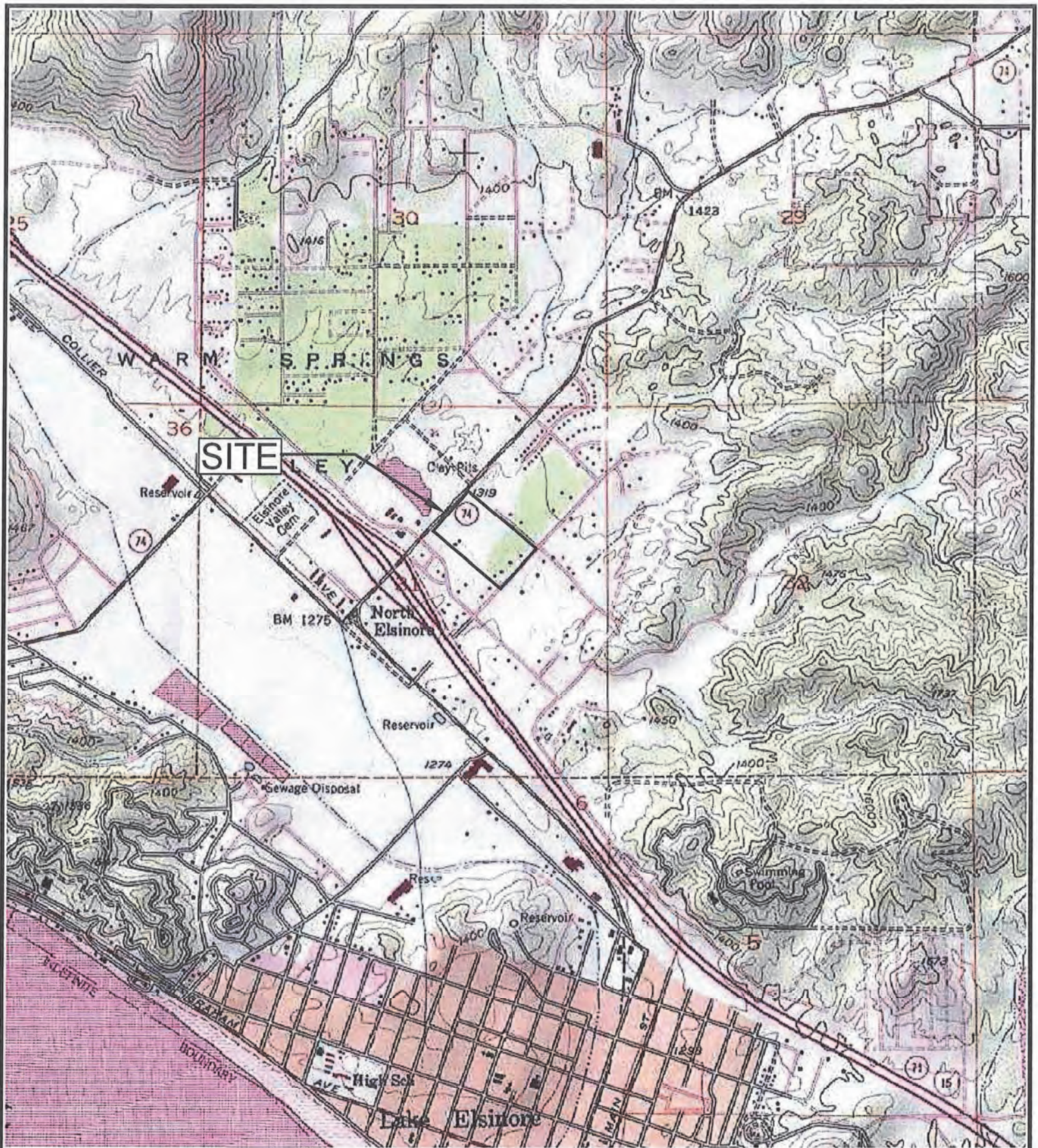


APPENDIX A**DRAWINGS**

- Drawing No. 1 - Site Location Map
- Drawing No. 2 - Test Boring Location Map
- Drawing No. 3 - Retaining Wall and Loading Dock Wall Drainage Details
- Drawing No. 4 - Two Layer AC Pavement Section Thickness Details
- Drawing No. 5 - Portland Cement Concrete Pavement Thickness Details



SOURCE: U.S.G.S. TOPOGRAPHIC MAP, 7 1/2 MINUTE SERIES
LAKE ELSINORE, CALIFORNIA QUADRANGLE 1997

0 2000
APPROXIMATE SCALE
IN FEET

SITE LOCATION MAP
PROPOSED RETAIL TENANT
SOUTHWEST CORNER OF CENTRAL AVENUE
(ROUTE 74) AND CAMBERN AVENUE
LAKE ELSINORE, CALIFORNIA

FILE NO.:
82109-01-01

DATE:
07/08/11

DRAWN BY:
RM

APPROVED BY:

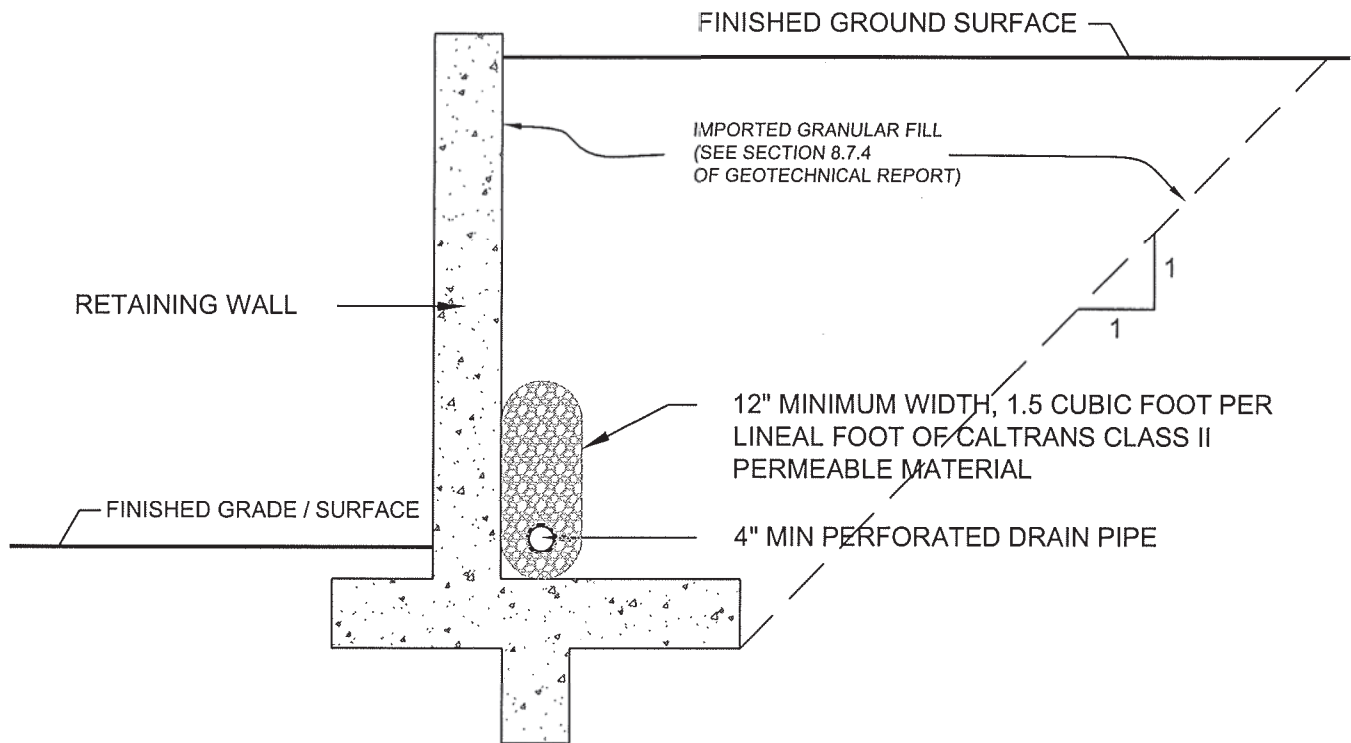
PROJECT NO.
D82109.01

DRAWING NO.
1

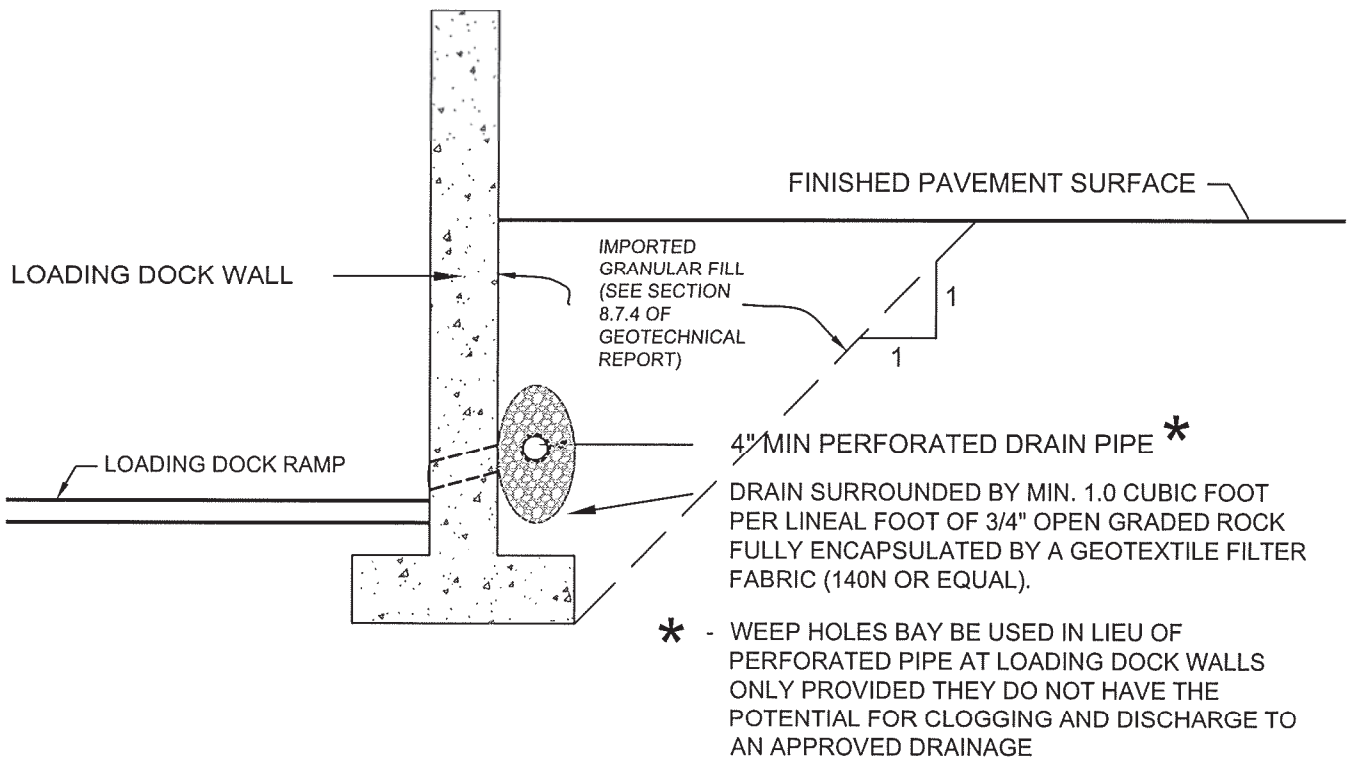


**MOORE TWINING
ASSOCIATES, INC.**

RETAINING WALL DRAINAGE DETAIL



LOADING DOCK WALL DRAINAGE DETAIL



RETAINING WALL AND LOADING DOCK WALL
PROPOSED RETAIL TENANT
SOUTHWEST CORNER OF CENTRAL AVENUE
(ROUTE 74) AND CAMBERN AVENUE
LAKE ELSINORE, CALIFORNIA

FILE NO.
82109-01-02
DRAWN BY:
RM
PROJECT NO.
D82109.01

DATE DRAWN:
07/08/11
APPROVED BY:
DRAWING NO.
3



**MOORE TWINING
ASSOCIATES, INC.**

APPENDIX B

LOGS OF BORINGS

This appendix contains the final logs of borings. These logs represent our interpretation of the contents of the field logs and the results of the field and laboratory tests.

The logs and related information depict subsurface conditions only at these locations and at the particular time designated on the logs. Soil conditions at other locations may differ from conditions occurring at these test boring locations. Also, the passage of time may result in changes in the soil conditions at these test boring locations.

In addition, an explanation of the abbreviations used in the preparation of the logs and a description of the Unified Soil Classification System are provided at the end of Appendix B.

Test Boring	Latitude (deg)	Longitude (deg)	Elevation (Feet AMSL)
B-1	33.693297	-117.332371	1,304
B-2	33.693014	-117.332717	1,303
B-3	33.693156	-117.331559	1,303
B-4	33.692957	-117.331329	1,300
B-5	33.693266	-117.331299	1,303
B-6	33.692789	-117.331088	1,298
B-7	33.692599	-117.331360	1,298
B-8	33.692676	-117.331549	1,298
B-9	33.692851	-117.331814	1,301
B-10	33.692288	-117.331619	1,300
B-11	33.692429	-117.331974	1,300
B-12	33.692011	-119.331939	1,298
B-13	33.691981	-117.332387	1,298
B-14	33.692336	-117.332364	1,299
B-15	33.692178	-117.332627	1,298
B-16	33.693537	-117.332039	1,307
B-17	33.692796	-117.332954	1,303
B-18	33.692581	-117.332678	1,298
B-19	33.692812	-117.332461	1,299
B-20	33.693540	-117.331670	1,304

Test Boring	Latitude (deg)	Longitude (deg)	Elevation (Feet AMSL)
B-21	33.693362	-117.331798	1,303
B-22	33.692084	-117.332110	1,303
B-23	33.692369	-117.332877	1,298
B-24	33.692565	-117.333122	1,303
B-25	33.692766	-117.333379	1,303
B-26	33.692958	-117.333629	1,302
B-27	33.693160	-117.333869	1,300
B-28	33.693351	-117.334116	1,303
B-29	33.693545	-117.334368	1,304
B-30	33.693718	-117.334683	1,305
B-31	33.693889	-117.334921	1,305
B-32	33.694140	-117.334635	1,307
B-33	33.693942	-117.334386	1,306
B-34	33.693740	-117.334140	1,305
B-35	33.693551	-117.333897	1,303
B-36	33.693353	-117.333640	1,303
B-37	33.696157	-117.333391	1,303
B-38	33.692959	-117.333156	1,303
B-39	33.693168	-117.332915	1,304
B-40	33.693365	-117.333162	1,305
B-41	33.693556	-117.333410	1,305
B-42	33.693758	-117.333664	1,305
B-43	33.693950	-117.333906	1,306
B-44	33.694145	-117.334161	1,308
B-45	33.694336	-117.334404	1,310
B-46	33.694542	-117.334147	1,311
B-47	33.694347	-117.333923	1,310
B-48	33.694145	-117.333674	1,308
B-49	33.693964	-117.333430	1,307
B-50	33.693752	-117.333180	1,307
B-51	33.693563	-117.332932	1,307

Test Boring	Latitude (deg)	Longitude (deg)	Elevation (Feet AMSL)
B-52	33.693367	-117.332691	1,306
B-53	33.693571	-117.332447	1,306
B-54	33.693763	-117.332697	1,308
B-55	33.693963	-117.332944	1,308
B-56	33.694154	-117.333201	1,309
B-57	33.694357	-117.333450	1,310
B-58	33.694549	-117.333695	1,312
B-59	33.694743	-117.333943	1,313
B-60	33.694946	-117.333721	1,315
B-61	33.694755	-117.333460	1,313
B-62	33.694560	-117.333214	1,312
B-63	33.694359	-117.332963	1,311
B-64	33.694162	-117.332719	1,310
B-65	33.693963	-117.332471	1,309
B-66	33.693777	-117.33225	1,308



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-1

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,304 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	3/6 6/6 11/6	SM	FILL: SAND, Silty; Medium dense, damp, fine grained, light brown, with paper debris	El=34	17	2
1300	3/6 7/6 13/6 13/6 17/6 19/6	CL	LEAN CLAY, Sandy; Very stiff, moist, low plasticity, brown, trace gravel, slightly cemented (hardpan) Hard	GRAVEL=2% SAND=42% -200=56% PI=15 LL=28	20 36	8
1295	2/6 6/6 11/6	SM	SAND, Silty; Medium dense, damp, fine grained, brown, trace clay and fine gravel	Drilling became more difficult	17	
1290	17/6 24/6 24/6	CL	LEAN CLAY; Hard, moist, low plasticity, brown		48	
1285	11/6 13/6 8/6		Very stiff, increase in moisture content, with trace fine gravel		21	
1280			Bottom of Boring at 20 Feet			
1275						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-2

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,303 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	4/6 10/6 17/6	SM	SAND, Silty; Medium dense, damp, fine grained, brown		27	
1300	-- 24/6	CL	LEAN CLAY, Sandy; Hard, moist, low plasticity, brown, with fine gravel, slightly cemented (hardpan)	DD=124 PCF	24/6	9
5	10/6 16/6 20/6				36	6
1295	6/6 10/6 10/6	SM	SAND, Silty; Medium dense, moist, fine to coarse grained, brown, with fine gravel	Difficult drilling	20	
10			3 inch interbed of lean clay from 9.5-9.75 feet			
1290	14/6 16/6 18/6	CL	LEAN CLAY; Hard, moist, low plasticity, brown, with fine gravel With 6 inch interbed of silty fine to coarse sand, brown, with fine gravel		34	
15	10/6 12/6 15/6		Very stiff With a 12 inch interbed of brown silty fine sand, with fine gravel		27	
1285			Bottom of Boring at 20 Feet			
20						
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-3

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,303 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: 17.7 Feet BSG

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Loose, dry to damp, fine to coarse grained, light brown, with fine gravel		4	2
1300					--	
5					4	5
1295			Decrease in percent of medium to coarse sand		6	
10			Dense, increase in gravel content, with fine to coarse gravel		38	
1290						
1285		CL	Wet LEAN CLAY; Stiff, wet, low to medium plasticity, brown, trace fine gravel, with a rootlet		13	
20			Bottom of Boring at 20 Feet			
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-4

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Date: 6/27/11

Drill Type: CME 75

Elevation: 1,300 Feet AMSL

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1300 0	 8/6 8/6 6/6	SM	FILL: SAND, Silty; Medium dense, damp, fine to coarse grained, dark brown, with fine gravel and a little concrete debris		14	
	 2/6 2/6 4/6	SM	SAND, Silty; Loose, moist, fine grained, dark brown, with fine gravel		6	
1295 5	 3/6 4/6 6/6		Medium dense		10	
	 3/6 7/6 3/6		With coarse rock fragments		10	
1290 10			Bottom of Boring at 10 Feet			
1285 15						
1280 20						
1275 25						
1270 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-5

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,303 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Loose, dry to damp, fine grained, with some medium to coarse sand, light brown, with fine gravel Moist, fine to coarse grained		6	
	6/6 4/6 2/6					
1300	2/6 4/6 5/6					
5	5/6 5/6 4/6					
1295	2/6 1/6 2/6		Very loose, increase in moisture content		3	
10						
1290	4/6 8/6 12/6		Medium dense		20	
15						
1285			Bottom of Boring at 15 Feet			
20						
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-6

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,298 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	9/6 13/6 16/6	SM	SAND, Silty; Medium dense, damp, fine to medium grained, brown, with trace fine gravel, cemented (hardpan)		29	
1295	6/6 9/6 13/6 16/6 20/6 20/6		Increase in moisture content, cementation (hardpan) , with calcification Dense		22 40	11
1290	4/6 6/6 8/6	CL	LEAN CLAY; Stiff, moist, low plasticity, brown		14	
1285	3/6 4/6 5/6		Increase in moisture content		9	
1280			Bottom of Boring at 15 Feet			
1275						
1270						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-7

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,298 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: 13.3 Feet BSG

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	6/6 5/6 3/6	SM	SAND, Silty; Loose, damp, fine grained, light brown, with fine gravel		8	3
1295		CL	LEAN CLAY; Medium stiff, moist, low to medium plasticity, brown, with fine gravel		23	10
5	6/6 10/6 13/6 6/6 13/6 16/6		Very stiff		29	11
1290			interbedded with thin layers of gravelly clay		15	
10	4/6 7/6 8/6					
1285						
15	2/6 4/6 4/6	GP	GRAVEL, Poorly Graded with Sand; Loose, wet, fine to coarse, gray		8	
1280			Bottom of Boring at 15 Feet			
20						
1275						
25						
1270						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-8

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,298 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	FILL:SAND, Silty; Medium dense, dry, fine to coarse grained, light brown, with fine to coarse gravel		20	
1295			Very loose, with cloth debris, increase in moisture content		1	
5			Loose, with cloth debris and trace concrete debris		7	
1290						
10		SM	SAND, Silty; Medium dense, moist, fine to coarse grained, brown, with fine to coarse gravel		12	
		CL	LEAN CLAY; Stiff, moist, low to medium plasticity, brown, with fine gravel			
1285			Bottom of Boring at 10 Feet			
15						
1280						
20						
1275						
25						
1270						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-9

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,301 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: 19 Feet BSG

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0						
1300	3/6 2/6 2/6	SM	FILL: SAND, Silty; Loose, damp, fine to coarse grained, brown, with fine gravel, trace glass debris		4	
	2/6 3/6 4/6	SM CL	SAND, Silty; Loose, damp, fine to coarse grained, brown, with fine gravel		7	
5		SM	LEAN CLAY; Medium stiff, moist, low plasticity, brown, with fine gravel	DD=114.3 PCF	--	5
1295			SAND, Silty; Damp, fine to coarse grained, brown, with fine gravel		3	
10	1/6 1/6 2/6	CL	LEAN CLAY, Sandy; Soft, moist, low plasticity, brown, trace fine gravel			
1290			Stiff, high plasticity, with trace fine gravel		14	
15	4/6 6/6 8/6					
1285						
20	2/6 2/6 3/6		Wet, increase in percent sand and gravel, with some interbedded clayey sands		5	
1280			Bottom of Boring at 20 Feet			
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-10

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,300 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: 12.8 Feet BSG

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1300 0	8/6 4/6 3/6	SM	SAND, Silty; Loose, dry to damp, fine grained, light brown, with fine gravel Very loose, moist, brown, trace fine gravel		7	7
	1/6 1/6 1/6				2	
1295 5	1/6 2/6 1/6				3	
1290 10	4/6 7/6 10/6	CL	LEAN CLAY; Very stiff, moist, low to medium plasticity, brown, with fine gravel		17	12
1285 15	2/6 2/6 2/6	CL	LEAN CLAY, Sandy; Medium stiff, wet, low plasticity, brown 6 inch interbed of brown silty fine to coarse sand, with fine gravel and trace clay		4	15
			Bottom of Boring at 15 Feet			
1280 20						
1275 25						
1270 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-11

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,300 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: 17.7 Feet BSG

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1300 0		SM	SAND, Silty; Loose, damp, fine to medium grained, brown, with fine gravel Moist Very loose		6	
1295 5		SM	Loose, increase in percent gravel content, with fine to coarse gravel		3 9	
1290 10		CL	LEAN CLAY, Sandy; Moist, low plasticity, brown, with fine gravel	DD=117.7 PCF	--	9
1285 15		SP-SM	POORLY GRADED SAND, with silt; Medium dense, moist, fine to coarse grained, brown	-200= 8% PI-NP LL=NV	11	
1280 20		CL	Wet LEAN CLAY, Sandy; Stiff, moist, low plasticity, brown, with fine gravel		15	
1275 25			Bottom of Boring at 20 Feet			
1270 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-12

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,298 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Loose, dry to damp, fine to coarse grained, light brown, with fine to coarse gravel Reddish-brown Very loose, moist, fine grained, brown, with fine gravel		4	6
1295					8	
5					2	
1290					2	
10						
1285		CL	LEAN CLAY; Very stiff, moist, low to medium plasticity, brown, with fine gravel and oxidation features Bottom of Boring at 15 Feet		19	
15						
1280						
20						
1275						
25						
1270						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-13

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,298 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Medium dense, damp, fine to coarse grained, brown, with fine to coarse gravel Moist Very loose		13	
1295					3	
5					3	
1290		SC	SAND, Clayey; Loose, moist, fine grained, brown, with fine gravel Bottom of Boring at 10 Feet		6	
10						
1285						
15						
1280						
20						
1275						
25						
1270						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-14

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

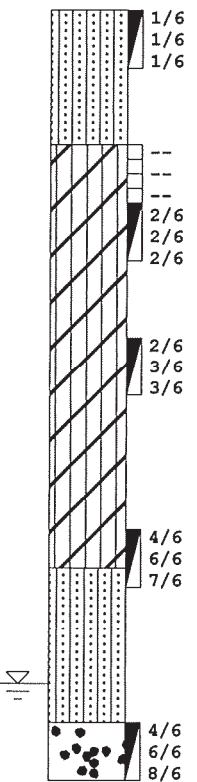
Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,299 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: 17.5 Feet BSG

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Very loose, moist, fine grained, brown, with trace fine to coarse gravel and rootlets		2	
1295		CL-ML	SILTY CLAY, Sandy; Medium stiff, moist, low plasticity, brown, with fine gravel	DD=107.2 PCF GRAVEL=4% SAND=46% -200=50% PI=6 LL=22	--	8
5					4	
1290					6	
10						
1285		SM	SAND, Silty; Medium dense, moist, fine to coarse grained, brown, with fine to coarse gravel		13	
15			Wet			
1280		GP	GRAVEL, Poorly graded with sand; Medium dense, wet, fine, brown		14	
20			Bottom of Boring at 20 Feet			
1275						
25						
1270						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-15

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,298 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Medium dense, damp, fine grained, light brown, slightly cemented to a depth of 12 inches (hardpan), with fine gravel Moist		11	
1295						
5						
1290		CL	LEAN CLAY, Sandy; Stiff, moist, low plasticity, brown, with trace fine gravel Medium stiff, with trace fine to coarse gravel		11	7
10						
1285						
15						
1280						
20						
1275						
25						
1270						
30						
			Bottom of Boring at 10 Feet			

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-16

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,307 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: 23.5 Feet BSG

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	2/6 3/6 6/6	SM	SAND, Silty; Loose, dry, fine to medium grained, light brown, with a little fine gravel		9	
1305		CL-ML	SILTY CLAY, Sandy; Stiff, damp, low plasticity, brown, with fine gravel			
5			Very stiff	DD=121 PCF PI=5 LL=22 Drilling became more difficult	--	10
1300						
10	7/6 8/6 12/6		With calcification, increase in percent sand		20	
1295						
15	4/6 6/6 8/6		Stiff		14	
1290						
20	2/6 2/6 5/6		With fine gravel	Gravel=6% Sand=42% -200=42% PI=7 LL=24	7	
1285						
25	4/6 4/6 6/6	CL	LEAN CLAY, Sandy; Stiff, wet, low plasticity, brown, with a little fine gravel		10	
1280						
30						

Notes: Groundwater was encountered initially at 25 feet during drilling and at about 23.5 feet approximately 24 hours later.



