDEX	11
USC	ML

GRAIN SIZE DATA	
% GRAVEL	0.0
% SAND	33.7
% SILT	35.9
% CLAY	30.4



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40723

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>39.15</u>
Wet + tare wt:	<u>64.29</u>
Dry + tare wt:	<u>63.95</u>
Solids wt:	<u>24.8</u>
Moist. wt:	<u>0.34</u>
Percent moisture:	<u>1.37</u>

Sample Data:

Init wt, (g):	<u>338.61</u>
Hydro spec wt, (g):	<u>52.08</u>
Dry hydro wt, (g):	<u>51.38</u>
Rep. total wt:	<u>51.38</u>
Sp. Gr:	<u>2.641</u>
Sp. Gr. corr, (a):	<u>1</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.00	0.00	100.00	
10	2	0.00	0.00	100.00	
20	0.85	3.82	7.44	92.56	
40	0.425	9.31	18.12	81.88	
60	0.25	12.70	24.72	75.28	
140	0.106	16.42	31.96	68.04	
200	0.075	17.31	33.69	66.31	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	37	5	32	38	10.1	0.01317	0.0296	62.29
5	23	34	5	29	35	10.6	0.01317	0.0192	56.45
15	23	28	5	23	29	11.6	0.01317	0.0116	44.77
30	23	25	5	20	26	12.1	0.01317	0.0083	38.93
60	23	22	5	17	23	12.5	0.01317	0.0060	33.09
250	23	17	5	12	18	13.4	0.01317	0.0030	23.36
1440	23	15	5	10	2	16.0	0.01317	0.0014	19.46



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL40723

Date: 9/23/01

Flask No.	13
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	175.11
Wt. of Flask + Dry Soil, (g)	224.50
Wt. of Dry Soil, (g)	49.39
Wt. of Flask + Water, (g)	673.08
Wt. of Flask, Soil, & Water, (g)	703.78
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.641



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

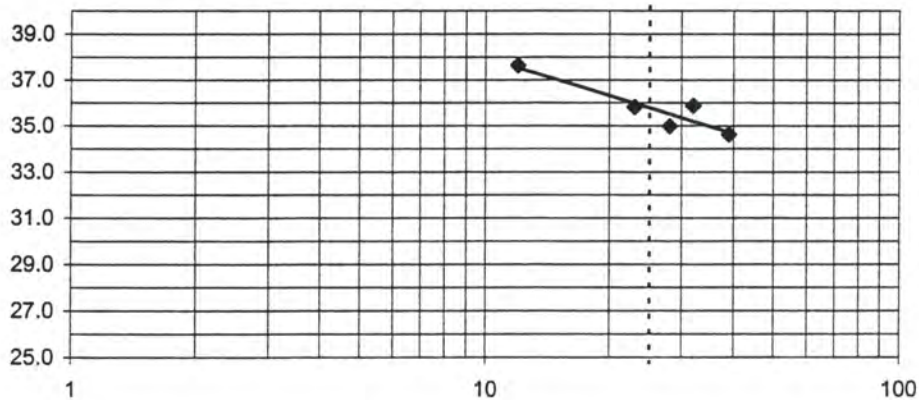
Operator: DB

Sample No: LL40723

Date: 09/22/01

LIQUID LIMIT DETERMINATION

Tare No.	11	57	u	l	6
Soil & Tare Wet Wt.	17.71	16.99	16.50	15.59	18.17
Soil & Tare Dry Wt.	13.95	13.53	13.27	12.58	14.53
Tare Wt.	3.96	3.87	4.04	4.19	4.02
Moisture Content; %	37.6	35.8	35.0	35.9	34.6
No. of Blows; N	12	23	28	32	39



PLASTIC LIMIT DETERMINATION

Tare No.	A15		1D		28
Soil & Tare Wet Wt.	15.76		15.96		13.87
Soil & Tare Dry Wt.	13.40		13.59		11.88
Tare Wt.	4.00		4.09		3.83
Moisture Content; %	25.1		25.0		24.7

LL= 36

PL = 25

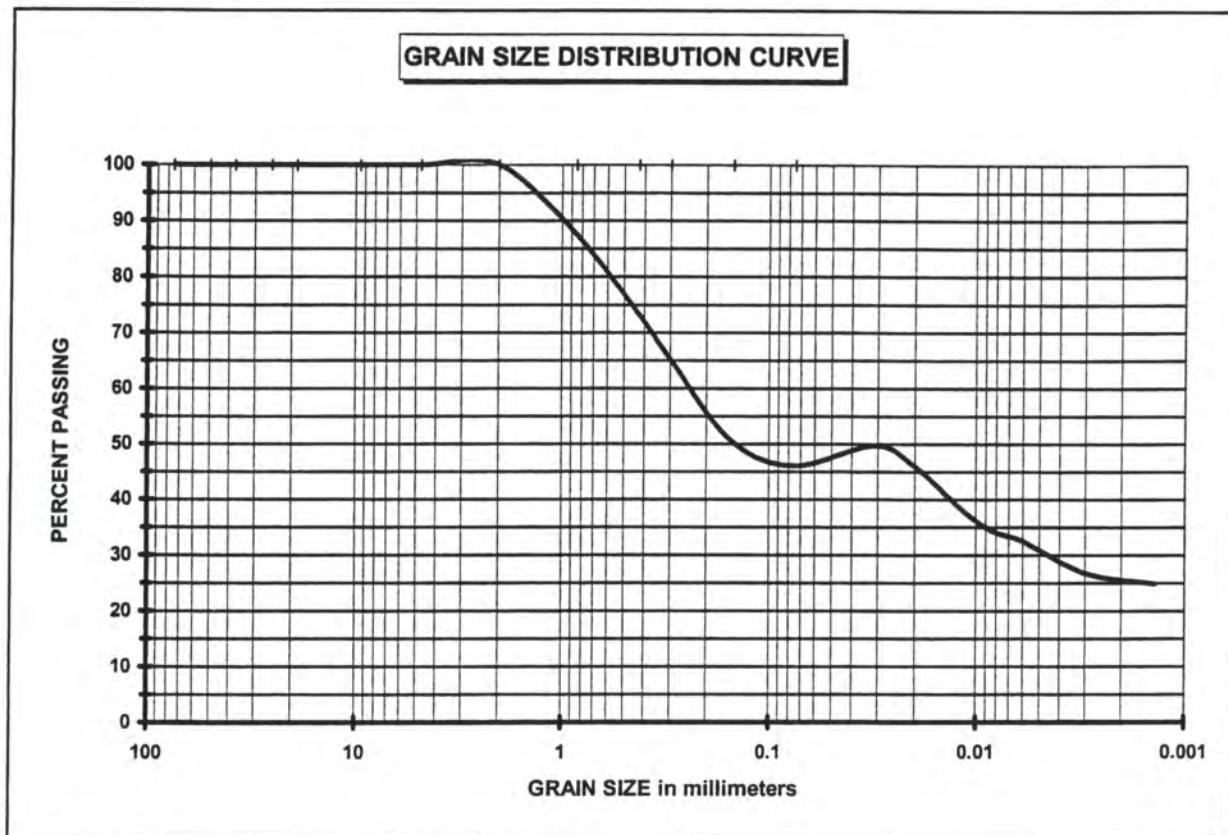
PI = 11



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40822 Depth (ft): _____

Soil Description: Clayey Sand, Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	31
PLASTIC LIMIT	17
PLASTICITY INDEX	14
USC	SC

GRAIN SIZE DATA	
% GRAVEL	0.0
% SAND	53.9
% SILT	15.1
% CLAY	31.0



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40822

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 38.37
Wet + tare wt: 63.27
Dry + tare wt: 62.89
Solids wt: 24.52
Moist. wt: 0.38
Percent moisture: 1.55

Init wt, (g): 421.73
Hydro spec wt, (g): 53.11
Dry hydro wt, (g): 52.30
Rep. total wt: 52.30
Sp. Gr: 2.667
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.00	0.00	100.00	
10	2	0.00	0.00	100.00	
20	0.85	6.52	12.47	87.53	
40	0.425	13.97	26.71	73.29	
60	0.25	18.21	34.82	65.18	
140	0.106	25.97	49.66	50.34	
200	0.075	28.21	53.94	46.06	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	31	5	26	32	11.1	0.01317	0.0310	49.71
5	23	29	5	24	30	11.4	0.01317	0.0199	45.89
15	23	25	5	20	26	12.1	0.01317	0.0118	38.24
30	23	23	5	18	24	12.4	0.01317	0.0085	34.42
60	23	22	5	17	23	12.5	0.01317	0.0060	32.51
250	23	19	5	14	20	13.0	0.01317	0.0030	26.77
1440	23	18	5	13	2	16.0	0.01317	0.0014	24.86



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL40822

Date: 9/23/01

Flask No.	14
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	168.04
Wt. of Flask + Dry Soil, (g)	216.26
Wt. of Dry Soil, (g)	48.22
Wt. of Flask + Water, (g)	666.00
Wt. of Flask, Soil, & Water, (g)	696.15
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.667



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

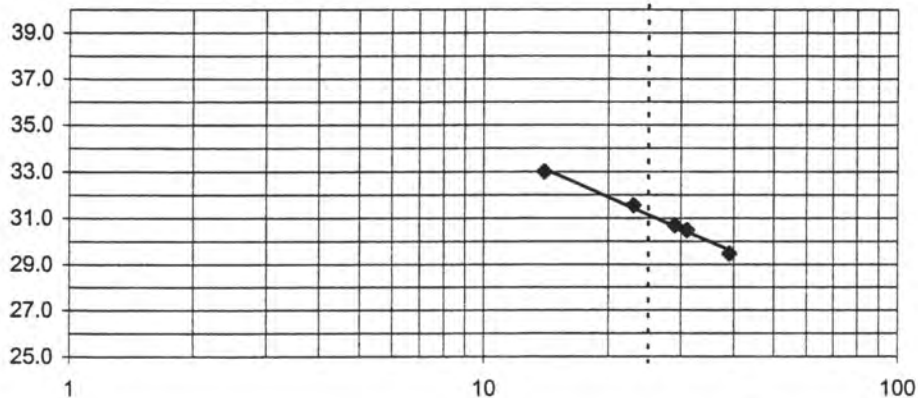
Operator: DB

Sample No: LL40822

Date: 09/22/01

LIQUID LIMIT DETERMINATION

Tare No.	A	N	H	A18	9
Soil & Tare Wet Wt.	15.56	17.60	17.53	17.04	18.40
Soil & Tare Dry Wt.	12.72	14.34	14.35	13.98	15.18
Tare Wt.	4.12	4.01	3.99	3.94	4.25
Moisture Content; %	33.0	31.6	30.7	30.5	29.5
No. of Blows; N	14	23	29	31	39



PLASTIC LIMIT DETERMINATION

Tare No.	39		S		7
Soil & Tare Wet Wt.	17.98		18.60		17.96
Soil & Tare Dry Wt.	15.94		16.53		16.00
Tare Wt.	3.78		4.11		4.16
Moisture Content; %	16.8		16.7		16.6

LL= 31

PL = 17

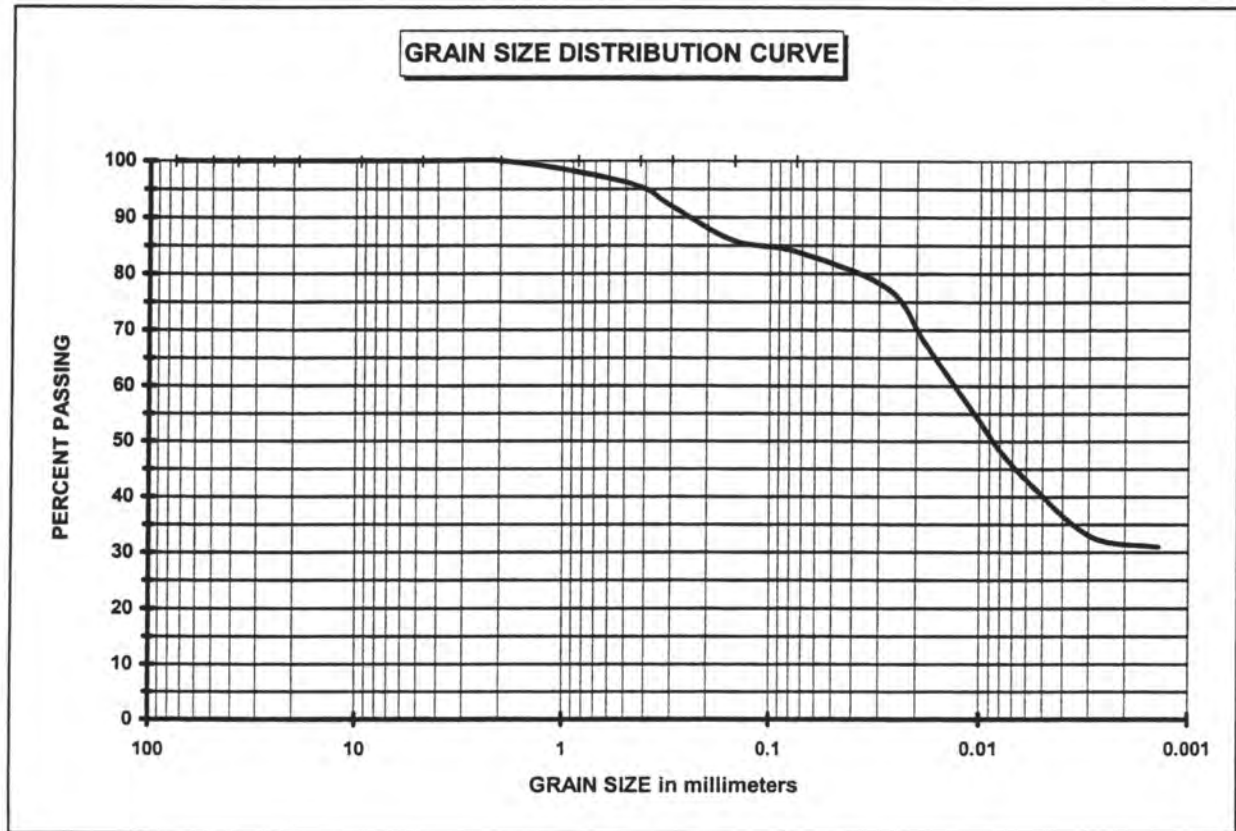
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40698 Depth (ft): _____

Soil Description: Silt with Sand, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	41
PLASTIC LIMIT	27
PLASTICITY INDEX	14
USC	ML

GRAIN SIZE DATA	
% GRAVEL	0.0
% SAND	16.1
% SILT	43.5
% CLAY	40.4



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40698

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Sample Data:

Tare wt: 38.47
Wet + tare wt: 58.74
Dry + tare wt: 58.62
Solids wt: 20.15
Moist. wt: 0.12
Percent moisture: 0.60

Init wt, (g): 427.00
Hydro spec wt, (g): 52.52
Dry hydro wt, (g): 52.21
Rep. total wt: 52.21
Sp. Gr: 2.635
Sp. Gr. corr, (a): 1.01

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.00	0.00	100.00	
10	2	0.00	0.00	100.00	
20	0.85	1.02	1.95	98.05	
40	0.425	2.40	4.60	95.40	
60	0.25	4.22	8.08	91.92	
140	0.106	7.40	14.17	85.83	
200	0.075	8.41	16.11	83.89	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	45	5	40	46	8.8	0.01317	0.0276	77.38
5	23	40	5	35	41	9.6	0.01317	0.0183	67.71
15	23	34	5	29	35	10.6	0.01317	0.0111	56.10
30	23	30	5	25	31	11.2	0.01317	0.0081	48.36
60	23	27	5	22	28	11.7	0.01317	0.0058	42.56
250	23	22	5	17	23	12.5	0.01317	0.0030	32.89
1440	23	21	5	16	2	16.0	0.01317	0.0014	30.95



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL40698

Date: 9/23/01

Flask No.	17
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	175.85
Wt. of Flask + Dry Soil, (g)	227.25
Wt. of Dry Soil, (g)	51.40
Wt. of Flask + Water, (g)	673.45
Wt. of Flask, Soil, & Water, (g)	705.36
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.635



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

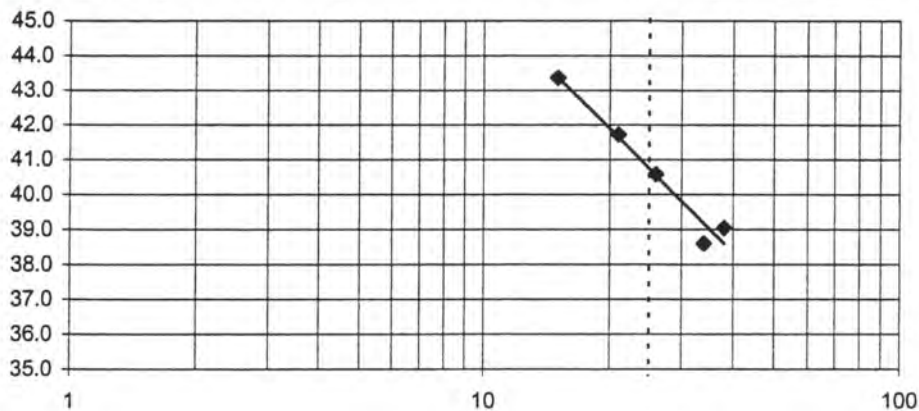
Operator: DB

Sample No: LL40698

Date: 09/22/01

LIQUID LIMIT DETERMINATION

Tare No.	3	P	31	0	G
Soil & Tare Wet Wt.	15.31	16.08	16.93	16.17	17.53
Soil & Tare Dry Wt.	11.91	12.55	13.16	12.80	13.72
Tare Wt.	4.07	4.09	3.87	4.07	3.96
Moisture Content; %	43.4	41.7	40.6	38.6	39.0
No. of Blows; N	15	21	26	34	38



PLASTIC LIMIT DETERMINATION

Tare No.	2		16		38
Soil & Tare Wet Wt.	15.47		16.71		15.09
Soil & Tare Dry Wt.	13.00		14.02		12.69
Tare Wt.	4.02		4.13		3.83
Moisture Content; %	27.5		27.2		27.1

LL= 41

PL = 27

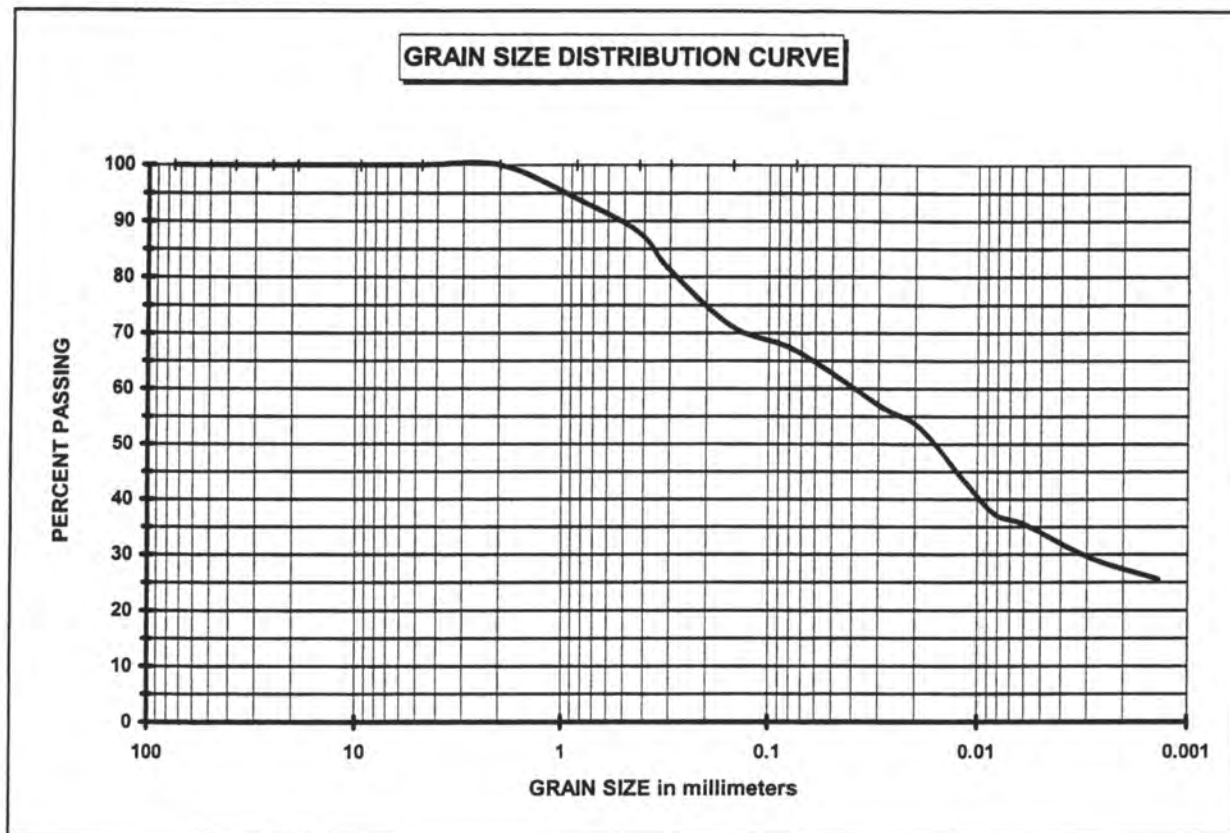
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40798 Depth (ft): _____

Soil Description: Sandy Silty Clay, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	28
PLASTIC LIMIT	22
PLASTICITY INDEX	6
USC	CL-ML

GRAIN SIZE DATA	
% GRAVEL	0.0
% SAND	33.2
% SILT	32.8
% CLAY	34.0



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40798

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 38.78
Wet + tare wt: 60.18
Dry + tare wt: 59.79
Solids wt: 21.01
Moist. wt: 0.39
Percent moisture: 1.86

Init wt, (g): 120.89
Hydro spec wt, (g): 51.87
Dry hydro wt, (g): 50.92
Rep. total wt: 50.92
Sp. Gr: 2.67
Sp. Gr. corr, (a): 1

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.00	0.00	100.00	
10	2	0.00	0.00	100.00	
20	0.85	3.06	6.01	93.99	
40	0.425	6.15	12.08	87.92	
60	0.25	9.57	18.79	81.21	
140	0.106	14.74	28.94	71.06	
200	0.075	16.90	33.19	66.81	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	34	5	29	35	10.6	0.01297	0.0298	56.95
5	23	32	5	27	33	10.9	0.01297	0.0192	53.02
15	23	27	5	22	28	11.7	0.01297	0.0115	43.20
30	23	24	5	19	25	12.2	0.01297	0.0083	37.31
60	23	23	5	18	24	12.4	0.01297	0.0059	35.35
250	23	20	5	15	21	12.9	0.01297	0.0029	29.46
1440	23	18	5	13	2	16.0	0.01297	0.0014	25.53



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL40798

Date: 9/23/01

Flask No.	16
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	177.66
Wt. of Flask + Dry Soil, (g)	222.57
Wt. of Dry Soil, (g)	44.91
Wt. of Flask + Water, (g)	675.52
Wt. of Flask, Soil, & Water, (g)	703.62
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.670