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-16

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/27/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,307 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: 23.5 Feet BSG

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1275	2/6 2/6 3/6		Medium stiff, high plasticity, with fine to coarse gravel Increase in percent sand and gravel		5	
35	3/6 3/6 6/6		Stiff		9	
1270						
40	6/6 16/6 27/6	ROCK	CLAYSTONE; Hard, highly weathered, very weak rock, with oxidation, weathering features, with some slickenside surfaces		43	
1265						
45	16/6 30/6 50/5		SANDSTONE; Very dense, highly weathered, very weak rock, fine to medium grained, yellowish brown, with pyrite and clay		80/11	
1260						
50	16/6 32/6 50/5.5				>50	
1255			Bottom of Boring at 51.4 Feet			
55						
1250						
60						

Notes: Groundwater was encountered initially at 25 feet during drilling and at about 23.5 feet approximately 24 hours later.



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-17

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/28/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,303 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	2/6 3/6 4/6	SM	SAND, Silty; Loose, dry to damp, fine grained, light brown, with trace fine gravel		7	
1300	8/6 16/6 22/6	CL	LEAN CLAY, Sandy; Hard, damp, low plasticity, brown, cemented, with fine gravel		38	
5	--	SM	SAND, Silty; Medium dense, damp, fine grained, light brown, with fine gravel	DD=116.2pcf	--	6
1295	--	SC	SAND, Clayey; Medium dense, moist, fine to medium grained, brown, with fine gravel, slightly cemented (hardpan)			
10	3/6 5/6 7/6	SP-SM	SAND, Poorly Graded with silt; Medium dense, damp, fine to coarse grained, reddish-brown, with fine gravel	-200=14% PI=NP LL=NV	12	
1290						
15	4/6 5/6 6/6	CL	LEAN CLAY; Stiff, moist, low to medium plasticity, reddish- brown, trace fine gravel No gravel		11	
1285						
20	2/6 5/6 6/6		With fine gravel		11	
1280			Bottom of Boring at 21.5 Feet			
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-18

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/28/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,298 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		ML SM	SILT, Sandy; Soft, damp, non plastic, light brown, with roots		2	
1295		CL	SAND, Silty; Very loose, damp, fine to coarse grained, brown, with roots	DD=115.4 PCF	--	7
5			Fine grained LEAN CLAY, Sandy; Very stiff, moist, low plasticity, brown, with fine gravel, with cementation (hardpan)		22	
1290			Stiff, decrease in percent fine gravel		14	
10						
1285			Increase in percent fine gravel		15	
15						
1280						
20		SM-SC CL	SAND, Silty to Clayey; Loose, very moist to wet, fine to coarse grained, brown, with fine gravel		4	
1275			LEAN CLAY; Medium stiff, moist, low plasticity, brown, with fine gravel			
25			Bottom of Boring at 21.5 Feet			
1270						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-19

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/28/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,299 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	1/6 1/6 2/6	SM	FILL: SAND, Silty; Very loose, damp, fine to coarse grained, brown, with fine to coarse gravel		3	
1295	7/6 9/6 11/6 6/6 10/6 17/6	CL	Fine grained, with glass and hard plastic debris LEAN CLAY, Sandy; Very stiff, moist, low plasticity, brown, with roots and fine gravel No roots		20 27	
1290	5/6 7/6 7/6		Stiff, with roots less than 1/4 inch, decrease in fine gravel		14	
1285	7/6 8/6 6/6	SM	SAND, Silty; Medium dense, moist, fine to medium grained, brown, with fine gravel	-200=36% PI=NP LL=NV	14	
1280	1/6 2/6 6/6	CL	LEAN CLAY, Sandy; Medium stiff, very moist, low to medium plasticity, brown, with fine gravel		8	
1275			Bottom of Boring at 21.5 Feet			
1270						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-20

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/28/11

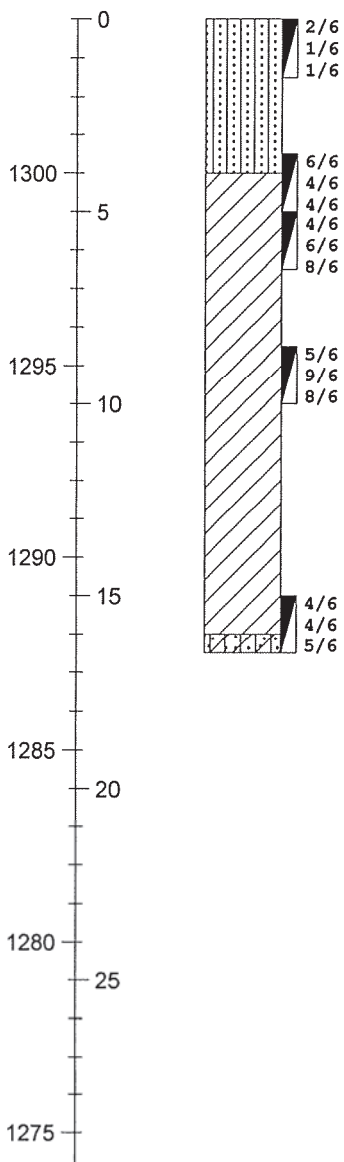
Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,304 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Very loose, damp, fine to medium grained, light brown, with fine gravel, with roots		2	
1300		CL	LEAN CLAY; Stiff, moist, low plasticity, brown, with fine gravel, with roots up to 1/4 inch in diameter		8	
5					14	
1295			Very stiff, slightly cemented (hardpan), with roots less than 1/4 inch in diameter		17	
10						
1290			Stiff		9	
15		SM-SC	SAND, Silty to Clayey; Loose, fine to coarse grained, brown, with fine gravel			
1285			Bottom of Boring at 16.5 Feet			
20						
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-21

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/28/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,303 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: 20 Feet BSG

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0						
1300	2/6 4/6 3/6	SM	SAND, Silty; Loose, damp, fine to coarse grained, light brown, with fine to coarse gravel Rootlets at 2 feet Increase in percent gravel		7	
5	2/6 2/6 4/6				6	
1295	3/6 8/6 12/6	CL	LEAN CLAY; Very stiff, moist, low to medium plasticity, brown, with fine gravel, slight cementation (hardpan), with roots No gravel, no roots, with calcification		20	
10	5/6 6/6 9/6 -- --			DD=114.8 PCF	15	5
1290		SM	SAND, Silty; Moist, fine to medium grained, brown, with fine gravel		--	
15	2/6 2/6 4/6	CL	LEAN CLAY; Medium stiff, moist, low to medium plasticity, brown, with fine gravel		6	
1285						
20	6/6 3/6 2/6		6 inch interbed of silty fine to coarse sand, with fine gravel from 20.5 - 21 feet Bottom of Boring at 21.5 Feet		5	
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-22

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AH

Drill Type: CME 75

Date: 6/28/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,303 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	2/6 4/6 8/6	SM	SAND, Silty; Medium dense, damp,		12	
		CL	fine to medium grained, brown, with fine gravel and roots	DD=130.4 PCF	--	7
1300	-- -- --		LEAN CLAY; Stiff, moist, low plasticity, brown, with fine gravel, slight cementation (hard pan)			
5	16/6 28/6 18/6		Hard, reddish-brown, with fine gravel, with calcification		46	
1295	2/6 3/6 4/6		Medium stiff, low to medium plasticity, roots up to 3/4 inch		7	
10						
1290	7/6 7/6 7/6		Stiff, trace fine gravel, with calcification		14	
15						
1285	3/6 5/6 5/6		3 inch interbed of silty fine to coarse sand, with fine gravel from 20 - 20.25 feet		10	
20			Bottom of Boring at 21.5 Feet			
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-23

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/28/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,298 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM SC	SAND, Silty; Medium dense, damp, light brown		11	
1295			SAND, Clayey; Medium dense, damp, light brown, with fine gravel			
5		CL	LEAN CLAY, Sandy; Hard, moist, medium plasticity, brown, fine gravel, slight cementation (hardpan)		37	
1290					47	
10			Very stiff		17	
1285			Bottom of Boring at 10 Feet			
15						
1280						
20						
1275						
25						
1270						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-24

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/28/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,303 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Medium dense, damp, fine grained, light brown		12	
1300					23	
5		CL	LEAN CLAY; Hard, moist, low to medium plasticity, brown with fine gravel, slight cementation (hardpan)		37	
1295					33	
10			Bottom of Boring at 10 Feet			
1290						
15						
1285						
20						
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-25

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/28/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,303 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Medium dense, damp, fine grained, light brown, trace fine gravel		10	
1300		CL	LEAN CLAY; Very stiff, moist, low to medium plasticity, brown, with fine gravel, slight cementation (hardpan)		23	
5			Hard		39	
1295					43	
10			Bottom of Boring at 10 Feet			
1290						
15						
1285						
20						
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-26

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Date: 6/28/11

Drill Type: CME 75

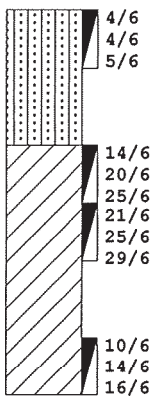
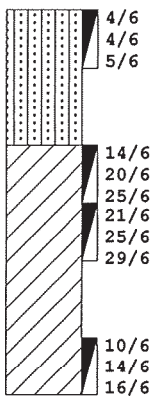
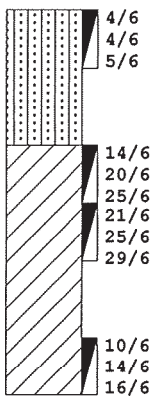
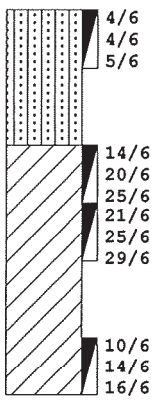
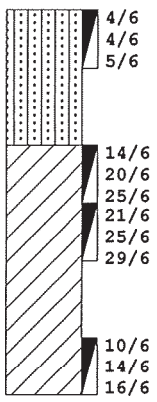
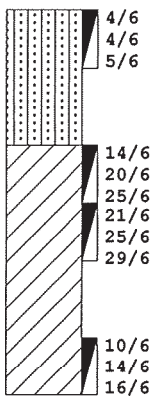
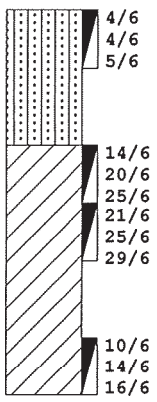
Elevation: 1,302 Feet AMSL

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Loose, damp, fine grained, light brown, with fine to coarse gravel Trace clay		9	
1300						
5		CL	LEAN CLAY; Hard, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan)		45 54	
1295						
10			Bottom of Boring at 10 Feet			
1290						
15						
1285						
20						
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-27

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Date: 6/28/11

Drill Type: CME 75

Elevation: 1,300 Feet AMSL

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1300 0		SM	SAND, Silty; Loose, damp, fine grained, light brown		7	
		SC	SAND, Clayey; Loose, damp, fine grained, brown			
		CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, slight cementation (hardpan), with fine gravel		23	
1295 5					26	
					21	
1290 10			Bottom of Boring at 10 Feet			
1285 15						
1280 20						
1275 25						
1270 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-28

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/28/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,303 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Dense, damp, fine grained, light brown		30	
1300		SC	SAND, Clayey; Dense, damp, fine to medium grained, light brown, with fine gravel		29	
5		CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan)		38	
1295			Hard			
10			Very stiff		17	
1290			Bottom of Boring at 10 Feet			
15						
1285						
20						
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-29

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Date: 6/28/11

Drill Type: CME 75

Elevation: 1,304 Feet AMSL

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Medium dense, damp,		12	
		SC	fine grained, light brown			
			SAND, Clayey; Medium dense,			
			damp, fine grained, light brown			
1300		CL	LEAN CLAY; Very stiff, moist,		22	
5			medium plasticity, brown, slight		35	
			cementation (hardpan), with fine			
			gravel			
			Hard			
1295					47	
10						
			Bottom of Boring at 10 Feet			
1290						
15						
1285						
20						
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-30

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Date: 6/28/11

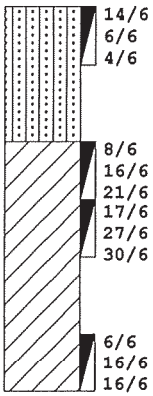
Drill Type: CME 75

Elevation: 1,305 Feet AMSL

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1305 — 0		SM	SAND, Silty; Medium dense, damp, fine grained, light brown		10	3
1300 — 5		CL	LEAN CLAY; Hard, moist, medium plasticity, brown		37 57	8
1295 — 10			2 inch interbedded layer of silty sand with fine gravel from 6.3 - 6.5 feet		32	9
1290 — 15			Bottom of Boring at 10 Feet			
1285 — 20						
1280 — 25						
1275 — 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-31

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/28/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,305 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1305 — 0		SM	SAND, Silty; Medium dense, damp, fine to medium grained, light brown, with fine gravel		12	
1300 — 5		CL	LEAN CLAY; Hard, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan) Decrease in fine gravel content		42 49	
1295 — 10			Very stiff		28	
1290 — 15			Bottom of Boring at 10 Feet			
1285 — 20						
1280 — 25						
1275 — 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-32

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/29/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,307 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Medium dense, damp, fine grained, light brown, with fine gravel		14	
1305						
5						
1300		SC CL	SAND, Clayey; Medium dense, damp, fine to medium grained, brown, with fine gravel LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel Hard, Slight cementation (hardpan) Very stiff		18 43 23	
10						
1295						
15			Bottom of Boring at 10 Feet			
1290						
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-33

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/29/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,306 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0						
1305	7/6 7/6 7/6	SM	SAND, Silty; Medium dense, damp, fine grained, light brown		14	
		CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan) Hard		28	
5	6/6 13/6 15/6 6/6 17/6 21/6				38	
1300						
	6/6 12/6 15/6		Very stiff		27	
10						
1295			Bottom of Boring at 10 Feet			
15						
1290						
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-34

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/29/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,305 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1305 — 0		SM	SAND, Silty; Medium dense, damp, fine grained, light brown		12	
1300 — 5		CL	LEAN CLAY; Hard, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan)		41 58	
1295 — 10			Bottom of Boring at 10 Feet		31	
1290 — 15						
1285 — 20						
1280 — 25						
1275 — 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-35

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/29/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,303 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	4/6 7/6 10/6	SM	SAND, Silty; Medium dense, damp, fine grained, light brown, with trace fine gravel		17	
1300	10/6 8/6 11/6 12/6 14/6 14/6	CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown		19 28	
1295	4/6 10/6 10/6				20	
10			Bottom of Boring at 10 Feet			
1290						
15						
1285						
20						
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-36

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/29/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,303 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Loose, damp, fine to medium grained, light brown, with a little gravel		6	
1300						
5						
1295		CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with gravel, slight cementation (hardpan)		21 24	
10						
1290						
15			Increase in percent gravel		18	
1285			Bottom of Boring at 10 Feet			
20						
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-37

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Date: 6/29/11

Drill Type: CME 75

Elevation: 1,303 Feet AMSL

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	2/6 4/6 12/6	SM	SAND, Silty; Medium dense, damp, fine to medium grained, light brown, with gravel		16	
1300	6/6 8/6 10/6 10/6 20/6 23/6	CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with gravel, slight cementation (hardpan) Hard, increase in percent gravel		18 43	
1295	6/6 7/6 9/6		Very stiff		16	
10			Bottom of Boring at 10 Feet			
1290						
15						
1285						
20						
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-38

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/29/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,303 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	3/6 4/6 12/6	SM	SAND, Silty; Medium dense, damp, fine grained, light brown, trace fine gravel		16	
1300	4/6 12/6 14/6 4/6 16/6 18/6	SC	SAND, Clayey; Medium dense, damp, fine to medium grained, brown, with fine gravel Dense		26 34	
1295	4/6 17/6 20/6	CL	LEAN CLAY; Hard, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan)		37	
10			Bottom of Boring at 10 Feet			
1290						
15						
1285						
20						
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-39

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/29/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,304 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Medium dense, damp, fine to medium grained, light brown		15	
1300						
5						
1295		CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan) Hard		22 34	
10						
1290						
15			Bottom of Boring at 10 Feet		33	
1285						
20						
1280						
25						
1275						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-40

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/29/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,305 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1305 0		SM	SAND, Silty; Medium dense, damp, fine to medium grained, light brown		14	
1300 5		SC	SAND, Clayey, Dense, damp, fine to medium grained, brown, with fine gravel		34	
		CL	LEAN CLAY; Hard, moist, medium plasticity, brown, with fine gravel		36	
1295 10					38	
			Bottom of Boring at 10 Feet			
1290 15						
1285 20						
1280 25						
1275 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-41

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Date: 6/29/11

Drill Type: CME 75

Elevation: 1,305 Feet AMSL

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1305 0		SM	SAND, Silty; Medium dense, damp, fine grained, light brown		11	
		CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel, slight cementation		19	
1300 5		SC	(hardpan)		33	
			SAND, Clayey; Dense, damp, fine grained, light brown, 6 inch interbed of lean clay with gravel		26	
1295 10			Medium dense, with fine coarse gravel			
			Bottom of Boring at 10 Feet			
1290 15						
1285 20						
1280 25						
1275 30						

Notes:



Test Boring: B-42

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Date: 6/29/11

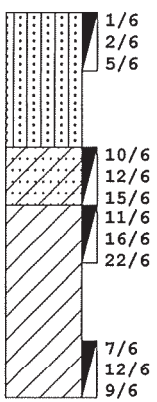
Drill Type: CME 75

Elevation: 1,305 Feet AMSL

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1305 — 0		SM	SAND, Silty; Loose, damp, fine grained, light brown		7	
1300 — 5		SC	SAND, Clayey; Medium dense, damp, fine to medium grained, brown, with fine to coarse gravel		27	
		CL	LEAN CLAY; Hard, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan) Very stiff		38	
1295 — 10			Bottom of Boring at 10 Feet		21	
1290 — 15						
1285 — 20						
1280 — 25						
1275 — 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-43

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/29/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,306 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Medium dense, damp, fine grained, light brown		10	
1305						
5		CL	LEAN CLAY; Hard, moist, low to medium plasticity, brown, with fine gravel, slight cementation (hardpan)		30 42	
1300						
10			Very stiff		24	
1295						
15			Bottom of Boring at 10 Feet			
1290						
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-44

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Date: 6/29/11

Drill Type: CME 75

Elevation: 1,308 Feet AMSL

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	1/6 4/6 4/6	SM	SAND, Silty; Loose, damp, fine grained, light brown Fine to medium grained		8	
1305	9/6 16/6 17/6	CL	LEAN CLAY; Hard, moist, low to medium plasticity, brown, with fine gravel, slight cementation (hardpan)		33	
5	16/6 19/6 27/6	SC	SAND, Clayey; Dense, moist, fine to medium grained, with trace fine gravel		46	
1300	16/6 19/6 12/6	CL	LEAN CLAY; Hard, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan)		31	
10			Bottom of Boring at 10 Feet			
1295						
15						
1290						
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-45

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Date: 6/29/11

Drill Type: CME 75

Elevation: 1,310 Feet AMSL

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1310 0	 2/6 3/6 6/6	SM	SAND, Silty; Loose, damp, fine grained, light brown, with a trace fine gravel		9	
1305 5	 4/6 6/6 8/6 2/6 3/6 3/6	SC	SAND, Clayey; Medium dense, damp, fine to medium grained, brown, with fine gravel Loose		14 6	
1300 10	 6/6 12/6 18/6	CL SM	LEAN CLAY; Hard, moist, low to medium plasticity, brown, with fine gravel SAND, Silty; Dense, damp, fine to medium grained, grayish brown, with gravel Bottom of Boring at 10 Feet		30	
1295 15						
1290 20						
1285 25						
1280 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-46

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Drill Type: CME 75

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Logged By: AR

Date: 6/29/11

Elevation: 1,311 Feet AMSL

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0						
1310	2/6 2/6 4/6	SM	SAND, Silty; Loose, damp, fine grained, light brown		6	
5	2/6 4/6 3/6 2/6 4/6 6/6		6 inch interbed of clayey sand Medium dense, fine to medium grained, with fine gravel		7 10	
1305						
10	9/6 16/6 12/6		Grayish brown, increase in gravel content		28	
1300			Bottom of Boring at 10 Feet			
15						
1295						
20						
1290						
25						
1285						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-47

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Date: 6/29/11

Drill Type: CME 75

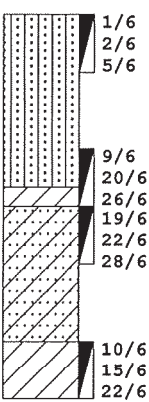
Elevation: 1,310 Feet AMSL

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1310 0		SM	SAND, Silty; Loose, damp, fine grained, light brown		7	3
1305 5		CL SC	LEAN CLAY; Hard, moist, low to medium plasticity, brown, with fine gravel		46 50	5 5
1300 10		CL	SAND, Clayey; Very dense, moist, fine to medium grained, brown, with fine gravel, slight cementation (hardpan)		37	
1295 15			LEAN CLAY; Hard, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan)			
1290 20			Bottom of Boring at 10 Feet			
1285 25						
1280 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-48

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Drill Type: CME 75

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Logged By: AR

Date: 6/29/11

Elevation: 1,308 Feet AMSL

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Loose, damp, fine grained, light brown		8	
1305		CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel		16	
5		SC	SAND, Clayey; Medium dense, damp, fine to medium grained, brown, with fine gravel		20	
1300		CL	LEAN CLAY; Hard, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan)		32	
10			Bottom of Boring at 10 Feet			
1295						
15						
1290						
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-49

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Date: 6/29/11

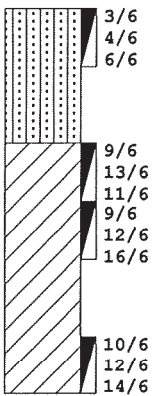
Drill Type: CME 75

Elevation: 1,307 Feet AMSL

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Medium dense, damp, fine grained, light brown		10	
1305						
5		CL	LEAN CLAY; Very stiff, moist, low to medium plasticity, brown, with fine, gravel, slight cementation (hardpan) With fine coarse gravel		24 28	
1300			With fine gravel		26	
10			Bottom of Boring at 10 Feet			
1295						
15						
1290						
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-50

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/29/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,307 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Medium dense, damp, fine grained, light brown		10	
1305						
5		CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel, slight cementation		19	
1300		SC	(hardpan)		33	
10		CL	SAND, Clayey; Dense, moist, fine to coarse grained, grayish brown, with fine gravel		30	
1295			LEAN CLAY; Hard, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan)			
15			Medium stiff, increase in moisture content		8	
1290			Bottom of Boring at 15 Feet			
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-51

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/29/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,307 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	4/6 7/6 10/6	SM	SAND, Silty; Medium dense, damp, fine grained, light brown		17	
1305	11/6 11/6 14/6	SC	SAND, Clayey; Medium dense, damp, fine to medium grained, light brown, with fine gravel 12 inch interbed of lean clay		25	
5	11/6 10/6 12/6	SM	SAND, Silty; Medium dense, moist, fine to coarse grained, brown, with fine gravel		22	
1300	5/6 10/6 16/6	CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan)		26	
10	5/6 10/6 5/6		Stiff, increase in moisture		15	
1295			Bottom of Boring at 15 Feet			
1290						
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-52

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/29/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,306 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0						
1305	2/6 3/6 4/6	SM	SAND, Silty; Loose, damp, fine to medium grained, light brown		7	
	6/6 8/6 12/6 13/6 16/6 14/6	CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel		20	
1300		SC	SAND, Clayey; Dense, Moist, fine to coarse grained, brown, with fine gravel		30	
	8/6 12/6 14/6	CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan)		26	
1295			Bottom of Boring at 10 Feet			
15						
1290						
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-53

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/30/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,306 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0						
1305	4/6 9/6 14/6	SM	SAND, Silty; Medium dense, damp,		23	
		CL	fine to medium grained, light brown, with fine gravel			
	4/6 8/6 11/6 15/6 20/6 17/6		LEAN CLAY; Very stiff, damp, medium plasticity, brown, slight cementation (hardpan)		19	
5			Moist, with fine gravel		37	
1300			Hard, increase in sand content			
	7/6 11/6 11/6		Very stiff		22	
10						
1295			Bottom of Boring at 10 Feet			
15						
1290						
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-54

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/30/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,308 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	2/6 6/6 8/6	SM	SAND, Silty; Medium dense, damp, fine to medium grained, light brown		14	
1305	7/6 10/6 10/6	SC	SAND, Clayey; Medium dense, moist, fine to coarse grained, brown, with fine gravel		20	
5	7/6 9/6 9/6				18	
1300	7/6 9/6 8/6	SM	SAND, Silty; Medium dense, damp, fine to coarse grained, brown, with fine gravel		17	
10						
1295	6/6 7/6 8/6	CL	LEAN CLAY; Stiff, moist, medium plasticity, brown, with fine gravel		15	
15			Bottom of Boring at 15 Feet			
1290						
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-55

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Date: 6/30/11

Drill Type: CME 75

Elevation: 1,308 Feet AMSL

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	2/6 3/6 5/6	SM	SAND, Silty; Loose, damp, fine to medium grained, light brown		8	
1305	7/6 8/6 10/6 10/6 15/6 18/6	CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan) Hard		18 33	
5	6/6 8/6 11/6		Very stiff		19	
1300	3/6 4/6 5/6		Stiff, Increase in moisture content		9	
10			Bottom of Boring at 15 Feet			
1295						
1290						
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-56

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/30/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,309 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	2/6 3/6 4/6	SM	SAND, Silty; Loose, damp, fine to medium grained, light brown		7	
1305	4/6 5/6 8/6 8/6 10/6 10/6	SC	SAND, Clayey; Medium dense, moist, fine to medium grained, brown, with fine gravel		13	
5					20	
1300	6/6 9/6 9/6		Increase in clay content, slight cementation (hardpan)		18	
10						
1295	4/6 11/6 12/6	CL SM	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan)		23	
15			SAND, Silty; Medium dense, moist, fine to coarse grained, grayish brown, with fine gravel			
1290			Bottom of Boring at 15 Feet			
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-57

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/30/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,310 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1310 - 0	9/6 14/6 5/6	SM	SAND, Silty; Medium dense, damp, fine to medium grained, light brown, with fine gravel		19	
1305 - 5	12/6 12/6 17/6 12/6 15/6 18/6	CL	LEAN CLAY, with Sand; Very stiff, moist, low to medium plasticity, brown, with fine gravel, slight cementation (hardpan) Hard		29 33	
1300 - 10	5/6 11/6 11/6		Very stiff		22	
1295 - 15			Bottom of Boring at 10 Feet			
1290 - 20						
1285 - 25						
1280 - 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-58

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/30/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,312 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0						
1310	2/6 4/6 4/6	SM	SAND, Silty; Loose, damp, fine to medium grained, light brown		8	
5	10/6 17/6 19/6 17/6 22/6 20/6	SC	SAND, Clayey; Dense, damp, fine to medium grained, brown, with fine gravel		36 42	
1305						
10	6/6 9/6 9/6	CL	LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel		18	
1300			Bottom of Boring at 10 Feet			
15						
1295						
20						
1290						
25						
1285						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-59

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/30/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,313 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0		SM	SAND, Silty; Loose, damp, fine to medium grained, light brown		9	
1310						
5						
1305		SC	SAND, Clayey; Dense, damp, fine to medium grained, brown, with fine gravel		33	
10						
1300						
15			Medium dense, grayish brown		15	
1295						
20						
1290			Bottom of Boring at 10 Feet			
25						
1285						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-60

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/30/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,315 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1315 0		SM	SAND, Silty; Loose, damp, fine to medium grained, light brown		6	
			With trace clay and fine gravel		6	
1310 5			Moist		6	
		CL				
1305 10			LEAN CLAY; Very stiff, moist, medium plasticity, brown, with fine gravel, cementation (hardpan)		19	
						
1300 15			Stiff		13	
						
1295 20			Bottom of Boring at 15 Feet			
1290 25						
1285 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-61

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/30/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,313 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	5/6 8/6 5/6	SM	SAND, Silty; Medium dense, damp, fine to medium grained, light brown		13	
1310	7/6 10/6 15/6	SC	SAND, Clayey; Medium dense, damp, fine to medium grained,		25	
5	7/6 12/6 18/6	CL	brown, with fine gravel LEAN CLAY; Hard, moist, medium plasticity, brown, with fine gravel, cementation (hardpan)		30	
1305	10/6 11/6 11/6		Very stiff		22	
10	7/6 7/6 5/6		Stiff		12	
1300			Bottom of Boring at 15 Feet			
15						
1295						
20						
1290						
25						
1285						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-62

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/30/11

Auger Type: 6-5/8" Hollow Stem Auger

Elevation: 1,312 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	4/6 5/6 5/6	SM	SAND, Silty; Medium dense, damp, fine to medium grained, light brown		10	
1310						
	10/6 15/6 26/6 16/6 22/6 20/6	CL	LEAN CLAY; Hard, damp, medium plasticity, brown, with fine gravel, cementation (hardpan)		41 42	
5						
	7/6 10/6 12/6 5/6 8/6 10/6 12/6 6/6 18/6 12/6		Very stiff		22 22	
10						
			Hard		30	
1300						
			Bottom of Boring at 13.5 Feet			
15						
1295						
20						
1290						
25						
1285						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-63

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Drill Type: CME 75

Auger Type: 6-5/8" Hollow Stem Auger

Hammer Type: 140lb Auto Trip

Logged By: AR

Date: 6/30/11

Elevation: 1,311 Feet AMSL

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0 1310	2/6 2/6 3/6	SM	SAND, Silty; Loose, damp, fine grained, light brown,		5	
5 1305	12/6 20/6 22/6 18/6 17/6 18/6	CL	LEAN CLAY; Hard, moist, medium plasticity, brown, with fine gravel, cementation (hardpan)		42 35	
10 1300	10/6 13/6 15/6 5/6 10/6 13/6 18/6 6/6 13/6 12/6		Calcification Increase in percent sand With fine coarse gravel		28 31 25	
15 1295			Bottom of Boring at 13.5 Feet			
20 1290						
25 1285						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-64

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/30/11

Auger Type: 8" Hollow Stem Auger

Elevation: 1,310 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater

First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
1310 0		SM	SAND, Silty; Medium dense, damp,		10	
		SC	fine to medium grained, light brown			
			SAND, Clayey; Medium dense,			
			damp, fine to medium grained, light			
			brown		33	
1305 5		CL	LEAN CLAY; Hard, moist, medium		36	
			plasticity, brown, with fine gravel,			
			cementation (hardpan)			
					15	
1300 10		SM	SAND, Silty; Medium dense, damp,			
			fine to coarse grained, brown, with			
			fine gravel			
					10	
1295 15		CL	LEAN CLAY; Stiff, moist, medium			
			plasticity, brown, with fine gravel,			
			slight cementation (hardpan)			
			3/4 inch gravel encountered while			
			drilling from 10 - 15 feet			
			Bottom of Boring at 15 Feet			
1290 20						
1285 25						
1280 30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-65

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/30/11

Auger Type: 8" Hollow Stem Auger

Elevation: 1,309 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0	2/6 4/6 5/6	SM	SAND, Silty; Loose, damp, fine grained, light brown, with trace clay		9	
1305	5/6 8/6 12/6 10/6 11/6 12/6	CL	LEAN CLAY; Very stiff, moist, medium plasticity, with fine gravel, slight cementation (hardpan)		20 23	
1300	4/6 5/6 7/6		Stiff, cementation (hardpan)		12	
1295	1/6 2/6 2/6		Medium stiff, medium to high plasticity		4	
15			Bottom of Boring at 15 Feet			
1290						
20						
1285						
25						
1280						
30						

Notes:



MOORE TWINING ASSOCIATES, INC.

Test Boring: B-66

Project: Proposed Retail Tenant, Lake Elsinore, California

Project Number: D82109.01

Drilled By: AB

Logged By: AR

Drill Type: CME 75

Date: 6/30/11

Auger Type: 8" Hollow Stem Auger

Elevation: 1,308 Feet AMSL

Hammer Type: 140lb Auto Trip

Depth to Groundwater
First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
0						
1305	3/6 8/6 8/6	SM	SAND, Silty; Medium dense, damp, fine to medium grained, light brown, with fine gravel		16	
5	5/6 10/6 9/6 5/6 6/6 5/6	CL	LEAN CLAY, with Sand; Very stiff, moist, medium plasticity, brown, with fine gravel, slight cementation (hardpan) Stiff		19 11	
1300			Hard			
10	11/6 14/6 17/6				31	
1295		SC	SAND, Clayey; Moist, fine to medium grained, brown, with fine gravel			
15			Bottom of Boring at 15 Feet			
1290						
20						
1285						
25						
1280						
30						

Notes:

KEY TO SYMBOLS

Symbol Description

Symbol Description

Strata symbols



fill



lean clay/lean clay, Sandy



silty sand



poorly graded gravel



poorly graded sand with silt



clayey sand



silty clay, Sandy



bedrock



silt



silty sand to clayey sand

Notes:

1. Test Borings were drilled from June 27, 2011 to June 30, 2011 using a CME 75 equipped with 6 5/8" and 8" O.D. Hollow Stem Augers and hand auger equipment.
2. Groundwater was encountered during drilling. See boring logs.
3. Test boring locations were located by pace with reference to the existing site features. Elevations were extrapolated based on our review of the Preliminary Site Topographic Plan provided by Greenberg Farrow
4. These logs are subject to the limitations, conclusions, and recommendations in this report.
5. The "N-value" reported for the California Modified Split Barrel Sampler is the uncorrected field blow count. This value should not be interpreted as an SPT equivalent N-value.
6. Results of tests conducted on samples recovered are reported on the logs. Abbreviations used are:

DD =	Natural dry density (pcf)	LL =	Liquid limit (%)
UC =	Unconfined compression (psf)	PI =	Plasticity index (%)
-4 =	Percent passing #4 sieve (%)	pH =	Soil pH
-200 =	Percent passing #200 sieve (%)	SS =	Soluble sulfates(%)
SR =	Soil resistivity (ohm-cm)	Cl =	Soluble chlorides(%)
c =	Cohesion (psf)	φ =	Angle of internal friction (degrees)
TS =	Field Torvane Shear Strength test (tsf)	N/A =	Not applicable
pcf =	pounds per cubic foot	N/E =	None encountered
psf =	pounds per square foot	BSG =	Below Site Grade

KEY TO SYMBOLS

Symbol Description

Misc. Symbols

 Water table during
drilling

 Boring continues

Soil Samplers

 Standard penetration test

 California Modified
split barrel ring
sampler

APPENDIX C

RESULTS OF LABORATORY TESTS

This appendix contains the individual results of the following tests. The results of the moisture content and dry density tests are included on the test boring logs in Appendix B. These data, along with the field observations, were used to prepare the final test boring logs in Appendix B.

These Included:

Moisture Content
(ASTM D2216)

Dry Density
(ASTM D2216)

Consolidation
(ASTM D2435)

Direct Shear
(ASTM D3080)

Grain-Size Distribution
(ASTM D422)

Atterberg Limits
(ASTM D4318)

Expansion Index
(ASTM D4829)

R-Value
(CTM 301)

Sulfate Content
(ASTM D4327)

Chloride Content
(ASTM D4327)

Resistivity
(ASTM D1125)

pH (ASTM D4972)

To Determine:

Moisture contents representative of field conditions at the time the sample was taken.

Dry unit weight of sample representative of in-situ or in-place undisturbed condition.

The amount and rate at which a soil sample compresses when loaded, and the influence of saturation on its behavior.

Soil shearing strength under varying loads and/or moisture conditions

Size and distribution of soil particles, i.e., sand, gravel and fines (silt and clay).

The consistency and "stickiness," as well as the range of moisture contents within which the material is "workable"

Swell potential of soil with increases in moisture content.

The capacity of a subgrade or subbase to support a pavement section designed to carry a specified traffic load.

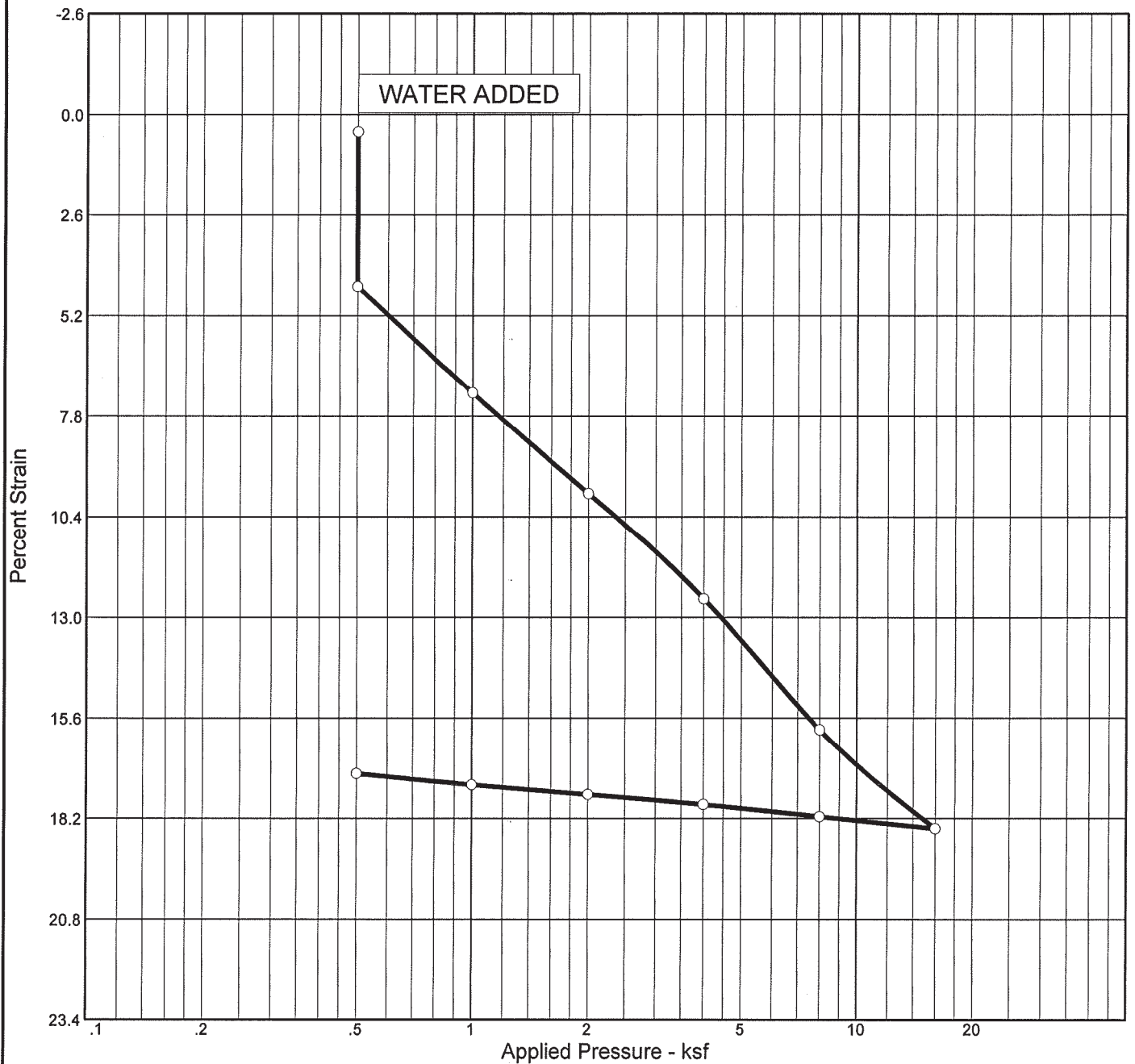
Percentage of water-soluble sulfate as (SO₄) in soil samples. Used as an indication of the relative degree of sulfate attack on concrete and for selecting the cement type.

Percentage of soluble chloride in soil. Used to evaluate the potential attack on encased reinforcing steel.

The potential of the soil to corrode metal.

The acidity or alkalinity of subgrade material.

CONSOLIDATION TEST REPORT



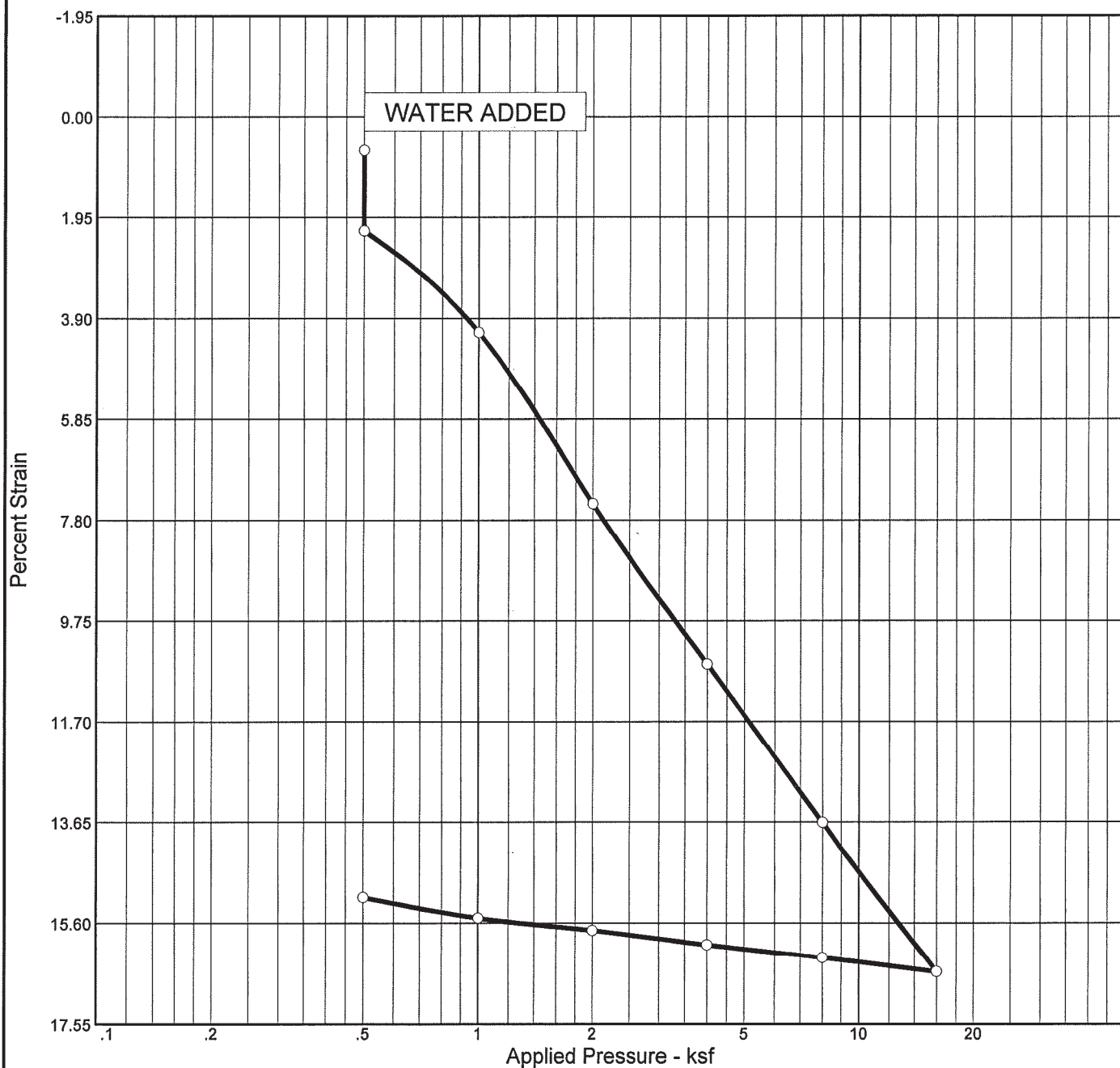
Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P _c (ksf)	C _c	C _s	Swell Press. (ksf)	Clpse. %	e ₀
Sat.	Moist.											
44.5 %	10.4 %	102.4			2.65		7.26	0.13	0.02		4.0	0.616

MATERIAL DESCRIPTION										USCS	AASHTO
Lean Clay, Sandy											

Project No. D82109.01			Client:	Remarks:
Project: Retail Tenant				
Source:	Sample No.: B-11	Elev./Depth: 8.5-10 Feet		
Moore Twining Associates, Inc.				
Fresno, CA				Figure

Figure

CONSOLIDATION TEST REPORT



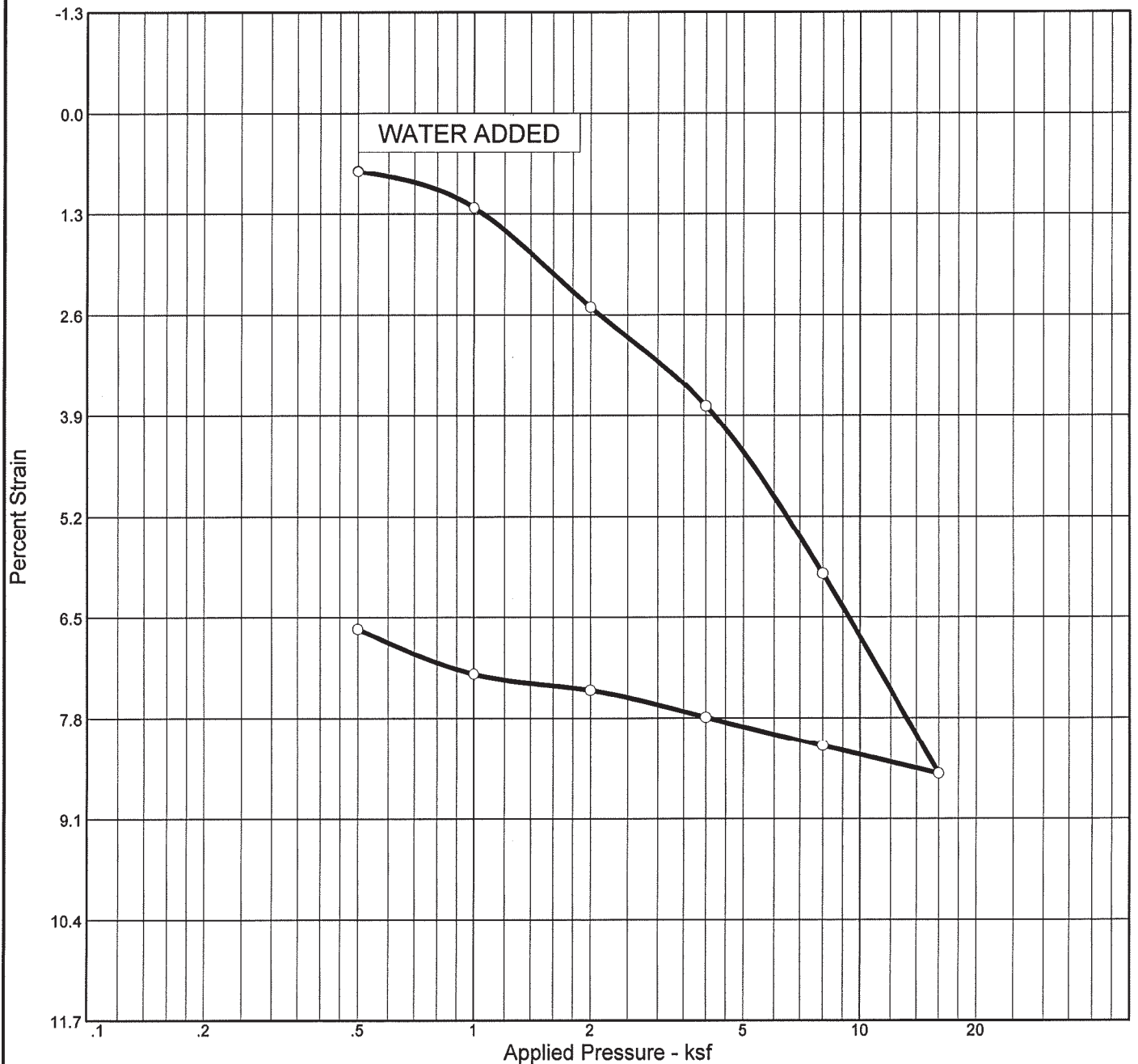
Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P _c (ksf)	C _c	C _s	Swell Press. (ksf)	Clpse. %	e ₀
Sat.	Moist.											
41.2 %	10.2 %	100.0			2.65		0.65	0.16	0.02		1.6	0.655

MATERIAL DESCRIPTION	USCS	AASHTO
Silty Clay, Sandy		

Project No. D82109.01	Client:
Project: Retail Tenant	
Source:	Sample No.: B-14 Elev./Depth: 3.5-5 Feet
Moore Twining Associates, Inc. Fresno, CA	

Remarks:
Figure

CONSOLIDATION TEST REPORT

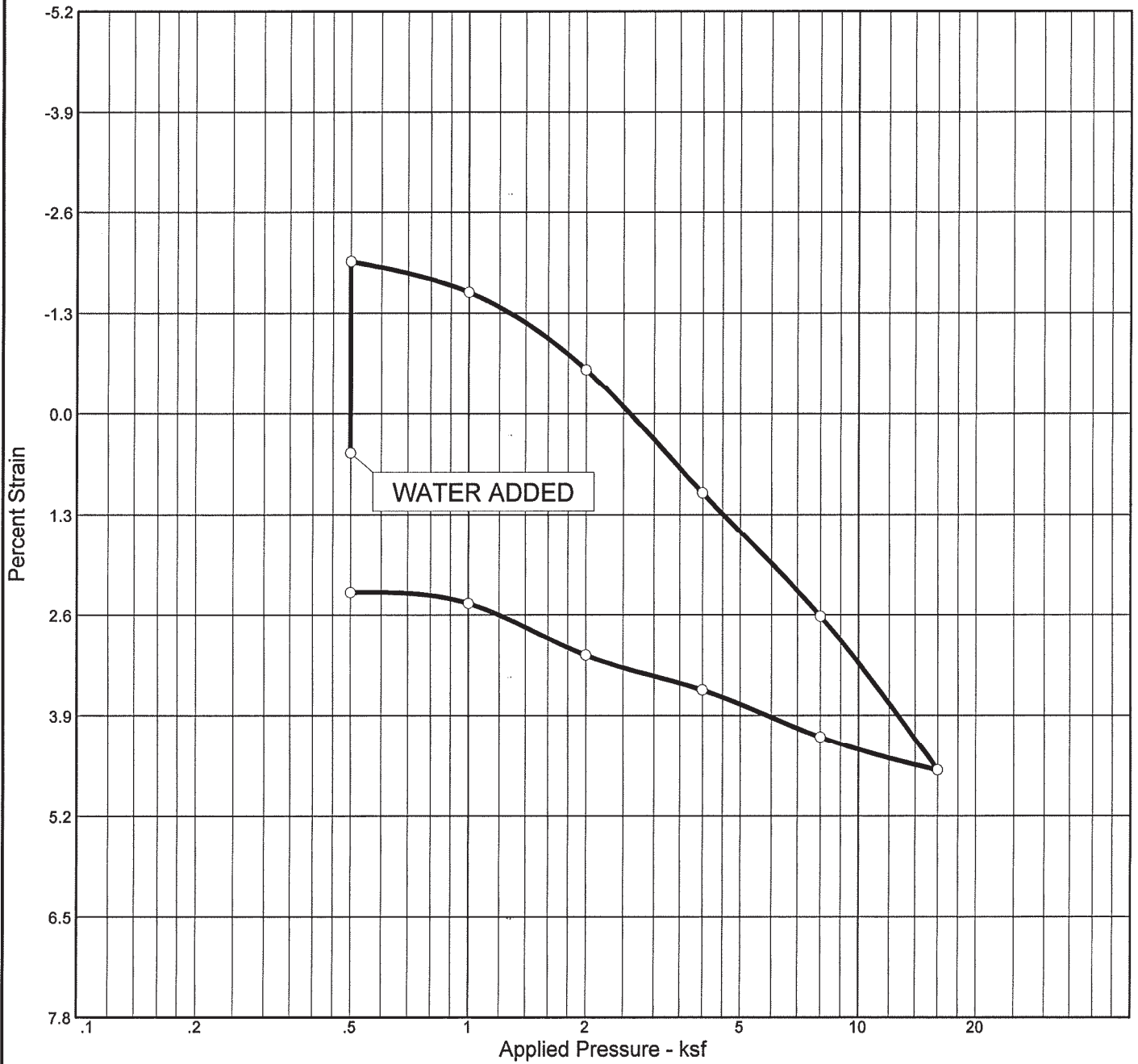


Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P _c (ksf)	C _c	C _s	Swell Press. (ksf)	Clpse. %	e _o
Sat.	Moist.											
66.4 %	10.0 %	118.2			2.65		2.73	0.12	0.02		0.1	0.400