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

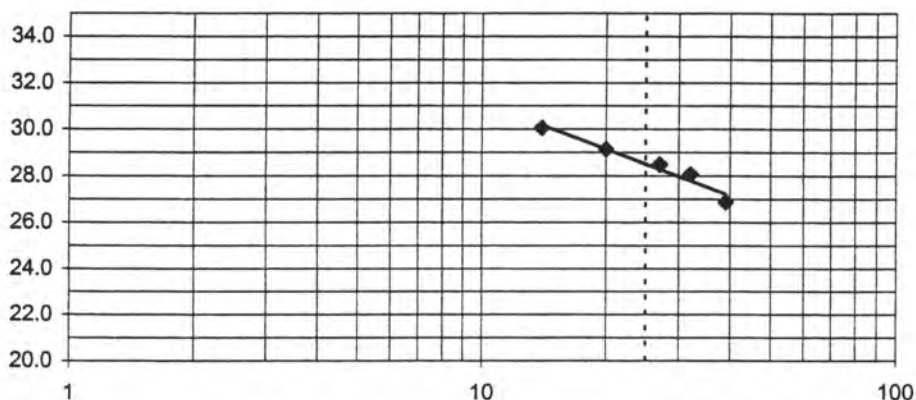
Operator: DB

Sample No: LL40798

Date: 09/22/01

LIQUID LIMIT DETERMINATION

Tare No.	50	5	114	61	A4
Soil & Tare Wet Wt.	17.11	17.08	17.98	18.26	19.57
Soil & Tare Dry Wt.	14.05	14.14	14.92	15.08	16.26
Tare Wt.	3.87	4.05	4.18	3.75	3.94
Moisture Content; %	30.1	29.1	28.5	28.1	26.9
No. of Blows; N	14	20	27	32	39



PLASTIC LIMIT DETERMINATION

Tare No.	20		25		15
Soil & Tare Wet Wt.	17.42		17.57		18.00
Soil & Tare Dry Wt.	15.00		15.10		15.52
Tare Wt.	3.98		3.88		4.05
Moisture Content; %	22.0		22.0		21.6

LL= 28

PL = 22

PI = 6

TEST DATA

Chain-of-Custody No. LL2S&ME-04
Shipment Received 8/30/01



Date: 9/21/01

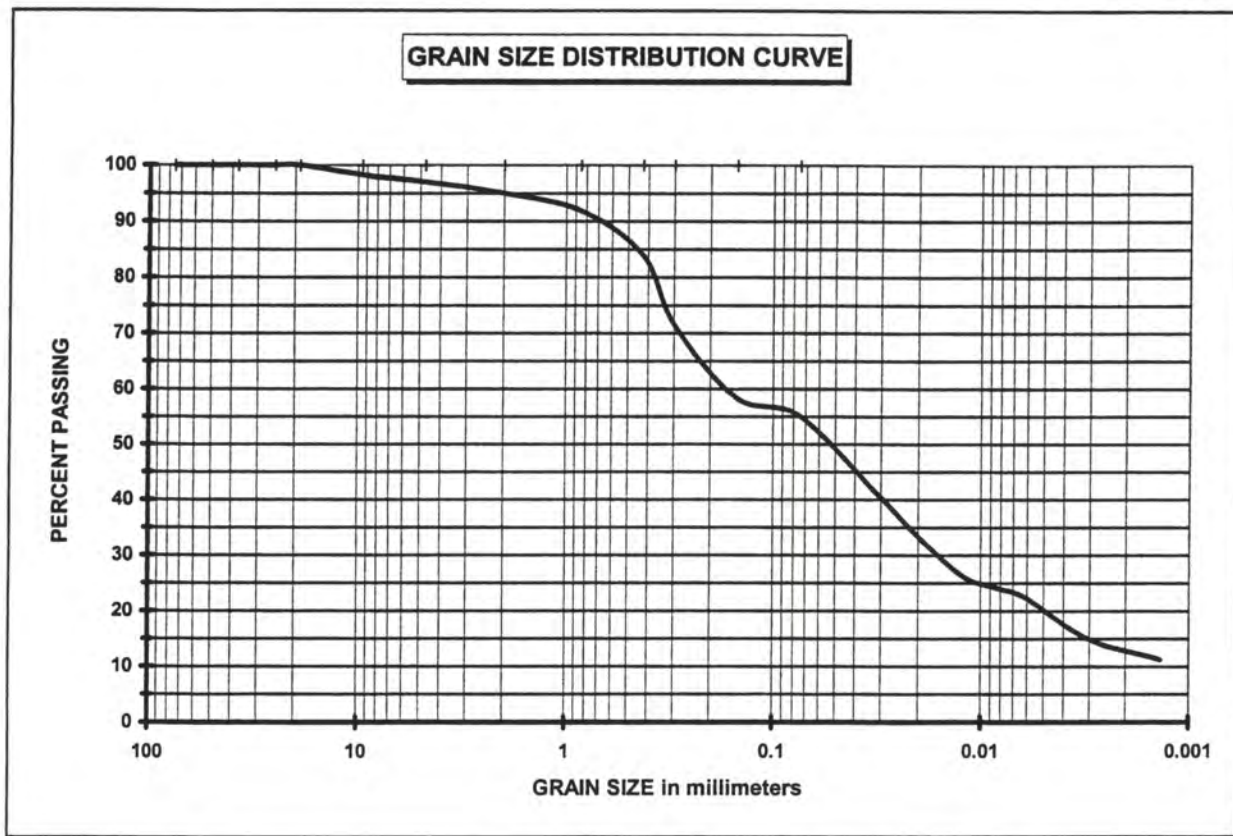
S&ME, Inc., 1413 Topside Road, Louisville, Tennessee 37777, (865) 970-0003, Fax (865) 970-2312



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/20/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL21066 Depth (ft): _____

Soil Description: Sandy Lean Clay, Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	30
PLASTIC LIMIT	17
PLASTICITY INDEX	13
USC	CL

GRAIN SIZE DATA	
% GRAVEL	3.0
% SAND	42.0
% SILT	34.8
% CLAY	20.2



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21066

Date: 9/20/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: 28.19
Wet + tare wt: 42.67
Dry + tare wt: 42.32
Solids wt: 14.13
Moist. wt: 0.35
Percent moisture: 2.48

Init wt, (g): 271.35
Hydro spec wt, (g): 51.57
Dry hydro wt, (g): 50.32
Rep. total wt: 52.96
Sp. Gr: 2.728
Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	4.71	1.74	98.26	
4	4.75	8.02	2.96	97.04	
10	2	13.49	4.97	95.03	
20	0.85	1.66	3.13	91.89	
40	0.425	5.86	11.07	83.96	
60	0.25	12.44	23.49	71.54	
140	0.106	19.42	36.67	58.36	
200	0.075	21.15	39.94	55.09	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	27	5	22	28	11.7	0.01297	0.0314	41.13
5	23	23	5	18	24	12.4	0.01297	0.0204	33.65
15	23	19	5	14	20	13.0	0.01297	0.0121	26.17
30	23	18	5	13	19	13.2	0.01297	0.0086	24.30
60	23	17	5	12	18	13.4	0.01297	0.0061	22.43
250	23	13	5	8	14	14.0	0.01297	0.0031	14.96
1440	23	11	5	6	2	16.0	0.01297	0.0014	11.22



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL21066

Date: 9/25/01

Flask No.	20
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	169.47
Wt. of Flask + Dry Soil, (g)	230.45
Wt. of Dry Soil, (g)	60.98
Wt. of Flask + Water, (g)	667.12
Wt. of Flask, Soil, & Water, (g)	705.76
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.728



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

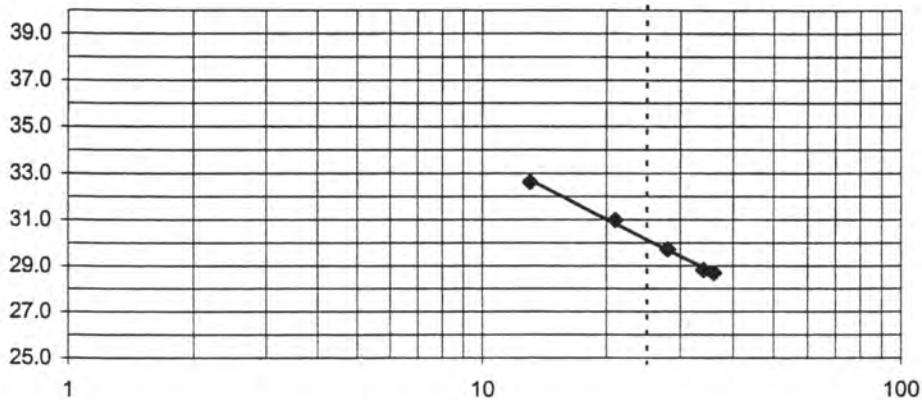
Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21066

Date: 09/25/01

LIQUID LIMIT DETERMINATION					
Tare No.	9	39	S	7	A11
Soil & Tare Wet Wt.	17.86	16.64	17.29	16.69	18.37
Soil & Tare Dry Wt.	14.51	13.60	14.27	13.89	15.16
Tare Wt.	4.24	3.79	4.11	4.17	3.97
Moisture Content; %	32.6	31.0	29.7	28.8	28.7
No. of Blows; N	13	21	28	34	36



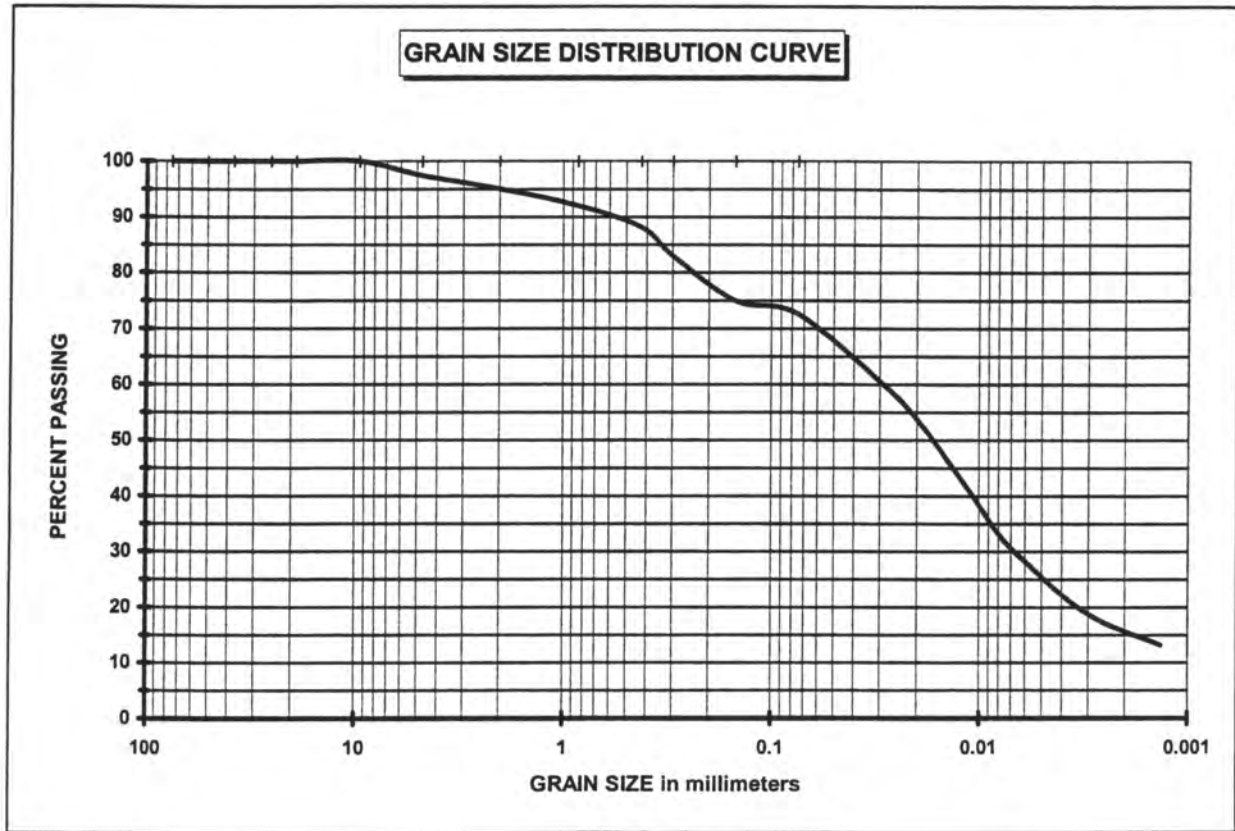
PLASTIC LIMIT DETERMINATION					
Tare No.	57		U		I
Soil & Tare Wet Wt.	18.31		16.47		18.75
Soil & Tare Dry Wt.	16.19		14.65		16.59
Tare Wt.	3.85		4.03		4.18
Moisture Content; %	17.2		17.1		17.4
<div> LL= 30 PL = 17 PI = 13 </div>					



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/25/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL21065 Depth (ft): _____

Soil Description: Lean Clay with Sand, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	32
PLASTIC LIMIT	15
PLASTICITY INDEX	17
USC	CL

GRAIN SIZE DATA	
% GRAVEL	2.5
% SAND	24.9
% SILT	46.9
% CLAY	25.7



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21065

Date: 9/25/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>35.49</u>
Wet + tare wt:	<u>52.67</u>
Dry + tare wt:	<u>52.23</u>
Solids wt:	<u>16.74</u>
Moist. wt:	<u>0.44</u>
Percent moisture:	<u>2.63</u>

Sample Data:

Init wt, (g):	<u>344.41</u>
Hydro spec wt, (g):	<u>51.63</u>
Dry hydro wt, (g):	<u>50.31</u>
Rep. total wt:	<u>52.91</u>
Sp. Gr:	<u>2.74</u>
Sp. Gr. corr, (a):	<u>0.99</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	8.72	2.53	97.47	
10	2	16.94	4.92	95.08	
20	0.85	1.62	3.06	92.02	
40	0.425	3.68	6.96	88.13	
60	0.25	6.40	12.10	82.99	
140	0.106	10.63	20.09	74.99	
200	0.075	11.89	22.47	72.61	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	37	5	32	38	10.1	0.01279	0.0287	59.88
5	23	33	5	28	34	10.7	0.01279	0.0188	52.39
15	23	27	5	22	28	11.7	0.01279	0.0113	41.16
30	23	23	5	18	24	12.4	0.01279	0.0082	33.68
60	23	20	5	15	21	12.9	0.01279	0.0059	28.07
250	23	15	5	10	16	13.7	0.01279	0.0030	18.71
1440	23	12	5	7	2	16.0	0.01279	0.0013	13.10



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL21065

Date: 9/25/01

Flask No.	28
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	171.50
Wt. of Flask + Dry Soil, (g)	229.35
Wt. of Dry Soil, (g)	57.85
Wt. of Flask + Water, (g)	669.24
Wt. of Flask, Soil, & Water, (g)	705.99
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.740



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

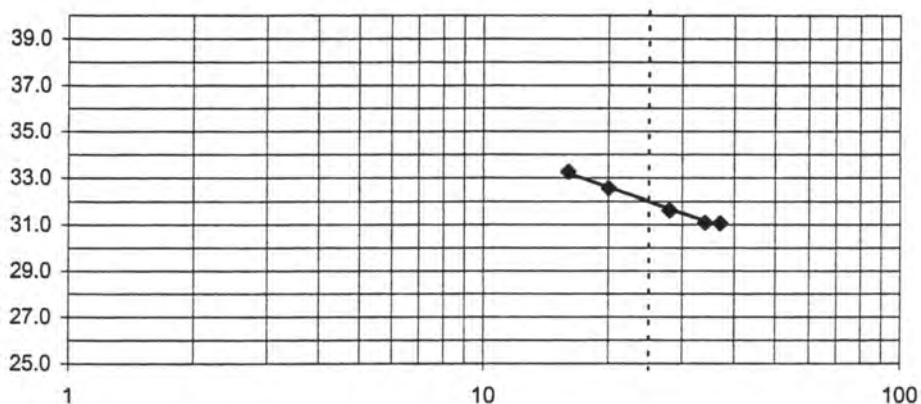
Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21065

Date: 09/25/01

LIQUID LIMIT DETERMINATION					
Tare No.	46	19	10	18	C
Soil & Tare Wet Wt.	16.34	16.46	16.97	17.28	18.57
Soil & Tare Dry Wt.	13.25	13.43	13.83	14.15	15.13
Tare Wt.	3.96	4.12	3.90	4.08	4.05
Moisture Content; %	33.3	32.6	31.6	31.1	31.1
No. of Blows; N	16	20	28	34	37



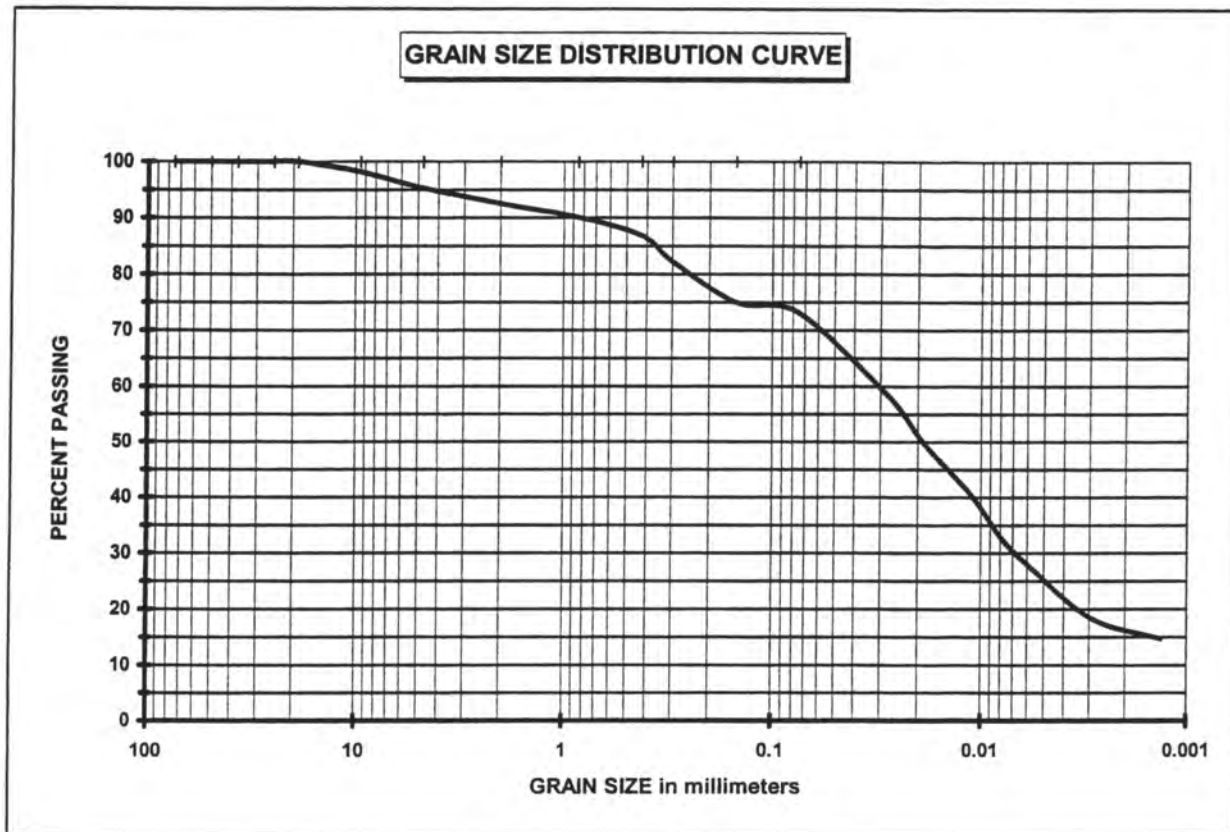
PLASTIC LIMIT DETERMINATION					
Tare No.	5		Z		D
Soil & Tare Wet Wt.	14.22		14.26		15.01
Soil & Tare Dry Wt.	12.91		12.97		13.58
Tare Wt.	3.93		4.09		4.01
Moisture Content; %	14.6		14.5		14.9
<div> LL= 32 PL = 15 PI = 17 </div>					



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/25/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL21064 Depth (ft): _____

Soil Description: Lean Clay with Sand, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	31
PLASTIC LIMIT	17
PLASTICITY INDEX	14
USC	CL

GRAIN SIZE DATA	
% GRAVEL	4.7
% SAND	22.2
% SILT	47.6
% CLAY	25.5



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21064

Date: 9/25/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont:

Tare wt:	<u>34.49</u>
Wet + tare wt:	<u>48.69</u>
Dry + tare wt:	<u>48.18</u>
Solids wt:	<u>13.69</u>
Moist. wt:	<u>0.51</u>
Percent moisture:	<u>3.73</u>

Sample Data:

Init wt, (g):	<u>238.70</u>
Hydro spec wt, (g):	<u>51.20</u>
Dry hydro wt, (g):	<u>49.36</u>
Rep. total wt:	<u>53.37</u>
Sp. Gr:	<u>2.781</u>
Sp. Gr. corr, (a):	<u>0.98</u>

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	4.23	1.77	98.23	
4	4.75	11.22	4.70	95.30	
10	2	17.93	7.51	92.49	
20	0.85	1.29	2.42	90.07	
40	0.425	3.03	5.68	86.81	
60	0.25	5.49	10.29	82.20	
140	0.106	9.34	17.50	74.99	
200	0.075	10.34	19.37	73.11	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	37	5	32	38	10.1	0.01261	0.0283	58.76
5	23	32	5	27	33	10.9	0.01261	0.0186	49.58
15	23	27	5	22	28	11.7	0.01261	0.0111	40.40
30	23	23	5	18	24	12.4	0.01261	0.0081	33.05
60	23	20	5	15	21	12.9	0.01261	0.0058	27.54
250	23	15	5	10	16	13.7	0.01261	0.0030	18.36
1440	23	13	5	8	2	16.0	0.01261	0.0013	14.69



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL21064

Date: 9/25/01

Flask No.	22
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	176.26
Wt. of Flask + Dry Soil, (g)	228.89
Wt. of Dry Soil, (g)	52.63
Wt. of Flask + Water, (g)	673.89
Wt. of Flask, Soil, & Water, (g)	707.61
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.781



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 2 Phase II

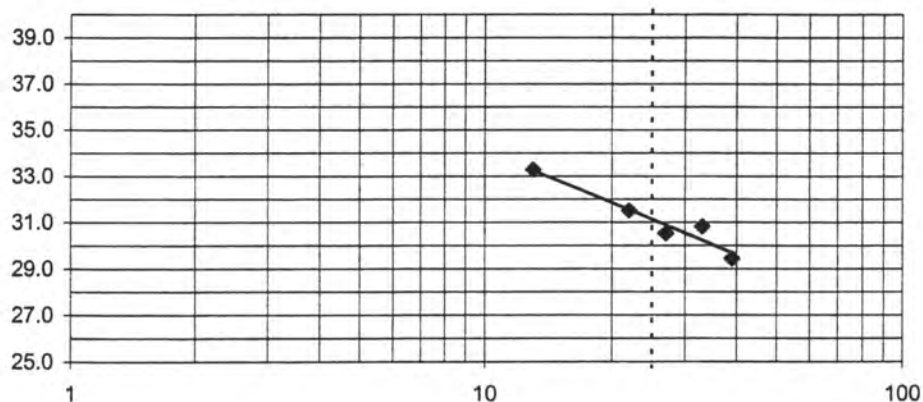
Operator: DB

Sample No: LL21064

Date: 09/25/01

LIQUID LIMIT DETERMINATION

Tare No.	A4	20	25	15	60
Soil & Tare Wet Wt.	16.20	16.01	16.87	17.93	18.53
Soil & Tare Dry Wt.	13.13	13.13	13.83	14.66	15.18
Tare Wt.	3.91	3.99	3.87	4.05	3.80
Moisture Content; %	33.3	31.5	30.5	30.8	29.4
No. of Blows; N	13	22	27	33	39



PLASTIC LIMIT DETERMINATION

Tare No.	401		A20		E
Soil & Tare Wet Wt.	15.78		14.25		14.17
Soil & Tare Dry Wt.	14.02		12.73		12.69
Tare Wt.	3.83		3.93		4.08
Moisture Content; %	17.3		17.3		17.2

LL= 31

PL = 17

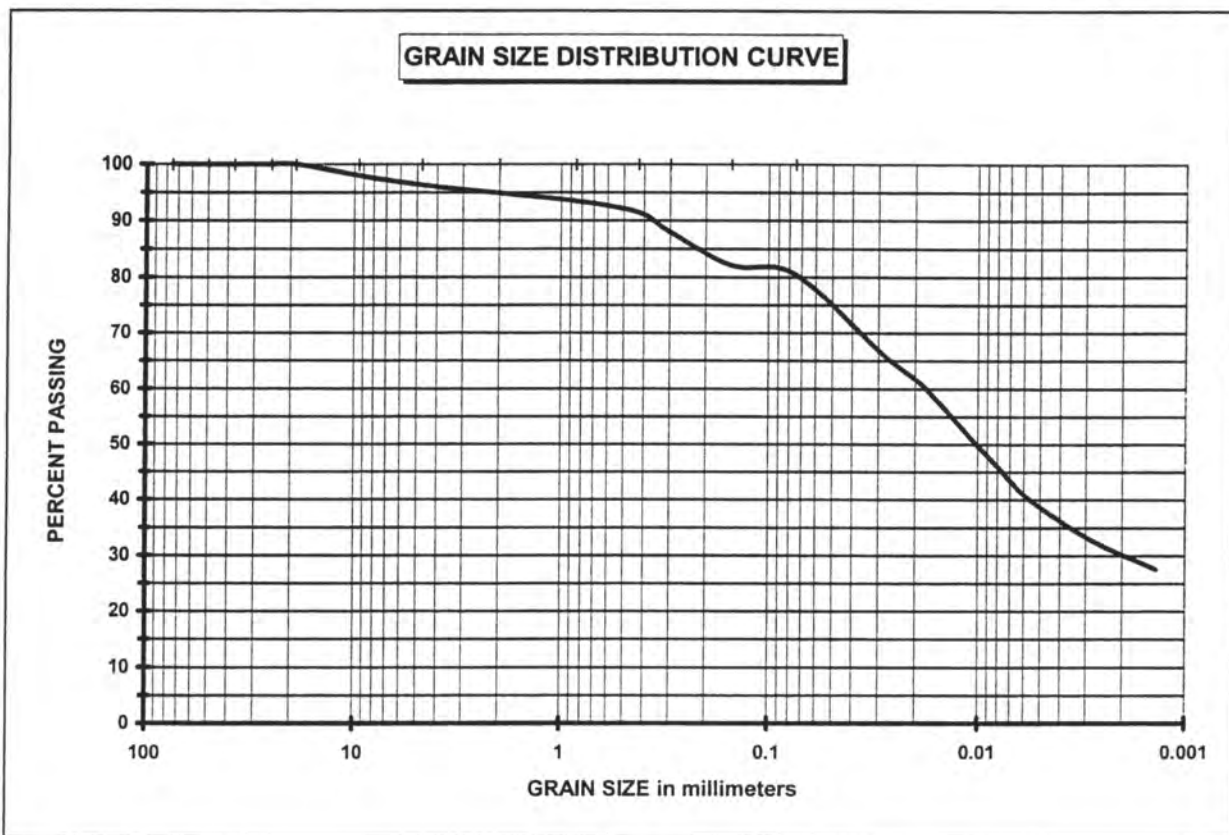
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/24/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL21074 Depth (ft): _____

Soil Description: Lean Clay with Sand, Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	34
PLASTIC LIMIT	18
PLASTICITY INDEX	16
USC	CL

GRAIN SIZE DATA	
% GRAVEL	3.6
% SAND	15.9
% SILT	41.7
% CLAY	38.8



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21074

Date: 9/24/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: _____
Wet + tare wt: _____
Dry + tare wt: _____
Solids wt: _____
Moist. wt: _____
Percent moisture: _____

Init wt, (g): 381.99
Hydro spec wt, (g): 51.30
Dry hydro wt, (g): 51.30
Rep. total wt: 54.05
Sp. Gr: 2.689
Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	7.60	1.99	98.01	
4	4.75	13.91	3.64	96.36	
10	2	19.41	5.08	94.92	
20	0.85	0.81	1.50	93.42	
40	0.425	1.90	3.52	91.40	
60	0.25	3.76	6.96	87.96	
140	0.106	6.95	12.86	82.06	
200	0.075	7.81	14.45	80.47	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	41	5	36	42	9.4	0.01297	0.0282	65.94
5	23	38	5	33	39	9.9	0.01297	0.0183	60.45
15	23	33	5	28	34	10.7	0.01297	0.0110	51.29
30	23	30	5	25	31	11.2	0.01297	0.0079	45.79
60	23	27	5	22	28	11.7	0.01297	0.0057	40.30
250	23	23	5	18	24	12.4	0.01297	0.0029	32.97
1440	23	20	5	15	2	16.0	0.01297	0.0014	27.48



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL21074

Date: 9/25/01

Flask No.	33
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	178.54
Wt. of Flask + Dry Soil, (g)	229.55
Wt. of Dry Soil, (g)	51.01
Wt. of Flask + Water, (g)	676.10
Wt. of Flask, Soil, & Water, (g)	708.15
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.689



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 2 Phase II

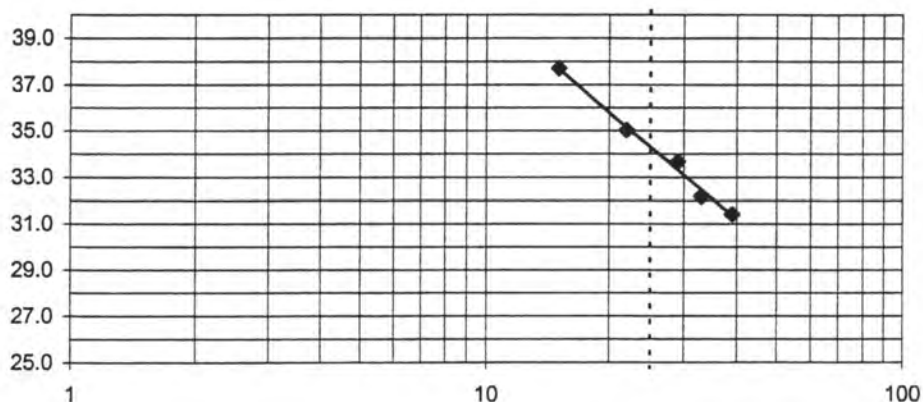
Operator: DB

Sample No: LL21074

Date: 09/26/01

LIQUID LIMIT DETERMINATION

Tare No.	1A	4	21	13	47
Soil & Tare Wet Wt.	16.77	16.98	17.43	18.17	18.46
Soil & Tare Dry Wt.	13.29	13.60	14.06	14.74	14.95
Tare Wt.	4.06	3.95	4.05	4.08	3.78
Moisture Content; %	37.7	35.0	33.7	32.2	31.4
No. of Blows; N	15	22	29	33	39



PLASTIC LIMIT DETERMINATION

Tare No.	37		Y		44
Soil & Tare Wet Wt.	14.26		15.44		20.56
Soil & Tare Dry Wt.	12.69		13.75		18.04
Tare Wt.	3.84		4.17		3.72
Moisture Content; %	17.7		17.6		17.6

LL= 34

PL = 18

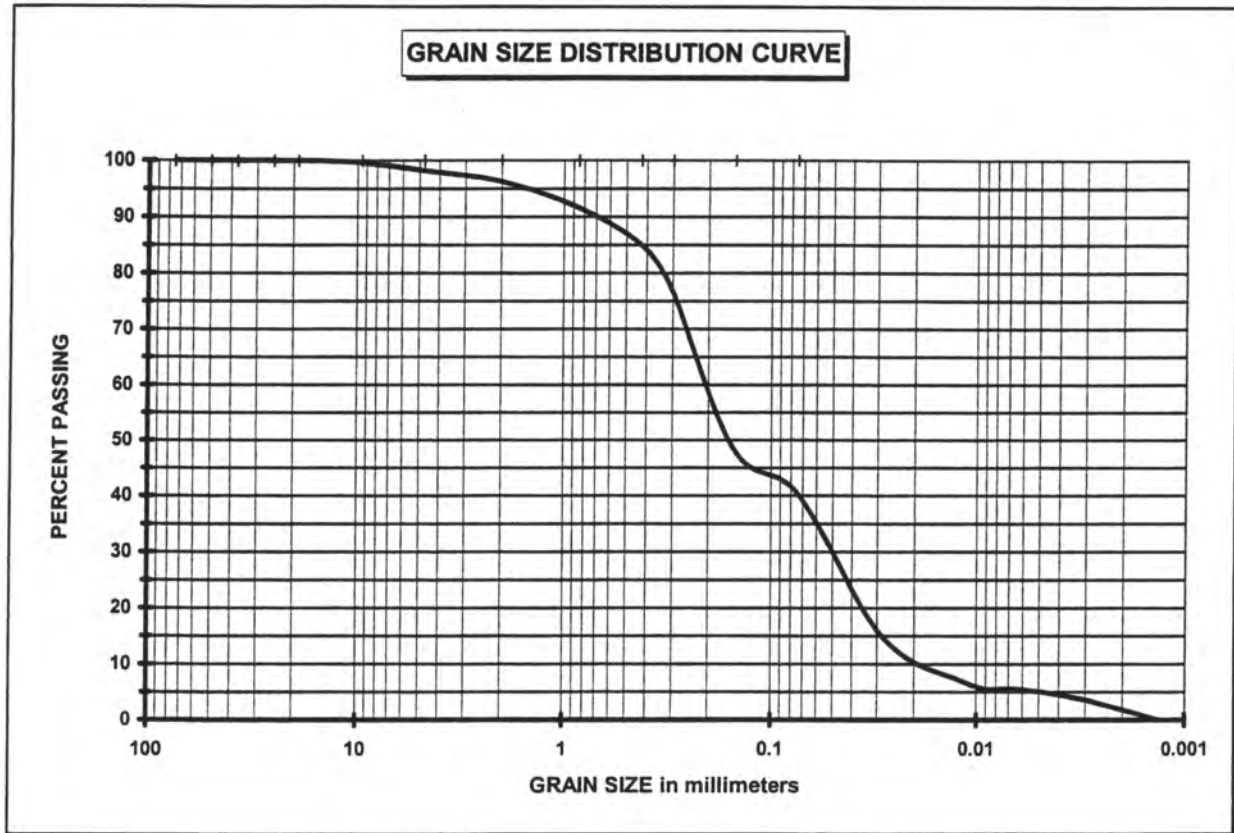
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/24/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL21073 Depth (ft): _____

Soil Description: Silty Clayey Sand, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	20
PLASTIC LIMIT	13
PLASTICITY INDEX	7
USC	SC-SM

GRAIN SIZE DATA	
% GRAVEL	1.8
% SAND	57.6
% SILT	35.7
% CLAY	4.9



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21073

Date: 9/24/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: _____
Wet + tare wt: _____
Dry + tare wt: _____
Solids wt: _____
Moist. wt: _____
Percent moisture: _____

Init wt, (g): 371.36
Hydro spec wt, (g): 51.75
Dry hydro wt, (g): 51.75
Rep. total wt: 53.74
Sp. Gr: 2.782
Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	1.46	0.39	99.61	
4	4.75	6.70	1.80	98.20	
10	2	13.77	3.71	96.29	
20	0.85	2.52	4.69	91.60	
40	0.425	6.07	11.29	85.00	
60	0.25	10.60	19.72	76.57	
140	0.106	25.88	48.16	48.14	
200	0.075	29.95	55.73	40.56	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	15	5	10	16	13.7	0.01279	0.0335	18.42
5	23	11	5	6	12	14.3	0.01279	0.0217	11.05
15	23	9	5	4	10	14.7	0.01279	0.0126	7.37
30	23	8	5	3	9	14.8	0.01279	0.0090	5.53
60	23	8	5	3	9	14.8	0.01279	0.0064	5.53
250	23	7	5	2	8	15.0	0.01279	0.0031	3.68
1440	23	5	5	0	2	16.0	0.01279	0.0013	0.00



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL21073

Date: 9/25/01

Flask No.	9
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	177.37
Wt. of Flask + Dry Soil, (g)	232.22
Wt. of Dry Soil, (g)	54.85
Wt. of Flask + Water, (g)	674.90
Wt. of Flask, Soil, & Water, (g)	710.05
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.782



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 2 Phase II

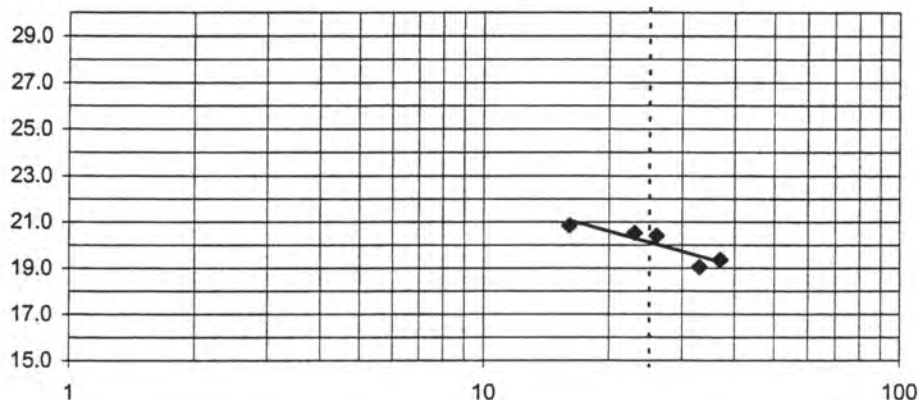
Operator: DB

Sample No: LL21073

Date: 09/26/01

LIQUID LIMIT DETERMINATION

Tare No.	g	2	16	38	a
Soil & Tare Wet Wt.	15.10	14.12	14.99	13.14	13.86
Soil & Tare Dry Wt.	13.18	12.40	13.15	11.65	12.28
Tare Wt.	3.97	4.02	4.13	3.83	4.12
Moisture Content; %	20.9	20.5	20.4	19.1	19.4
No. of Blows; N	16	23	26	33	37



PLASTIC LIMIT DETERMINATION

Tare No.	n		h		a18
Soil & Tare Wet Wt.	17.54		17.61		17.12
Soil & Tare Dry Wt.	15.96		16.01		15.60
Tare Wt.	4.01		3.98		3.94
Moisture Content; %	13.2		13.3		13.0

LL= 20

PL = 13

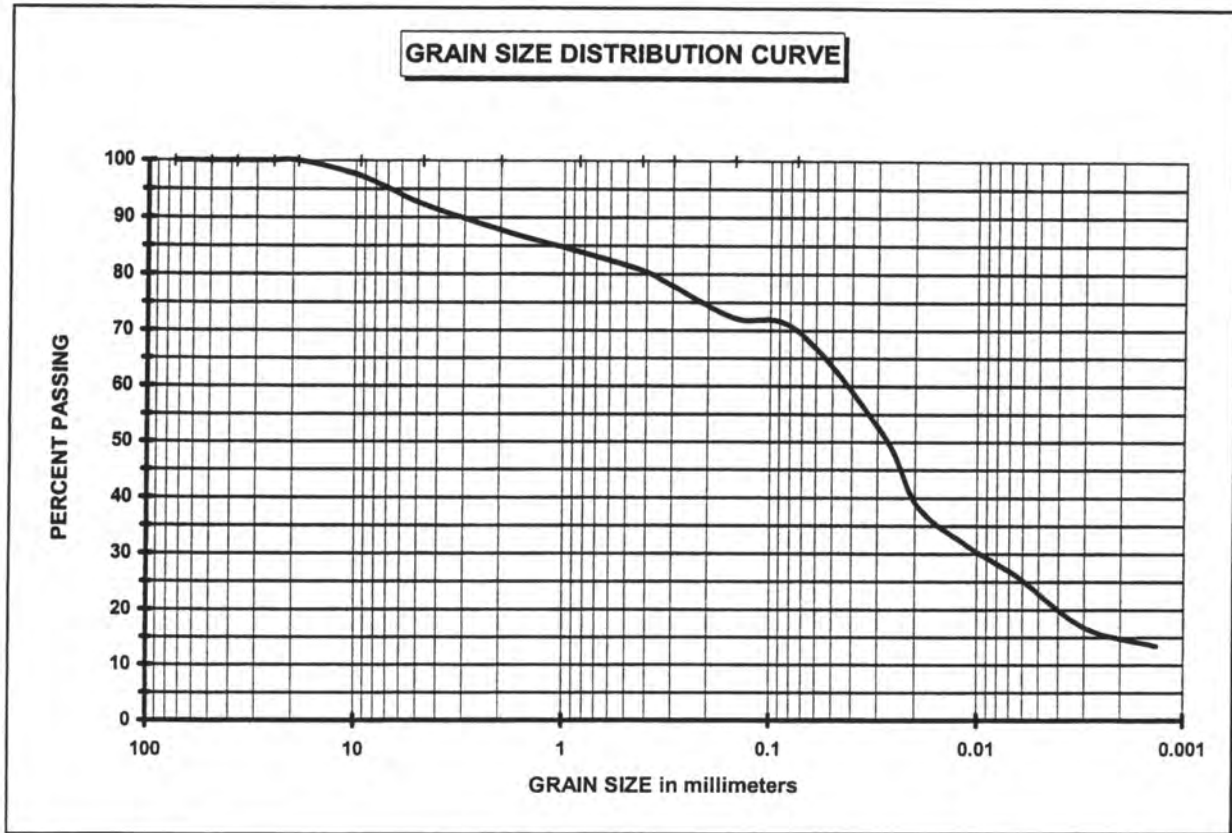
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 2 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/25/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL21075 Depth (ft): _____

Soil Description: Lean Clay with Sand, Gray

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	23
PLASTIC LIMIT	14
PLASTICITY INDEX	9
USC	CL

GRAIN SIZE DATA	
% GRAVEL	7.7
% SAND	22.2
% SILT	47.0
% CLAY	23.1



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Sample No: LL21075

Date: 9/25/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: _____
 Wet + tare wt: _____
 Dry + tare wt: _____
 Solids wt: _____
 Moist. wt: _____
 Percent moisture: _____

Init wt, (g): 546.18
 Hydro spec wt, (g): 51.86
 Dry hydro wt, (g): 51.86
 Rep. total wt: 59.07
 Sp. Gr: 2.759
 Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	14.40	2.64	97.36	
4	4.75	41.95	7.68	92.32	
10	2	66.70	12.21	87.79	
20	0.85	2.28	3.86	83.93	
40	0.425	4.19	7.09	80.70	
60	0.25	5.83	9.87	77.92	
140	0.106	9.22	15.61	72.18	
200	0.075	10.46	17.71	70.08	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	36	5	31	37	10.3	0.01279	0.0290	51.95
5	23	28	5	23	29	11.6	0.01279	0.0195	38.54
15	23	24	5	19	25	12.2	0.01279	0.0115	31.84
30	23	22	5	17	23	12.5	0.01279	0.0083	28.49
60	23	20	5	15	21	12.9	0.01279	0.0059	25.14
250	23	15	5	10	16	13.7	0.01279	0.0030	16.76
1440	23	13	5	8	2	16.0	0.01279	0.0013	13.41



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 2 Phase II

Operator: DB

Specimen ID: LL21075

Date: 9/25/01

Flask No.	27
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	181.39
Wt. of Flask + Dry Soil, (g)	234.64
Wt. of Dry Soil, (g)	53.25
Wt. of Flask + Water, (g)	679.29
Wt. of Flask, Soil, & Water, (g)	713.25
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.759



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 2 Phase II

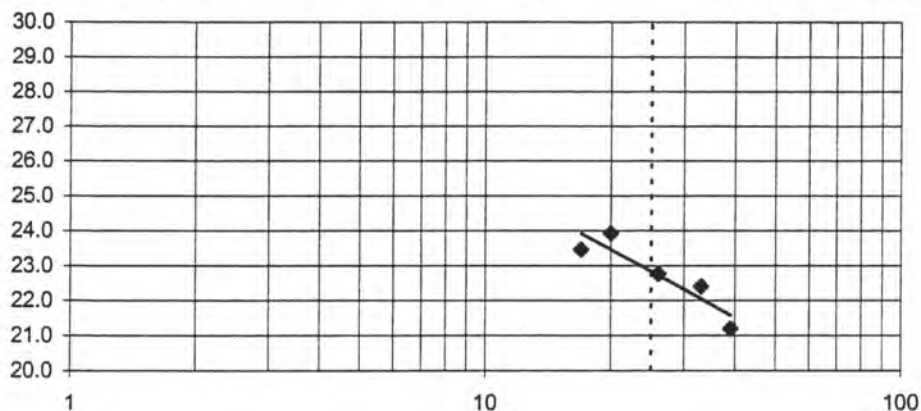
Operator: DB

Sample No: LL21075

Date: 09/26/01

LIQUID LIMIT DETERMINATION

Tare No.	a16	a4	a3	a2	a5
Soil & Tare Wet Wt.	15.46	13.10	14.71	16.58	14.62
Soil & Tare Dry Wt.	12.76	10.82	12.22	13.78	12.29
Tare Wt.	1.25	1.29	1.28	1.28	1.30
Moisture Content; %	23.5	23.9	22.8	22.4	21.2
No. of Blows; N	17	20	26	33	39



PLASTIC LIMIT DETERMINATION

Tare No.	a11		a9		a10
Soil & Tare Wet Wt.	22.02		18.90		21.53
Soil & Tare Dry Wt.	19.44		16.72		19.03
Tare Wt.	1.24		1.28		1.26
Moisture Content; %	14.2		14.1		14.1