MATERIAL DESCRIPTION										USCS	AASHTO
Silty Clay, Sandy											

Project No. D82109.01 Client: Project: Retail Tenant Source: Sample No.: B-16 Elev./Depth: 3.5-5 Feet Moore Twining Associates, Inc. Fresno, CA	Remarks: Figure
---	--

CONSOLIDATION TEST REPORT

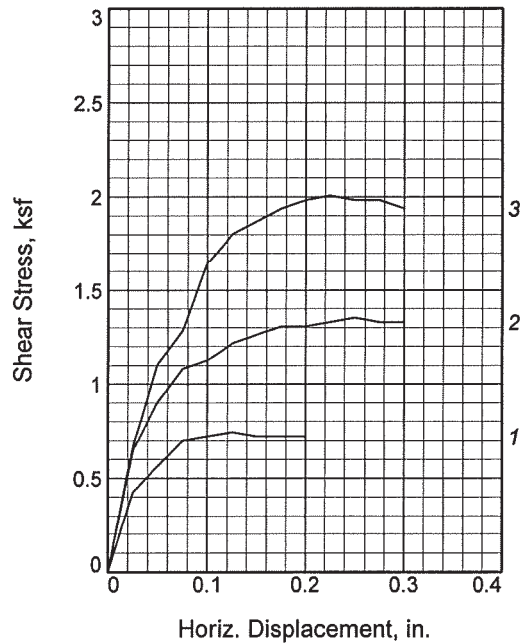
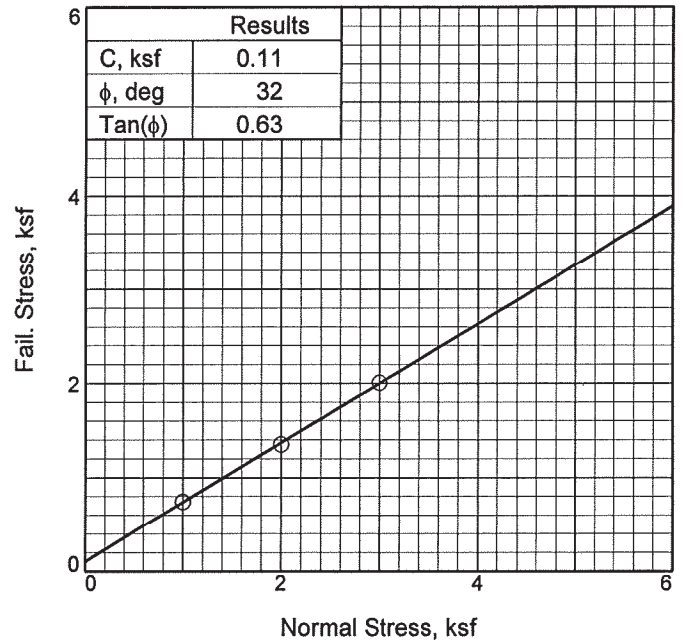
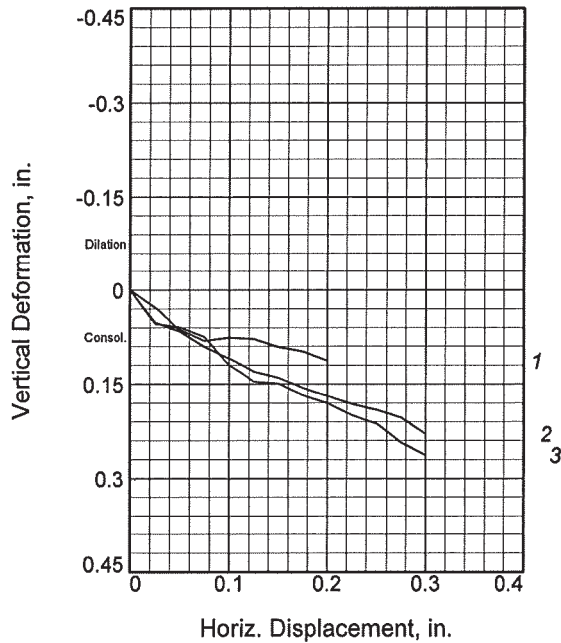


Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P _C (ksf)	C _c	C _s	Swell Press. (ksf)	Swell %	e _o
Sat.	Moist.											
65.8 %	7.5 %	127.1			2.65		2.19	0.09	0.02	3.23	2.5	0.302

MATERIAL DESCRIPTION	USCS	AASHTO
Lean Clay		

Project No. D82109.01	Client:	Remarks:
Project: Retail Tenant		
Source:	Sample No.: B-22 Elev./Depth: 2-3.5 Feet	
Moore Twining Associates, Inc. Fresno, CA		

Figure



Sample No.		1	2	3
Initial	Water Content, %	11.9	12.6	11.6
	Dry Density, pcf	116.5	120.0	112.4
	Saturation, %	75.4	87.9	65.0
	Void Ratio	0.4196	0.3785	0.4719
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	17.8	17.3	16.1
	Dry Density, pcf	118.2	122.1	116.6
	Saturation, %	118.0	129.3	102.2
	Void Ratio	0.3995	0.3549	0.4185
	Diameter, in.	2.42	2.42	2.42
	Height, in.	0.99	0.98	0.96
Normal Stress, ksf		1.00	2.00	3.00
Fail. Stress, ksf		0.74	1.35	2.01
Displacement, in.		0.13	0.25	0.23
Ult. Stress, ksf				
Displacement, in.				
Strain at peak, %		5.2	10.3	9.3

Sample Type:

Description: Silty Clay, Sandy

Assumed Specific Gravity= 2.65

Remarks:

Figure _____

Client:

Project: Retail Tenant

Sample Number: B-16

Depth: 3.5-5 Feet

Proj. No.: D82109.01

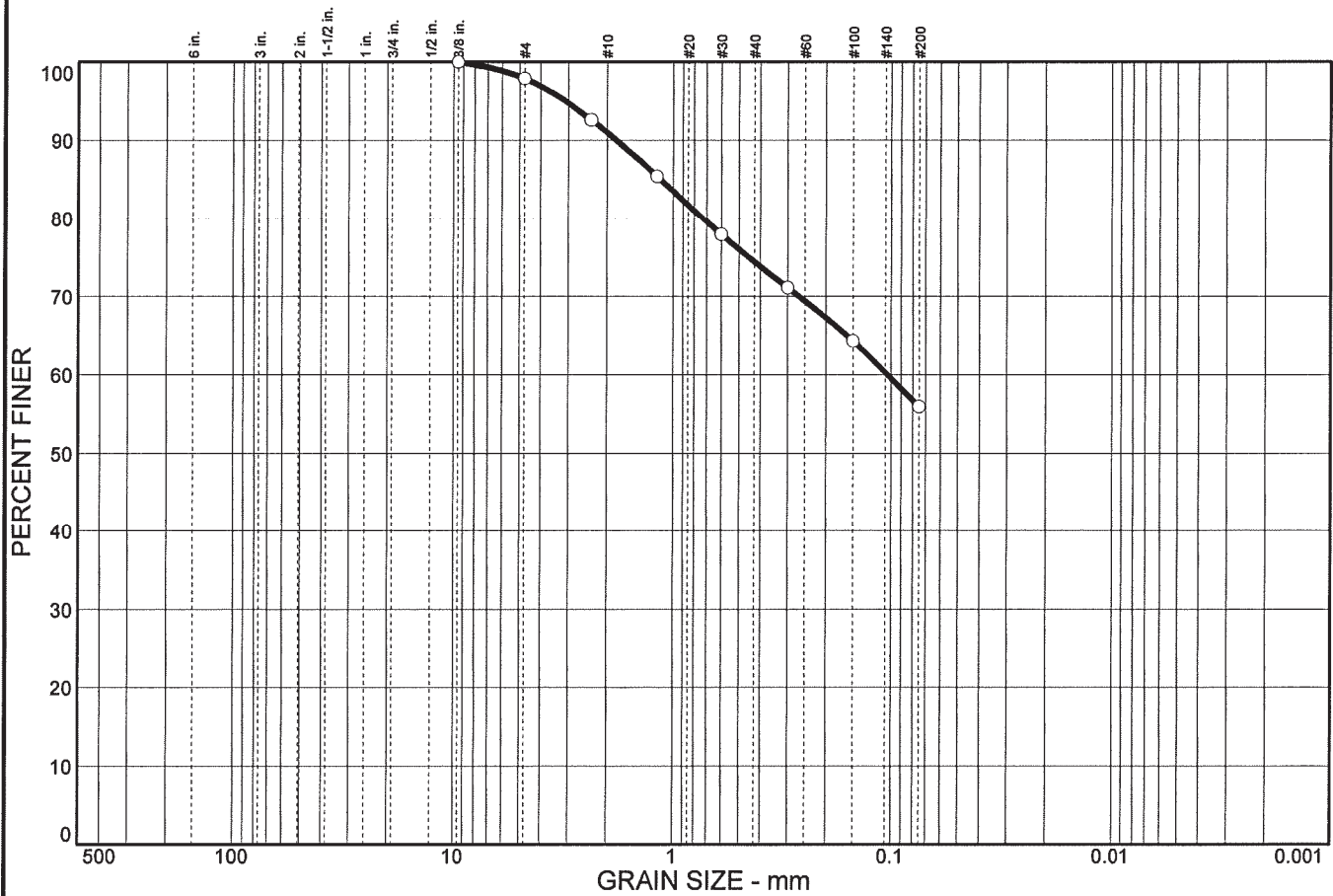
Date Sampled: 06/27/11

DIRECT SHEAR TEST REPORT

Moore Twining Associates, Inc.

Tested By: TD _____ **Checked By:** MS _____

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.1	6.9	16.6	18.5	55.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8 in.	100.0		
#4	97.9		
#8	92.6		
#16	85.4		
#30	77.9		
#50	71.1		
#100	64.3		
#200	55.9		

* (no specification provided)

Material Description
Sandy lean clay

Atterberg Limits
PL= 13 LL= 28 PI= 15

Coefficients
D₈₅= 1.14 D₆₀= 0.104 D₅₀=
D₃₀= D₁₅= D₁₀=
C_u= C_c=

Classification
USCS= CL AASHTO=

Remarks

Sample No.: B-1
Location:

Source of Sample:

Date: 06/27/11
Elev./Depth: 0-5 Feet

Moore Twining Associates, Inc.

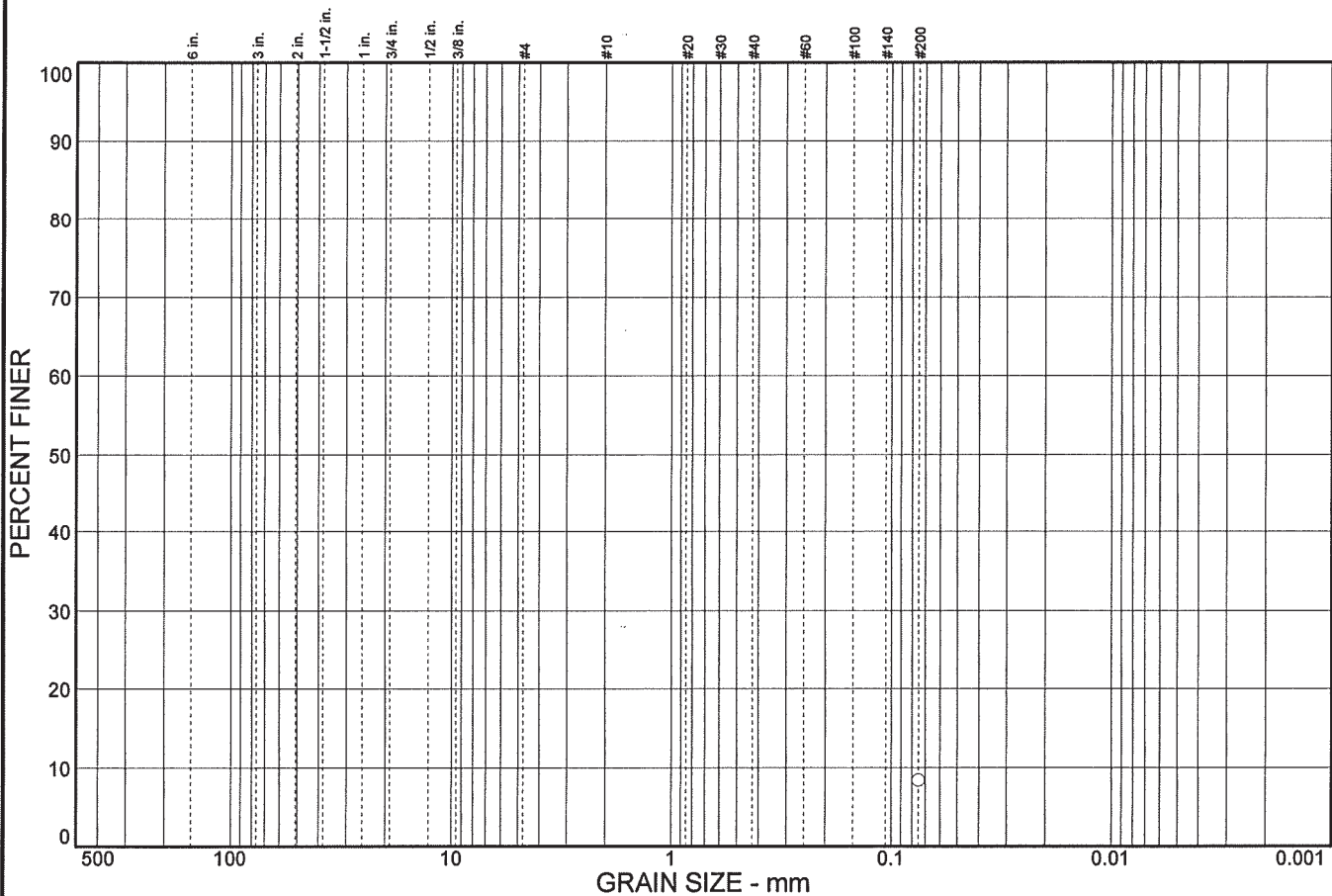
Fresno, CA

Client:
Project: Retail Tenant

Project No: D82109.01

Figure

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
						8.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#200	8.4		

* (no specification provided)

Material Description
Poorly Graded Sand with Silt

Atterberg Limits
 PL= NP LL= NV PI= NP

Coefficients
 D₈₅= D₆₀= D₅₀=
 D₃₀= D₁₅= D₁₀=
 C_u= C_c=

Classification
 USCS= SP-SM AASHTO=

Remarks

Sample No.: B-11
Location:

Source of Sample:

Date: 06/27/11
Elev./Depth: 14-15 Feet

Moore Twining Associates, Inc.

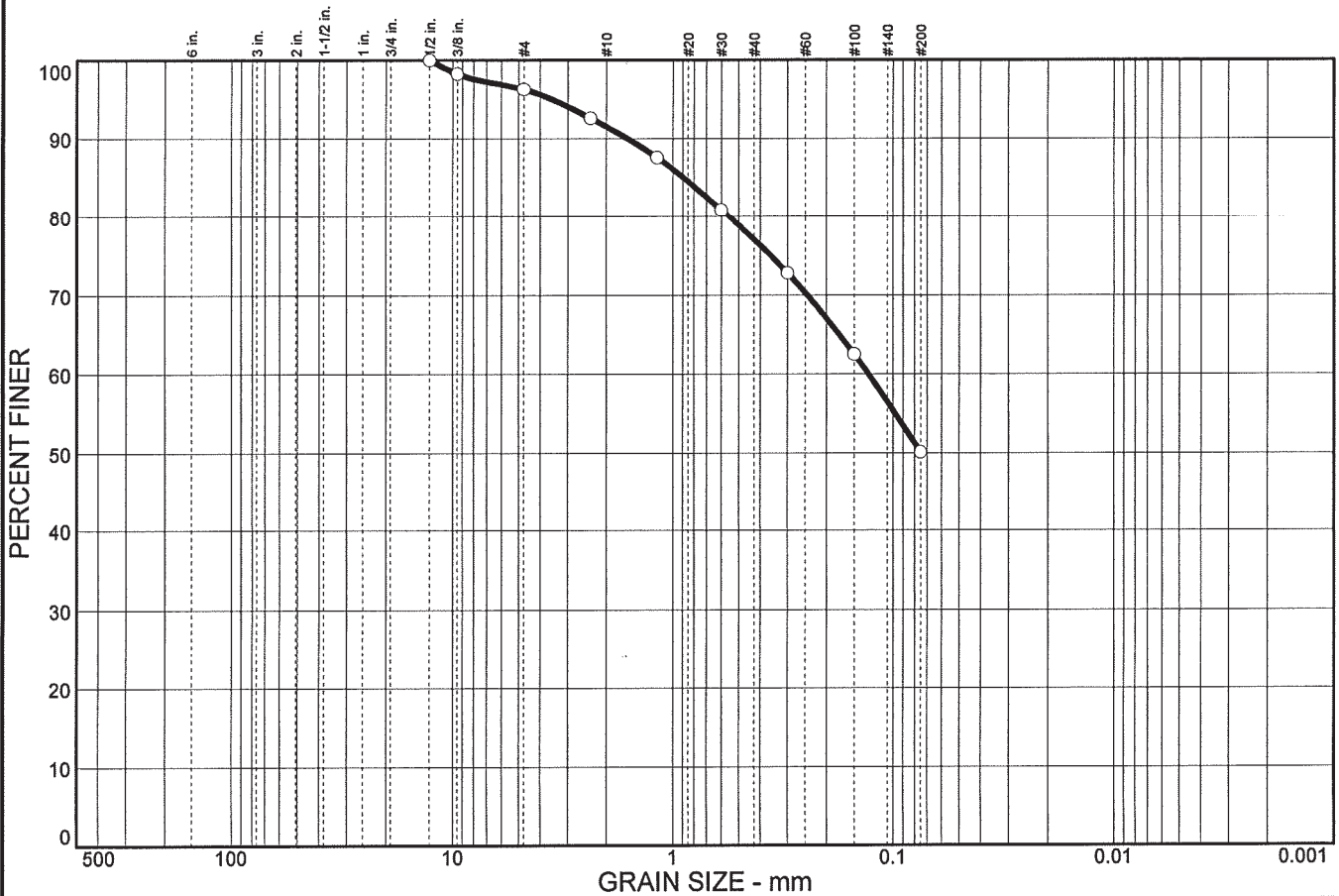
Fresno, CA

Client:
Project: Retail Tenant

Project No: D82109.01

Figure

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.7	4.8	14.5	26.9	50.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2 in.	100.0		
3/8 in.	98.3		
#4	96.3		
#8	92.6		
#16	87.6		
#30	80.9		
#50	72.8		
#100	62.5		
#200	50.1		

* (no specification provided)

Material Description
 Silty Clay, Sandy

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₈₅= 0.890 D₆₀= 0.130 D₅₀=
 D₃₀= D₁₅= D₁₀=
 C_u= C_c=

Classification
 USCS= AASHTO=

Remarks

Sample No.: B-14
Location:

Source of Sample:

Date: 06/27/11
Elev./Depth: 3.5-5 Feet

Moore Twining Associates, Inc.

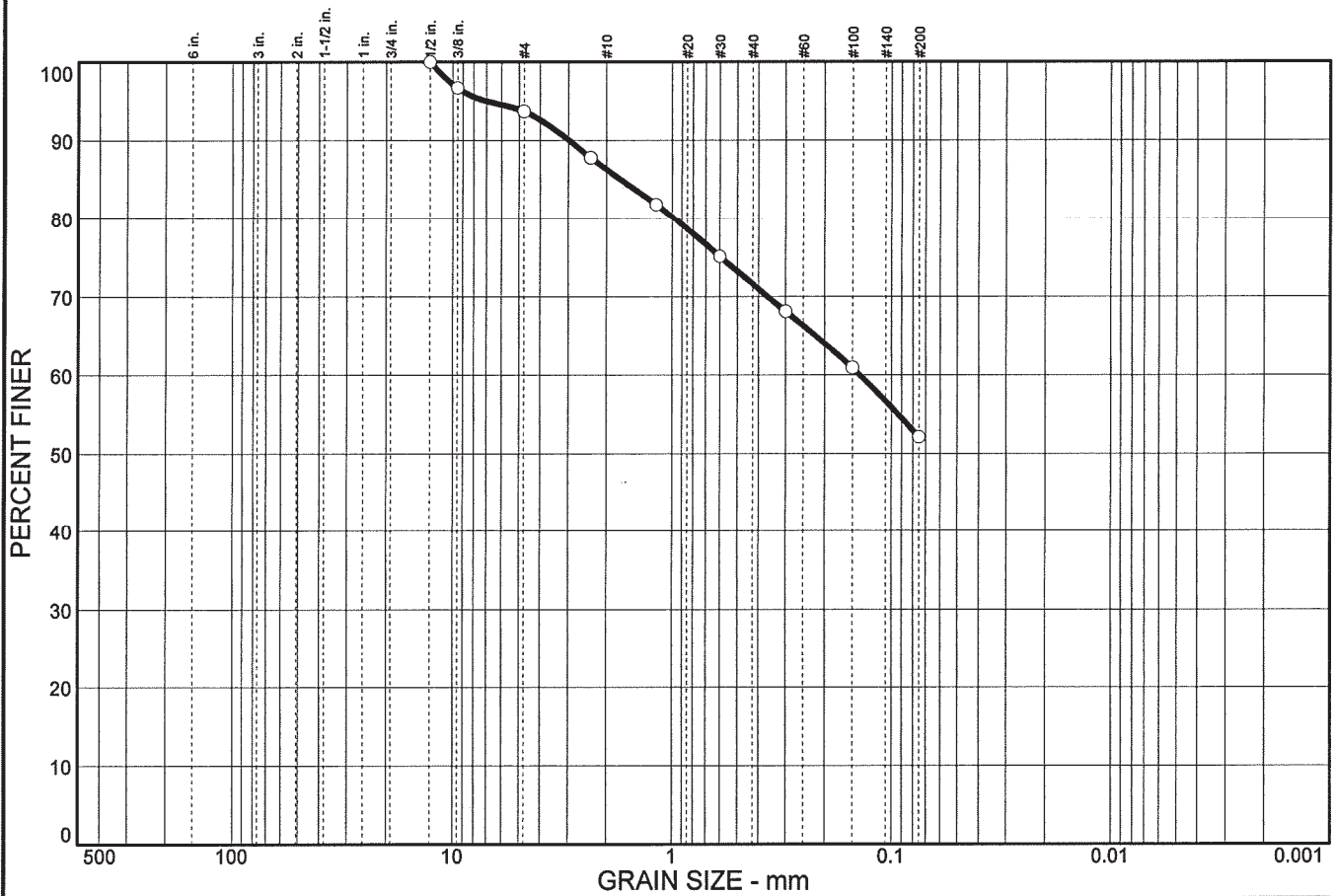
Fresno, CA

Client:
Project: Retail Tenant

Project No: D82109.01

Figure

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	6.3	7.4	14.7	19.5	52.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2 in.	100.0		
3/8 in.	96.7		
#4	93.7		
#8	87.8		
#16	81.8		
#30	75.1		
#50	68.1		
#100	60.9		
#200	52.1		

* (no specification provided)

Material Description
 Sandy Silty Clay

Atterberg Limits
 PL= 17 LL= 24 PI= 7

Coefficients
 D₈₅= 1.71 D₆₀= 0.139 D₅₀=
 D₃₀= D₁₅= D₁₀=
 C_u= C_c=

Classification
 USCS= CL-ML AASHTO=

Remarks

Sample No.: B-16
Location:

Source of Sample:

Date: 06/27/11
Elev./Depth: 20-21.5 Feet

Moore Twining Associates, Inc.

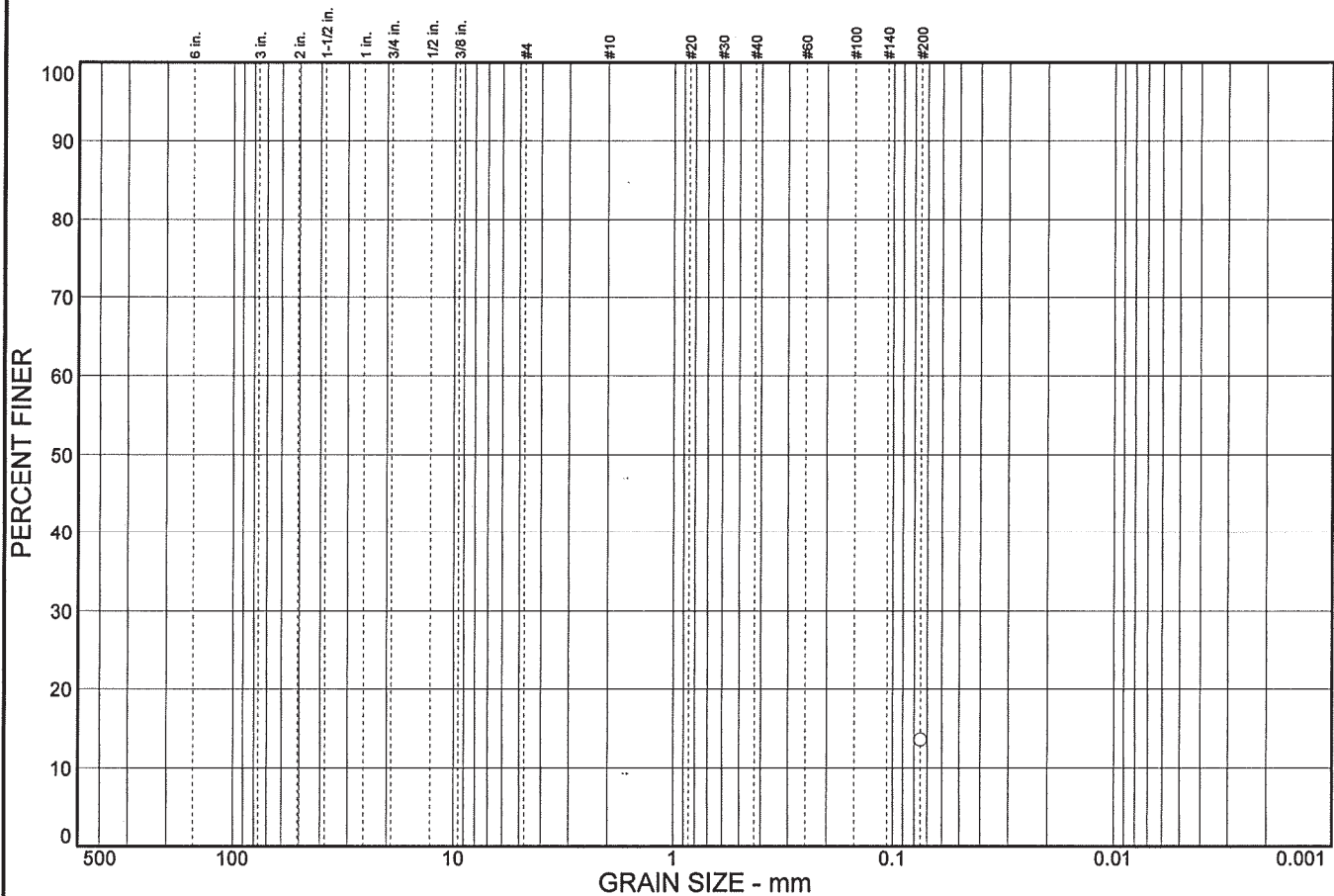
Fresno, CA

Client:
Project: Retail Tenant

Project No: D82109.01

Figure

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
						13.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#200	13.6		

* (no specification provided)

Material Description
Poorly Graded Sand with Silt

Atterberg Limits
 PL= NP LL= NV PI= NP

Coefficients
 D₈₅= D₆₀= D₅₀=
 D₃₀= D₁₅= D₁₀=
 C_u= C_c=

Classification
 USCS= SP-SM AASHTO=

Remarks

Sample No.: B-17
Location:

Source of Sample:

Date: 06/27/11
Elev./Depth: 8.5-10 Feet

Moore Twining Associates, Inc.

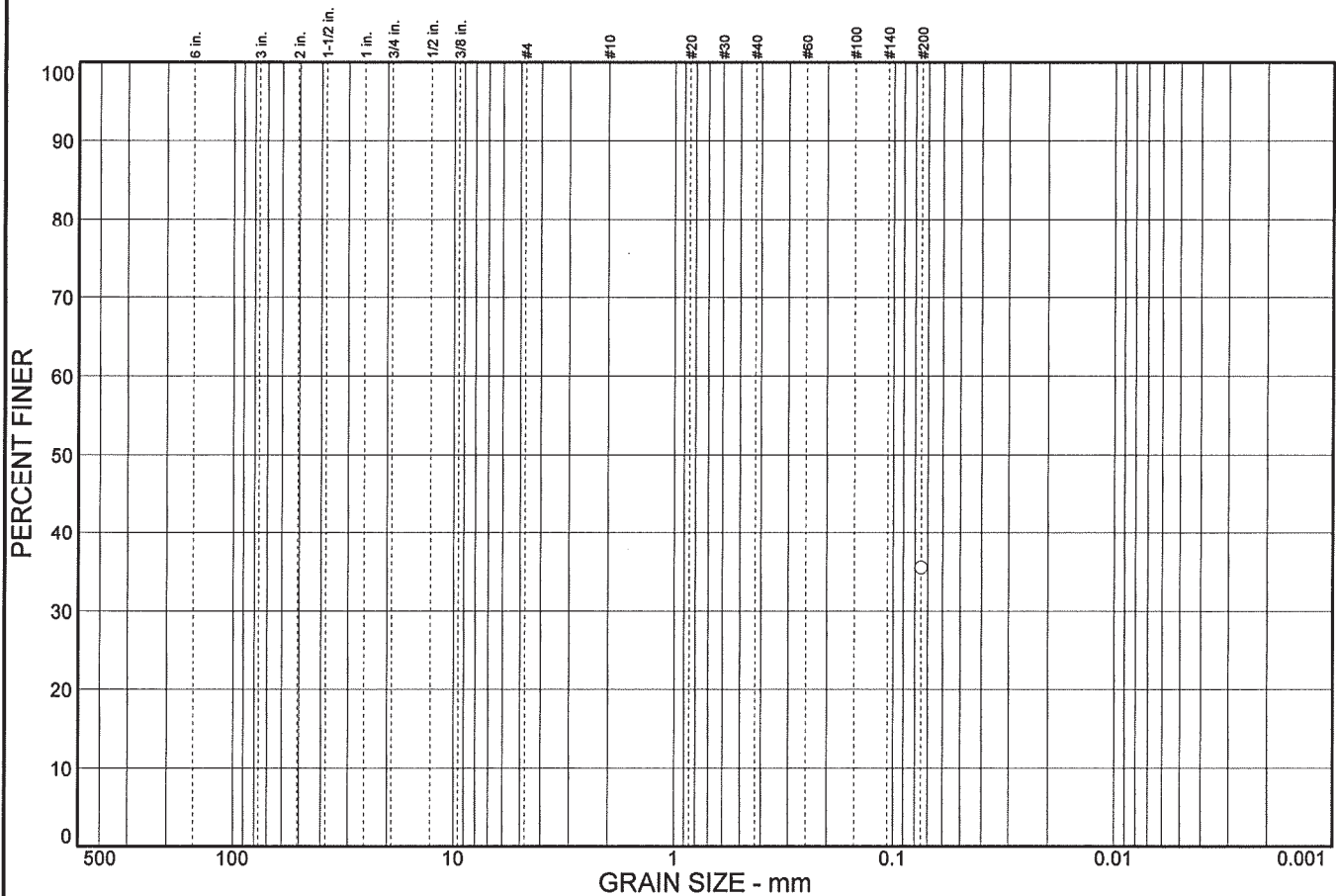
Fresno, CA

Client:
Project: Retail Tenant

Project No: D82109.01

Figure

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
						35.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#200	35.5		

* (no specification provided)

Material Description

Silty Sand

PL= NP **Atterberg Limits** LL= NV PI= NP

Coefficients

D₈₅= D₆₀= D₅₀=
D₃₀= D₁₅= D₁₀=
C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample No.: B-19
Location:

Source of Sample:

Date: 06/27/11
Elev./Depth: 15.75-16.5

Moore Twining Associates, Inc.

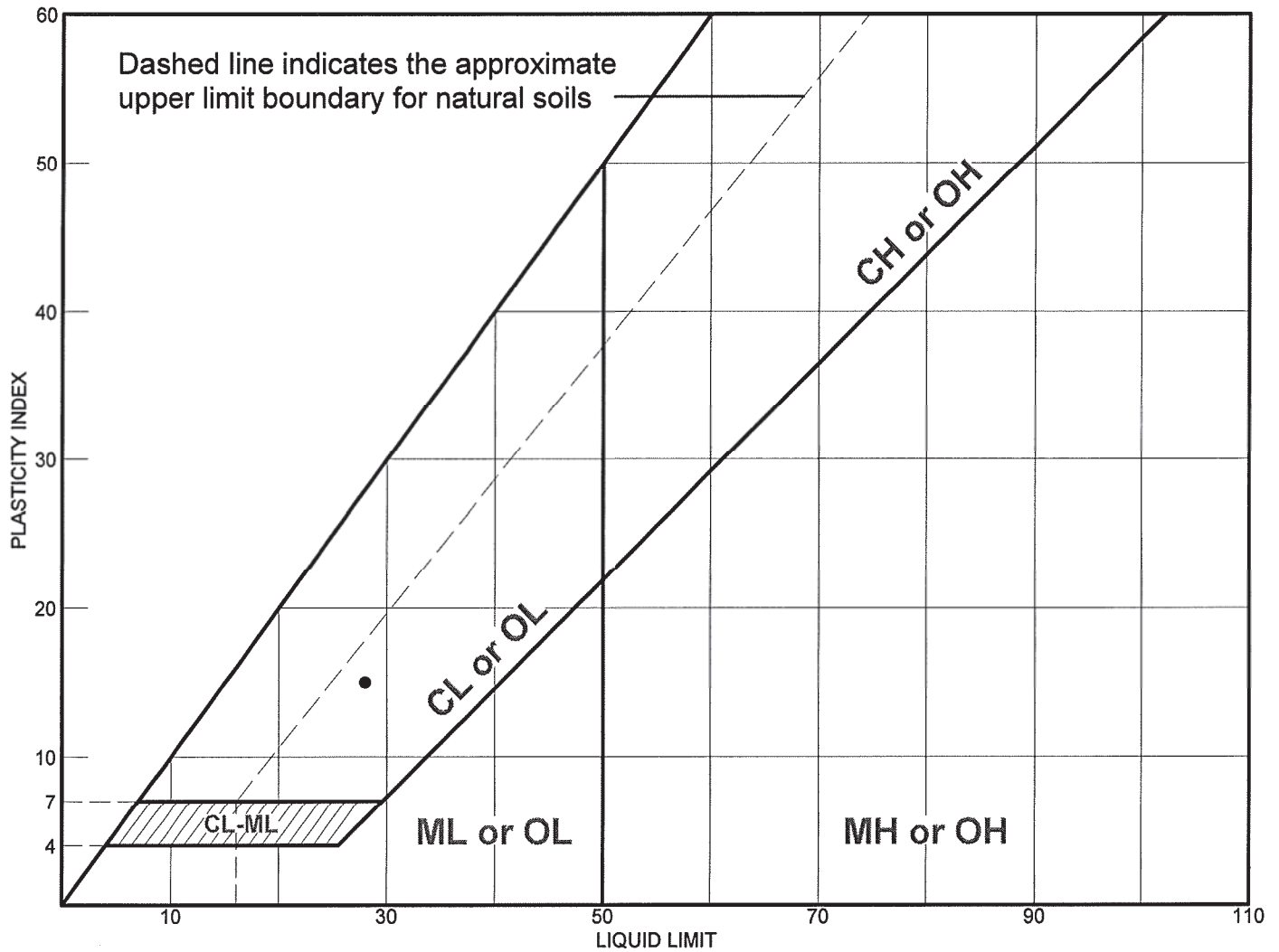
Fresno, CA

Client:
Project: Retail Tenant

Project No: D82109.01

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
•	Sandy lean clay	28	13	15	74.4	55.9	CL

Project No. D82109.01

Client:

Project: Retail Tenant

• Source:

Sample No.: B-1

Elev./Depth: 0-5 Feet

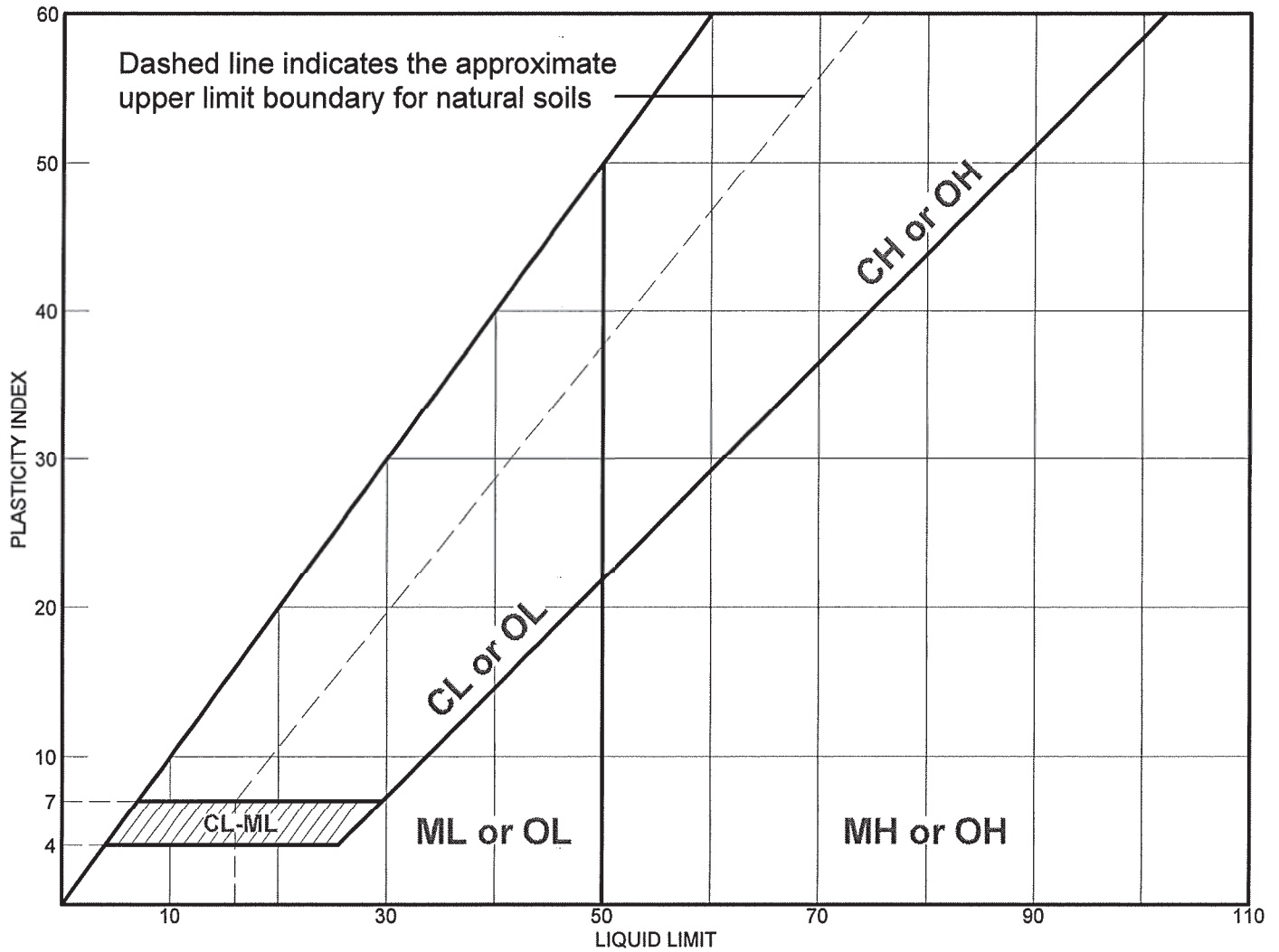
Remarks:

•

Moore Twining Associates, Inc.
Fresno, CA

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT

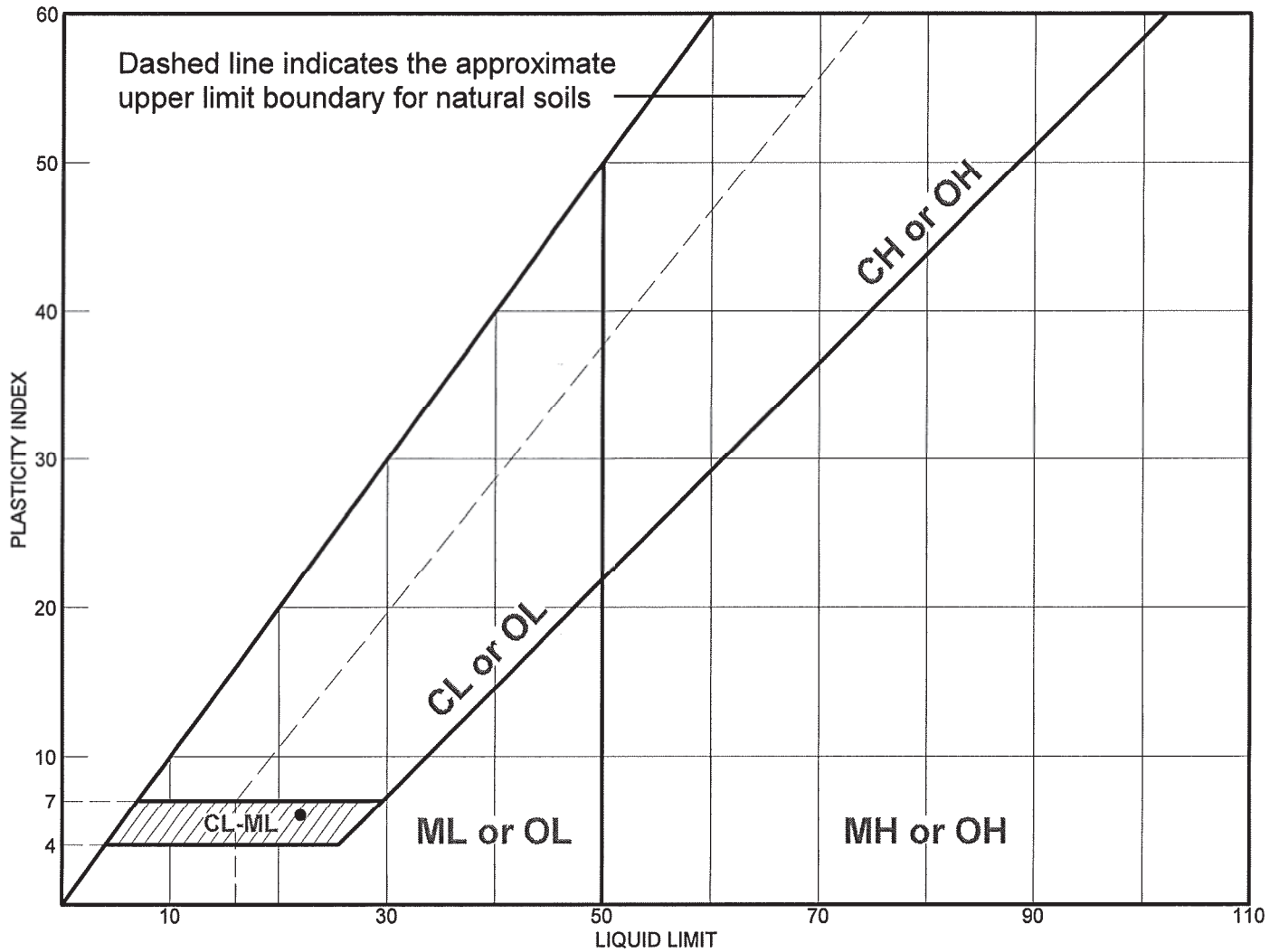


	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Poorly Graded Sand with Silt	NV	NP	NP		8.4	SP-SM

Project No. D82109.01 Client: Project: Retail Tenant Source: Sample No.: B-11 Elev./Depth: 14-15 Feet	Remarks: ●
Moore Twining Associates, Inc. Fresno, CA	

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT

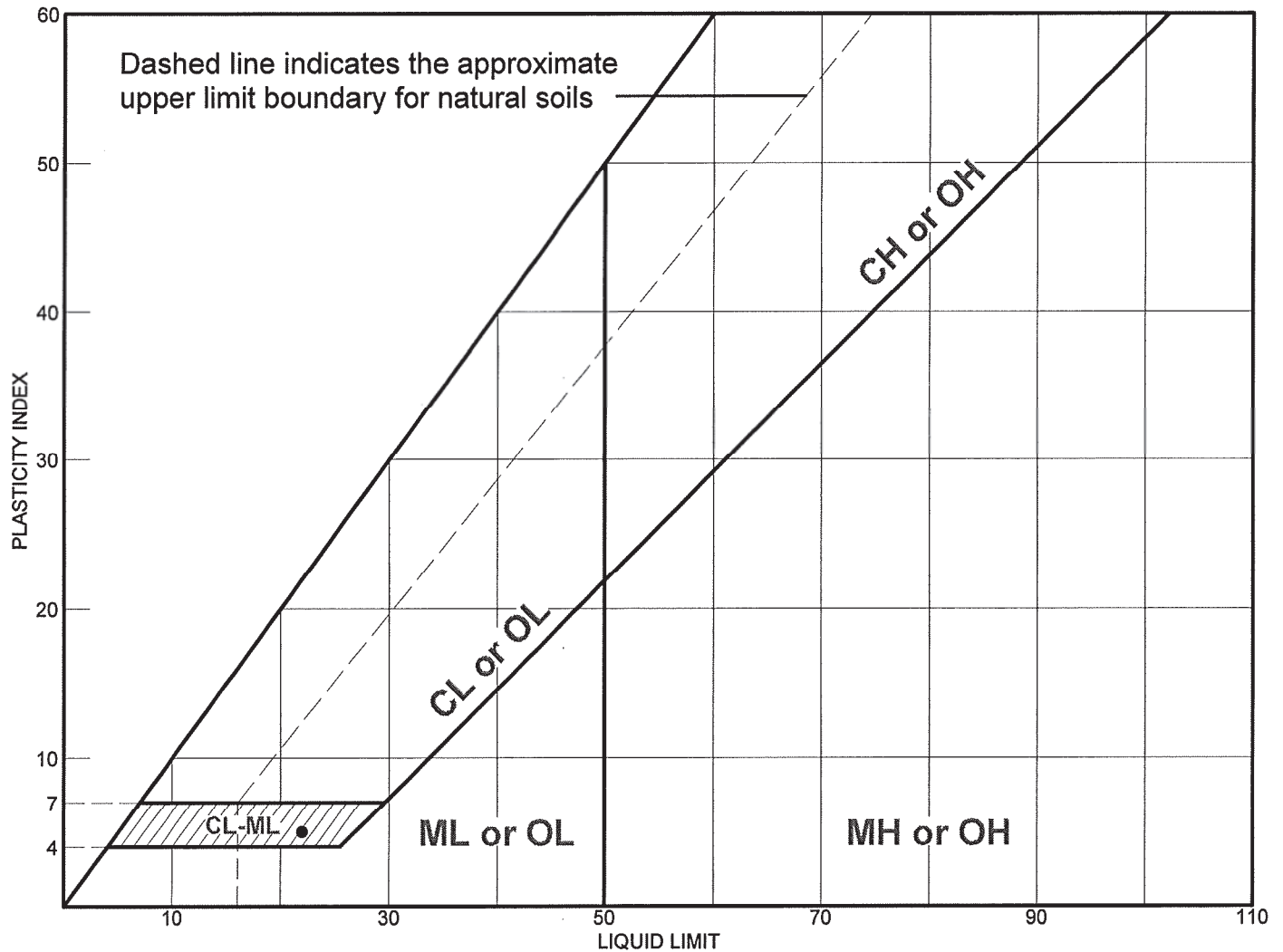


	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Sandy Silty Clay	22	16	6			

Project No. D82109.01 Client: Project: Retail Tenant Source: Sample No.: B-14 Elev./Depth: 5-6.5 Feet	Remarks: ●
Moore Twining Associates, Inc. Fresno, CA	

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
•	Sandy Silty Clay	22	17	5			

Project No. D82109.01

Client:

Project: Retail Tenant

• Source:

Sample No.: B-16

Elev./Depth: 8.5-10 Feet

Remarks:

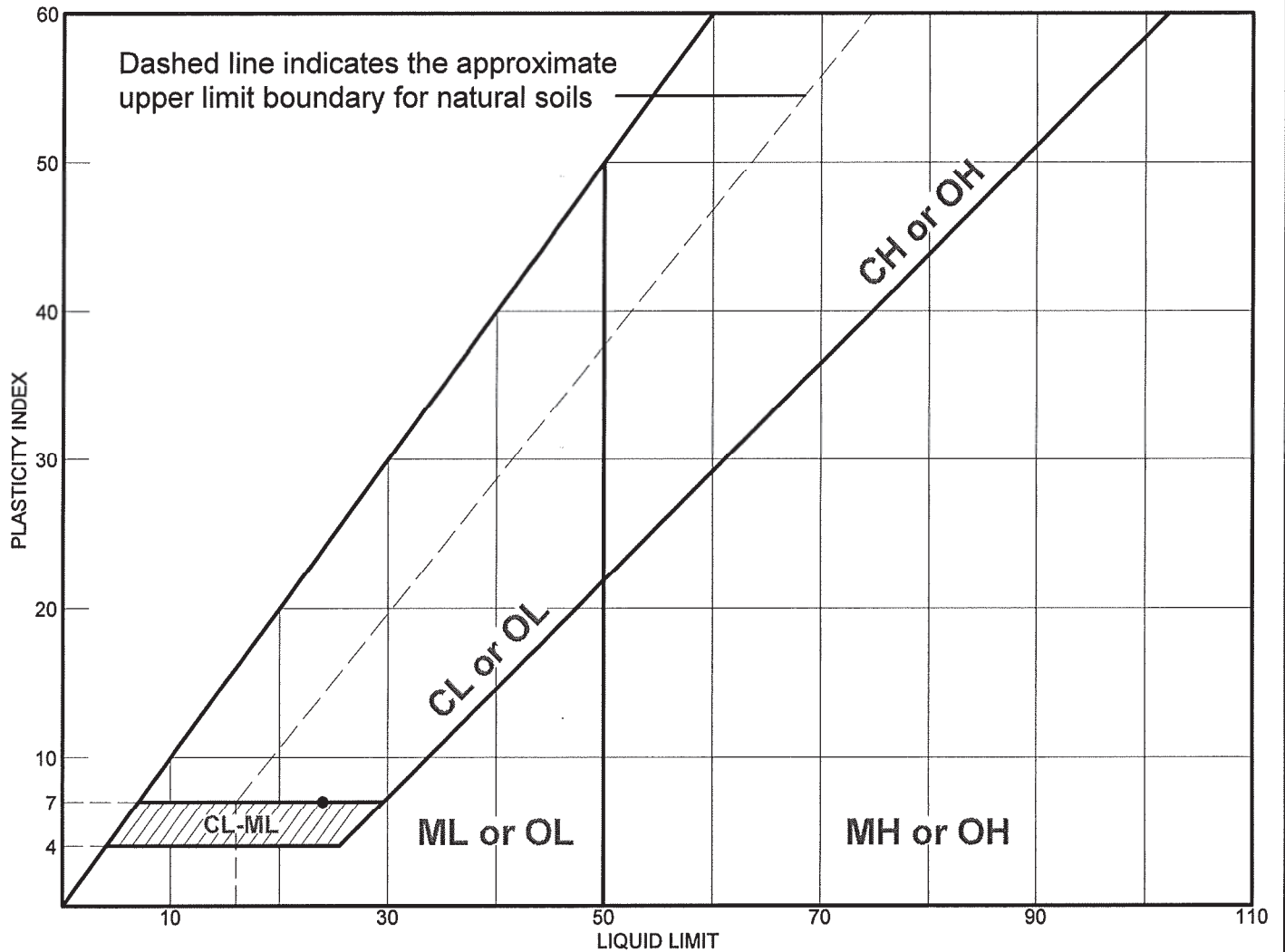
•

Moore Twining Associates, Inc.