LL= 23

PL = 14

PI = 9

TEST DATA

Chain-of-Custody No. LL3S&ME-05
Shipment Received 8/30/01



Job No: 1439-01-417

Name: SAIC - Ravenna Load Line 3 Phase II

Operator: JW Date: 9/21/01

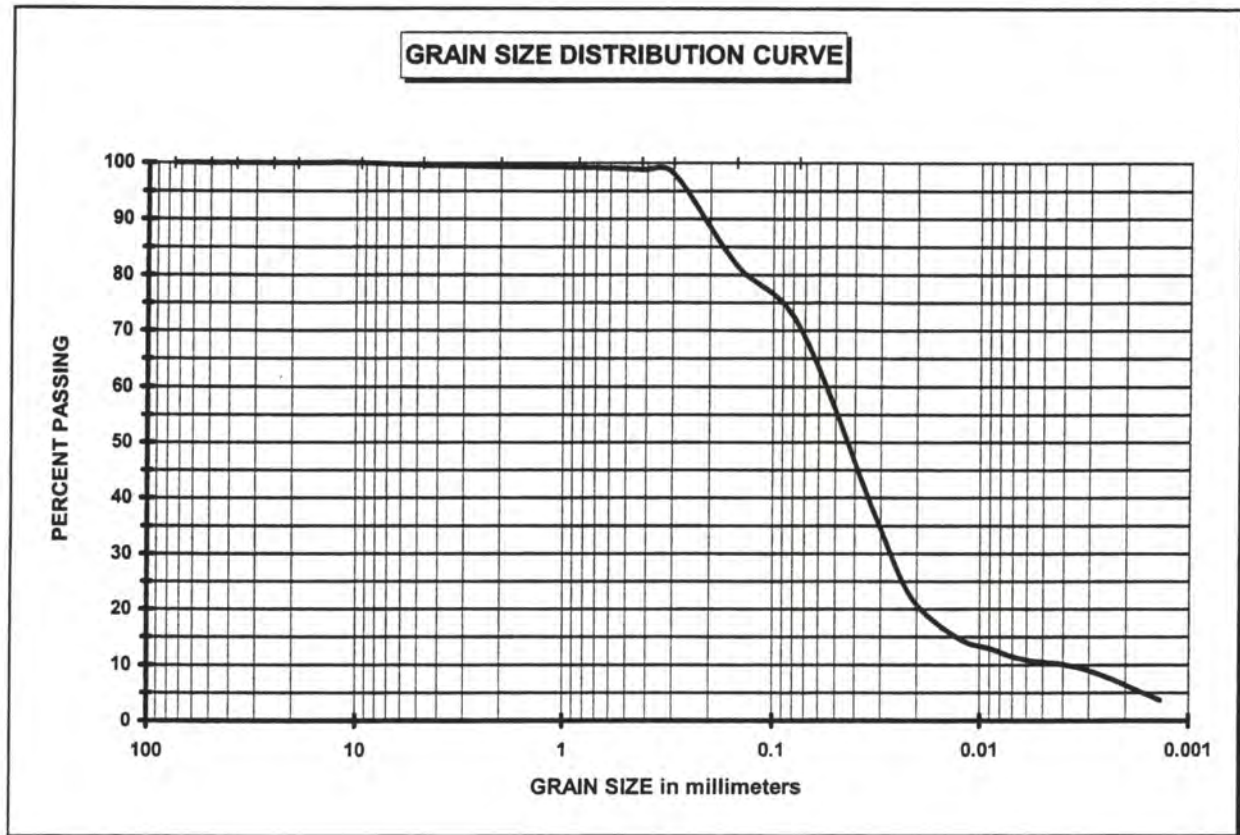
S&ME, Inc., 1413 Topside Road, Louisville, Tennessee 37777, (865) 970-0003, Fax (865) 970-2312



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/24/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31035

Depth (ft): _____

Soil Description: Lean Clay with Sand, Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	22
PLASTIC LIMIT	14
PLASTICITY INDEX	8
USC	CL

GRAIN SIZE DATA	
% GRAVEL	0.4
% SAND	28.7
% SILT	60.5
% CLAY	10.4



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31035

Date: 9/24/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: _____
 Wet + tare wt: _____
 Dry + tare wt: _____
 Solids wt: _____
 Moist. wt: _____
 Percent moisture: _____

Init wt, (g): 323.71
 Hydro spec wt, (g): 52.98
 Dry hydro wt, (g): 52.98
 Rep. total wt: 53.35
 Sp. Gr: 2.709
 Sp. Gr. corr, (a): 0.98

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	1.44	0.44	99.56	
10	2	2.27	0.70	99.30	
20	0.85	0.06	0.11	99.19	
40	0.425	0.25	0.47	98.83	
60	0.25	0.65	1.22	98.08	
140	0.106	9.36	17.54	81.76	
200	0.075	15.15	28.40	70.90	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	25	5	20	26	12.1	0.01297	0.0318	36.74
5	23	17	5	12	18	13.4	0.01297	0.0212	22.04
15	23	13	5	8	14	14.0	0.01297	0.0125	14.69
30	23	12	5	7	13	14.2	0.01297	0.0089	12.86
60	23	11	5	6	12	14.3	0.01297	0.0063	11.02
250	23	10	5	5	11	14.5	0.01297	0.0031	9.18
1440	23	7	5	2	2	16.0	0.01297	0.0014	3.67



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Specimen ID: LL31035

Date: 9/25/01

Flask No.	8
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	174.54
Wt. of Flask + Dry Soil, (g)	225.69
Wt. of Dry Soil, (g)	51.15
Wt. of Flask + Water, (g)	672.85
Wt. of Flask, Soil, & Water, (g)	705.13
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.709



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 3 Phase II

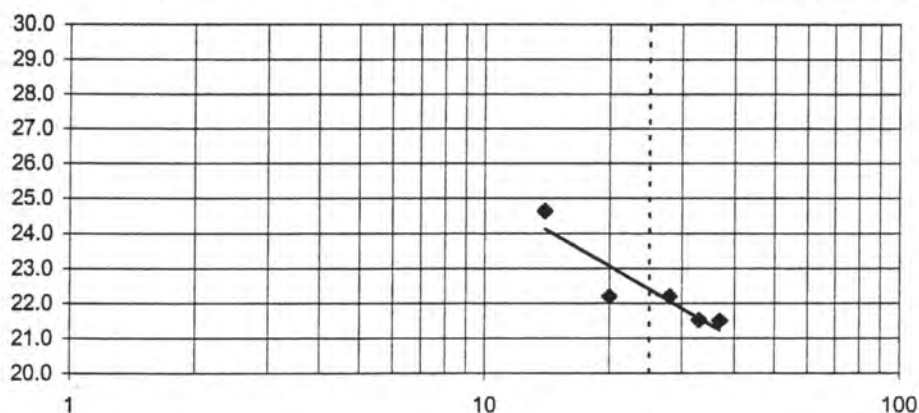
Operator: DB

Sample No: LL31035

Date: 09/25/01

LIQUID LIMIT DETERMINATION

Tare No.	m	14	26	35	3
Soil & Tare Wet Wt.	18.81	14.28	13.99	14.50	16.56
Soil & Tare Dry Wt.	15.89	12.44	12.15	12.63	14.35
Tare Wt.	4.04	4.15	3.86	3.94	4.07
Moisture Content; %	24.6	22.2	22.2	21.5	21.5
No. of Blows; N	14	20	28	33	37



PLASTIC LIMIT DETERMINATION

Tare No.	p	31	F0
Soil & Tare Wet Wt.	16.89	17.13	16.19
Soil & Tare Dry Wt.	15.27	15.47	14.69
Tare Wt.	4.10	3.87	4.08
Moisture Content; %	14.5	14.3	14.1

LL= 22

PL = 14

PI = 8



GRAIN SIZE DATA SHEET

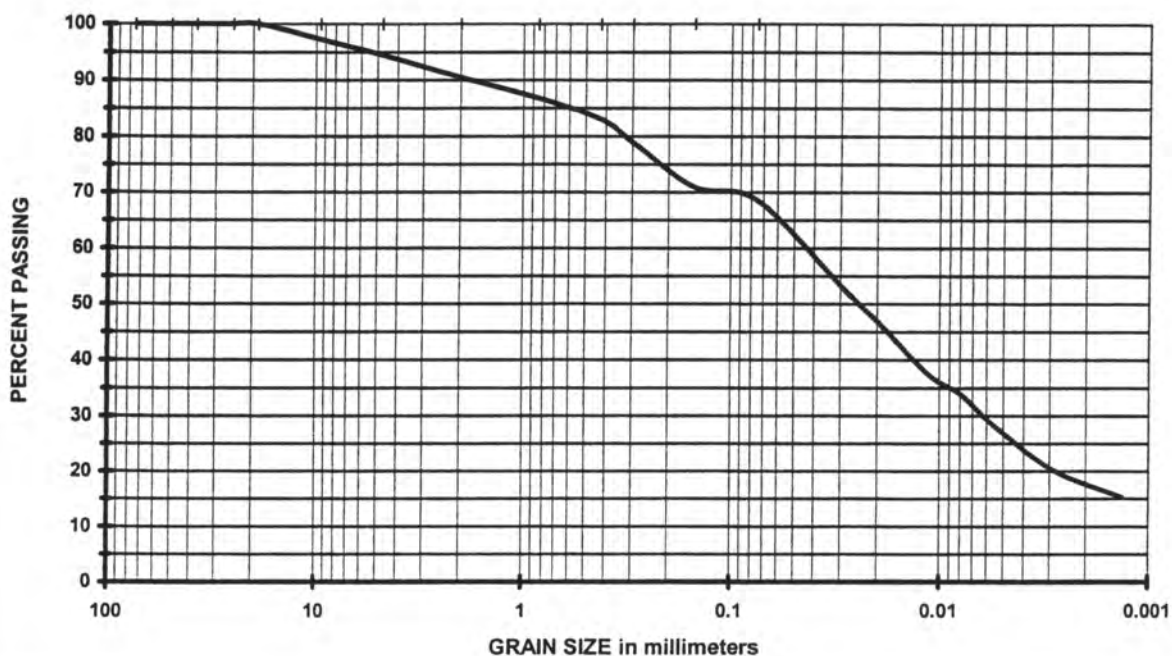
Job Name: Ravenna Load Line 3 Phase II

Job Number: 1439-01-417

ASTM: D 422

Date: 9/24/01

GRAIN SIZE DISTRIBUTION CURVE



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31036

Depth (ft): _____

Soil Description: Sandy Lean Clay, Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	28
PLASTIC LIMIT	17
PLASTICITY INDEX	11
USC	CL

GRAIN SIZE DATA	
% GRAVEL	5.5
% SAND	25.9
% SILT	41.6
% CLAY	27.0



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31036

Date: 9/24/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: _____
Wet + tare wt: _____
Dry + tare wt: _____
Solids wt: _____
Moist. wt: _____
Percent moisture: _____

Init wt, (g): 412.10
Hydro spec wt, (g): 51.85
Dry hydro wt, (g): 51.85
Rep. total wt: 57.30
Sp. Gr: 2.819
Sp. Gr. corr, (a): 0.97

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	11.32	2.75	97.25	
4	4.75	22.68	5.50	94.50	
10	2	39.20	9.51	90.49	
20	0.85	2.12	3.70	86.79	
40	0.425	4.27	7.45	83.04	
60	0.25	6.61	11.54	78.95	
140	0.106	11.19	19.53	70.96	
200	0.075	12.57	21.94	68.55	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	36	5	31	37	10.3	0.01261	0.0286	52.48
5	23	32	5	27	33	10.9	0.01261	0.0186	45.71
15	23	27	5	22	28	11.7	0.01261	0.0111	37.24
30	23	25	5	20	26	12.1	0.01261	0.0080	33.86
60	23	22	5	17	23	12.5	0.01261	0.0058	28.78
250	23	17	5	12	18	13.4	0.01261	0.0029	20.31
1440	23	14	5	9	2	16.0	0.01261	0.0013	15.24



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Specimen ID: LL31036

Date: 9/25/01

Flask No.	30
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	174.94
Wt. of Flask + Dry Soil, (g)	226.51
Wt. of Dry Soil, (g)	51.57
Wt. of Flask + Water, (g)	672.57
Wt. of Flask, Soil, & Water, (g)	705.86
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.819



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 3 Phase II

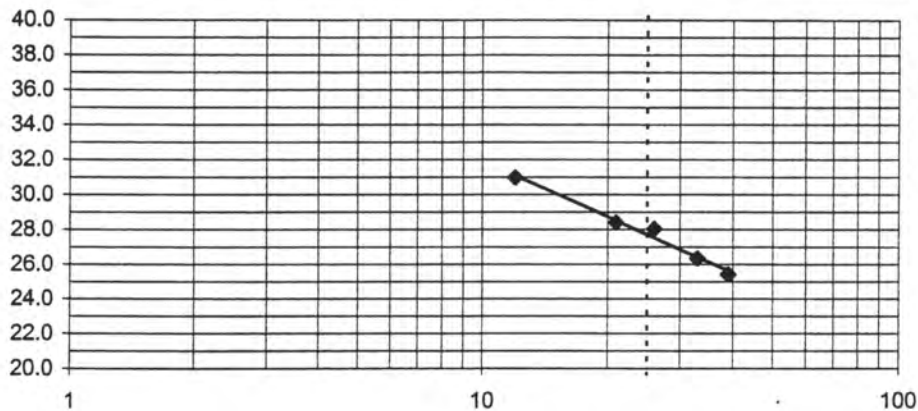
Operator: DB

Sample No: LL31036

Date: 09/25/01

LIQUID LIMIT DETERMINATION

Tare No.	C	A5	Z	D	311
Soil & Tare Wet Wt.	18.43	17.70	17.84	17.41	17.70
Soil & Tare Dry Wt.	15.03	14.66	14.83	14.62	14.93
Tare Wt.	4.06	3.96	4.09	4.03	4.03
Moisture Content; %	31.0	28.4	28.0	26.4	25.4
No. of Blows; N	12	21	26	33	39



PLASTIC LIMIT DETERMINATION

Tare No.	b6		q		l
Soil & Tare Wet Wt.	15.71		17.92		17.51
Soil & Tare Dry Wt.	14.05		15.96		15.60
Tare Wt.	4.05		4.19		4.12
Moisture Content; %	16.6		16.7		16.6

LL= 28

PL = 17

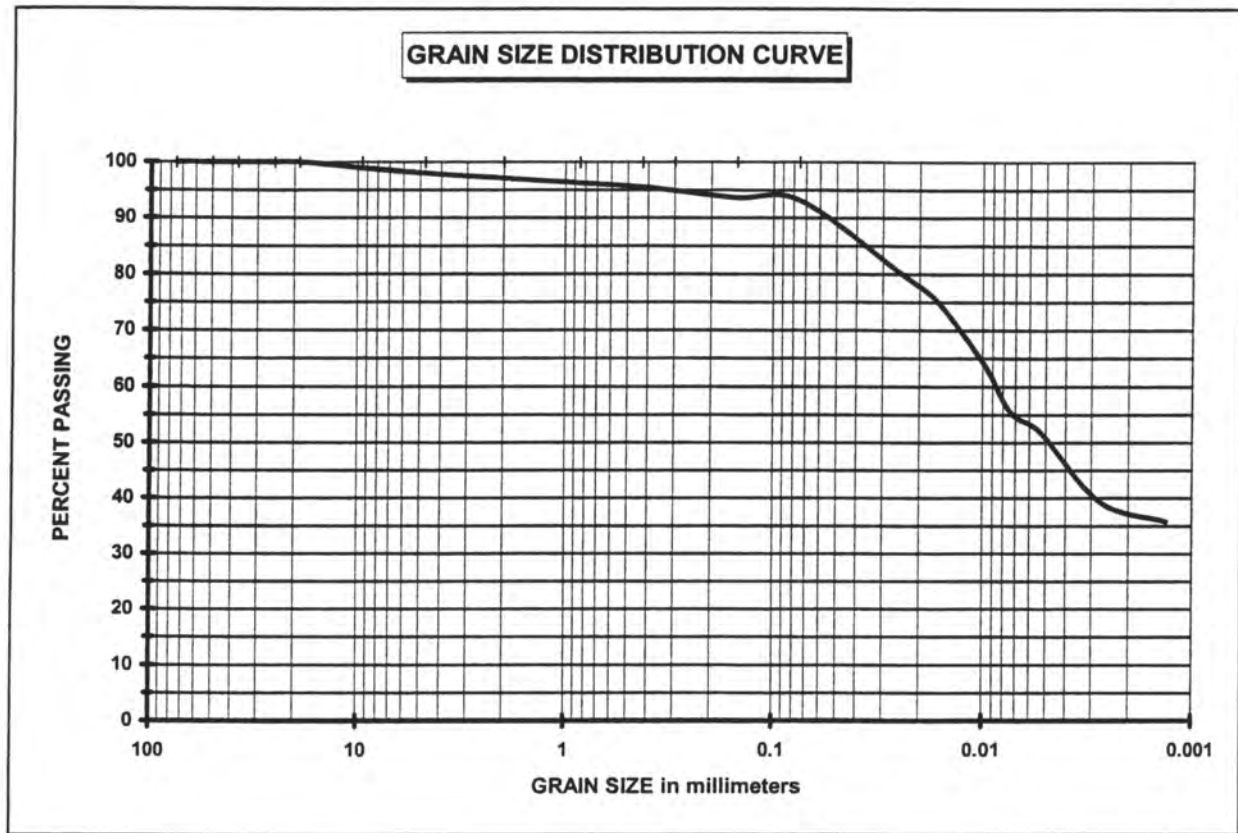
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/24/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31042 Depth (ft): _____

Soil Description: Lean Clay, Gray & Brown

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	39
PLASTIC LIMIT	19
PLASTICITY INDEX	20
USC	CL

GRAIN SIZE DATA	
% GRAVEL	2.0
% SAND	4.9
% SILT	42.4
% CLAY	50.7



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31042

Date: 9/24/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: _____
Wet + tare wt: _____
Dry + tare wt: _____
Solids wt: _____
Moist. wt: _____
Percent moisture: _____

Init wt, (g): 520.67
Hydro spec wt, (g): 52.75
Dry hydro wt, (g): 52.75
Rep. total wt: 54.31
Sp. Gr: 2.835
Sp. Gr. corr, (a): 0.97

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	5.55	1.07	98.93	
4	4.75	10.22	1.96	98.04	
10	2	14.92	2.87	97.13	
20	0.85	0.45	0.83	96.31	
40	0.425	0.83	1.53	95.61	
60	0.25	1.22	2.25	94.89	
140	0.106	1.92	3.54	93.60	
200	0.075	2.17	4.00	93.14	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	50	5	45	51	8.0	0.01261	0.0252	80.38
5	23	47	5	42	48	8.5	0.01261	0.0164	75.02
15	23	41	5	36	42	9.4	0.01261	0.0100	64.30
30	23	36	5	31	37	10.3	0.01261	0.0074	55.37
60	23	34	5	29	35	10.6	0.01261	0.0053	51.80
250	23	27	5	22	28	11.7	0.01261	0.0027	39.30
1440	23	25	5	20	2	16.0	0.01261	0.0013	35.72



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

Job Name: Ravenna Load Line 3 Phase II

Specimen ID: LL31042

ASTM : D 854

Operator: DB

Date: 9/25/01

Flask No.	25
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	170.10
Wt. of Flask + Dry Soil, (g)	221.47
Wt. of Dry Soil, (g)	51.37
Wt. of Flask + Water, (g)	667.91
Wt. of Flask, Soil, & Water, (g)	701.17
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.835



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 3 Phase II

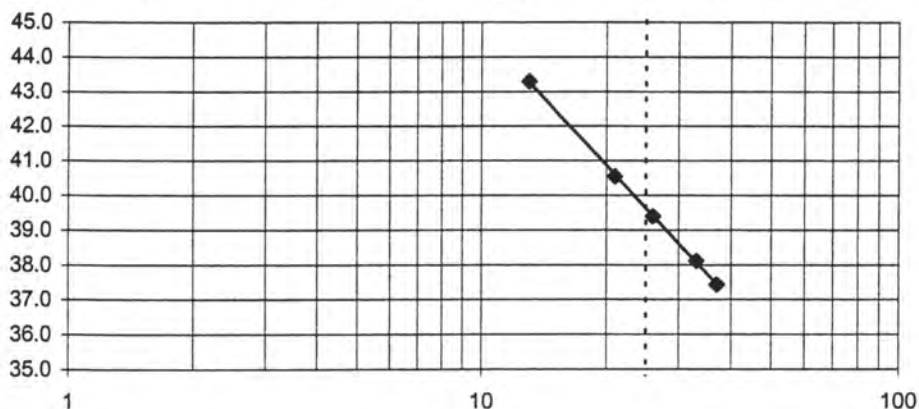
Operator: DB

Sample No: LL31042

Date: 09/25/01

LIQUID LIMIT DETERMINATION

Tare No.	6	15	1	28	50
Soil & Tare Wet Wt.	15.34	16.19	15.80	15.48	16.82
Soil & Tare Dry Wt.	11.92	12.67	12.49	12.27	13.29
Tare Wt.	4.02	3.99	4.09	3.85	3.86
Moisture Content; %	43.3	40.6	39.4	38.1	37.4
No. of Blows; N	13	21	26	33	37



PLASTIC LIMIT DETERMINATION

Tare No.	5		114		61
Soil & Tare Wet Wt.	19.74		18.79		16.67
Soil & Tare Dry Wt.	17.24		16.44		14.61
Tare Wt.	4.05		4.17		3.74
Moisture Content; %	19.0		19.2		19.0

LL= 39

PL = 19

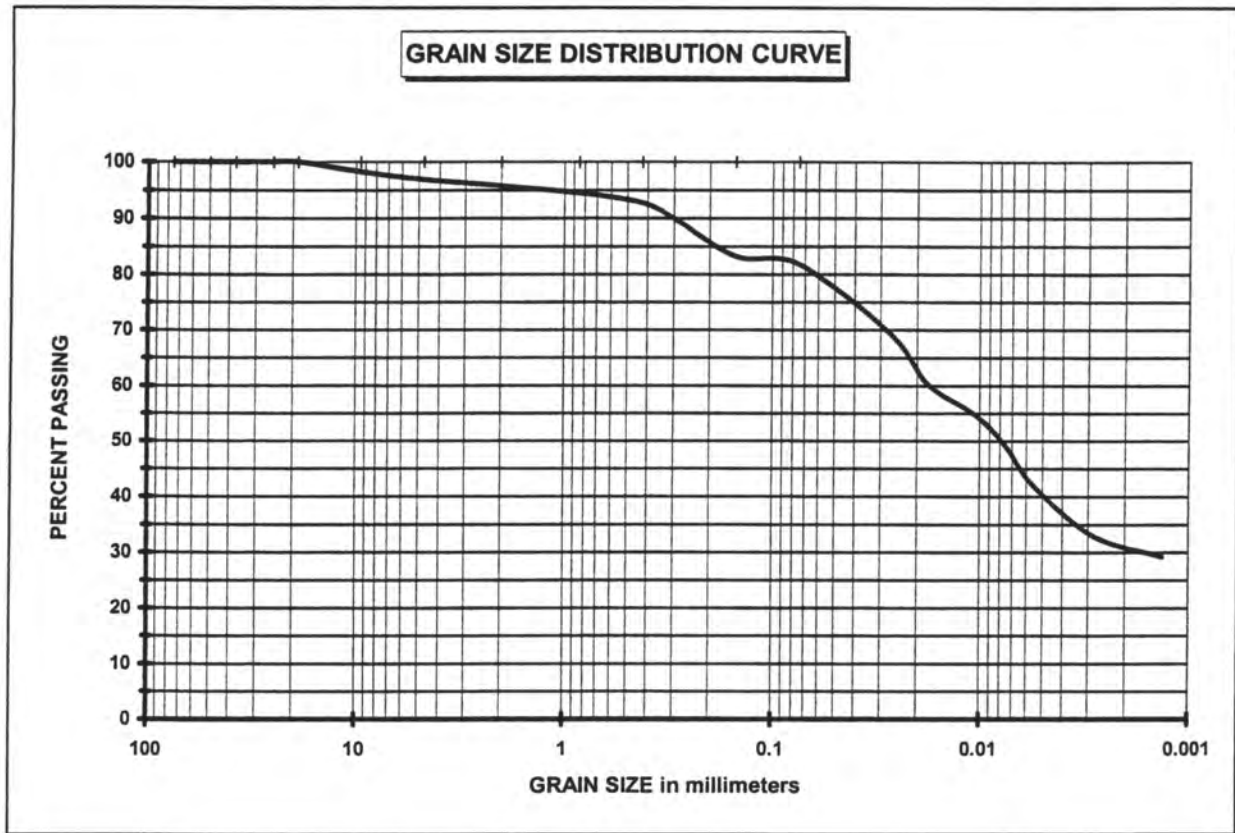
PI = 20



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 3 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/24/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL31043 Depth (ft): _____