Fresno, CA

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Sandy Silty Clay	24	17	7	71.6	52.1	CL-ML

Project No. D82109.01

Client:

Project: Retail Tenant

● Source:

Sample No.: B-16

Elev./Depth: 20-21.5 Feet

Remarks:

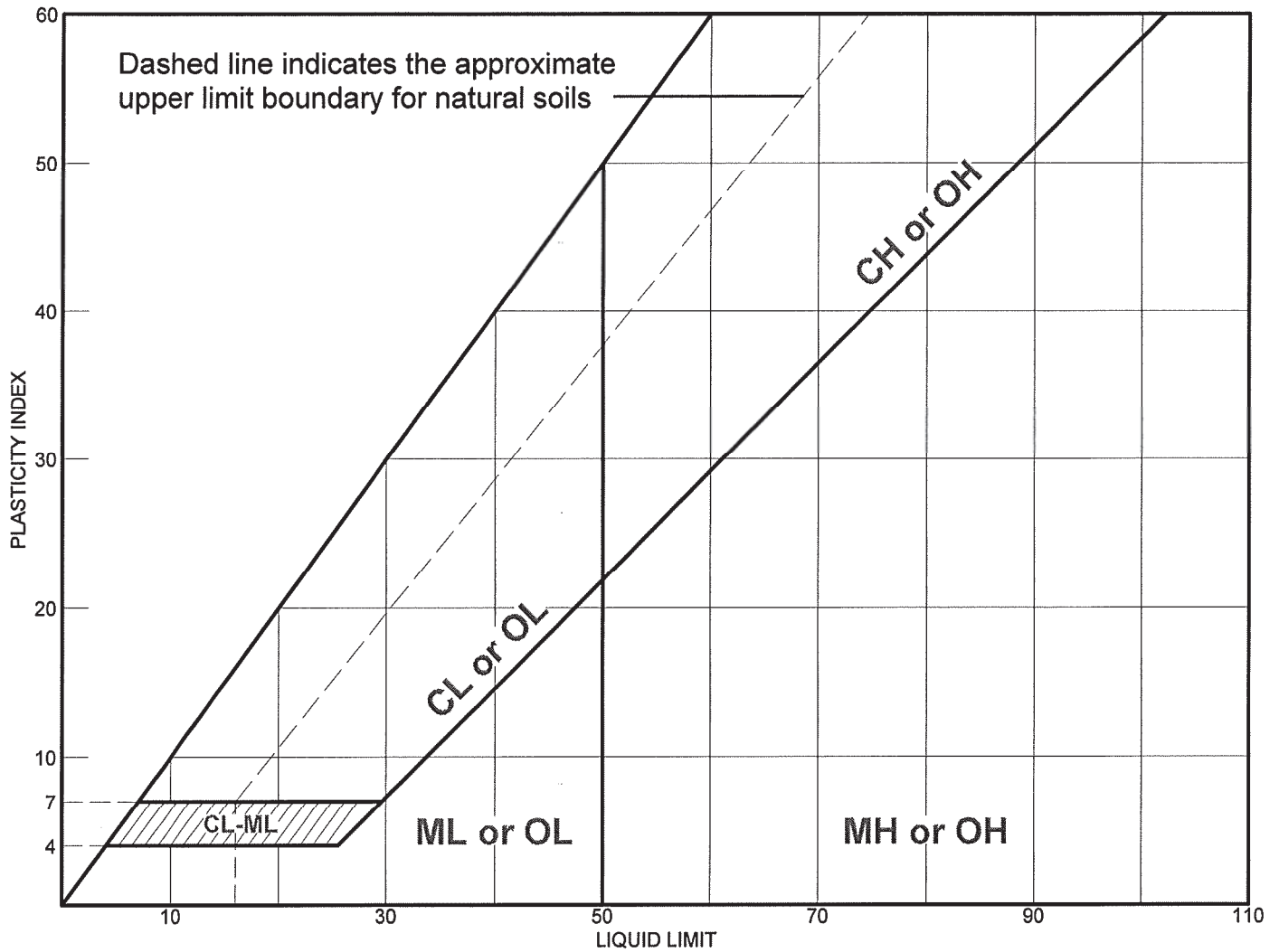
●

Moore Twining Associates, Inc.

Fresno, CA

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Poorly Graded Sand with Silt	NV	NP	NP		13.6	SP-SM

Project No. D82109.01

Client:

Project: Retail Tenant

● **Source:**

Sample No.: B-17

Elev./Depth: 8.5-10 Feet

Remarks:

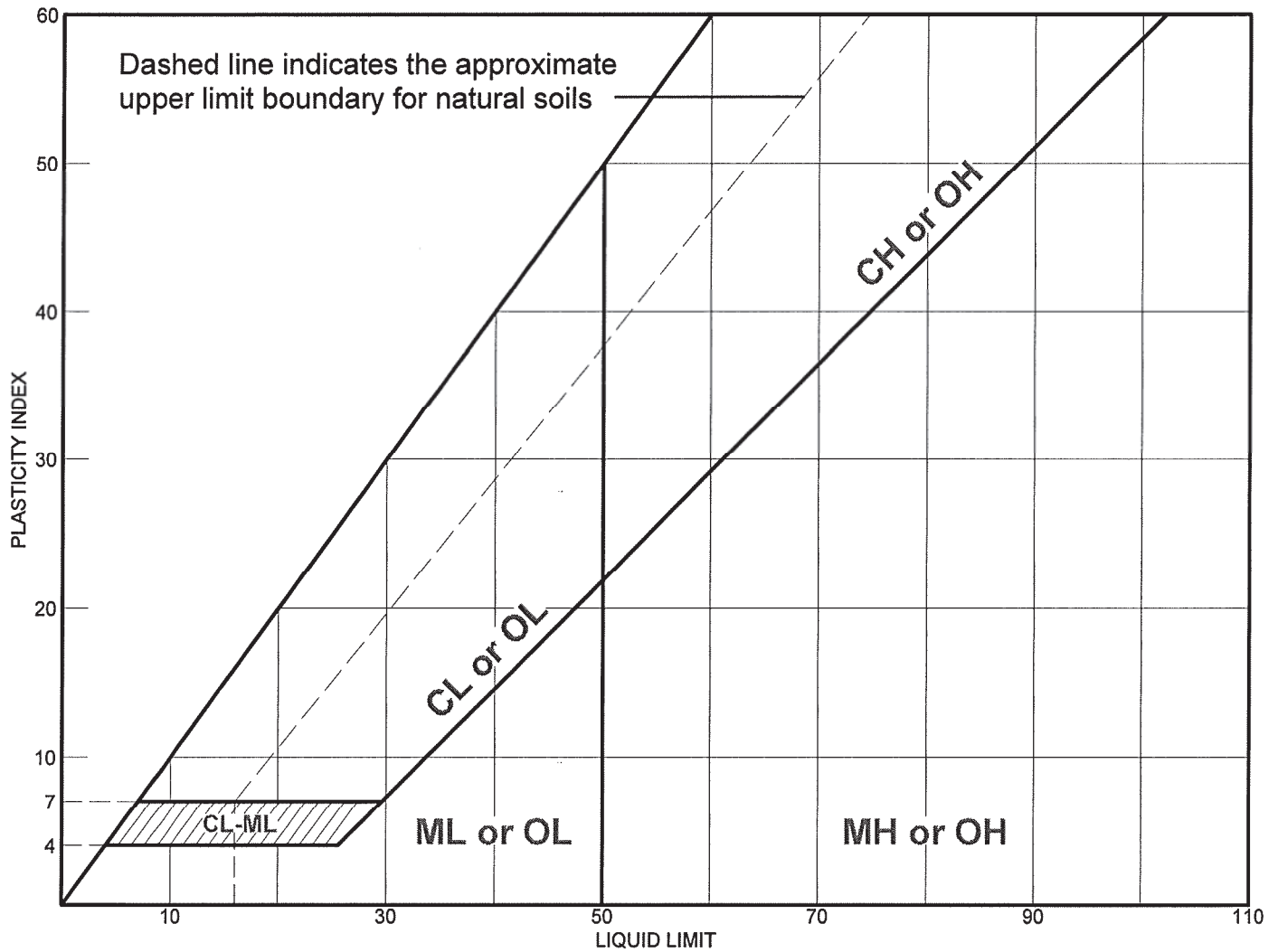
●

Moore Twining Associates, Inc.

Fresno, CA

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silty Sand	NV	NP	NP		35.5	SM

Project No. D82109.01

Client:

Project: Retail Tenant

● **Source:**

Sample No.: B-19

Elev./Depth: 15.75-16.5 Feet

Remarks:

●

Moore Twining Associates, Inc.

Fresno, CA

Figure



MOORE TWINING ASSOCIATES, INC.

EXPANSION INDEX TEST, ASTM D4829

MTA PROJECT NAME: Retail Tenant REPORT DATE: 7/5/2011
TEST DATE: 7/3/2011
MTA PROJECT NO.: D82109.01
SAMPLE I.D.: B-1 @ 0-5 Feet
SAMPLED BY: AH
SAMPLE DATE: 6/27/2011 TESTED BY: TD

MATERIALS DESCRIPTION: Lean Clay, Sandy

% PASSING # 4 SIEVE 100

Initial Moisture Determination:

Pan + Wet Soil Wt., gm	<u>250.0</u>
Pan + Dry Soil Wt., gm	<u>233.7</u>
Pan Wt., gm	<u>0.0</u>
Initial % Moisture Content	<u>7.0</u>

Final Moisture Determination:

Wet Soil Wt., lbs	<u>0.9750</u>
Dry Soil Wt., lbs	<u>0.8948</u>
Final % Moisture Content	<u>9.0</u>

Initial Expansion Data:

Ring + Sample Wt., lbs	<u>0.9572</u>
Ring Wt., lbs	<u>0.0000</u>
Remolded Wt., lbs	<u>0.9572</u>
Remolded Wet Density, pcf	<u>131.6</u>
Remolded Dry Density, pcf	<u>123.0</u>

Final Expansion Data:

Ring + Sample Wt., lbs	<u>0.9750</u>
Ring Wt., lbs	<u>0.0000</u>
Remolded Wt., lbs	<u>0.9750</u>
Remolded Wet Density, pcf	<u>129.7</u>
Remolded Dry Density, pcf	<u>119.0</u>

Expansion Data:

Initial Gage Reading, in:	<u>0.0500</u>
Final Gage Reading, in:	<u>0.0841</u>
Expansion, in:	<u>0.0341</u>
Expansion Index	<u>34</u>

Initial Volume	Final Volume
<u>0.00727222</u>	<u>0.00752</u>

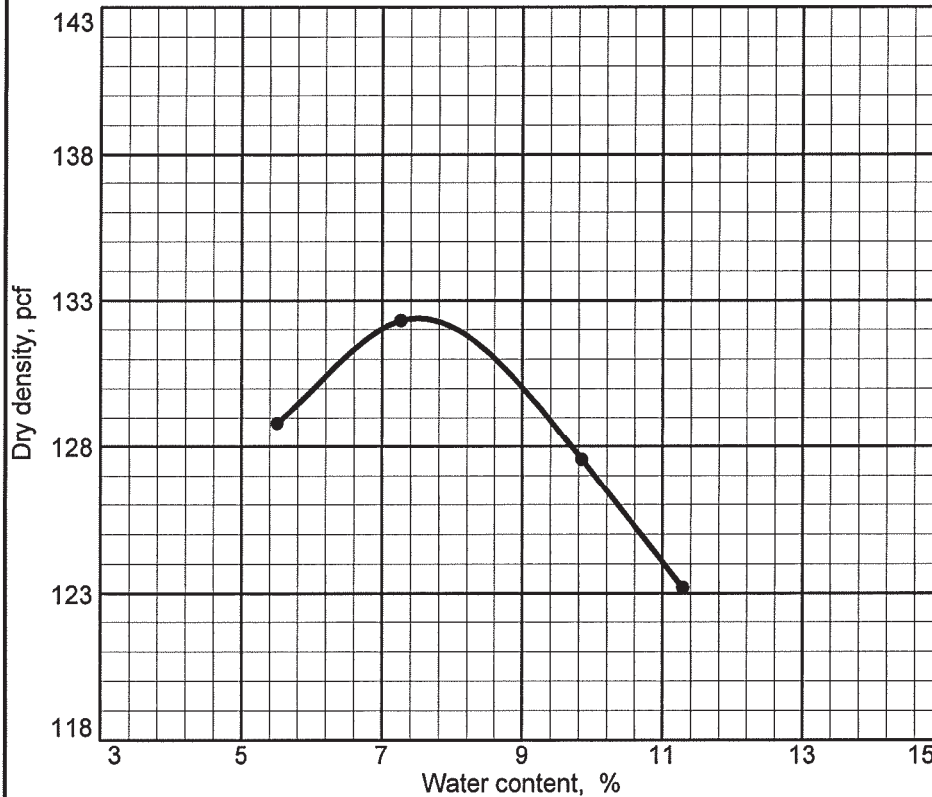
Comments: (Low Expansion Potential)

Classification of Expansive Soils. (Table No.1 From ASTM D4829)

Expansion Index	Potential Expansion
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
>130	Very High

COMPACTION TEST REPORT

Curve No.



Test Specification:

ASTM D 1557-12 Method B Modified

Hammer Wt.: 10 lb.

Hammer Drop: 18 in.

Number of Layers: five

Blows per Layer: 25

Mold Size: .03333 cu.ft.

Test Performed on Material

Passing 3/8 in. Sieve

Soil Data

NM _____ Sp.G. _____

LL 28 PI 15

%>3/8 in. 0.0 %<#200 55.9

USCS CL AASHTO _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	9.03	8.97	8.83	8.87		
WM	4.30	4.30	4.30	4.30		
WW + T #1	308.70	304.60	308.60	300.60		
WD + T #1	287.80	277.30	292.50	270.10		
TARE #1	0.00	0.00	0.00	0.00		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	7.3	9.8	5.5	11.3		
DRY DENSITY	132.3	127.6	128.8	123.2		

TEST RESULTS

Maximum dry density = 132.4 pcf

Optimum moisture = 7.5 %

Material Description

Sandy lean clay

Project No. D82109.01 Client:

Project: Retail Tenant

Remarks:

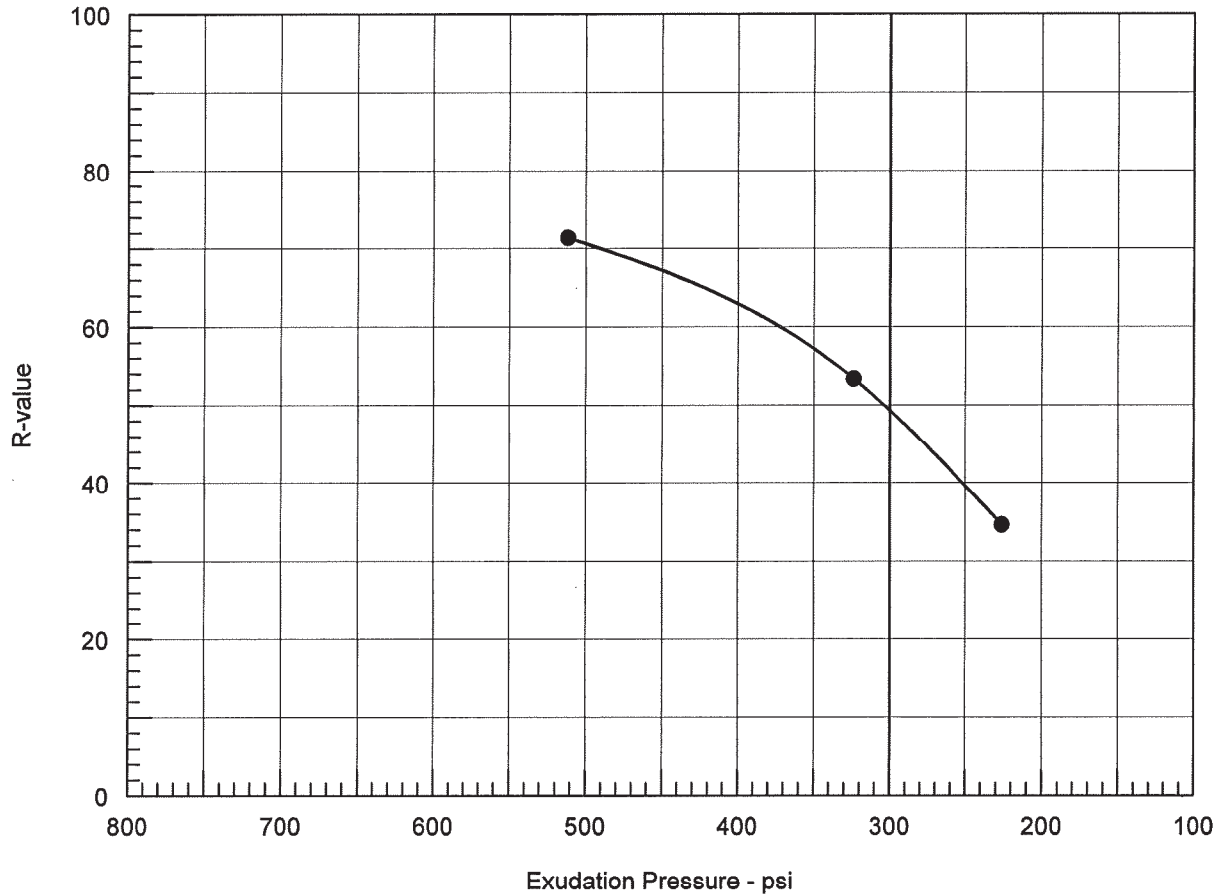
● Source: Sample No.: B-1 Elev./Depth: 0-5 Feet

Moore Twining Associates, Inc.

Fresno, CA

Figure

R-VALUE TEST REPORT



Resistance R-Value and Expansion Pressure - Cal Test 301

No.	Compact. Pressure psi	Density pcf	Moist. %	Expansion Pressure psi	Horizontal Press. psi @ 160 psi	Sample Height in.	Exud. Pressure psi	R Value	R Value Corr.
1	250	125.6	8.5	0.00	34	2.44	512	73	71
2	200	124.3	9.3	0.00	58	2.48	324	53	53
3	150	123.4	10.2	0.00	86	2.45	226	35	35

Test Results

Material Description

R-value at 300 psi exudation pressure = 49

Project No.: D82109.01

Project: Retail Tenant

Sample Number: B-4

Depth: 0-5 Feet

Date: 10/28/2013

Tested by:

Checked by:

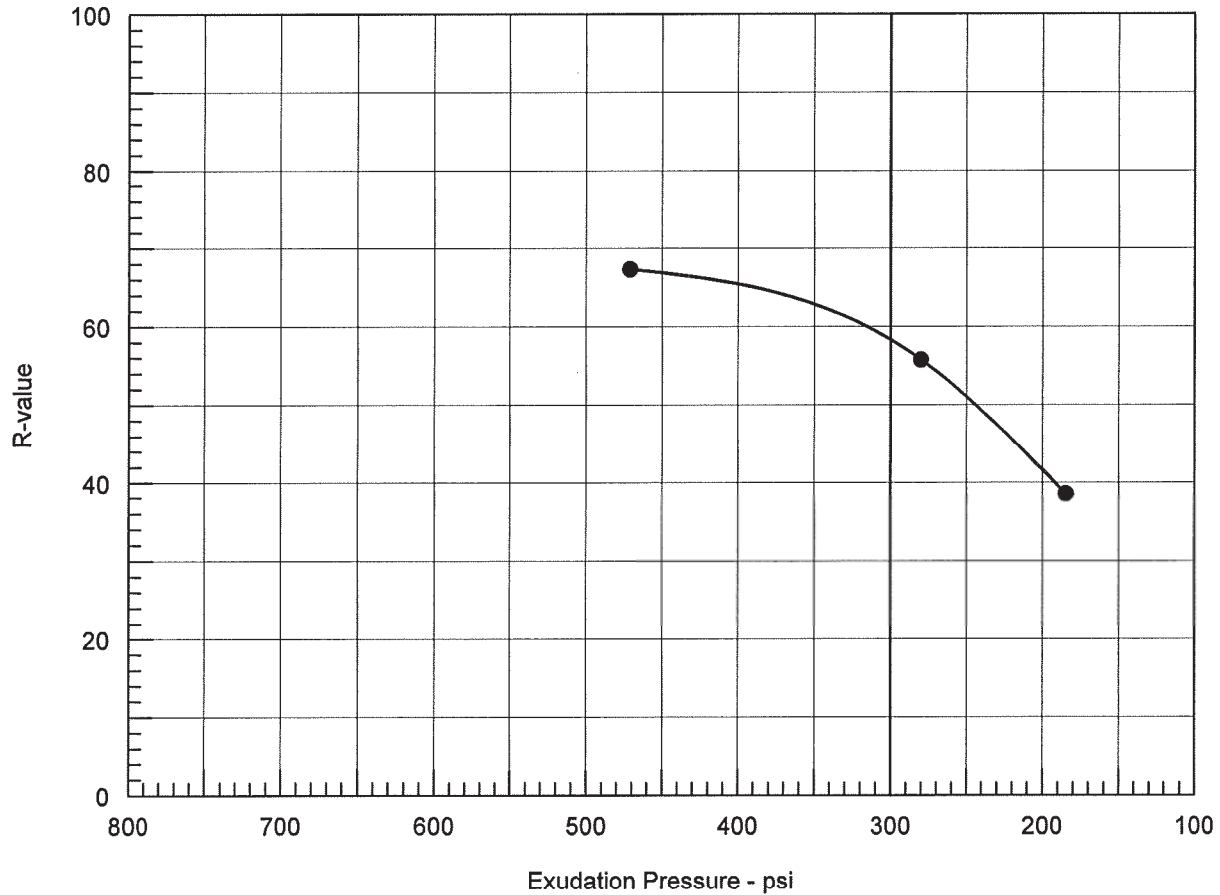
Remarks:

R-VALUE TEST REPORT

Moore Twining Associates, Inc.

Figure _____

R-VALUE TEST REPORT

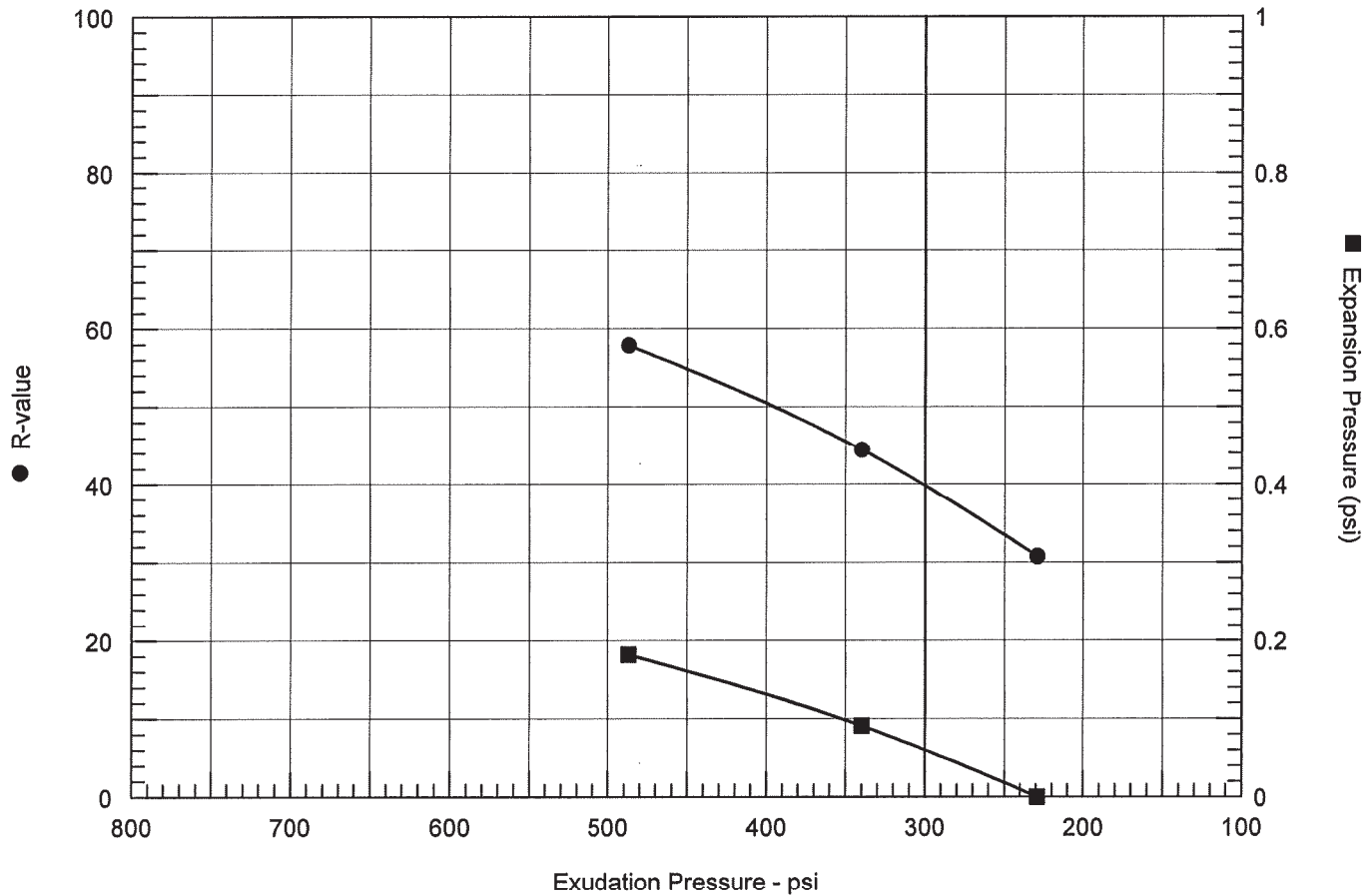


Resistance R-Value and Expansion Pressure - Cal Test 301

No.	Compact. Pressure psi	Density pcf	Moist. %	Expansion Pressure psi	Horizontal Press. psi @ 160 psi	Sample Height in.	Exud. Pressure psi	R Value	R Value Corr.
1	250	125.0	8.4	0.00	38	2.51	471	67	67
2	200	123.9	9.3	0.00	52	2.46	280	56	56
3	150	122.9	10.2	0.00	76	2.52	185	39	39

Test Results	Material Description
R-value at 300 psi exudation pressure = 58	
Project No.: D82109.01 Project: Retail Tenant Sample Number: B-13 Depth: 0-5 Feet Date: 10/28/2013	Tested by: Checked by: Remarks:
R-VALUE TEST REPORT Moore Twining Associates, Inc.	Figure _____

R-VALUE TEST REPORT



Resistance R-Value and Expansion Pressure - Cal Test 301

No.	Compact. Pressure psi	Density pcf	Moist. %	Expansion Pressure psi	Horizontal Press. psi @ 160 psi	Sample Height in.	Exud. Pressure psi	R Value	R Value Corr.
1	200	117.8	10.4	0.18	52	2.53	487	58	58
2	150	117.0	11.2	0.09	70	2.49	340	44	44
3	75	115.7	12.1	0.00	92	2.48	229	31	31

Test Results

R-value at 300 psi exudation pressure = 40

Exp. pressure at 300 psi exudation pressure = 0.06 psi

Material Description

Project No.: D82109.01

Project: Retail Tenant

Sample Number: B-25

Depth: 0-3.5 Feet

Date: 10/28/2013

Tested by:

Checked by:

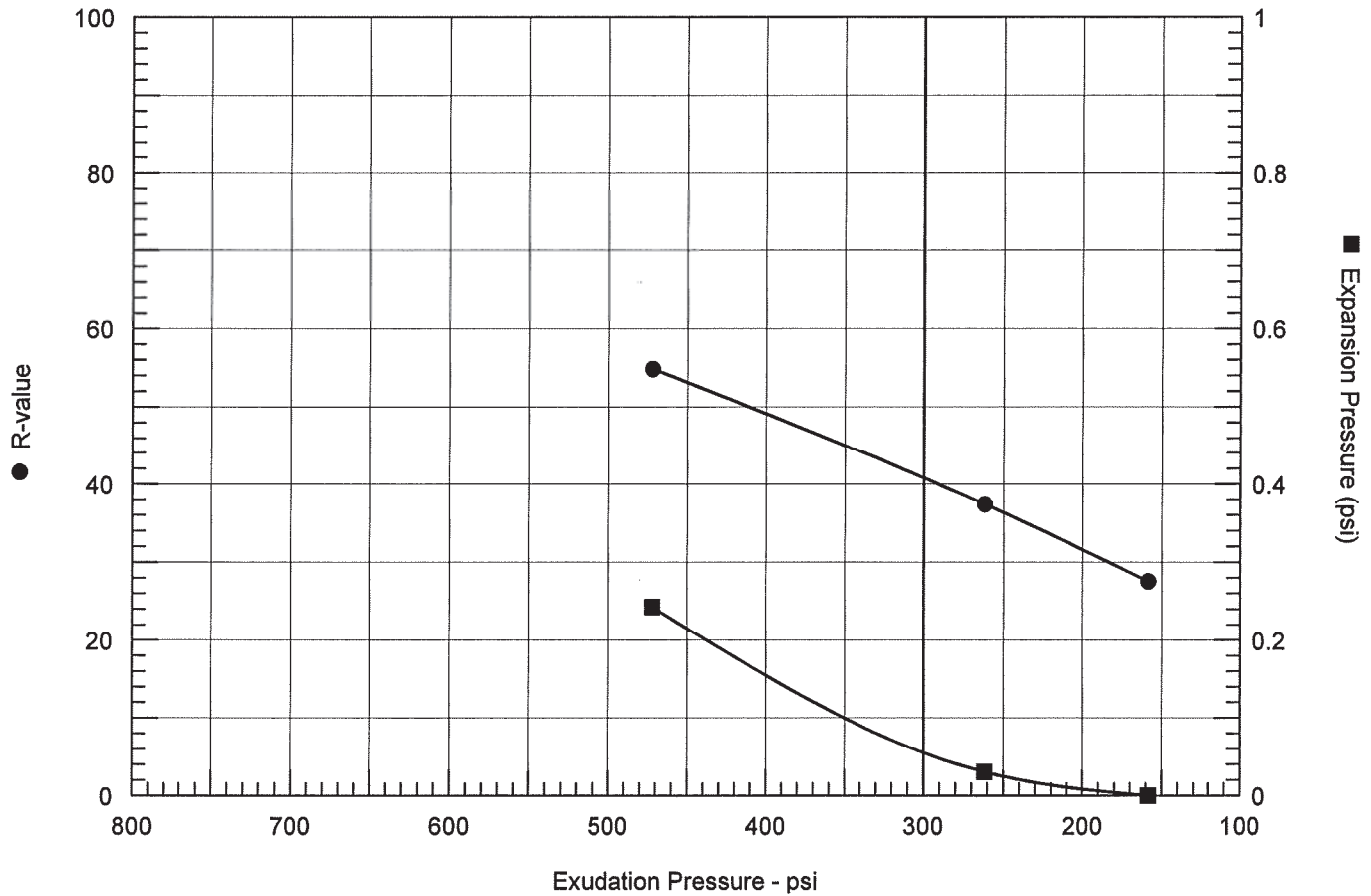
Remarks:

R-VALUE TEST REPORT

Moore Twining Associates, Inc.

Figure _____

R-VALUE TEST REPORT



Resistance R-Value and Expansion Pressure - Cal Test 301

No.	Compact. Pressure psi	Density pcf	Moist. %	Expansion Pressure psi	Horizontal Press. psi @ 160 psi	Sample Height in.	Exud. Pressure psi	R Value	R Value Corr.
1	250	119.3	9.8	0.24	61	2.56	472	53	55
2	200	118.1	10.6	0.03	84	2.53	262	37	37
3	100	117.0	11.5	0.00	98	2.49	158	28	28

Test Results

R-value at 300 psi exudation pressure = 41

Exp. pressure at 300 psi exudation pressure = 0.06 psi

Material Description

Project No.: D82109.01

Project: Retail Tenant

Sample Number: B-43

Depth: 0-3.5 Feet

Date: 10/28/2013

Tested by:

Checked by:

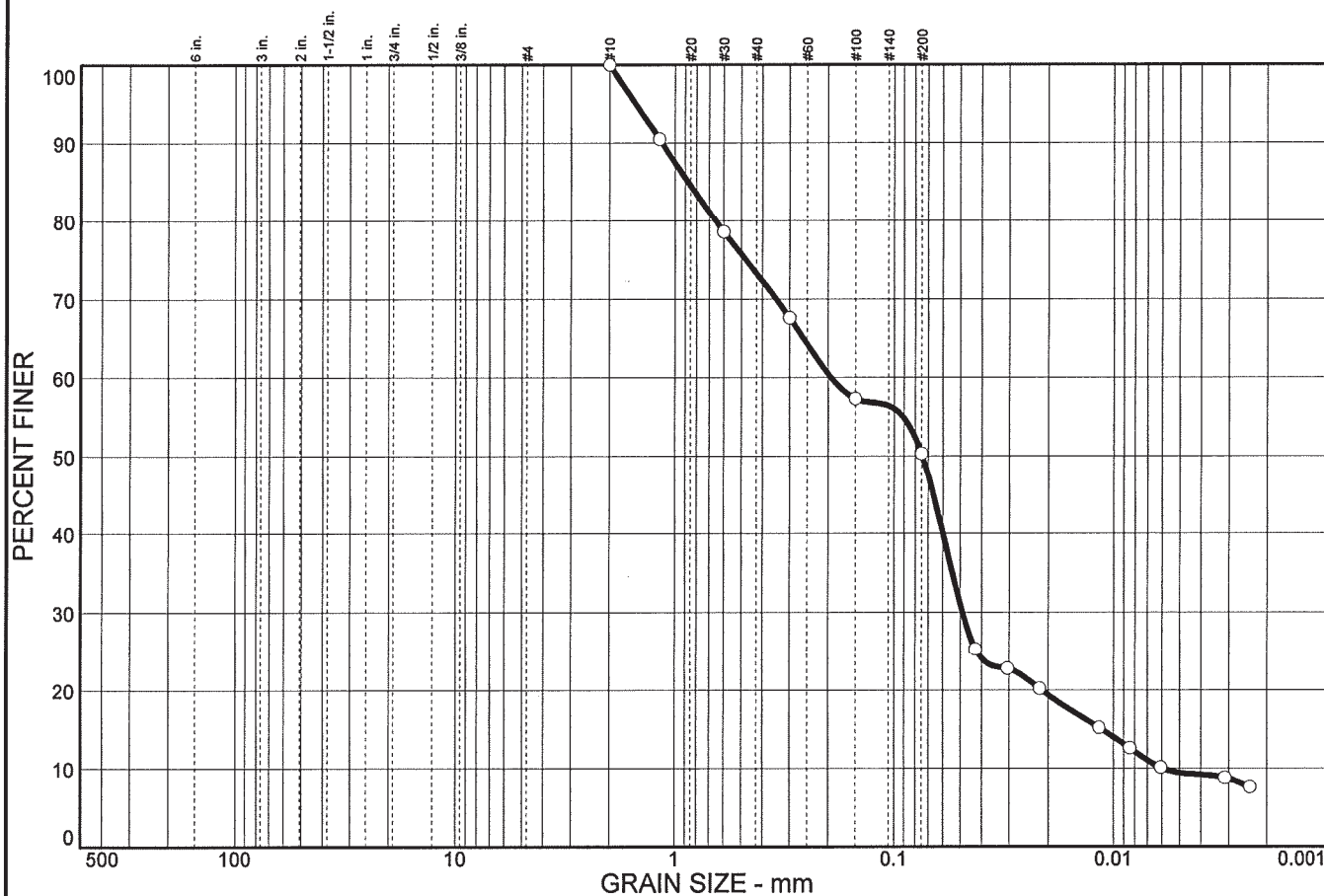
Remarks:

R-VALUE TEST REPORT

Moore Twining Associates, Inc.

Figure _____

Particle Size Distribution Report





MOORE TWINING
ASSOCIATES, INC.

Project Name: Retail Tenant

Report Date:

9/19/2011

Project No: D82109.01

Sample I.D.:

11-0376

Sample Date:

6/27/2011

Material: Top Soil Composite

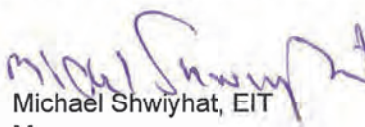
Laboratory Materials Testing Report

Sieve Analysis

Sieve Size	% Passing by Dry Weight	ASTM D5268 Spec
10	100	
#16	91	
#30	79	
#50	68	
#100	57	
#200	50.3	
% Deleterious Materials	8.0	5 % Max
% Sand	49.7	20-60
% Silt & Clay	48.3	35-70
% Organic, ASTM D2974	2.00%	2-20
Ph	6.1	5-7

Remarks: Material tested failed to meet the ASTM D5268 specification requirements.
See summary of the plant Nutrient and Minerals data sheets.

Moore Twining Associates, Inc.


Michael Shwiyhat, EIT
Manager
Material Testing Division



California ELAP Certificate # 1371

2527 Fresno Street
Fresno, CA 93721
(559) 268-7021 Phone
(559) 268-0740 Fax

MTA Geotechnical Division
2527 Fresno Street
Fresno CA, 93721

Project: Lake Elsinore
Project Number: D82109.01
Project Manager: Dean Ledgerwood

Reported:
7/7/11

B1@0-5'

1G01006-01 (Soil)

Sampled: 06/27/11 00:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
DRAFT: Inorganics									
Chloride	12	6.0	mg/kg	3	TIG0107	07/01/11	07/06/11	ASTM D-4327-84	
Chloride	0.0012	0.00060	% by Weight	3	[CALC]	07/01/11	07/06/11	ASTM D4327-84	
Sulfate as SO ₄	0.0021	0.00060	% by Weight	3	[CALC]	07/01/11	07/06/11	ASTM D4327-84	
pH	7.3	0.30	pH Units	3	TIG0107	07/01/11	07/06/11	ATSM D4972-89 Mod	
Resistivity	5600		ohms-cm	3	TIG0107	07/01/11	07/06/11	ASTM D1125-82	
Sulfate as SO ₄	21	6.0	mg/kg	3	TIG0107	07/01/11	07/06/11	ASTM D4327-84	



California ELAP Certificate # 1371

2527 Fresno Street
Fresno, CA 93721
(559) 268-7021 Phone
(559) 268-0740 Fax

MTA Geotechnical Division
2527 Fresno Street
Fresno CA, 93721

Project: Lake Elsinore
Project Number: D82109.01
Project Manager: Dean Ledgerwood

Reported:
7/7/11

B4@0-5'

1G01006-02 (Soil)

Sampled:06/27/11 00:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
DRAFT: Inorganics									
Chloride	97	6.0	mg/kg	3	TIG0107	07/01/11	07/06/11	ASTM D-4327-84	
Chloride	0.0097	0.00060	% by Weight	3	[CALC]	07/01/11	07/06/11	ASTM D4327-84	
Sulfate as SO4	0.0054	0.00060	% by Weight	3	[CALC]	07/01/11	07/06/11	ASTM D4327-84	
pH	7.1	0.30	pH Units	3	TIG0107	07/01/11	07/06/11	ATSM D4972-89 Mod	
Resistivity	2400		ohms-cm	3	TIG0107	07/01/11	07/06/11	ASTM D1125-82	
Sulfate as SO4	54	6.0	mg/kg	3	TIG0107	07/01/11	07/06/11	ASTM D4327-84	



California ELAP Certificate # 1371

2527 Fresno Street
Fresno, CA 93721
(559) 268-7021 Phone
(559) 268-0740 Fax

MTA Geotechnical Division
2527 Fresno Street
Fresno CA, 93721

Project: Lake Elsinore
Project Number: D82109.01
Project Manager: Dean Ledgerwood

Reported:
7/7/11

B25@0-3.5'

1G01006-03 (Soil) Sampled:06/27/11 00:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
DRAFT: Inorganics									
Chloride	ND	6.0	mg/kg	3	T1G0107	07/01/11	07/06/11	ASTM D-4327-84	
Chloride	ND	0.00060	% by Weight	3	[CALC]	07/01/11	07/06/11	ASTM D4327-84	
Sulfate as SO ₄	ND	0.00060	% by Weight	3	[CALC]	07/01/11	07/06/11	ASTM D4327-84	
pH	7.2	0.30	pH Units	3	T1G0107	07/01/11	07/06/11	ATSM D4972-89 Mod	
Resistivity	6100		ohms-cm	3	T1G0107	07/01/11	07/06/11	ASTM D1125-82	
Sulfate as SO ₄	ND	6.0	mg/kg	3	T1G0107	07/01/11	07/06/11	ASTM D4327-84	

APPENDIX D
PHOTOGRAPHIC LOG



Photograph No. 1: General View Looking South



Photograph No. 2: View within southern area of site, near residences within trees



Photograph No. 3 Erosional drainage feature within vacant field



Photograph No. 4: Erosional drainage feature within trees



Photograph No. 5: Close up of erosional feature within trees



Photograph No. 6: View of existing residence area



Photograph No. 7: Over-size material near area of former debris/soil piles



Photograph No. 8: Scattered rock debris near limits of former debris/soil piles

APPENDIX E

**GEOTECHNICAL INVESTIGATION FACT SHEET AND
FOUNDATION SUBSURFACE PREPARATION**

GEOTECHNICAL INVESTIGATION FACT SHEET

PROJECT LOCATION: SWC of Cambern and Central Avenue, Lake Elsinore, California
Engineer: Read Andersen Phone #: 559-268-7021
Geotechnical Engineering Co.: Moore Twining Associates, Inc. Report Date: July 08, 2011

Ground Water Elevation: At the time of our field exploration, groundwater was encountered in eight (8) of the sixty six (66) test borings at depths ranging from 13.33 to 25 feet BSG, drilled during our June 2011 field exploration. Test boring B-16, where groundwater was initially encountered at a depth of about 25 feet BSG, was left open for a period of 24 hours. After a period of 24 hours, groundwater was measured at a depth of 23½ feet BSG in test boring B-16.

Date Groundwater Measured: June 27 to June 30

Recommended Fill Soil Characteristics: Import Fill: Maximum Liquid Limit: 25 Maximum Plasticity Index: 15
Onsite Engineered Fill: Maximum Liquid Limit: 40 Maximum Plasticity Index: 25
Topsoil/Stripping Depth: 4 inches

Undercut (If Required): Over-excavate building pad to a depth of 12 inches below improvements to be removed (i.e. foundations, septic systems, utilities, etc.), to the depth to remove undocumented fills (encountered to depths ranging from 1 to 8½ feet BSG), to the depth required to remove the tree root systems (estimated to extend to depths ranging from 4 to 5 feet BSG), to a minimum depth of 48 inches below preconstruction site grades, or to 2½ feet below foundations, whichever provides the deeper excavation

Specified Compaction: 95% Relative Compaction (ASTM D1557)

Recommended Moisture Content Range: 0 percent to 3 percent above optimum

Modified Proctor Results 132.4 pounds per cubic foot with optimum moisture content of 7.5 percent

pH: 7.3, 7.1, and 7.2

Corrective actions required for construction based on pH level noted: N/A

Resistivity: 5,600, 2,400, and 6,100 ohm-centimeters

Corrective actions required for construction based on resistivity level noted:
N/A

Cement Type: Not Restricted due to Sulfate Condition (Type I and II cement OK)

Recommended local DOT subbase/base material:
Non Recycled Class 2 Aggregate Base or Crushed Aggregate Base (CAB)

Recommended Compaction Control Tests:

1 Test for Each 2,500 Sq. Ft. each Lift (bldg. area)
1 Test for Each 10,000 Sq. Ft. each Lift (parking area)

Structural Fill Maximum Lift Thickness 8 in. (Measured loose)

Subgrade Design R value = 40

COMPONENT	ASPHALT		CONCRETE	
	standard	heavy	standard	heavy
Stabilized Subgrade	<u>12</u>	<u>12</u>	<u>12</u>	<u>12</u>
Base Material	<u>7.0</u>	<u>8.5</u>	<u>6.0</u>	<u>6.0</u>
(Local DOT AB)				
Asphalt Base Course	<u>4.0</u>	<u>4.5</u>		
Leveling Binder Course	<u>2.0</u>	<u>2.0</u>		
Surface Course	<u>2.0</u>	<u>2.5</u>	<u>6.5</u>	<u>6.5</u>

NOTE: This information shall not be used separately from the geotechnical report.

FOUNDATION DESIGN CRITERIA

Include this form in the Geotechnical Report as an Appendix.

PROJECT LOCATION: SWC of Cambern and Central Avenue, Lake Elsinore, California

Engineer: Read Andersen Phone #: 559-268-7021

Geotechnical Engineering Co.: Moore Twining Associates, Inc. Report Date: July 8, 2011

Foundation type: Conventional Shallow Spread Foundations Supported on Engineered Fill

Allowable bearing pressure: 2,000 psf

Factor of Safety against bearing failure: 3.0

Minimum footing width: Individual: 15 inch min Continuous: 15 inch min

Minimum footing embedment: Exterior: 24 inches below top of slab on grade or 18 inches below the lowest adjacent finished exterior surface grade, whichever is greater
Interior: 18 inches below bottom of slab on grade

Frost depth: NA

Maximum foundation settlements: Total Static Settlement: 3/4 inch

Differential Static Settlement: 1/2 (0.53) inch in 40 feet for perimeter foundations
L/500 for slab on grade and interior foundations

Differential Seismic Settlement: Up to 1 1/4 inch differential over 40 feet

Slab: Potential vertical rise: 3/4 inch

Capillary Break (not a vapor barrier) describe: Fine choker course (if required) over 6 inches of non-recycled Class 2 Aggregate Base or CAB

Subgrade reaction modulus: 150 psi/in; Method obtained: Aggregate Base over Compacted Subgrade

Active Equivalent Fluid Pressures 45 psf/ft

Passive Equivalent Fluid Pressures 275 psf/ft; neglect upper 6 inches in landscape areas

Perimeter Drains (describe):

Building: N/A

Retaining Walls: Min 1.5 cubic foot per lineal foot of Class 2 Permeable Material surrounding a perforated pipe

Retaining Wall: At rest pressure: 65 psf/ft

Coefficient of friction: 0.34

COMMENTS: _____

FOUNDATION SUBSURFACE PREPARATION RETAIL TENANT
JOB #2077-06 Lake Elsinore, California
7/8/2011

UNLESS SPECIFICALLY INDICATED OTHERWISE IN THE DRAWINGS AND/OR SPECIFICATIONS, THE LIMITS OF THIS SUBSURFACE PREPARATION ARE CONSIDERED TO BE THAT PORTION OF THE SITE DIRECTLY BENEATH AND 5 FEET BEYOND THE BUILDING AND APPURTENANCES OR TO A HORIZONTAL DISTANCE EQUAL TO THE DEPTH OF ENGINEERED FILL BELOW THE OUTSIDE EDGE OF THESE IMPROVEMENTS, WHICHEVER IS GREATER.

APPURTENANCES ARE THOSE ITEMS ATTACHED TO THE BUILDING PROPER (REFER TO DRAWING SHEET SP1), TYPICALLY INCLUDING, BUT NOT LIMITED TO, THE BUILDING SIDEWALKS, GARDEN CENTER, PORCHES, RAMPS, STOOPS, TRUCK WELLS/DOCKS, CONCRETE APRONS AT THE AUTOMOTIVE CENTER, COMPACTOR PAD, ETC. THE BASE AND THE VAPOR BARRIER, WHERE REQUIRED, DO NOT EXTEND BEYOND THE LIMITS OF THE ACTUAL BUILDING AND THE APPURTENANCES.

ESTABLISH THE FINAL SUBGRADE ELEVATION TO ALLOW FOR THE CONCRETE SLAB AND AGGREGATE BASE. REFERENCE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR REQUIRED SLAB THICKNESS. THE 6" THICK AGGREGATE BASE MATERIAL SHALL CONFORM TO *[Insert Assigned Concrete Consultants Recommended State Dot RoadBase. This will not be filled out in the initial geotech report. Only fill this in after the required coordination with the AOR assigned concrete consultant].*

Soils Engineer's recommendation for aggregate base below interior slabs:

AGGREGATE BASE BELOW THE INTERIOR BUILDING SLAB ON GRADE SHALL BE NON-RECYCLED AND COMPLY WITH CLASS 2 AGGREGATE BASE (AB) PER STATE OF CALIFORNIA STANDARD SPECIFICATIONS OR COMPLY WITH CRUSHED AGGREGATE BASE (CAB) PER THE GREENBOOK. AGGREGATE BASE USED FOR PAVEMENT CONSTRUCTION SHALL COMPLY WITH CLASS 2 AGGREGATE BASE IN ACCORDANCE WITH THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS AND MAY INCLUDE RECYCLED MATERIALS OR COMPLY WITH CRUSHED MISCELLANEOUS BASE (CMB) PER THE GREENBOOK. AGGREGATE BASE SHALL BE COMPACTED TO A MINIMUM RELATIVE COMPACTION OF 95 PERCENT IN ACCORDANCE WITH ASTM D1557 STANDARDS. DOCUMENTATION, INCLUDING LABORATORY TEST DATA, SHALL BE PROVIDED TO THE RETAIL TENANT CEC PRIOR TO DELIVERY OF THE AGGREGATE BASE TO THE SITE INDICATING THAT THE AGGREGATE BASE MEETS PROJECT SPECIFICATIONS AND IS NON-RECYCLED, WHERE APPLICABLE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ACCURATE MEASUREMENTS FOR ALL CUT AND FILL DEPTHS REQUIRED. ANY PROPOSED EQUIVALENT ALTERNATIVE BASE MATERIAL MUST BE SUBMITTED FOR APPROVAL WITHIN 30 DAYS AFTER AWARD OF CONTRACT. ANY EQUIVALENT ALTERNATIVE SHALL ONLY BE USED IF APPROVED IN WRITING BY THE CEC AND AOR.

LOCATION WITH RESPECT
TO BOTTOM OF SLAB ON GRADE

MATERIAL

BUILDING PAD AREA:

TOP 6 INCHES:

AGGREGATE BASE (AB)

6 TO 12 INCHES

IMPORTED NON-EXPANSIVE ENGINEERED
FILL

BELOW 12 INCHES

ONSITE SOILS WITH A MAXIMUM PARTICLE SIZE OF 3 INCHES, FREE OF ROOTS AND CONTAINING NOT MORE THAN 3 PERCENT ORGANICS PLACED AS ENGINEERED FILL

REMOVE SURFACE VEGETATIONS, TOPSOIL, ROOT SYSTEMS, ORGANIC MATERIAL, EXISTING FILL, AND SOFT OR OTHERWISE UNSUITABLE MATERIAL FROM THE BUILDING AREA.

SITE PREPARATION SHALL INCLUDE REMOVAL OF TREE ROOTS TO REMOVE THE ROOT BALLS, AND ALL ROOT SYSTEMS GREATER THAN ABOUT 1/4 INCH IN DIAMETER. REMOVAL OF THE ROOT BALLS AND ROOT SYSTEMS SHALL BE ANTICIPATED TO REQUIRE EXCAVATION TO DEPTHS OF UP TO 5 FEET BSG. SOILS CONTAINING ORGANIC MATTER SUCH AS ROOT CLUMPS, ROOTS EXCEEDING 1/4 INCH IN DIAMETER, WITH ORGANIC CONTENTS ABOVE 3 PERCENT SHALL BE COMPLETELY REMOVED AND NOT USED AS ENGINEERED FILL. THESE MATERIALS SHALL BE RAKED AND HAND-PICKED, OR SCREENED AS NECESSARY, TO REMOVE TREE ROOTS LARGER THAN 1/4 INCH IN DIAMETER AND CONCENTRATED ROOT MASSES. LIMBS, TREE BRANCHES, ROOTS, ETC. SHALL NOT BE DISCED INTO THE SOILS.

STRIPPING SHALL BE CONDUCTED IN ALL AREAS OF EXISTING SURFACE VEGETATION AND WHERE ROOT SYSTEMS ARE PRESENT. THE GENERAL DEPTH OF STRIPPING SHALL BE SUFFICIENTLY DEEP TO REMOVE THE ROOT SYSTEMS AND ORGANIC TOPSOILS. A MINIMUM STRIPPING DEPTH OF 4 INCHES IS RECOMMENDED. DEEPER STRIPPING MAY BE REQUIRED IN LOCALIZED AREAS. STRIPPING AND CLEARING OF DEBRIS SHALL EXTEND Laterally A MINIMUM OF 10 FEET OUTSIDE THE NEW FOOTING AND PAVEMENT PERIMETERS. THESE MATERIALS WILL NOT BE SUITABLE FOR USE AS ENGINEERED FILL

THE PROPOSED BUILDING PAD AREA AND OVER-BUILD ZONE SHALL BE PREPARED BY OVER-EXCAVATION TO A DEPTH OF 12 INCHES BELOW IMPROVEMENTS TO BE REMOVED (I.E. FOUNDATIONS, SEPTIC SYSTEMS, UTILITIES, ETC.), TO THE DEPTH TO REMOVE UNDOCUMENTED FILLS (ENCOUNTERED TO DEPTHS RANGING FROM 1 TO 8½ FEET BSG), TO THE DEPTH REQUIRED TO REMOVE THE TREE ROOT SYSTEMS (ESTIMATED TO EXTEND TO DEPTHS RANGING FROM 4 TO 5 FEET BSG), TO A MINIMUM DEPTH OF 48 INCHES BELOW PRECONSTRUCTION SITE GRADES, OR TO 2½ FEET BELOW FOUNDATIONS, WHICHEVER PROVIDES THE DEEPER EXCAVATION.

OVER-EXCAVATION SHALL INCLUDE THE ENTIRE BUILDING FOOTPRINT AND OVERBUILD ZONE. THE BUILDING PAD IS DEFINED AS THE AREAS TO BE OCCUPIED BY THE BUILDING, ADJACENT SIDEWALKS, GARDEN CENTER, PORCHES, RAMPS, STOOPS, TRUCK WELLS/DOCKS, CONCRETE APRONS, COMPACTOR PAD, ETC., TO A MINIMUM HORIZONTAL DISTANCE OF FIVE (5) FEET BEYOND THESE AREAS, OR TO A HORIZONTAL DISTANCE EQUAL TO THE DEPTH OF ENGINEERED FILL, WHICHEVER IS GREATER. SLOT CUTTING BELOW FOUNDATIONS WILL NOT BE ALLOWED. UPON APPROVAL OF THE OVER-EXCAVATION BY THE RETAIL TENANT CTL, THE SUBGRADE SOILS AT THE BOTTOM OF THE OVER-EXCAVATION SHALL BE SCARIFIED TO A DEPTH OF 12 INCHES, MOISTURE CONDITIONED BETWEEN OPTIMUM AND THREE (3) PERCENT ABOVE OPTIMUM MOISTURE CONTENT AND COMPACTED AS ENGINEERED FILL.

THE CONTRACTOR SHALL VERIFY IN WRITING TO THE OWNER AND CEC THAT THE HORIZONTAL AND VERTICAL OVER-EXCAVATION LIMITS WERE COMPLETED IN CONFORMANCE WITH THE FOUNDATION SUBSURFACE PREPARATION. THE VERIFICATION SHALL INCLUDE SURVEY DATA FROM A LICENSED SURVEYOR, INCLUDING A PLAN DEMONSTRATING THAT THE HORIZONTAL AND VERTICAL OVER-EXCAVATION HAS BEEN ACHIEVED. THIS VERIFICATION SHALL BE PROVIDED PRIOR TO REQUESTING PAD CERTIFICATION.

WET WEATHER CONDITIONS: CONTRACTORS SHALL ANTICIPATE THAT SUBGRADE INSTABILITY WILL BE ENCOUNTERED DURING EARTHWORK OPERATIONS DUE TO HIGH SOIL MOISTURE CONTENTS. WHERE WET, UNSTABLE SOIL CONDITIONS ARE EXPERIENCED, STABILIZATION MAY BE CONDUCTED BY USE OF A GEOTEXTILE FABRIC AND COMPACTED AGGREGATE BASE, OR CHEMICAL (I.E., LIME, CEMENT, ETC.) TREATMENT. THE CONTRACTOR SHALL INCLUDE IN THE BID THE COSTS FOR STABILIZATION OF ALL WET, UNSTABLE AREAS IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. NO CHANGE ORDERS WILL BE ALLOWED FOR WET WEATHER CONDITIONS, WET SOIL, SOIL INSTABILITY, ETC. OR MITIGATION MEASURES SUCH AS CHEMICAL TREATMENT, GEOTEXTILE FABRIC, ROCK, SOIL IMPORT, ETC.

THE ON-SITE NEAR SURFACE SOILS ENCOUNTERED ARE PREDOMINANTLY SILTY SANDS WITH INTERBEDDED LAYERS OF LEAN CLAY AND SANDY LEAN CLAY SOILS WHICH EXHIBIT EXPANSIVE CHARACTERISTICS. THE EXISTING NEAR SURFACE SOILS THAT ARE FREE OF ORGANICS (LESS THAN 3 PERCENT BY WEIGHT), FREE OF ROOTS AND DEBRIS, AND OVERSIZED MATERIALS GREATER THAN 3 INCHES IN LARGEST DIMENSION WILL BE SUITABLE FOR USE AS FILL MATERIAL BELOW A DEPTH OF 6 INCHES BELOW THE RECOMMENDED AGGREGATE BASE WITHIN THE BUILDING AND OVER-BUILD ZONE AND DIRECTLY BELOW THE AGGREGATE BASE OUTSIDE OF THE BUILDING OVER-BUILD ZONE, PROVIDED THEY ARE PROPERLY MOISTURE CONDITIONED AND COMPACTED. THE UPPER 12 INCHES BELOW SLABS ON GRADE WITHIN THE BUILDING PAD PREPARATION LIMITS SHALL BE SUPPORTED ON 6 INCHES OF CLASS 2 AGGREGATE BASE OR CRUSHED AGGREGATE BASE (CAB), OVER 6 INCHES OF IMPORTED NON-EXPANSIVE ENGINEERED FILL..

IMPORT FILL SOIL SHALL BE NON-EXPANSIVE, FREE OF RECYCLED AGGREGATE BASE MATERIALS AND GRANULAR IN NATURE WITH THE FOLLOWING ACCEPTANCE CRITERIA RECOMMENDED.

PERCENT PASSING 3-INCH SIEVE	100
PERCENT PASSING NO. 4 SIEVE	85 - 100
PERCENT PASSING NO. 200 SIEVE	15 - 40
PLASTICITY INDEX	LESS THAN 15
EXPANSION INDEX (ASTM D4829)	LESS THAN 15
ORGANICS	LESS THAN 3 PERCENT BY WEIGHT
R-VALUE	MINIMUM 40
SULFATES	< 0.05 PERCENT BY WEIGHT
MIN. RESISTIVITY	> 10,000 OHMS-CM

PRIOR TO IMPORTING FILL, THE CONTRACTOR SHALL SUBMIT TEST DATA THAT DEMONSTRATES THAT THE PROPOSED IMPORT COMPLIES WITH THE RECOMMENDED CRITERIA FOR BOTH GEOTECHNICAL AND ENVIRONMENTAL CRITERIA. ALSO, PRIOR TO BEING TRANSPORTED TO THE SITE, THE IMPORT MATERIAL SHALL BE CERTIFIED BY THE CONTRACTOR AND THE SUPPLIER THAT THE SOILS DO NOT CONTAIN ANY ENVIRONMENTAL CONTAMINATES REGULATED BY LOCAL, STATE OR FEDERAL AGENCIES HAVING JURISDICTION. THIS CERTIFICATION SHALL CONSIST OF, AS A MINIMUM, ANALYTICAL DATA SPECIFIC TO THE SOURCE OF THE IMPORT MATERIAL IN ACCORDANCE WITH THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL, "INFORMATION ADVISORY, CLEAN IMPORTED FILL MATERIAL," DATED OCTOBER 2001.

LOADING DOCK WALLS SHALL BE BACKFILLED WITH IMPORTED GRANULAR FREE DRAINING BACKFILL PLACED WITHIN THE ZONE EXTENDING FROM A DISTANCE OF 1 FOOT Laterally FROM THE BOTTOM OF THE WALL FOOTING AT A 1 HORIZONTAL TO 1 VERTICAL GRADIENT TO THE SURFACE. THE ONSITE SOILS ARE NOT ALLOWED WITHIN A 1 HORIZONTAL TO 1 VERTICAL PLANE FROM THE BACK OF THE RETAINING WALL FOOTINGS. THIS REQUIREMENT SHALL BE DETAILED ON THE CONSTRUCTION DRAWINGS. GRANULAR WALL BACKFILL SHALL MEET THE FOLLOWING REQUIREMENTS:

PERCENT PASSING 3-INCH SIEVE	100
PERCENT PASSING NO. 4 SIEVE	85 - 100
PERCENT PASSING NO. 200 SIEVE	5 - 35
INTERNAL ANGLE OF FRICTION	30 DEGREES

THE BUILDING PAD SUBGRADE SURFACE, ALL FOOTING EXCAVATIONS AND EXPOSED SUBGRADE SOILS SHALL NOT BE ALLOWED TO DRY SUCH THAT THE MOISTURE CONTENT OF THE SOILS IS LESS THAN OPTIMUM MOISTURE CONTENT. THE EXPOSED SOILS SHALL BE CONTINUOUSLY MOISTENED TO MAINTAIN THE MOISTURE CONTENT ABOVE OPTIMUM UNTIL CONCRETE IS PLACED. THE CTL SHALL BE REQUESTED BY THE CONTRACTOR TO OBSERVE THE BOTTOMS AND SIDES OF THE FOUNDATION EXCAVATIONS AND EXPOSED SOILS TO VERIFY THAT THE EXPOSED SOILS ARE PROPERLY MOISTURE CONDITIONED.

RECYCLED MATERIALS (SUCH AS PORTLAND CEMENT AND ASPHALTIC CONCRETE) SHALL NOT BE USED WITHIN THE BUILDING PAD AREA.

IMPORTED, NON-EXPANSIVE SOIL SHALL BE PLACED IN LOOSE LIFTS APPROXIMATELY 8 INCHES THICK OR LESS, MOISTURE-CONDITIONED TO BETWEEN OPTIMUM TO THREE (3) PERCENT ABOVE OPTIMUM MOISTURE CONTENT, AND COMPACTED TO A NON-YIELDING CONDITION AT A DRY DENSITY OF AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM TEST METHOD D1557. ADDITIONAL LIFTS SHALL NOT BE PLACED IF THE PREVIOUS LIFT DID NOT MEET THE REQUIRED DRY DENSITY OR IF SOIL CONDITIONS ARE NOT STABLE.

ON-SITE SOILS SHALL BE PLACED IN LOOSE LIFTS APPROXIMATELY 8 INCHES THICK OR LESS, MOISTURE-CONDITIONED TO BETWEEN OPTIMUM TO THREE (3) PERCENT ABOVE OPTIMUM MOISTURE CONTENT, AND COMPACTED TO A NON-YIELDING CONDITION AT A DRY DENSITY OF AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM TEST METHOD D1557. ADDITIONAL LIFTS SHALL NOT BE PLACED IF THE PREVIOUS LIFT DID NOT MEET THE REQUIRED DRY DENSITY OR IF SOIL CONDITIONS ARE NOT STABLE.

THE FOUNDATION SYSTEM SHALL BE ISOLATED SPREAD FOOTINGS AT COLUMNS AND CONTINUOUS SPREAD FOOTINGS AT WALLS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF CONCRETE, ASPHALTIC CONCRETE, SOIL, SPOILS, ETC. (IF ANY) THAT MUST BE EXPORTED FROM THE SITE. INDIVIDUALS, FACILITIES, AGENCIES, ETC. MAY REQUIRE ANALYTICAL TESTING AND OTHER ASSESSMENTS OF THESE MATERIALS TO DETERMINE IF THESE MATERIALS ARE ACCEPTABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING THE TESTS, ASSESSMENTS, ETC. TO DETERMINE THE APPROPRIATE METHOD OF DISPOSAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS TO DISPOSE OF THESE MATERIALS IN A LEGAL MANNER.

THIS FOUNDATION SUBSURFACE PREPARATION DOES NOT CONSTITUTE A COMPLETE SITE WORK SPECIFICATION. IN CASE OF CONFLICT, INFORMATION COVERED IN THIS PREPARATION SHALL TAKE PRECEDENCE OVER THE RETAIL TENANT SPECIFICATIONS. REFER TO THE SPECIFICATIONS FOR SPECIFIC INFORMATION NOT COVERED IN THIS PREPARATION. THIS INFORMATION WAS TAKEN FROM A GEOTECHNICAL REPORT PREPARED BY MOORE TWINING ASSOCIATES, INC., DATED JULY 8, 2011 (GEOTECHNICAL REPORT IS FOR INFORMATION ONLY AND IS NOT A CONSTRUCTION SPECIFICATION).

APPENDIX F**DEWATERING SPECIFICATION**

The contractor is responsible for all dewatering to construct the project in accordance with the plans and specifications, including but not limited to the building pad, utility trenches, retaining walls, foundations, etc.

Dewatering General: As required, the contractor should design and provide dewatering systems using accepted and professional methods consistent with current industry practice to eliminate water entering the excavation under hydrostatic head from the bottom and/or sides. The system should be designed to prevent differential hydrostatic head, which would result in floating out soil particles in a manner, termed as a quick or a boiling condition. System shall not be dependent solely upon sumps and/or pumping water from within the excavation where differential head would result in a quick condition, which would continue to worsen the integrity of the excavations' stability.

The contractor should provide dewatering systems of sufficient size and capacity to prevent ground and surface water flow into the excavation and to allow all Work to be installed in a dry condition.

The contractor should control, by acceptable means, all water regardless of source and the contractor is fully responsible for disposal of the water in a manner that is acceptable to all applicable agencies with jurisdiction.

The contractor should confine discharge piping and/or ditches to available easement or to additional easement obtained by Contractor. The contractor shall provide necessary permits and/or additional easement at no additional cost to Owner.

The contractor should control groundwater in a manner that preserves the strength of foundation soils, does not cause instability or raveling of excavation slopes, and does not result in damage to existing structures and offsite improvements. Where necessary to these purposes, the contractor should lower the water level in advance of excavation, utilizing wells, wellpoints, jet educators, or similar positive methods. The water level as measured by piezometers shall be maintained a minimum of 3 feet below prevailing excavation level or as necessary to achieve the required grading site preparation, and construction of the specified improvements.

The contractor should commence dewatering prior to any appearance of water in excavation and continue until Work is complete to the extent that no damage results from hydrostatic pressure, flotation, or other causes.

Open pumping with sumps and ditches shall be allowed, provided it does not result in boils, loss of fines, softening of the ground, or instability of slopes.

The contractor should install wells and/or wellpoints, if required, with suitable screens and filters, so that continuous pumping of fines does not occur. Discharge should be arranged to facilitate collection of samples by the Owner. During normal pumping, and upon development of well(s), levels of fine sand or silt in the discharge water shall not exceed five parts per million and comply with the current SWPPP requirements, whichever is more stringent. The contractor is responsible to install a sand tester on discharge of each pump during testing and conduct necessary water quality tests to verify that levels or RWQCB requirements are not exceeded.

The contractor should control grading around excavations to prevent surface water from flowing into excavation areas. No additional payment will be made for any supplemental measures to control seepage, groundwater, or artesian head.

Dewatering Design: The contractor should designate and obtain the services of a qualified dewatering specialist to provide dewatering plan as may be necessary to complete the Work.

The contractor should be responsible for the accuracy of the drawings, design data, and operational records required, and the contractor is solely responsible for the design, installation, operation, maintenance, and any failure of any component of the system.

Dewatering Damages: The contractor shall be responsible for and shall repair without cost to the Owner any damage to work in place, or other contractor's equipment, utilities, residences, highways, roads, railroads, private and municipal well systems, adjacent structures, natural resources, habitat, existing wells, and the excavation. Including, damage to the bottom due to heave and including but not limited to, removal and pumping out of the excavated area that may result from Contractors negligence, inadequate or improper design and operation of the dewatering system, and any mechanical or electrical failure of the dewatering system.

The contractor is responsible to remove subgrade materials rendered unsuitable by excessive wetting and replace with approved backfill material at no additional cost to the Owner.

Maintaining Excavation in Dewatering Condition: Dewatering shall be a continuous operation. Interruptions due to power outages, or any other reason will not be permitted.

The contractor should continuously maintain excavation in a dry condition with positive dewatering methods during preparation of subgrade, installation of pipe, and construction of structures until the critical period of construction and/or backfill is completed to prevent damage of subgrade support, piping, structure, side slopes, or adjacent facilities from flotation or other hydrostatic pressure imbalance.

The contractor should provide standby equipment on site, installed, wired, and available for immediate operation if required to maintain dewatering on a continuous basis in the event any part of the system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, perform such work as may be required to restore damaged structures and foundation soils at no additional cost to Owner.

The contractor should provide system maintenance including but not be limited to 24-hour supervision by personnel skilled in the operation, maintenance, and replacement of system components, and any other work required to maintain excavation in dewatered condition.

Dewatering System Removal: The contractor should remove dewatering equipment from the site, including related temporary electrical service.

Wells should be removed in their entirety in accordance with regulations by agencies having jurisdiction.

APPENDIX G
PAVEMENT DESIGN CALCULATIONS

Two-Layer Asphalt Concrete Pavement Design Calculations

Reference: Caltrans Highway Design Manual

Project Name: Store #2077-06, Lake Elsinore, California

Project Type: Supercenter

Pavement Type: Standard Duty

18-kip Equivalent Single Axle Loading (ESAL) = 109,500 (20 years)

Subgrade Design R-value = 40

Aggregate Base R-value = 78

$$\text{Traffic Index (TI)} = 9.0 \times \left(\frac{\text{ESAL} \times \text{LDF}}{10^6} \right)^{0.119}$$

$$\text{Traffic Index (TI)} = 7.00$$

[Rounded to Nearest 0.5 increment]

Lane Distribution Factor (LDF) = 1

Asphalt Concrete (AC) Layer

$$\text{AC Thickness} = \left(\frac{\text{Gravel Equivalent (GE}_{AC})}{\text{Gravel Factor (G}_{fAC})} \right)$$

where: $\text{GE}_{AC} = 0.0032 \times (\text{TI}) \times [100 - (\text{R-value})_{AB}] + \text{Safety Factor}$

where: Safety Factor = 0.20 feet

$$\text{and: } G_{fAC} = \frac{5.67}{(\text{TI})^{0.5}}$$

Aggregate Base (AB) Layer

$$\text{AB Thickness} = \left(\frac{\text{Gravel Equivalent (GE}_{AB})}{\text{Gravel Factor (G}_{fAB})} \right)$$

where: $\text{GE}_{AB} = \text{GE}_{(AC+AB)} - \text{GE}_{AC \text{ Actual}}$

where: $\text{GE}_{(AC+AB)} = 0.0032 \times (\text{TI}) \times [100 - (\text{R-value})_{\text{Subgrade}}]$

and: $\text{GE}_{AC \text{ Actual}} = (\text{AC Thickness}) \times G_{fAC}$

Asphalt Concrete (AC) Layer

Required GE = 0.69 feet

Gravel Factor (Gf) = 2.14

AC Required = 3.9 inches

Use 4.0 inches AC

Actual GE = 0.71 feet

Aggregate Base (AB) Layer

Required GE = 0.63 feet

Gravel Factor (Gf) = 1.1

[Class 2 AB]

AB Required = 6.87 inches

Use 7 inches AB

**Use 4.0 inches Type B Asphalt Concrete (Caltrans Standard Specifications Section 39)
over 7.0 inches of Class 2 Aggregate Base (Caltrans Standard Specifications Section 26)**

Two-Layer Asphalt Concrete Pavement Design Calculations

Reference: Caltrans Highway Design Manual

Project Name: Store #2077-06, Lake Elsinore, California

Project Type: Supercenter

Pavement Type: Heavy Duty

18-kip Equivalent Single Axle Loading (ESAL) = 335,800 (20 years)

Subgrade Design R-value = 40

Aggregate Base R-value = 78

$$\text{Traffic Index (TI)} = 9.0 \times \left(\frac{\text{ESAL} \times \text{LDF}}{10^6} \right)^{0.119}$$

$$\text{Traffic Index (TI)} = 8.00$$

[Rounded to Nearest 0.5 increment]

Lane Distribution Factor (LDF) = 1

Asphalt Concrete (AC) Layer

$$\text{AC Thickness} = \left(\frac{\text{Gravel Equivalent (GE}_{AC})}{\text{Gravel Factor (G}_{fAC})} \right)$$

where: $\text{GE}_{AC} = 0.0032 \times (\text{TI}) \times [100 - (\text{R-value})_{AB}] + \text{Safety Factor}$

where: Safety Factor = 0.20 feet

$$\text{and: } G_{fAC} = \frac{5.67}{(\text{TI})^{0.5}}$$

Aggregate Base (AB) Layer

$$\text{AB Thickness} = \left(\frac{\text{Gravel Equivalent (GE}_{AB})}{\text{Gravel Factor (G}_{fAB})} \right)$$

where: $\text{GE}_{AB} = \text{GE}_{(AC+AB)} - \text{GE}_{AC \text{ Actual}}$

where: $\text{GE}_{(AC+AB)} = 0.0032 \times (\text{TI}) \times [100 - (\text{R-value})_{\text{Subgrade}}]$

and: $\text{GE}_{AC \text{ Actual}} = (\text{AC Thickness}) \times G_{fAC}$

Asphalt Concrete (AC) Layer

Required GE = 0.76 feet

Gravel Factor (Gf) = 2.00

AC Required = 4.6 inches

Use 4.5 inches AC

Actual GE = 0.75 feet

Aggregate Base (AB) Layer

Required GE = 0.78 feet

Gravel Factor (Gf) = 1.1

[Class 2 AB]

AB Required = 8.56 inches

Use 8.5 inches AB

**Use 4.5 inches Type B Asphalt Concrete (Caltrans Standard Specifications Section 39)
over 8.5 inches of Class 2 Aggregate Base (Caltrans Standard Specifications Section 26)**

16:44:51

PCAPAV(TM) 2.10

Page 1

07-08-;1 Proprietary Software of PORTLAND CEMENT ASSOCIATION

Project: Proposed Lake Elsinore, Heavy Duty PCC

Engineer:

Input Data:

Subgrade / Subbase K 215.0 PCI

Modulus of Rupture MR 550.0 PSI

Avg. Daily Truck Traffic (2 way) ADTT 91.90

Design Life 20 years

Aggregate Interlock Joints

Concrete Shoulders

Load Safety Factor 1.1

Estimated Pavement Thickness 4.0 IN

A X L E L O A D S

Axles per 1000 Trucks

Single

Tandem

22	0.00	36	0.00
20	0.00	32	0.00
18	1000.00	28	0.00
16	0.00	24	0.00
14	0.00	20	0.00
12	0.00	16	0.00
10	0.00	12	0.00
8	0.00	8	0.00
6	0.00	4	0.00
4	0.00	0	0.00

Design Thickness = 6.5 Inches

Load Repetitions ---Fatigue Analysis----- ----Erosion Analysis---

SAL	*LSF	Axle/ 1000	Expected Reps	Stress Ratio	Allowable Reps	Fatigue Consump	Power	Allowable Reps	Erosion
22	24.2	0.00	0.	0.617	*****	0.00	28.193	*****	0.00
20	22.0	0.00	0.	0.565	*****	0.00	23.300	*****	0.00
18	19.8	1000.00	335435.	0.511	459607.	72.98	18.873	952192.	35.23
16	17.6	0.00	0.	0.458	*****	0.00	14.912	*****	0.00
14	15.4	0.00	0.	0.404	*****	0.00	11.417	*****	0.00
12	13.2	0.00	0.	0.349	*****	0.00	8.388	*****	0.00
10	11.0	0.00	0.	0.294	*****	0.00	5.825	*****	0.00
8	8.8	0.00	0.	0.239	*****	0.00	3.728	*****	0.00
6	6.6	0.00	0.	0.182	*****	0.00	2.097	*****	0.00
4	4.4	0.00	0.	0.124	*****	0.00	0.932	*****	0.00

TAL	*LSF	Axle/ 1000	Expected Reps	Stress Ratio	Allowable Reps	Fatigue Consump	Power	Allowable Reps	Erosion
36	39.6	0.00	0.	0.427	*****	0.00	20.148	*****	0.00
32	35.2	0.00	0.	0.382	*****	0.00	15.919	*****	0.00
28	30.8	0.00	0.	0.337	*****	0.00	12.188	*****	0.00
24	26.4	0.00	0.	0.292	*****	0.00	8.954	*****	0.00
20	22.0	0.00	0.	0.246	*****	0.00	6.218	*****	0.00
16	17.6	0.00	0.	0.199	*****	0.00	3.980	*****	0.00
12	13.2	0.00	0.	0.152	*****	0.00	2.239	*****	

15:23:43

PCAPAV(TM) 2.10

Page 1

07-08-;1 Proprietary Software of PORTLAND CEMENT ASSOCIATION

Project: Proposed Lake Elsinore, Standard Duty PCC

Engineer: [REDACTED]

Input Data:

Subgrade / Subbase K 215.0 PCI

Modulus of Rupture MR 550.0 PSI

Avg. Daily Truck Traffic (2 way) ADTT 30.00

Design Life 20 years

Aggregate Interlock Joints

Concrete Shoulders

Load Safety Factor 1.1

Estimated Pavement Thickness 7.5 IN

A X L E L O A D S

Axles per 1000 Trucks

Single

Tandem

22	0.00	36	0.00
20	0.00	32	0.00
18	1000.00	28	0.00
16	0.00	24	0.00
14	0.00	20	0.00
12	0.00	16	0.00
10	0.00	12	0.00
8	0.00	8	0.00
6	0.00	4	0.00
4	0.00	0	0.00

Design Thickness = 6.5 Inches

Load Repetitions ---Fatigue Analysis----- ----Erosion Analysis---

SAL	*LSF	Axle/ 1000	Expected Reps	Stress Ratio	Allowable Reps	Fatigue Consump	Power	Allowable Reps	Erosion
22	24.2	0.00	0.	0.617	*****	0.00	28.193	*****	0.00
20	22.0	0.00	0.	0.565	*****	0.00	23.300	*****	0.00
18	19.8	1000.00	109500.	0.511	459607.	23.82	18.873	952192.	11.50
16	17.6	0.00	0.	0.458	*****	0.00	14.912	*****	0.00
14	15.4	0.00	0.	0.404	*****	0.00	11.417	*****	0.00
12	13.2	0.00	0.	0.349	*****	0.00	8.388	*****	0.00
10	11.0	0.00	0.	0.294	*****	0.00	5.825	*****	0.00
8	8.8	0.00	0.	0.239	*****	0.00	3.728	*****	0.00
6	6.6	0.00	0.	0.182	*****	0.00	2.097	*****	0.00
4	4.4	0.00	0.	0.124	*****	0.00	0.932	*****	0.00

TAL	*LSF	Axle/ 1000	Expected Reps	Stress Ratio	Allowable Reps	Fatigue Consump	Power	Allowable Reps	Erosion
36	39.6	0.00	0.	0.427	*****	0.00	20.148	*****	0.00
32	35.2	0.00	0.	0.382	*****	0.00	15.919	*****	0.00
28	30.8	0.00	0.	0.337	*****	0.00	12.188	*****	0.00
24	26.4	0.00	0.	0.292	*****	0.00	8.954	*****	0.00
20	22.0	0.00	0.	0.246	*****	0.00	6.218	*****	0.00
16	17.6	0.00	0.	0.199	*****	0.00	3.980	*****	0.00
12	13.2	0.00	0.	0.152	*****	0.00	2.239	*****	0.00
8	8.8	0.00	0.	0.104	*****	0.00	0.995	*****	0.00
4	4.4	0.00	0.	0.054	*****	0.00	0.249	*****	0.00
0	0.0	0.00	0.	0.000	*****	0.00	0.000	*****	0.00

Total Fatigue Used = 23.82 Erosion Damage = 11.50

6.0 Inch Thickness Inadequate, Fatigue Used= 145.88 Erosion Damage = 25.09