Soil Description: Lean Clay with Sand, Gray & Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	34
PLASTIC LIMIT	18
PLASTICITY INDEX	16
USC	CL

GRAIN SIZE DATA	
% GRAVEL	3.1
% SAND	15.1
% SILT	41.2
% CLAY	40.6



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Sample No: LL31043

Date: 9/24/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: _____
Wet + tare wt: _____
Dry + tare wt: _____
Solids wt: _____
Moist. wt: _____
Percent moisture: _____

Init wt, (g): 361.88
Hydro spec wt, (g): 50.94
Dry hydro wt, (g): 50.94
Rep. total wt: 53.18
Sp. Gr: 2.853
Sp. Gr. corr, (a): 0.97

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	6.32	1.75	98.25	
4	4.75	11.08	3.06	96.94	
10	2	15.23	4.21	95.79	
20	0.85	0.69	1.30	94.49	
40	0.425	1.63	3.07	92.73	
60	0.25	3.10	5.83	89.96	
140	0.106	6.67	12.54	83.25	
200	0.075	7.44	13.99	81.80	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	43	5	38	44	9.1	0.01261	0.0269	69.31
5	23	38	5	33	39	9.9	0.01261	0.0178	60.19
15	23	35	5	30	36	10.4	0.01261	0.0105	54.72
30	23	32	5	27	33	10.9	0.01261	0.0076	49.25
60	23	28	5	23	29	11.6	0.01261	0.0055	41.95
250	23	23	5	18	24	12.4	0.01261	0.0028	32.83
1440	23	21	5	16	2	16.0	0.01261	0.0013	29.18



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 3 Phase II

Operator: DB

Specimen ID: LL31043

Date: 9/25/01

Flask No.	19
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	182.68
Wt. of Flask + Dry Soil, (g)	233.65
Wt. of Dry Soil, (g)	50.97
Wt. of Flask + Water, (g)	680.26
Wt. of Flask, Soil, & Water, (g)	713.38
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.853



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 3 Phase II

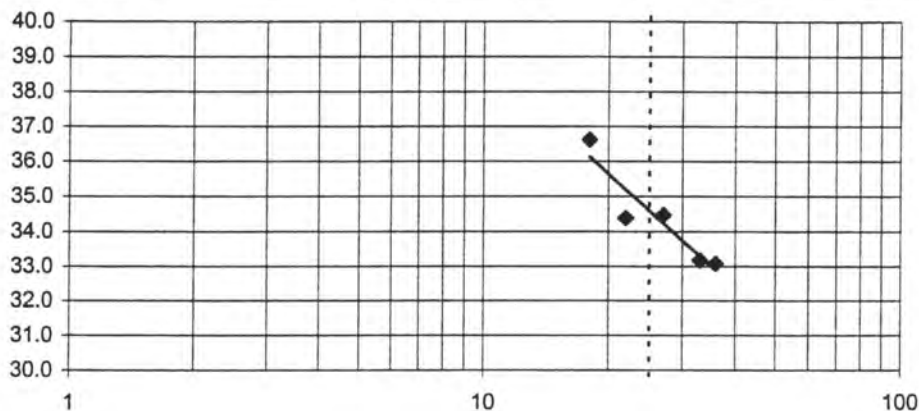
Operator: DB

Sample No: LL31043

Date: 09/25/01

LIQUID LIMIT DETERMINATION

Tare No.	t	36	a3	12	1c
Soil & Tare Wet Wt.	16.92	16.12	16.58	17.87	17.95
Soil & Tare Dry Wt.	13.47	12.97	13.34	14.47	14.52
Tare Wt.	4.05	3.81	3.94	4.22	4.15
Moisture Content; %	36.6	34.4	34.5	33.2	33.1
No. of Blows; N	18	22	27	33	36



PLASTIC LIMIT DETERMINATION

Tare No.	45		11		40
Soil & Tare Wet Wt.	19.10		10.74		16.52
Soil & Tare Dry Wt.	16.71		9.72		14.55
Tare Wt.	3.75		4.12		3.81
Moisture Content; %	18.4		18.2		18.3

LL = 34

PL = 18

PI = 16



Operator: JW

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TEST DATA

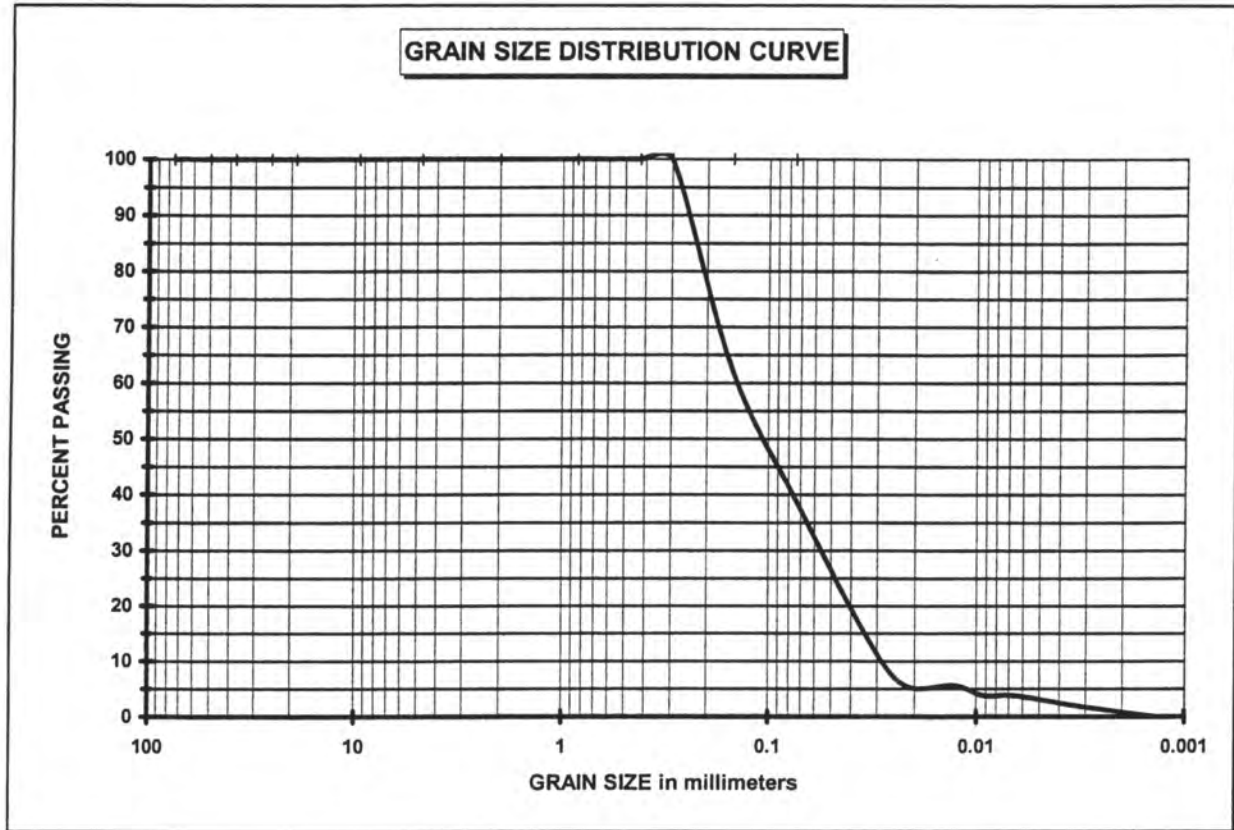
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Shipment Received 8/30/01



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
 Job Number: 1439-01-417

ASTM: D 422
 Date: 9/24/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40935 Depth (ft): _____

Soil Description: Silty Sand, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTICITY INDEX	NP
USC	SM

GRAIN SIZE DATA	
% GRAVEL	0.0
% SAND	60.5
% SILT	36.4
% CLAY	3.1



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40935

Date: 9/24/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: _____
Wet + tare wt: _____
Dry + tare wt: _____
Solids wt: _____
Moist. wt: _____
Percent moisture: _____

Init wt, (g): 242.41
Hydro spec wt, (g): 52.85
Dry hydro wt, (g): 52.85
Rep. total wt: 52.85
Sp. Gr: 2.717
Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.00	0.00	100.00	
10	2	0.00	0.00	100.00	
20	0.85	0.00	0.00	100.00	
40	0.425	0.00	0.00	100.00	
60	0.25	0.10	0.19	99.81	
140	0.106	20.02	37.88	62.12	
200	0.075	31.99	60.53	39.47	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	13	5	8	14	14.0	0.01297	0.0343	14.99
5	23	8	5	3	9	14.8	0.01297	0.0223	5.62
15	23	8	5	3	9	14.8	0.01297	0.0129	5.62
30	23	7	5	2	8	15.0	0.01297	0.0092	3.75
60	23	7	5	2	8	15.0	0.01297	0.0065	3.75
250	23	6	5	1	7	15.2	0.01297	0.0032	1.87
1440	23	5	5	0	2	16.0	0.01297	0.0014	0.00



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL40935

Date: 9/25/01

Flask No.	7
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	172.75
Wt. of Flask + Dry Soil, (g)	243.66
Wt. of Dry Soil, (g)	70.91
Wt. of Flask + Water, (g)	670.74
Wt. of Flask, Soil, & Water, (g)	715.57
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.717



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

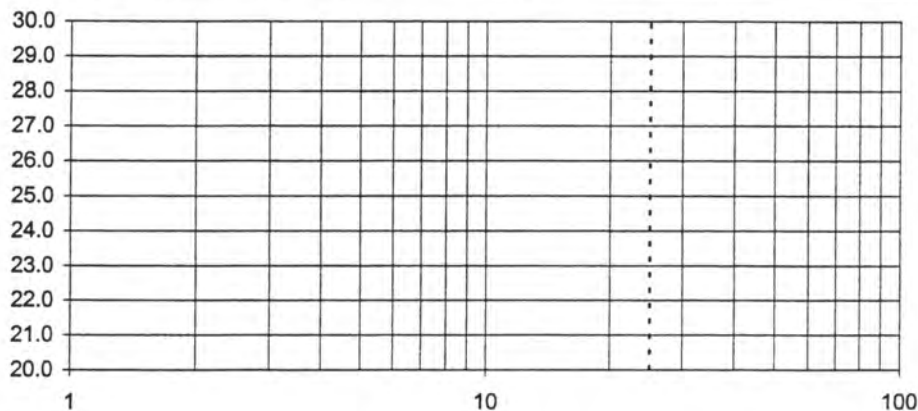
Operator: DB

Sample No: LL40935

Date: 09/25/01

LIQUID LIMIT DETERMINATION

Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
No. of Blows; N					



PLASTIC LIMIT DETERMINATION

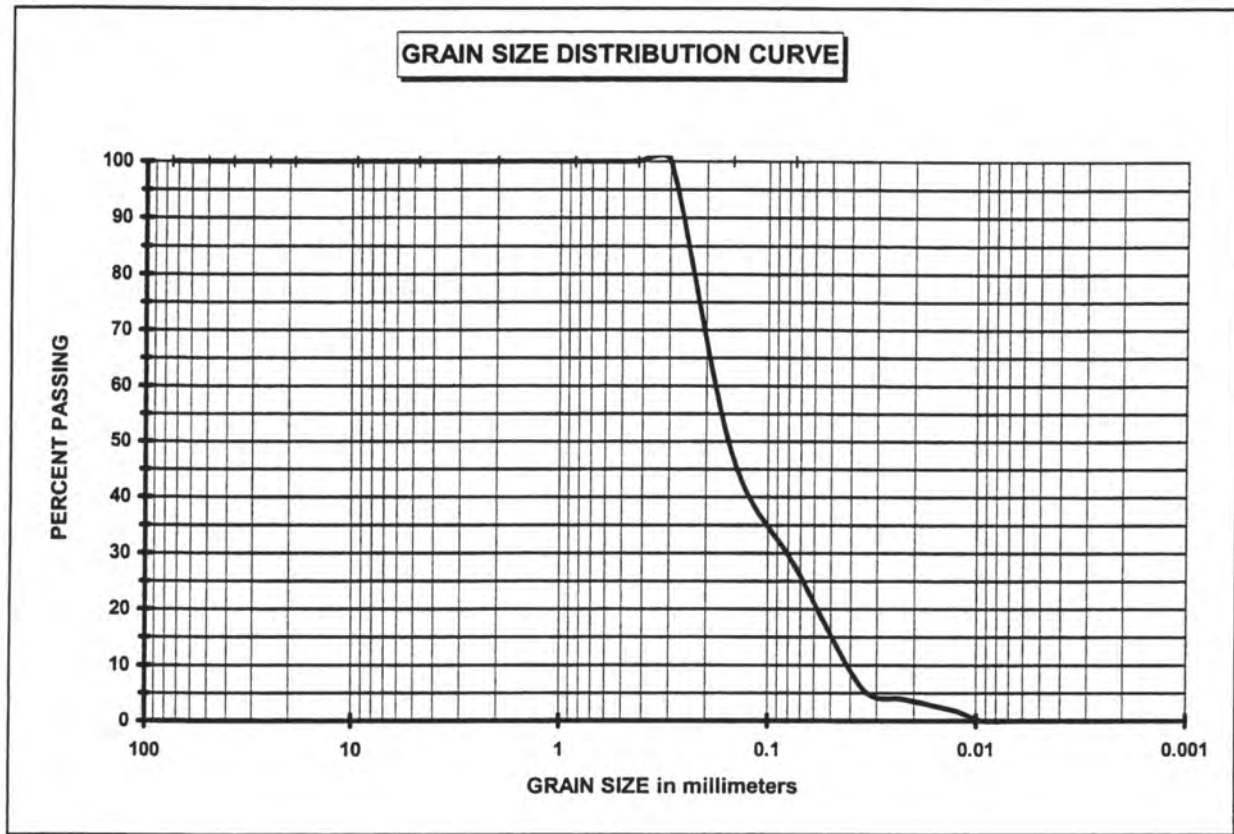
Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %	#DIV/0!		#DIV/0!		#DIV/0!
LL= NP PL = NP PI = NP					



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/24/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40936 Depth (ft): _____

Soil Description: Silty Sand, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTICITY INDEX	NP
USC	SM

GRAIN SIZE DATA	
% GRAVEL	0.0
% SAND	72.1
% SILT	27.9
% CLAY	0.0



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40936

Date: 9/24/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: _____
Wet + tare wt: _____
Dry + tare wt: _____
Solids wt: _____
Moist. wt: _____
Percent moisture: _____

Init wt, (g): 322.00
Hydro spec wt, (g): 50.85
Dry hydro wt, (g): 50.85
Rep. total wt: 50.85
Sp. Gr: 2.743
Sp. Gr. corr, (a): 0.99

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.00	0.00	100.00	
10	2	0.00	0.00	100.00	
20	0.85	0.00	0.00	100.00	
40	0.425	0.00	0.00	100.00	
60	0.25	0.00	0.00	100.00	
140	0.106	26.63	52.37	47.63	
200	0.075	36.67	72.11	27.89	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	8	5	3	9	14.8	0.01297	0.0353	5.84
5	23	7	5	2	8	15.0	0.01297	0.0225	3.89
15	23	6	5	1	7	15.2	0.01297	0.0130	1.95
30	23	5	5	0	6	15.3	0.01297	0.0093	0.00
60	23	5	5	0	6	15.3	0.01297	0.0066	0.00
250	23	5	5	0	6	15.3	0.01297	0.0032	0.00
1440	23	5	5	0	2	16.0	0.01297	0.0014	0.00



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

Job Name: Ravenna Load Line 4 Phase II

Specimen ID: LL40936

ASTM : D 854

Operator: DB

Date: 9/25/01

Flask No.	21
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	168.85
Wt. of Flask + Dry Soil, (g)	233.64
Wt. of Dry Soil, (g)	64.79
Wt. of Flask + Water, (g)	666.48
Wt. of Flask, Soil, & Water, (g)	707.67
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.743



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

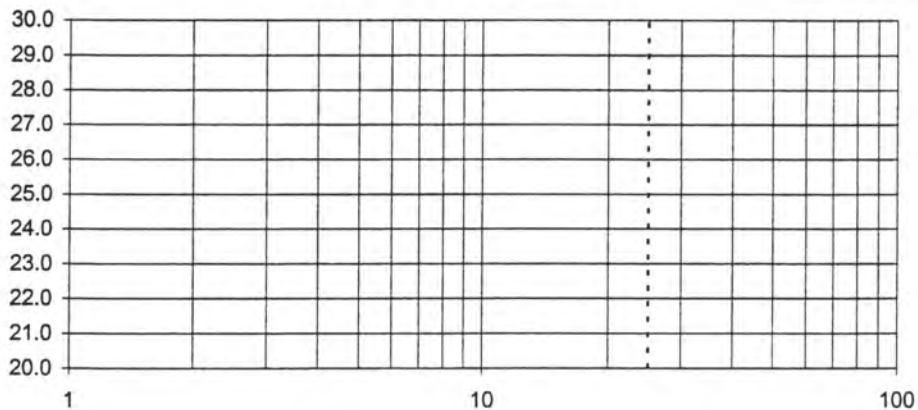
Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40936

Date: 09/24/01

LIQUID LIMIT DETERMINATION					
Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
No. of Blows; N					



PLASTIC LIMIT DETERMINATION					
Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %	#DIV/0!		#DIV/0!		#DIV/0!
LL= NP PL = NP PI = NP					



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40923

Date: 9/25/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: _____
Wet + tare wt: _____
Dry + tare wt: _____
Solids wt: _____
Moist. wt: _____
Percent moisture: _____

Init wt, (g): 339.95
Hydro spec wt, (g): 51.76
Dry hydro wt, (g): 51.76
Rep. total wt: 52.22
Sp. Gr: 2.837
Sp. Gr. corr, (a): 0.96

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	0.52	0.15	99.85	
10	2	3.02	0.89	99.11	
20	0.85	0.83	1.59	97.52	
40	0.425	2.00	3.83	95.28	
60	0.25	3.63	6.95	92.16	
140	0.106	6.22	11.91	87.20	
200	0.075	6.86	13.14	85.98	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	45	5	40	46	8.8	0.01243	0.0261	73.53
5	23	40	5	35	41	9.6	0.01243	0.0172	64.34
15	23	35	5	30	36	10.4	0.01243	0.0104	55.15
30	23	32	5	27	33	10.9	0.01243	0.0075	49.63
60	23	29	5	24	30	11.4	0.01243	0.0054	44.12
250	23	25	5	20	26	12.1	0.01243	0.0027	36.76
1440	23	23	5	18	2	16.0	0.01243	0.0013	33.09



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL40923

Date: 9/25/01

Flask No.	23
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	177.09
Wt. of Flask + Dry Soil, (g)	227.32
Wt. of Dry Soil, (g)	50.23
Wt. of Flask + Water, (g)	674.79
Wt. of Flask, Soil, & Water, (g)	707.33
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.837



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

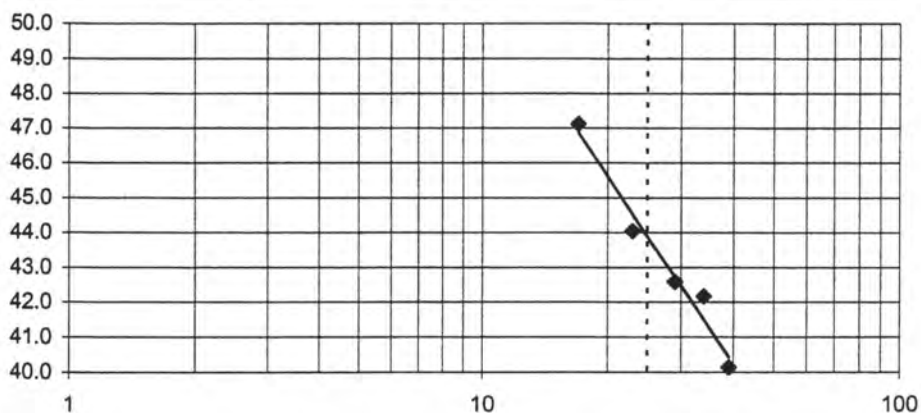
Operator: DB

Sample No: LL40923

Date: 09/25/01

LIQUID LIMIT DETERMINATION

Tare No.	311	6	q	1	19
Soil & Tare Wet Wt.	16.29	16.59	16.60	15.65	16.06
Soil & Tare Dry Wt.	12.36	12.75	12.89	12.23	12.58
Tare Wt.	4.02	4.03	4.18	4.12	3.91
Moisture Content; %	47.1	44.0	42.6	42.2	40.1
No. of Blows; N	17	23	29	34	39



PLASTIC LIMIT DETERMINATION

Tare No.	1		10		b1
Soil & Tare Wet Wt.	18.51		17.39		15.26
Soil & Tare Dry Wt.	16.20		15.26		13.46
Tare Wt.	4.10		4.03		3.83
Moisture Content; %	19.1		19.0		18.7

LL= 44

PL = 19

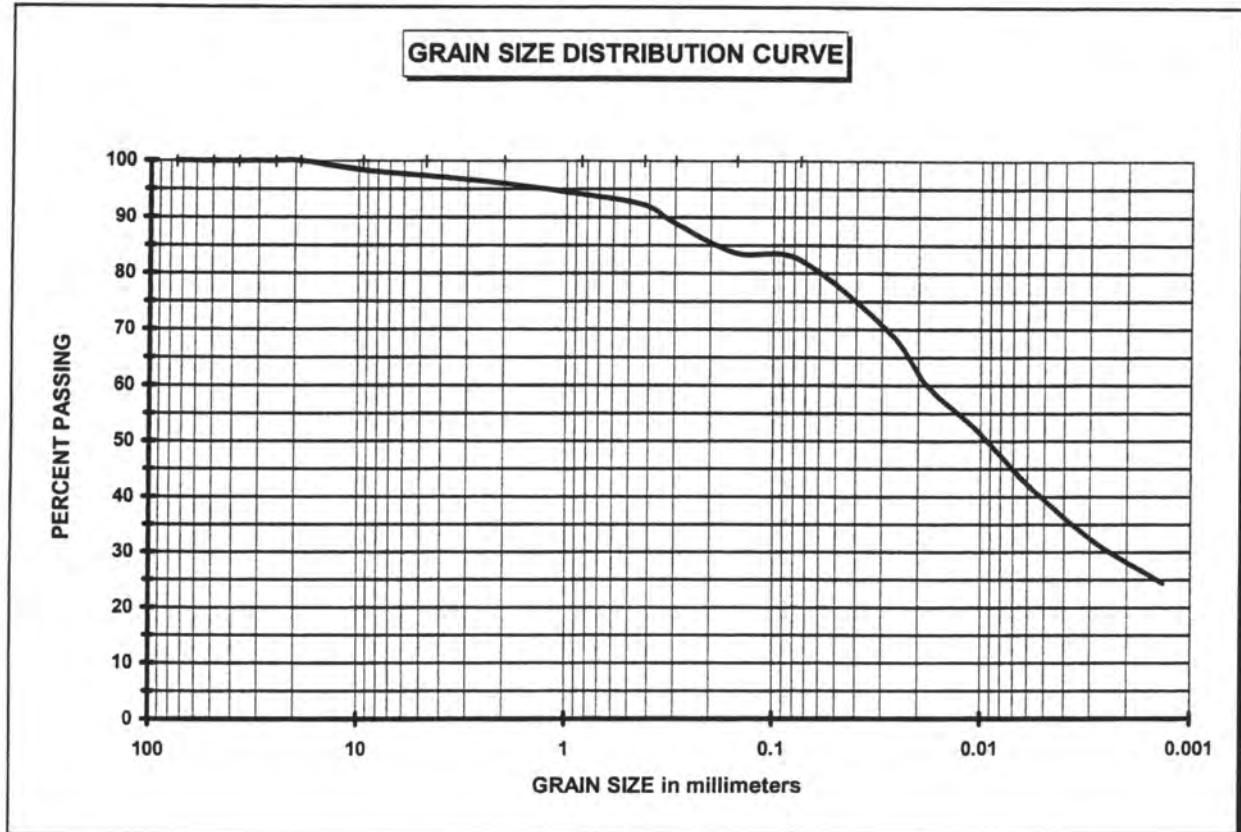
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GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/24/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40924

Depth (ft): _____

Soil Description: Lean Clay with Sand, Gray

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	35
PLASTIC LIMIT	19
PLASTICITY INDEX	16
USC	CL

GRAIN SIZE DATA	
% GRAVEL	2.6
% SAND	15.0
% SILT	42.8
% CLAY	39.6



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40924

Date: 9/24/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: _____
Wet + tare wt: _____
Dry + tare wt: _____
Solids wt: _____
Moist. wt: _____
Percent moisture: _____

Init wt, (g): 462.68
Hydro spec wt, (g): 50.15
Dry hydro wt, (g): 50.15
Rep. total wt: 52.25
Sp. Gr: 2.75
Sp. Gr. corr, (a): 0.98

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	7.61	1.64	98.36	
4	4.75	12.03	2.60	97.40	
10	2	18.58	4.02	95.98	
20	0.85	0.98	1.88	94.11	
40	0.425	2.00	3.83	92.16	
60	0.25	3.72	7.12	88.86	
140	0.106	6.46	12.36	83.62	
200	0.075	7.10	13.59	82.40	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	42	5	37	43	9.3	0.01279	0.0275	69.40
5	23	37	5	32	38	10.1	0.01279	0.0182	60.02
15	23	33	5	28	34	10.7	0.01279	0.0108	52.52
30	23	30	5	25	31	11.2	0.01279	0.0078	46.89
60	23	27	5	22	28	11.7	0.01279	0.0057	41.26
250	23	22	5	17	23	12.5	0.01279	0.0029	31.89
1440	23	18	5	13	2	16.0	0.01279	0.0013	24.38



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL40924

Date: 9/25/01

Flask No.	12
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	181.79
Wt. of Flask + Dry Soil, (g)	281.53
Wt. of Dry Soil, (g)	99.74
Wt. of Flask + Water, (g)	679.68
Wt. of Flask, Soil, & Water, (g)	743.18
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.750



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

Job Name: Ravenna Load Line 4 Phase II

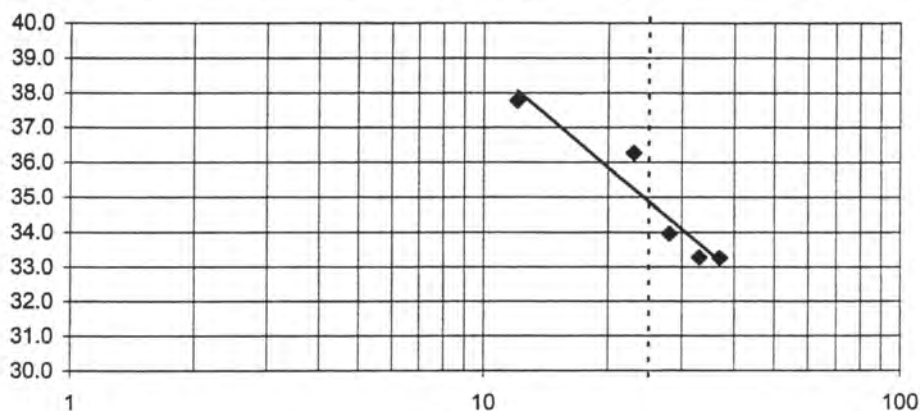
Operator: DB

Sample No: LL40924

Date: 09/25/01

LIQUID LIMIT DETERMINATION

Tare No.	60	401	a20	e	46
Soil & Tare Wet Wt.	16.65	16.54	16.85	17.28	16.48
Soil & Tare Dry Wt.	13.13	13.21	13.58	13.98	13.35
Tare Wt.	3.81	4.03	3.95	4.06	3.94
Moisture Content; %	37.8	36.3	34.0	33.3	33.3
No. of Blows; N	12	23	28	33	37



PLASTIC LIMIT DETERMINATION

Tare No.	19		B10		18
Soil & Tare Wet Wt.	16.84		14.18		15.85
Soil & Tare Dry Wt.	14.84		12.58		14.01
Tare Wt.	4.12		3.92		4.09
Moisture Content; %	18.7		18.5		18.6

LL= 35

PL = 19

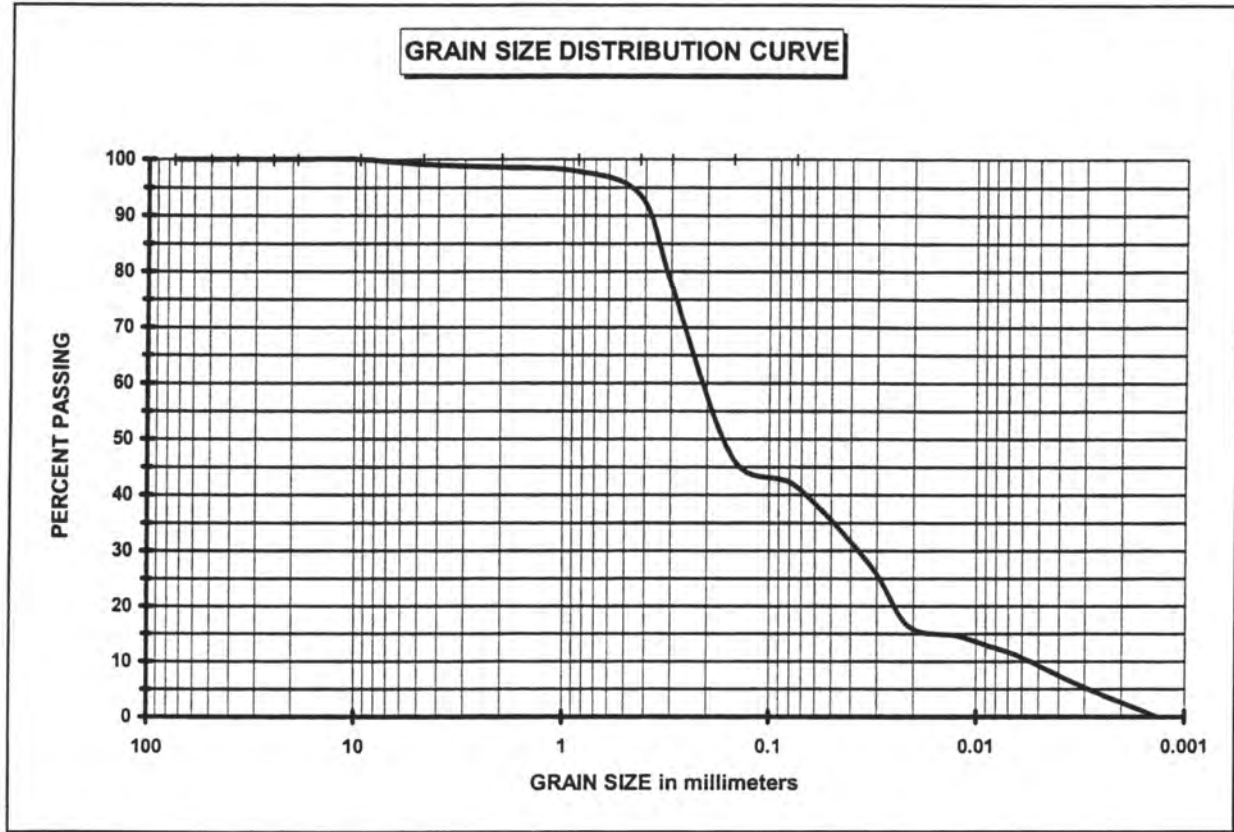
PI = 16



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/24/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40925 Depth (ft): _____

Soil Description: Silty Sand, Brown

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTICITY INDEX	NP
USC	SM

GRAIN SIZE DATA	
% GRAVEL	0.9
% SAND	57.5
% SILT	32.4
% CLAY	9.2



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40925

Date: 9/24/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: _____
Wet + tare wt: _____
Dry + tare wt: _____
Solids wt: _____
Moist. wt: _____
Percent moisture: _____

Init wt, (g): 242.41
Hydro spec wt, (g): 52.85
Dry hydro wt, (g): 52.85
Rep. total wt: 53.60
Sp. Gr: 2.743
Sp. Gr. corr, (a): 0.98

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	0.00	0.00	100.00	
4	4.75	2.09	0.86	99.14	
10	2	3.39	1.40	98.60	
20	0.85	0.36	0.67	97.93	
40	0.425	2.67	4.98	93.62	
60	0.25	11.24	20.97	77.63	
140	0.106	27.85	51.96	46.64	
200	0.075	30.53	56.96	41.64	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	20	5	15	21	12.9	0.01279	0.0324	27.43
5	23	14	5	9	15	13.9	0.01279	0.0213	16.46
15	23	13	5	8	14	14.0	0.01279	0.0124	14.63
30	23	12	5	7	13	14.2	0.01279	0.0088	12.80
60	23	11	5	6	12	14.3	0.01279	0.0063	10.97
250	23	8	5	3	9	14.8	0.01279	0.0031	5.49
1440	23	5	5	0	2	16.0	0.01279	0.0013	0.00



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL40925

Date: 9/25/01

Flask No.	15
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	179.58
Wt. of Flask + Dry Soil, (g)	274.25
Wt. of Dry Soil, (g)	94.67
Wt. of Flask + Water, (g)	677.12
Wt. of Flask, Soil, & Water, (g)	737.30
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.743



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

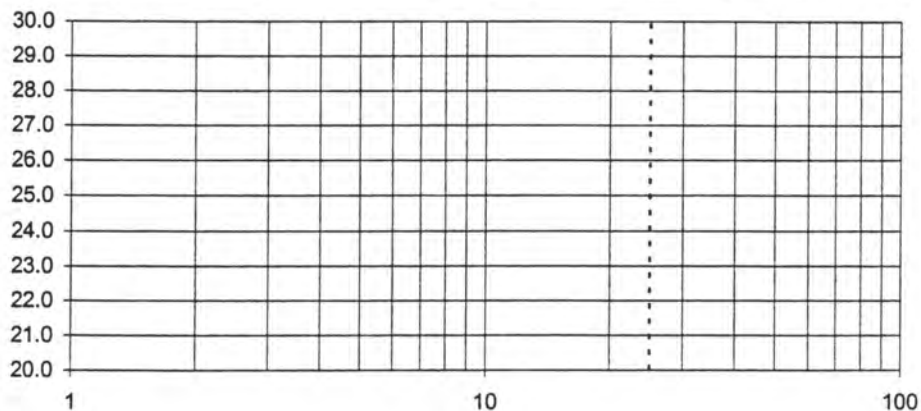
Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40925

Date: 09/25/01

LIQUID LIMIT DETERMINATION					
Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
No. of Blows; N					



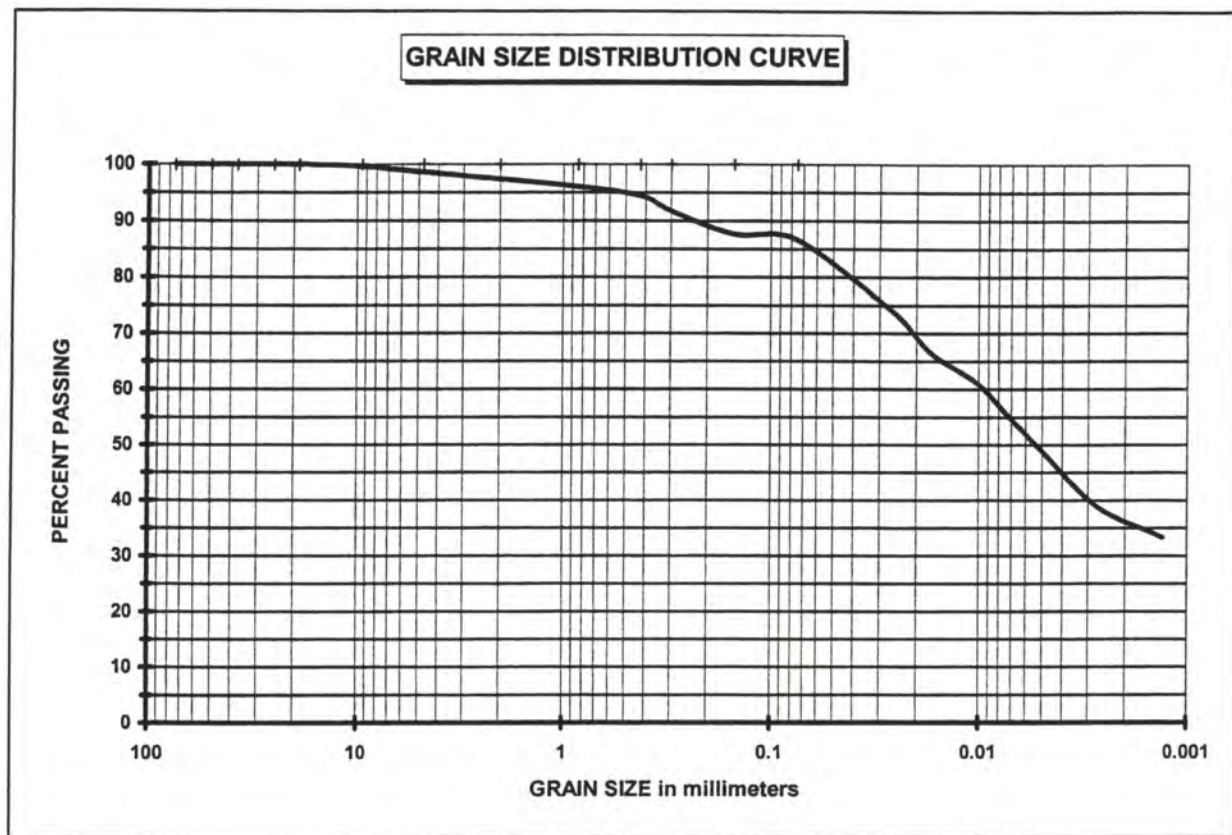
PLASTIC LIMIT DETERMINATION					
Tare No.					
Soil & Tare Wet Wt.					
Soil & Tare Dry Wt.					
Tare Wt.					
Moisture Content; %	#DIV/0!		#DIV/0!		#DIV/0!
LL= NP PL = NP PI = NP					



GRAIN SIZE DATA SHEET

Job Name: Ravenna Load Line 4 Phase II
Job Number: 1439-01-417

ASTM: D 422
Date: 9/24/01



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 mm and > 0.005 mm
Clay	< 0.005 mm

Sample No.: LL40926 Depth (ft): _____

Soil Description: Lean Clay, Gray

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	32
PLASTIC LIMIT	15
PLASTICITY INDEX	17
USC	CL

GRAIN SIZE DATA	
% GRAVEL	1.4
% SAND	12.0
% SILT	37.7
% CLAY	48.9



Particle Size Analysis

Job No: 1439-01-417

ASTM: D 422

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40926

Date: 9/24/01

Spec. Description: _____

Disp: 4 % Sodium Hexametaphosphate, Apparatus (A)

Moisture Cont: _____

Sample Data: _____

Tare wt: _____
Wet + tare wt: _____
Dry + tare wt: _____
Solids wt: _____
Moist. wt: _____
Percent moisture: _____

Init wt, (g): 492.01
Hydro spec wt, (g): 50.63
Dry hydro wt, (g): 50.63
Rep. total wt: 51.99
Sp. Gr: 2.843
Sp. Gr. corr, (a): 0.96

Sieve Analysis

Stand Sieve	Open Size (mm)	Cum Wt Ret. (g)	Cum % Ret. (%)	Percent Pass (%)	Req. % Pass (%)
1 in	25	0.00	0.00	100.00	
.75 in	19	0.00	0.00	100.00	
0.375	9.5	2.03	0.41	99.59	
4	4.75	6.92	1.41	98.59	
10	2	12.88	2.62	97.38	
20	0.85	0.69	1.33	96.06	
40	0.425	1.52	2.92	94.46	
60	0.25	2.95	5.67	91.71	
140	0.106	5.04	9.69	87.69	
200	0.075	5.61	10.79	86.59	

Hydrometer Analysis

Elapsed time (min)	Temp (C)	Act Hydro Read	Comp Corr	Corr Hydro Read	Men Corr Hydro	Effect Depth (L)	K value	Dia (mm)	% Finer
2	23	45	5	40	46	8.8	0.01243	0.0261	73.86
5	23	41	5	36	42	9.4	0.01243	0.0171	66.47
15	23	38	5	33	39	9.9	0.01243	0.0101	60.93
30	23	35	5	30	36	10.4	0.01243	0.0073	55.39
60	23	32	5	27	33	10.9	0.01243	0.0053	49.85
250	23	26	5	21	27	11.9	0.01243	0.0027	38.78
1440	23	23	5	18	2	16.0	0.01243	0.0013	33.24



SOIL SPECIFIC GRAVITY

Job No: 1439-01-417

ASTM : D 854

Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Specimen ID: LL40926

Date: 9/25/01

Flask No.	35
Flask Vol, (ml)	500
Meth. Of Deairing	Vacuum
Wt. of Flask, (g)	181.19
Wt. of Flask + Dry Soil, (g)	232.17
Wt. of Dry Soil, (g)	50.98
Wt. of Flask + Water, (g)	678.62
Wt. of Flask, Soil, & Water, (g)	711.68
Temperature, (C)	23.0
Temp. Corr. Factor, K	0.9993
Bulk Specific Gravity @ 20 C	2.843



ATTERBERG LIMITS

Job No: 1439-01-417

ASTM D: 4318

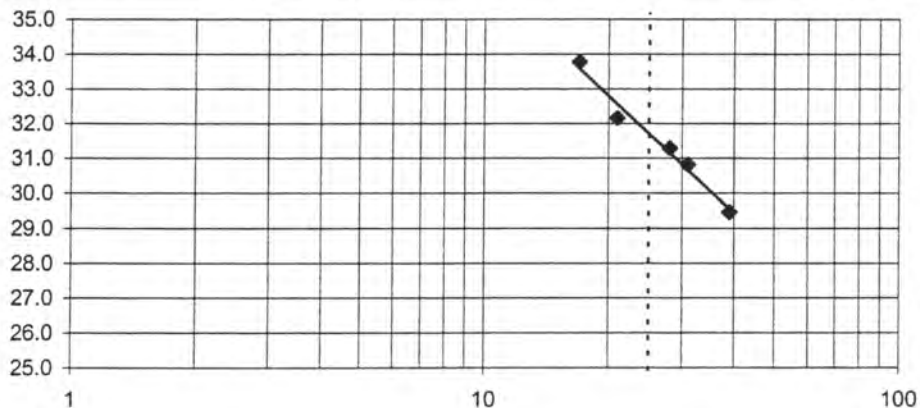
Job Name: Ravenna Load Line 4 Phase II

Operator: DB

Sample No: LL40926

Date: 09/26/01

LIQUID LIMIT DETERMINATION					
Tare No.	19	b1	10	b	m
Soil & Tare Wet Wt.	14.96	15.31	15.80	16.83	17.15
Soil & Tare Dry Wt.	12.17	12.58	12.99	13.76	14.16
Tare Wt.	3.91	4.09	4.01	3.80	4.01
Moisture Content; %	33.8	32.2	31.3	30.8	29.5
No. of Blows; N	17	21	28	31	39



PLASTIC LIMIT DETERMINATION					
Tare No.	14		26		35
Soil & Tare Wet Wt.	17.29		19.35		16.19
Soil & Tare Dry Wt.	15.53		17.28		14.54
Tare Wt.	4.14		3.86		3.94
Moisture Content; %	15.5		15.4		15.6
<div> LL = 32 PL = 15 PI = 17 </div>					

APPENDIX A

Receipt Inspection Reports
&
Chain of Custody Records

Inspection Report

☒ RECEIVING

☐ SHIPPING

RECEIVED FROM/SHIPPED TO:

SAIC - RAVENNA LOAD LINE 2

DATE: 8/13/01

PROJECT No.: 1439-01-417

S&ME P.O. No.: N/A

CLIENT P.O. No.: 4400042493

RELEASE/CO/REV No.: BoA 4600002000

REPORT No.: QA-INSP-01-129

INSPECTOR:

TR BEST

PROJECT MANAGER/ENGINEER:

JB PEARSON

ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
1	1	LL2sd-054(p)	LL21131	SOIL (SEDIMENT)	0-0.5'	✓	
2	1	LL2-233	LL21096	"	0-0.5'	✓	
3	1	LL2-245	LL21113	"	0-0.5'	✓	
4	1	LL2-249	LL21118	"	0-0.5'	✓	
5	1	LL2-252	LL21125	"	0-0.5'	✓	
6	1	LL2sd-055(p)	LL21133	"	0-0.5'	✓	

PACKAGING: ☐ CRATE

☒ ~~METAL~~ (21 PLOK) PLASTIC CONTAINER

☐ CARDBOARD

☐ DOUBLE PACKED

☒ SINGLE PACKED

DOCUMENTATION: ☐ MATERIAL CERTIFICATION

☐ CERTIFICATE OF CONFORMANCE

☐ CERTIFICATE OF CALIBRATION

☐ OTHER (specify)

*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1

☐ YES

☒ NO

2. WORK CLASSIFICATION: ☐ NUCLEAR

☒ SAFETY-RELATED

☒ NON-NUCLEAR

COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):

[Signature]
Inspector Signature

8/13/01
Date



CHAIN OF CUSTODY RECORD

page 1 of 1

PROJECT NAME: Load Line 2 Phase II RI				REQUESTED PARAMETERS																	LABORATORY NAME: S&ME, Inc.			
DELIVERY ORDER NO: ECAS 186				Grain Size	Moisture	Atterberg Limits	USCS Classification	Hydraulic Conductivity	Specific Gravity	pH												No. of Bottles/ Vials:	LABORATORY ADDRESS: 1413 Topside Road Louisville, TN 37777	
PROJECT MANAGER: Kevin Jago 865-481-4614																							PHONE NO: 865-970-0003	
Sampler (Signature)		(Printed Name)																						
Sample ID	Date Collected	Time Collected	Matrix																					
LL2 1131	7-30-01	1635	Sediment	X																		1		
LL2 1096	7-27-01	1430	Sediment	X																		1		
LL2 1113	7-30-01	0835	Sediment	X																		1		
LL2 1118	7-30-01	0938	Sediment	X																		1		
LL2 1125	7-30-01	1035	Sediment	X																		1		
LL2 1133	7-31-01	1147	Sediment	X																		1		
V. B. 8/17/01																								
RELINQUISHED BY: Vicki Brumback				Date/Time 8/8/01 1600		RECEIVED BY:		Date/Time		TOTAL NUMBER OF CONTAINERS: 6												Cooler Temperature: NA		
COMPANY NAME: S&ME						COMPANY NAME:				Cooler ID: NA Sent in FedEx Box												FEDEX NUMBER: 818850985508		
RECEIVED BY: TRACIE BEST				Date/Time 8/13/01 9:30 AM		RELINQUISHED BY:		Date/Time		<div>RECEIVED AUG 13 2001 LABORATORY</div>														
COMPANY NAME: S&ME						COMPANY NAME:																		
RELINQUISHED BY:				Date/Time		RECEIVED BY:		Date/Time																
COMPANY NAME:						COMPANY NAME:																		

Inspection Report

DATE: 8/15/01

REPORT No.: QA-INSP-01-130

☒ RECEIVING☐ SHIPPING

PROJECT No.: 1439-01-417

INSPECTOR:

S&ME P.O. No.: N/A

CLIENT P.O. No.: 4400042493

PROJECT MANAGER/ENGINEER:

RELEASE/CO/REV No.: 4600002000

RECEIVED FROM/SHIPPED TO:

SAIC - RAVENNA LOAD LINE 3

ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
1	1	LL3-222	LL31086	SOIL (SEDIMENT)	0-0.5'	✓	
2	1	LL3-219	LL31068	"	0-0.5'	✓	
3	1	LL3sd/sw-048(d)	LL31077	"	0-0.5'	✓	
4	1	LL3sd/sw-049(d)	LL31082	"	0-0.5'	✓	
5	1	LL3sd/sw-052(d)	LL31071	"	0-0.5'	✓	
6	1	LL3-053	LL31073	"	0-0.5'	✓	
7	1	LL3sd/sw-050(d)	LL31084	"	0-0.5'	✓	

PACKAGING: ☐ CRATE ☒ METAL PLASTIC CONTAINER ☐ CARDBOARD ☐ DOUBLE PACKED ☒ SINGLE PACKEDDOCUMENTATION: ☐ MATERIAL CERTIFICATION ☐ CERTIFICATE OF CONFORMANCE ☐ CERTIFICATE OF CALIBRATION ☐ OTHER (specify)

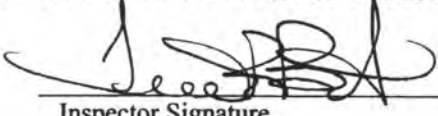
*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1

☐ YES ☒ NO2. WORK CLASSIFICATION: ☐ NUCLEAR
☒ SAFETY-RELATED ☒ NON-NUCLEAR

COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):

Inspector Signature

Date

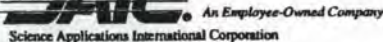
Inspection Report			DATE: 8/15/01		REPORT No.: QA-INSP-01-130		
<input checked="" type="checkbox"/> RECEIVING <input type="checkbox"/> SHIPPING RECEIVED FROM/SHIPPED TO: <u>SAC - RAVENNA LOAD LINE 3</u>			PROJECT No.: 1439-01-417		INSPECTOR:		
			S&ME P.O. No.: N/A		TR BEST		
			CLIENT P.O. No.: 4400042493				
			RELEASE/CO/REV No.: ^{BoA} 4600002000				
					PROJECT MANAGER/ENGINEER:		
					JB PEARSON		
ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
8	1	LL3 sl/sw-051(d)	LL31079	SOIL (SEDIMENT)	0-1.0'	✓	
9	1	LL3 sl/sw-047(d)	LL31069	" "	0-0.5'	✓	
PACKAGING: <input type="checkbox"/> CRATE <input checked="" type="checkbox"/> METAL PLASTIC CONTAINER (21 PLAK) <input type="checkbox"/> CARDBOARD <input type="checkbox"/> DOUBLE PACKED <input checked="" type="checkbox"/> SINGLE PACKED							
DOCUMENTATION: <input type="checkbox"/> MATERIAL CERTIFICATION <input type="checkbox"/> CERTIFICATE OF CONFORMANCE <input type="checkbox"/> CERTIFICATE OF CALIBRATION <input type="checkbox"/> OTHER (specify)							
*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse): <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  Inspector Signature </div> <div style="text-align: center;"> 8/15/01 Date </div> </div>			
2. WORK CLASSIFICATION: <input type="checkbox"/> NUCLEAR <input checked="" type="checkbox"/> SAFETY-RELATED <input checked="" type="checkbox"/> NON-NUCLEAR							



CHAIN OF CUSTODY RECORD

page \ of {

[illegible]



CHAIN OF CUSTODY RECORD

page 1 of 1

[illegible]

Inspection Report

☒ RECEIVING☐ SHIPPING

RECEIVED FROM/SHIPPED TO:

SAC - RAVENNA

LOAD LINE 2
LOAD LINE 3

DATE: 8/22/01

PROJECT No.: 1439-01-417

S&ME P.O. No.: N/A

CLIENT P.O. No.: 4400042493

RELEASE/CO/REV No.: 4600002000

REPORT No.: QA-INSP-01-131

INSPECTOR:

TR BEST

PROJECT MANAGER/ENGINEER:

JB PEARSON

ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
1	1	LL2-268	LL21160	SOIL (SHELBY TUBE)	8-10'	✓	
2	1	LL2-263	LL21162	" " "	3-5'	✓	
3	1	LL2-265	LL21163	" " "	6-8'	✓	
4	1	LL2-053	LL21129	" (ZIPOK BAG)	0-0.5'	✓	
5	1	LL3-239	LL31116	" (SHELBY TUBE)	3.5-5.5'	✓	
6	1	LL3-234	LL31114	" " "	1.5-3.0'	✓	
7	1	LL3-232	LL31113	" " "	13.5-15.2'	✓	

PACKAGING: ☐ CRATE ☒ METAL/PLASTIC CONTAINER ☒ CARDBOARD ☐ DOUBLE PACKED ☒ SINGLE PACKEDDOCUMENTATION: ☐ MATERIAL CERTIFICATION ☐ CERTIFICATE OF CONFORMANCE ☐ CERTIFICATE OF CALIBRATION ☐ OTHER (specify)

*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1

☐ YES ☒ NO2. WORK CLASSIFICATION: ☐ NUCLEAR☒ SAFETY-RELATED ☒ NON-NUCLEAR

COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):

Inspector Signature

8/22/01
Date

ITEM No.			QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
								YES	NO*
8			1	LL3-243	LL31118	SOIL (SHELBY TUBE)	6'-6'11"	✓	
9			1	LL3-236	LL31115	" " "	3.5-5.5'	✓	
10			1	LL4-194	LL41123	" " "	12-14'	✓	
11			1	LL4-194	LL41124	" " "	16-18'	✓	
12			1	LL4-193	LL41121	" " "	16-18'	✓	
13			1	LL4-193	LL41122	" " "	20-22'	✓	
14			1	LL4-199	LL41133	" " "	NOT GIVEN	✓	

PACKAGING:		<input type="checkbox"/> CRATE	<input checked="" type="checkbox"/> METAL PLASTIC CONTAINER	<input checked="" type="checkbox"/> CARDBOARD	<input type="checkbox"/> DOUBLE PACKED	<input checked="" type="checkbox"/> SINGLE PACKED
DOCUMENTATION:		<input type="checkbox"/> MATERIAL CERTIFICATION	<input type="checkbox"/> CERTIFICATE OF CONFORMANCE	<input type="checkbox"/> CERTIFICATE OF CALIBRATION	<input type="checkbox"/> OTHER (specify)	

*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1
☐ YES ☒ NO

2. WORK CLASSIFICATION: ☐ NUCLEAR
☒ SAFETY-RELATED ☒ NON-NUCLEAR

COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):
Inspector Signature: [Signature] Date: 8/22/01

Inspection Report			DATE: 8/22/01		REPORT No.: QA-INSP-01-131		
<input checked="" type="checkbox"/> RECEIVING <input type="checkbox"/> SHIPPING RECEIVED FROM/SHIPPED TO: <u>SAIC - RAVENNA LOAD LINE 4</u>			PROJECT No.: 1439-01-417		INSPECTOR: <u>TR Best</u>		
			S&ME P.O. No.: N/A		PROJECT MANAGER/ENGINEER: <u>JB PEARSON</u>		
			CLIENT P.O. No.: 4400042493				
			RELEASE/CO/REV No.: ^{BOA} 4600002000				
ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
15	1	LL4-199	LL41134	SOIL (ZIPOK BAG)	20-22'	✓	
16	1	LL4-200	LL41136	SOIL (SHELBY TOBE)	18-20'	✓	
17	1	LL4-200	LL41135	" " "	23-23'10"	✓	
18	1	LL4-197	LL41129	" " "	NOT GIVEN	✓	
19	1	LL4-195	LL41125	" " "	10-12'	✓	
20	1	LL4-198	LL41131	" " "	NOT GIVEN	✓	
21	1	LL4-195	LL41126	" " "	14-16'	✓	
<p>*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>2. WORK CLASSIFICATION: <input type="checkbox"/> NUCLEAR <input checked="" type="checkbox"/> SAFETY-RELATED <input checked="" type="checkbox"/> NON-NUCLEAR</p>	<p>COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):</p> <div style="text-align: center;"> Inspector Signature </div> <div style="text-align: right;"> <u>8/22/01</u> Date </div>						

Inspection Report

☒ RECEIVING☐ SHIPPING

RECEIVED FROM/SHIPPED TO:

SAIC - PAVENNA LOAD LINE 4

DATE: 8/22/01

PROJECT No.: 1439-01-417

S&ME P.O. No.: N/A

CLIENT P.O. No.: 4400042493

RELEASE/CO/REV No.: 4600002000

REPORT No.: QA-INSP-01-131

INSPECTOR:

TR BEST

PROJECT MANAGER/ENGINEER:

JB PEARSON

ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
22	1	LL4-196	LL41127	SOIL (ZIPOK BAG)	18-20'	✓	
23	1	LL4sd/sw-054(p)	LL40967	" " "	0-0.5'	✓	
24	1	LL4sd/sw-057(p)	LL40973	" " "	0-0.5'	✓	
25	1	LL4sd-013 (d)	LL40953	" " "	0-0.5'	✓	
26	1	LL4sd/sw-056 (p)	LL40971	" " "	0-0.5'	✓	
27	1	LL4-185	LL40990	" " "	0-0.5'	✓	

PACKAGING: ☐ CRATE ☒ METAL/PLASTIC CONTAINER ☒ CARDBOARD ☐ DOUBLE PACKED ☒ SINGLE PACKEDDOCUMENTATION: ☐ MATERIAL CERTIFICATION ☐ CERTIFICATE OF CONFORMANCE ☐ CERTIFICATE OF CALIBRATION ☐ OTHER (specify)

*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1

☐ YES ☒ NO2. WORK CLASSIFICATION: ☐ NUCLEAR
☒ SAFETY-RELATED ☒ NON-NUCLEAR

COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):

Inspector Signature

8/22/01
Date

CHAIN OF CUSTODY RECORD

PROJECT NAME: Load Line 2 Phase II RI				REQUESTED PARAMETERS														LABORATORY NAME: S&ME, Inc.																																																																																	
DELIVERY ORDER NO: ECAS 186				<table border="1"> <tr><td>Grain Size</td><td>Moisture</td><td>Atterberg Limits</td><td>USCS Classification</td><td>Hydraulic Conductivity</td><td>Specific Gravity</td><td>pH</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>														Grain Size	Moisture	Atterberg Limits	USCS Classification	Hydraulic Conductivity	Specific Gravity	pH																																																																										LABORATORY ADDRESS: 1413 Topside Road Louisville, TN 37777	
Grain Size	Moisture	Atterberg Limits	USCS Classification															Hydraulic Conductivity	Specific Gravity	pH																																																																															
PROJECT MANAGER: Kevin Jago 865-481-4614				PHONE NO: 865-970-0003																																																																																															
Sampler (Signature) <i>Vicki Brumback</i> (Printed Name) Vicki Brumback				No. of Bottles/ Vials:														OBSERVATIONS, COMMENTS,																																																																																	
Sample ID	Date Collected	Time Collected	Matrix															OBSERVATIONS, COMMENTS,																																																																																	
LL31115	8-7-01	1005	soil	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3.5-5.5' MW-236 1/2 ft recovery																																																																															
LL21166	7-30-01	0831	soil	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	8-10' MW-268																																																																															
LL21162	7-30-01	1720	soil	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3-5' MW-263																																																																															
LL21163	7-28-01	1450	soil	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	6-8' MW-265																																																																															
LL21129	7-30-01	1400	sediment	✓																21 PLOG BAG-																																																																															
 VJB 8/30/01 																																																																																																			
RELINQUISHED BY: <i>Vicki Brumback</i>		Date/Time 8-20-01 1600	RECEIVED BY:		Date/Time	TOTAL NUMBER OF CONTAINERS: 4		Cooler Temperature: NA																																																																																											
COMPANY NAME: SAIC			COMPANY NAME:			Cooler ID: Fed-Ex Tubes + NA Cardboard box		FEDEX NUMBER: 829335807537																																																																																											
RECEIVED BY: <i>TRACIE BEST</i>		Date/Time 8/22/01 9:00 AM	RELINQUISHED BY:		Date/Time	20 packages shipped under one air bill #.																																																																																													
COMPANY NAME: S&ME			COMPANY NAME:																																																																																																
RELINQUISHED BY:		Date/Time	RECEIVED BY:		Date/Time																																																																																														
COMPANY NAME:			COMPANY NAME:																																																																																																



CHAIN OF CUSTODY RECORD

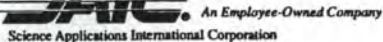
page 1 of 1

Page 234

[illegible]

CHAIN OF CUSTODY RECORD

PROJECT NAME: Load Line 4 Phase II RI				REQUESTED PARAMETERS														LABORATORY NAME: S&ME, Inc.							
DELIVERY ORDER NO: ECAS 186				Grain Size	Moisture	Atterberg Limits	USCS Classification	Hydraulic Conductivity	Specific Gravity	pH	BULK DENSITY	POROSITY											No. of Bottles/ Vials:	LABORATORY ADDRESS: 1413 Topside Road Louisville, TN 37777	
PROJECT MANAGER: Kevin Jago 865-481-4614																								PHONE NO: 865-970-0003	
Sampler (Signature) (Printed Name) Vicki Brumback Vicki Brumback																								OBSERVATIONS, COMMENTS,	
Sample ID	Date Collected	Time Collected	Matrix																						
LL41123	7-26-01	1410	soil	✓	✓	✓	✓	✓	✓	✓	✓	✓											1	12'-14'	MW-194
LL41124	7-26-01	1449	soil		✓	✓	✓	✓	✓	✓	✓	✓											1	16'-18'	↓
LL41121	7-26-01	1410	soil	✓	✓	✓	✓	✓	✓	✓	✓	✓											1	16'-18'	MW-193
LL41122	7-26-01	0950	soil		✓	✓	✓	✓	✓	✓	✓	✓											1	20-22'	↓
LL41133	7-25-01	1515	soil	✓	✓	✓	✓	✓	✓	✓	✓	✓											1		MW-199
LL41134	7-25-01		soil		✓	✓	✓	✓	✓	✓	✓	✓											1	20-22'	↓
LL41136		1414	soil		✓	✓	✓	✓	✓	✓	✓	✓											1	18-20'	MW-200
LL41135		1447	soil	✓	✓	✓	✓	✓	✓	✓	✓	✓											1	23-23'10"	↓
LL41129	7-25-01	0927	soil	✓	✓	✓	✓	✓	✓	✓	✓	✓											1		MW-197
LL41125	7-25-01	1450	soil	✓	✓	✓	✓	✓	✓	✓	✓	✓											1	10-12'	MW-195
LL41131	7-26-01	1522	soil	✓	✓	✓	✓	✓	✓	✓	✓	✓											1		MW-198
LL41127	7-25-01	1140	soil	✓	✓	✓	✓	✓	✓	✓	✓	✓											1	18-20'	MW-196
LL41126	7-25-01	1515	soil		✓	✓	✓	✓	✓	✓	✓	✓											1	14-16'	MW-195
RELINQUISHED BY: Vicki Brumback		Date/Time 8-20-01	RECEIVED BY:		Date/Time	TOTAL NUMBER OF CONTAINERS: See p. 2/2		Cooler Temperature:																	
COMPANY NAME: SAIC		1600	COMPANY NAME:			Cooler ID: Fed Ex Tubes & cardboard box NA		FEDEX NUMBER: 829335807537																	
RECEIVED BY: IRACIE Best		Date/Time 8-22-01	RELINQUISHED BY:		Date/Time	20 packages shipped under one air bill #.																			
COMPANY NAME: S&ME		9:00 AM	COMPANY NAME:																						
RELINQUISHED BY:		Date/Time	RECEIVED BY:		Date/Time																				
COMPANY NAME:			COMPANY NAME:																						



151 Lafayette Drive, Oak Ridge, Tennessee 37831 (865) 481-4600

page 2 of 2

Page 4 of 4

CHAIN OF CUSTODY RECORD

[illegible]

Inspection Report			DATE: 8/24/01		REPORT No.: QA-INSP-01-132		
<input checked="" type="checkbox"/> RECEIVING <input type="checkbox"/> SHIPPING RECEIVED FROM/SHIPPED TO: <u>SAIC - RAVENNA LOAD LINE 2</u>			PROJECT No.: 1439-01-417		INSPECTOR: <u>TR BEST</u>		
			S&ME P.O. No.: N/A				
			CLIENT P.O. No.: 4400042493		PROJECT MANAGER/ENGINEER: <u>B PEARSON</u>		
			RELEASE/CO-REV No.: ^{BDA} 4600002000				
ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
1	1	LL2-082	LL20732	SOIL (ZIPLOK BAG)	0-1'	✓	
2	1	LL2-086	LL20740	" " "	0-1'	✓	
3	1	LL2-131	LL20865	" " "	0-1'	✓	
4	1	LL2-080	LL20726	" " "	0-1'	✓	
5	1	LL2-141	LL20887	" " "	0-1'	✓	
6	1	LL2-128	LL20856	" " "	0-1'	✓	
7	1	LL2-176	LL20980	" " "	0-1'	✓	
<p>*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>2. WORK CLASSIFICATION: <input type="checkbox"/> NUCLEAR <input checked="" type="checkbox"/> SAFETY-RELATED <input type="checkbox"/> NON-NUCLEAR</p>	<p>COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):</p> <div style="text-align: center;"> Inspector Signature </div> <div style="text-align: right;"> <u>8/24/01</u> Date </div>						

Inspection Report			DATE: 8/24/01		REPORT No.: QA-INSP-01-132		
<input checked="" type="checkbox"/> RECEIVING <input type="checkbox"/> SHIPPING RECEIVED FROM/SHIPPED TO: <u>SAIC RAVENNA LOAD LINE 2</u>			PROJECT No.: 1439-01-417		INSPECTOR: <u>TR BEST</u>		
			S&ME P.O. No.: N/A				
			CLIENT P.O. No.: 4400042493		PROJECT MANAGER/ENGINEER: <u>JB PEARSON</u>		
			BSA RELEASE/CO/REV No.: 4600002000				
ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
8	1	LL2-188	LL21016	SOIL (21 PLOK BAG)	0-1'	✓	
9	1	LL2-088	LL20746	" " "	0-1'	✓	
10	1	LL2-178	LL20986	" " "	NOT GIVEN	✓	
11	1	LL2-148	LL20908	" " "	0-1'	✓	
12	1	LL2-093	LL20757	" " "	0-1'	✓	
13	1	LL2-090	LL20752	" " "	NOT GIVEN	✓	
14	1	LL2-178	LL20986	" " "	NOT GIVEN	✓	
<p>*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>2. WORK CLASSIFICATION: <input type="checkbox"/> NUCLEAR <input checked="" type="checkbox"/> SAFETY-RELATED <input type="checkbox"/> NON-NUCLEAR</p>	<p>COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):</p> <div style="text-align: center; margin-top: 20px;"> Inspector Signature </div> <div style="text-align: right; margin-top: 20px;"> <u>8/24/01</u> Date </div>						

Inspection Report

☒ RECEIVING☐ SHIPPING

RECEIVED FROM/SHIPPED TO:

SAIC - RAVENNA LOADLINE 2

DATE: 8/24/01

PROJECT No.: 1439-01-417

S&ME P.O. No.: N/A

CLIENT P.O. No.: 4400042493

RELEASE/CO/REV No.: 460000 2000

REPORT No.: QA-INSP-01-132

INSPECTOR:

TR BEST

PROJECT MANAGER/ENGINEER:

JB PEARSON

ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
15	1	LL2-154	LL20920	SOIL (2 FLOK BAG)	0-1'	✓	
16	1	LL2-118	LL20832	" " "	0-1'	✓	
17	1	LL2-120	LL20838	" " "	0-1'	✓	
18	1	LL2-116	LL20826	" " "	0-1'	✓	
19	1	LL2-156	LL20926	" " "	0-1'	✓	

PACKAGING: ☐ CRATE ☒ METAL PLASTIC CONTAINER ☐ CARDBOARD ☐ DOUBLE PACKED ☒ SINGLE PACKEDDOCUMENTATION: ☐ MATERIAL CERTIFICATION ☐ CERTIFICATE OF CONFORMANCE ☐ CERTIFICATE OF CALIBRATION ☐ OTHER (specify)

*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1

☐ YES ☒ NO2. WORK CLASSIFICATION: ☐ NUCLEAR☒ SAFETY-RELATED ☐ NON-NUCLEAR

COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):

Inspector Signature

8/24/01
Date



CHAIN OF CUSTODY RECORD

page 1 of 2

PROJECT NAME: Load Line 2 Phase II RI				REQUESTED PARAMETERS																		LABORATORY NAME: S&ME, Inc.			
DELIVERY ORDER NO: ECAS 186				Grain Size	Moisture	Atterberg Limits	USCS Classification	Hydraulic Conductivity	Specific Gravity	pH													No. of Bottles/ Vials:	LABORATORY ADDRESS: 1413 Topside Road Louisville, TN 37777	
PROJECT MANAGER: Kevin Jago 865-481-4614																								PHONE NO: 865-970-0003	
Sampler (Signature)		(Printed Name)																							
Sample ID		Date Collected	Time Collected	Matrix	OBSERVATIONS, COMMENTS.																				
LL20732		8-21-01	0925	soil		✓				✓													1	STATION LL2-082	
LL20740		8-21-01	0917	soil		✓				✓													1	STATION LL2-084	
LL20805		8-21-01	1145	soil		✓				✓													1	LL2-131	
LL20726		8-21-01	0911	soil	✓	✓	✓	✓	✓	✓													1	LL2-080	
LL20887		8-21-01	1115	soil	✓	✓	✓	✓	✓	✓													1	LL2-141	
LL20850		8-21-01	1100	soil		✓				✓													1	LL2-128	
LL20530		8-20-01	1555	soil	✓	✓	✓	✓	✓	✓													1	STATION LL2-116	
LL2-1016		8-20-01	1612	soil		✓				✓													1	STATION LL2-188	
LL20920		8-20-01	1545	soil		✓				✓	with													1	STATION
LL20746		8-20-01	1111	soil		✓				✓													1	STATION LL2-088	
LL20986		8-20-01	1623	soil	✓	✓	✓	✓	✓	✓													1	LL2-178	
LL20908		8-20-01	1500	soil		✓				✓													1	LL2-148	
LL20757		8-20-01	1701	soil		✓				✓													1	LL2-093	
RELINQUISHED BY: Widri Brumback		Date/Time 8-22-01	RECEIVED BY:		Date/Time	TOTAL NUMBER OF CONTAINERS: see p 2/2																		Cooler Temperature: NA	
COMPANY NAME: SMC		1400	COMPANY NAME:			Cooler ID: packed in 3 double-lined NA - cardboard boxes																		FEDEX NUMBER: (3 boxes) 829341083944	
RECEIVED BY: TRACIE BEST		Date/Time 8/24/01	RELINQUISHED BY:		Date/Time	PLEASE GO BY THE CHAIN FOR ANALYSES NEEDED. SOMETIMES THE LABELS SHOULD HAVE HAD "PH" MARKED AND THEY DIDN'T.																			
COMPANY NAME: S&ME		8:30 AM	COMPANY NAME:																						
RELINQUISHED BY:		Date/Time	RECEIVED BY:		Date/Time																				
COMPANY NAME:			COMPANY NAME:																						



page 2 of 2

[illegible]

<h2 style="margin: 0;">Inspection Report</h2> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <input checked="" type="checkbox"/> RECEIVING <input type="checkbox"/> SHIPPING </div> <div style="margin-top: 10px;"> <p>RECEIVED FROM/SHIPPED TO:</p> <p><u>SAIC - RAVENNA LOAD LINE 3</u></p> </div>			DATE: <u>8/28/01</u>			REPORT No.: <u>QA-INSP-01-133</u>		
			PROJECT No.: <u>1439-01-417</u>			INSPECTOR:		
			S&ME P.O. No.: <u>N/A</u>			<u>TRACIE R. BEST</u>		
			CLIENT P.O. No.: <u>4400042493</u>					
			^{BoA} RELEASE/CO/REV No.: <u>4600002000</u>			<u>JB PEARSON</u>		

ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
1	1	LL3-128	LL30878	SOIL (ZIPLOR BAG)	0-1'	✓	
2	1	LL3-065	LL30713	" " "	0-1'	✓	
3	1	LL3-119	LL30857	" " "	0-1'	✓	
4	1	LL3-122	LL30866	" " "	0-1'	✓	
5	1	LL3-064	LL30710	" " "	0-1'	✓	
6	1	LL3-121	LL30863	" " "	0-1'	✓	
7	1	LL3-129	LL30881	" " "	0-1'	✓	

PACKAGING: ☐ CRATE ☒ METAL PLASTIC CONTAINER ^(ZIPLOR) ☐ CARDBOARD ☐ DOUBLE PACKED ☒ SINGLE PACKED

DOCUMENTATION: ☐ MATERIAL CERTIFICATION ☐ CERTIFICATE OF CONFORMANCE ☐ CERTIFICATE OF CALIBRATION ☐ OTHER (specify)

<p>*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>2. WORK CLASSIFICATION: <input type="checkbox"/> NUCLEAR <input checked="" type="checkbox"/> SAFETY-RELATED <input type="checkbox"/> NON-NUCLEAR</p>	<p>COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):</p> <div style="text-align: center; margin-top: 20px;"> Inspector Signature </div> <div style="text-align: center; margin-top: 10px;"> <u>8/28/01</u> Date </div>
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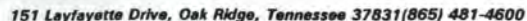
<h2 style="margin: 0;">Inspection Report</h2> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <input checked="" type="checkbox"/> RECEIVING <input type="checkbox"/> SHIPPING </div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block; margin-top: 5px;">RECEIVED FROM/SHIPPED TO:</div> <div style="margin-top: 5px;"> <u>SAC - RAVENNA LOAD LINE 4</u> </div>			DATE: <u>8/28/01</u>		REPORT No.: <u>QA-INSP-01-133</u>	
			PROJECT No.: <u>1439-01-417</u>		INSPECTOR: <u>TR BEST</u>	
			S&ME P.O. No.: <u>N/A</u>			
			CLIENT P.O. No.: <u>4400042493</u>		PROJECT MANAGER/ENGINEER: <u>JB PEARSON</u>	
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">BDA</div> <div>RELEASE/CO/REV No.: <u>4600002000</u></div> </div>						

ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
8	1	<u>LL4sd/sw-048(d)</u>	<u>LL40957</u>	<u>SOIL (ZIPLOK BAG)</u>	<u>0-0.5'</u>	✓	
9	1	<u>LL4sd/sw-058(d)</u>	<u>LL40975</u>	" " "	<u>0-0.5'</u>	✓	

PACKAGING: ☐ CRATE ☒ ~~METAL~~ (ZIPLOK) PLASTIC CONTAINER ☐ CARDBOARD ☐ DOUBLE PACKED ☒ ~~DOUBLE~~ SINGLE PACKED

DOCUMENTATION: ☐ MATERIAL CERTIFICATION ☐ CERTIFICATE OF CONFORMANCE ☐ CERTIFICATE OF CALIBRATION ☐ OTHER (specify)

<p>*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>2. WORK CLASSIFICATION: <input type="checkbox"/> NUCLEAR <input checked="" type="checkbox"/> SAFETY-RELATED <input checked="" type="checkbox"/> NON-NUCLEAR</p>	<p>COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):</p> <div style="display: flex; justify-content: space-between; align-items: flex-end; margin-top: 20px;"> <div style="text-align: center;"> Inspector Signature </div> <div style="text-align: center;"> <u>8/28/01</u> Date </div> </div>
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CHAIN OF CUSTODY RECORD

[illegible]



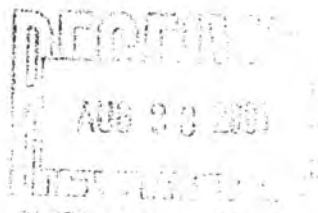
An Employee-Owned Company
Science Applications International Corporation

151 Lafayette Drive, Oak Ridge, Tennessee 37831(865) 481-4600

COC NO.: LL4S&ME - 0.2

page 1 of 1

CHAIN OF CUSTODY RECORD

PROJECT NAME: Load Line 4 Phase II RI				REQUESTED PARAMETERS																LABORATORY NAME: S&ME, Inc.				
DELIVERY ORDER NO: ECAS 186																				LABORATORY ADDRESS: 1413 Topside Road Louisville, TN 37777				
PROJECT MANAGER: Kevin Jago 865-481-4614																				PHONE NO: 865-970-0003				
Sampler (Signature) <i>Vicki Brumback</i>		(Printed Name) Vicki Brumback		Grain Size	Moisture	Atterberg Limits	USCS Classification	Hydraulic Conductivity	Specific Gravity	pH										No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS,			
Sample ID	Date Collected	Time Collected	Matrix																					
LL40957	8-26-01	1131	Sediment	✓																1	STATION LL4-048			
LL40975	8-26-01	1327	Sediment	✓																1	STATION LL4-058			
bb 8-25-01																								
RELINQUISHED BY: <i>Vicki Brumback</i>		Date/Time 8-27-01		RECEIVED BY:		Date/Time		TOTAL NUMBER OF CONTAINERS: 2				Cooler Temperature: NA												
COMPANY NAME: SAIC		1700		COMPANY NAME:				Cooler ID: NA - Cardboard box				FEDEX NUMBER: 829 341083911												
RECEIVED BY: TRACIE BEST		Date/Time 8/28/01		RELINQUISHED BY:		Date/Time																		
COMPANY NAME: S&ME		8:30 AM		COMPANY NAME:																				
RELINQUISHED BY:		Date/Time		RECEIVED BY:		Date/Time																		
COMPANY NAME:				COMPANY NAME:																				

Inspection Report

☒ RECEIVING☐ SHIPPING

RECEIVED FROM/SHIPPED TO:

SAIC - RAVENNA LOAD LINE 3DATE: 8/29/01PROJECT No.: 1439-01-417S&ME P.O. No.: N/ACLIENT P.O. No.: 4400042493BoA
RELEASE/CO/REV No.: 4600002000REPORT No.: QA-INSP-01-134

INSPECTOR:

TR BEST

PROJECT MANAGER/ENGINEER:

JB PEARSON

ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
1	1	LL3-105	LL30823	SOIL (ZIPLOK BAG)	0-1'	✓	
2	1	LL3-089	LL30781	" " "	NOT GIVEN	✓	
3	1	LL3-088	LL30778	" " "	0-1'	✓	
4	1	LL3-102	LL30814	" " "	0-1'	✓	
5	1	LL3-089	LL30781	" " "	0-1'	✓	
6	1	LL3-093	LL30793	" " "	0-1'	✓	
7	1	LL3-113	LL30842	" " "	0-1'	✓	

PACKAGING: ☐ CRATE☒ METAL/PLASTIC CONTAINER☐ CARDBOARD☐ DOUBLE PACKED☒ SINGLE PACKEDDOCUMENTATION: ☐ MATERIAL CERTIFICATION☐ CERTIFICATE OF CONFORMANCE☐ CERTIFICATE OF CALIBRATION☐ OTHER (specify)

*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1

☐ YES☒ NO2. WORK CLASSIFICATION: ☐ NUCLEAR☒ SAFETY-RELATED☒ NON-NUCLEAR

COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):

See JB

Inspector Signature

8/29/01

Date

Inspection Report

☒ RECEIVING☐ SHIPPING

RECEIVED FROM/SHIPPED TO:

SAIC-RAVENNA LOAD LINE 3

LOAD LINE 4

DATE: 8/29/01

PROJECT No.: 1439-01-417

S&ME P.O. No.: N/A

CLIENT P.O. No.: 4400042493

RELEASE/CO/REV No.: 4600002000

REPORT No.: QA-INSP-01-134

INSPECTOR:

TR BEST

PROJECT MANAGER/ENGINEER:

JB PEARSON

ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
8	1	LL3-103	LL30817	SOIL (ZIPLOK BAG)	0-1'	✓	
9	1	LL3-106	LL30826	" " "	0-1'	✓	
10	1	LL3-087	LL30775	" " "	0-1'	✓	
11	1	LL3-086	LL30772	" " "	0-1'	✓	
12	1	LL3-057	LL30693	" " "	0-1'	✓	
13	1	LL3-060	LL30702	" " "	0-1'	✓	
14	1	LL4-083	LL40723	" " "	0-1'	✓	

PACKAGING: ☐ CRATE☒ METAL PLASTIC CONTAINER☐ CARDBOARD☐ DOUBLE PACKED☒ SINGLE PACKEDDOCUMENTATION: ☐ MATERIAL CERTIFICATION☐ CERTIFICATE OF CONFORMANCE☐ CERTIFICATE OF CALIBRATION☐ OTHER (specify)

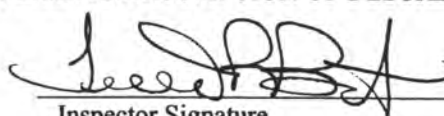
*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1

☐ YES☒ NO2. WORK CLASSIFICATION: ☐ NUCLEAR☒ SAFETY-RELATED☒ NON-NUCLEAR

COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):

Inspector Signature

Date

Inspection Report			DATE: 8/29/01		REPORT No.: QA-INSP-01-134		
<input checked="" type="checkbox"/> RECEIVING <input type="checkbox"/> SHIPPING RECEIVED FROM/SHIPPED TO: <u>SAIC - RAVENNA LOAD LINE 4</u>			PROJECT No.: 1439-01-417		INSPECTOR: <u>TR BEST</u>		
			S&ME P.O. No.: N/A				
			CLIENT P.O. No.: 4400042493		PROJECT MANAGER/ENGINEER: <u>JB PEARSON</u>		
			BQA RELEASE/CO/REV No.: 460000 2000				
ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
15	1	LL4-142	LL40878	SOIL (ZIPLOK BAG)	NOT GIVEN	✓	
16	1	LL4-082	LL40720	" " "	0-1'	✓	
17	1	LL4-118	LL40822	" " "	0-1'	✓	
18	1	LL4-074	LL40698	" " "	0-1'	✓	
19	1	LL4-080	LL40982	" " "	0-1'	✓	
20	1	LL4-117	LL40819	" " "	0-1'	✓	
21	1	LL4-075	LL40701	" " "	0-1'	✓	
*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 2. WORK CLASSIFICATION: <input type="checkbox"/> NUCLEAR <input checked="" type="checkbox"/> SAFETY-RELATED <input checked="" type="checkbox"/> NON-NUCLEAR	COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse): <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  Inspector Signature </div> <div style="text-align: center;"> <u>8/29/01</u> Date </div> </div>						

Inspection Report

☒ RECEIVING☐ SHIPPING

RECEIVED FROM/SHIPPED TO:

SAIC-RAVENNA LOAD LINE 4

DATE: 8/29/01

PROJECT No.: 1439-01-417

S&ME P.O. No.: N/A

CLIENT P.O. No.: 4400042493

BoA
RELEASE/CO/REV No.: 4600002000

REPORT No.: QA-INSP-01-134

INSPECTOR:

TR BEST

PROJECT MANAGER/ENGINEER:

JB PEARSON

ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
22	1	LL4-077	LL40707	SOIL (ZIPLOK BAG)	0-1'	✓	
23	1	LL4-073	LL40695	" " "	0-1'	✓	
24	1	LL4-122	LL40830	" " "	0-1'	✓	
25	1	LL4-072	LL40692	" " "	0-1'	✓	
26	1	LL4-121	LL40827	" " "	0-1'	✓	
27	1	LL4-078	LL40710	" " "	0-1'	✓	
28	1	LL4-081	LL40717	" " "	0-1'	✓	

PACKAGING: ☐ CRATE ☒ METAL/PLASTIC CONTAINER (ZIPLOK) ☐ CARDBOARD ☐ DOUBLE PACKED ☒ SINGLE PACKEDDOCUMENTATION: ☐ MATERIAL CERTIFICATION ☐ CERTIFICATE OF CONFORMANCE ☐ CERTIFICATE OF CALIBRATION ☐ OTHER (specify)

*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1

☐ YES ☒ NO2. WORK CLASSIFICATION: ☐ NUCLEAR☒ SAFETY-RELATED ☒ NON-NUCLEAR

COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):

Inspector Signature

Date

Inspection Report

☒ RECEIVING☐ SHIPPING

RECEIVED FROM/SHIPPED TO:

SAC-RAVENNA LOAD LINE 4DATE: 8/29/01PROJECT No.: 1439-01-417S&ME P.O. No.: N/ACLIENT P.O. No.: 4400042493BoA
RELEASE/CO/REV No.: 4600002000REPORT No.: QA-INSP-01-134

INSPECTOR:

TR BEST

PROJECT MANAGER/ENGINEER:

JB PEARSON

ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
29	1	LL4-071	LL40689	SOIL (ZIPLOK BAG)	0-1'	✓	
30	1	LL4-111	LL40801	" " "	0-1'	✓	
31	1	LL4-106	LL40790	" " "	NOT GIVEN	✓	
32	1	LL4-107	LL40793	" " "	0-1'	✓	
33	1	LL4-105	LL40787	" " "	0-1'	✓	
34	1	LL4-110	LL40798	" " "	0-1'	✓	

PACKAGING: ☐ CRATE☒ METAL/PLASTIC CONTAINER ^(ZIPLOK)☐ CARDBOARD☐ DOUBLE PACKED☒ SINGLE PACKEDDOCUMENTATION: ☐ MATERIAL CERTIFICATION☐ CERTIFICATE OF CONFORMANCE☐ CERTIFICATE OF CALIBRATION☐ OTHER (specify)

*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1

☐ YES☒ NO2. WORK CLASSIFICATION: ☐ NUCLEAR☒ SAFETY-RELATED☒ NON-NUCLEAR

COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):

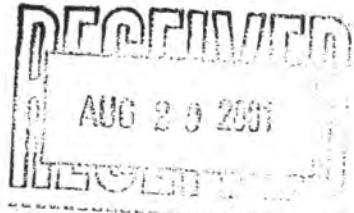
[Signature]

Inspector Signature

8/29/01

Date

CHAIN OF CUSTODY RECORD

PROJECT NAME: Load Line 3 Phase II RI				REQUESTED PARAMETERS															LABORATORY NAME: S&ME, Inc.				
DELIVERY ORDER NO: ECAS 186																							
PROJECT MANAGER: Kevin Jago 865-481-4614																							
Sampler (Signature) <u>Uden Brumbach</u> (Printed Name) <u>Vicki Brumbach</u>																							
Sample ID Date Collected Time Collected Matrix				Grain Size	Moisture	Atterberg Limits	USCS Classification	Hydraulic Conductivity	Specific Gravity	pH											No. of Bottles/ Vials:	LABORATORY ADDRESS: 1413 Topside Road Louisville, TN 37777	
														PHONE NO: 865-970-0003									
														OBSERVATIONS, COMMENTS,									
LL3 0823	8-25-01	1616	soil		✓				✓									1	STA LL3-105				
LL3 0781	8-25-01	0915	soil	✓	✓	✓	✓		✓	✓								1	STA LL3-089				
LL3 0778	8-25-01	0945	soil	✓	✓	✓	✓		✓	✓								1	STA-LL3-088				
LL3 0814	8-25-01	1026	soil		✓				✓									1	STA LL3 102				
LL3 0781	8-25-01	0911	soil		✓				✓									1	STA LL3-089				
LL3 0793	8-25-01	0919	soil		✓				✓									1	STA LL3 093				
LL3 0842	8-25-01	1611	soil		✓				✓									1	STA LL3-113				
LL3 0817	8-25-01	1031	soil	✓	✓	✓	✓		✓	✓								1	STA LL3-103				
LL3 0826	8-25-01	1021	soil		✓				✓									1	STA LL3 106				
LL3 0775	8-25-01	0927	soil		✓				✓									1	STA LL3-087				
LL3 0772	8-25-01	0931	soil		✓				✓									1	STA LL3 086				
LL3 0693	8-25-01	1405	soil		✓				✓									1	STA LL3 057				
LL3 0702	8-25-01	1435	soil		✓				✓									1	STA LL3-060				
RELINQUISHED BY: <u>Uden Brumbach</u>		Date/Time 8-25-01	RECEIVED BY:		Date/Time		TOTAL NUMBER OF CONTAINERS: 13				Cooler Temperature: NA												
COMPANY NAME: SAIC		1700	COMPANY NAME:				Cooler ID: NA - Cardboard box				FEDEX NUMBER: 829341083900												
RECEIVED BY: <u>TRACIE BEST</u>		Date/Time 8/29/01	RELINQUISHED BY:		Date/Time																		
COMPANY NAME: S&ME		9:00 AM	COMPANY NAME:																				
RELINQUISHED BY:		Date/Time	RECEIVED BY:		Date/Time																		
COMPANY NAME:			COMPANY NAME:																				



CHAIN OF CUSTODY RECORD

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CHAIN OF CUSTODY RECORD

COC NO.: LL45+ME -03
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Inspection Report			DATE: <u>8/30/01</u>		REPORT No.: <u>QA-INSP-01-135</u>		
<input checked="" type="checkbox"/> RECEIVING <input type="checkbox"/> SHIPPING RECEIVED FROM/SHIPPED TO: <u>SAIC - RAVENNA LOAD LINE 2</u>			PROJECT No.: <u>1439-01-417</u>		INSPECTOR: <u>TR BEST</u>		
			S&ME P.O. No.: <u>N/A</u>				
			CLIENT P.O. No.: <u>4400042493</u>				
			RELEASE/CO/REV No.: <u>BDA</u>		PROJECT MANAGER/ENGINEER: <u>JB PEARSON</u>		
ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
1	1	LL2-220	LL21066	SOIL (ZIPLOR BAG)	4-4.5'	✓	
2	1	LL2-220	LL21065	" " "	2-2.5'	✓	
3	1	LL2-220	LL21064	" " "	1-1.5'	✓	
4	1	LL2-223	LL21074	" " "	2.8-3.2'	✓	
5	1	LL2-223	LL21073	" " "	7.3-7.6'	✓	
6	1	LL2-223	LL21075	" " "	9'	✓	
7	1	LL2-175	LL20977	" " "	0-1'	✓	
*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 2. WORK CLASSIFICATION: <input type="checkbox"/> NUCLEAR <input checked="" type="checkbox"/> SAFETY-RELATED <input checked="" type="checkbox"/> NON-NUCLEAR	COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse): <div style="text-align: center;"> Inspector Signature </div> <div style="text-align: right;"> <u>8/30/01</u> Date </div>						

Inspection Report

☒ RECEIVING☐ SHIPPING

RECEIVED FROM/SHIPPED TO:

SAIC-RAVENNA LOAD LINE 3
LOAD LINE 4

DATE: 8/30/01

PROJECT No.: 1439-01-417

S&ME P.O. No.: N/A

CLIENT P.O. No.: 4400042493

RELEASE/CO/REV No.: 4600002000

REPORT No.: QA-INSP-01-135

INSPECTOR:

TR BEST

PROJECT MANAGER/ENGINEER:

JB PEARSON

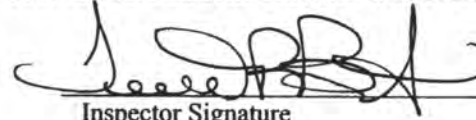
ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
8	1	LL3-203	LL31035	SOIL (ZIPLOK BAG)	1.8-2.4'	✓	
9	1	LL3-203	LL31036	" " "	3.5'	✓	
10	1	LL3-205	LL31042	" " "	11.4'	✓	
11	1	LL3-205	LL31043	" " "	3.2-4.0'	✓	
12	1	LL4-171	LL40935	" " "	3-3.5'	✓	
13	1	LL4-171	LL40936	" " "	10'	✓	
14	1	LL4-168	LL40923	" " "	2-2.5'	✓	

PACKAGING: ☐ CRATE☒ METAL/PLASTIC CONTAINER (ZIPLOK)☐ CARDBOARD☐ DOUBLE PACKED☐ SINGLE PACKEDDOCUMENTATION: ☐ MATERIAL CERTIFICATION☐ CERTIFICATE OF CONFORMANCE☐ CERTIFICATE OF CALIBRATION☐ OTHER (specify)

*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1

☐ YES☒ NO2. WORK CLASSIFICATION: ☐ NUCLEAR☒ SAFETY-RELATED☒ NON-NUCLEAR

COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):



Inspector Signature

8/30/01

Date

Inspection Report

☒ RECEIVING☐ SHIPPING

RECEIVED FROM/SHIPPED TO:

SAK - RAVENNA LOAD LINE 4

DATE: 8/30/01

PROJECT No.: 1439-01-417

S&ME P.O. No.: N/A

CLIENT P.O. No.: 4400042493

BOA
RELEASE/CO/REV No.: 4600002000

REPORT No.: QA-INSP-01-135

INSPECTOR:

TR BEST

PROJECT MANAGER/ENGINEER:

JB PEARSON

ITEM No.	QTY	STATION PART No.	IDENTIFICATION No.	DESCRIPTION	DEPTH	ACCEPTABLE	
						YES	NO*
15	1	LL4-168	LL40924	SOIL (ZIPLOR BAG)	7.0'	✓	
16	1	LL4-168	LL40925	" " "	8.5-9'	✓	
17	1	LL4-168	LL40926	" " "	11'	✓	

PACKAGING: ☐ CRATE ☒ METAL (ZIPLOR) PLASTIC CONTAINER ☐ CARDBOARD ☐ DOUBLE PACKED ☒ SINGLE PACKEDDOCUMENTATION: ☐ MATERIAL CERTIFICATION ☐ CERTIFICATE OF CONFORMANCE ☐ CERTIFICATE OF CALIBRATION ☐ OTHER (specify)

*1. NOTICE OF ANOMALY IS REQUIRED PER QAP 15.1

☐ YES ☒ NO2. WORK CLASSIFICATION: ☐ NUCLEAR☒ SAFETY-RELATED ☒ NON-NUCLEAR

COMMENTS/DESCRIPTION OF DISCREPANCIES (continue on reverse):

Inspector Signature

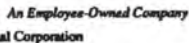
8/30/01
Date



CHAIN OF CUSTODY RECORD

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151 Lafayette Drive, Oak Ridge, Tennessee 37831 (865) 481-4600

COC NO.: LL45+ME-04
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