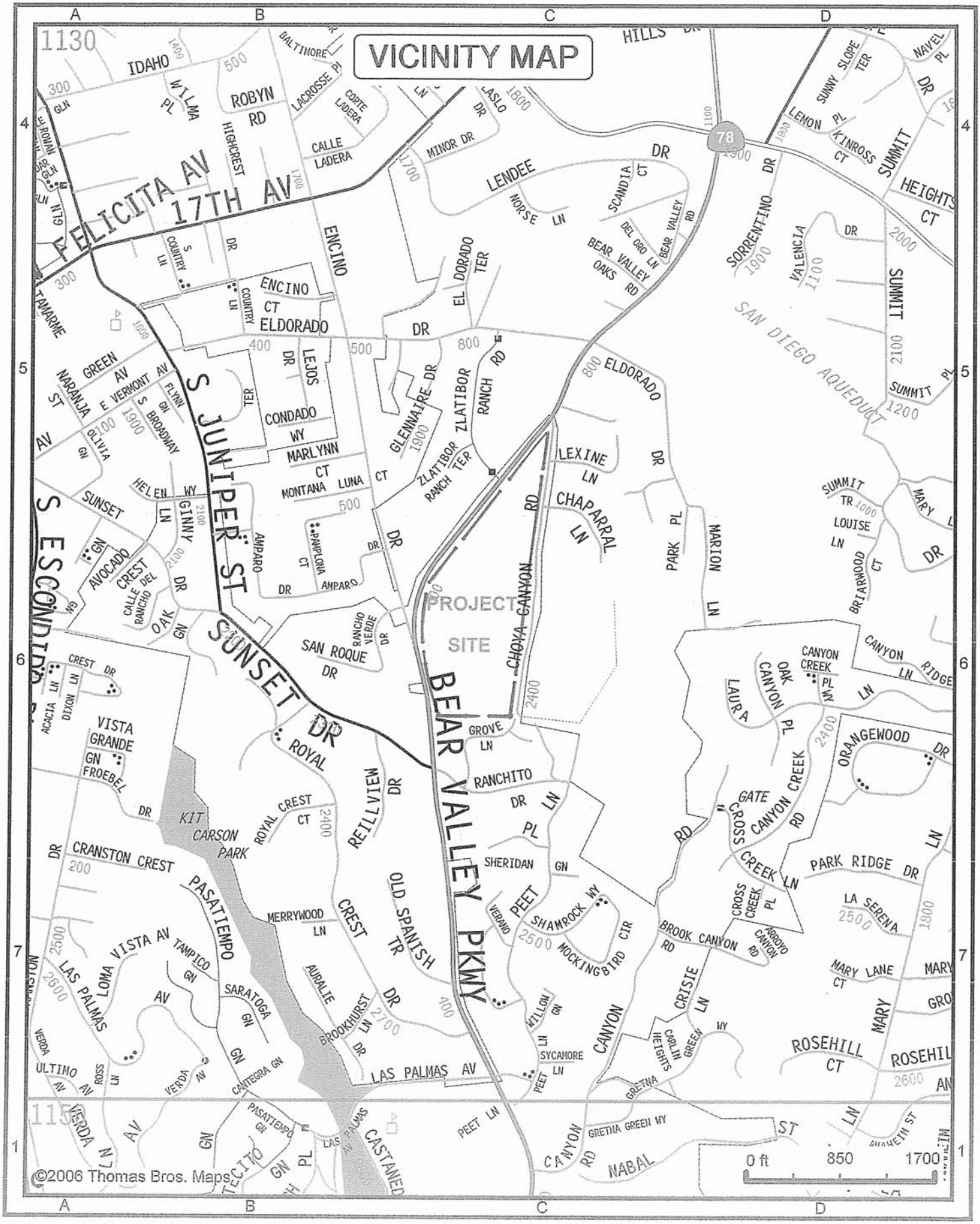


SITE: 1130 - C6

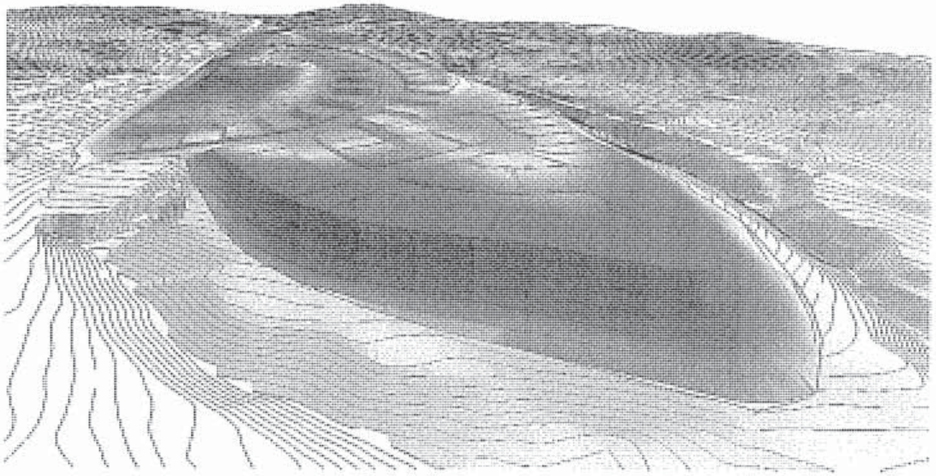
PLATE 1
V&M JOB #13-116-P

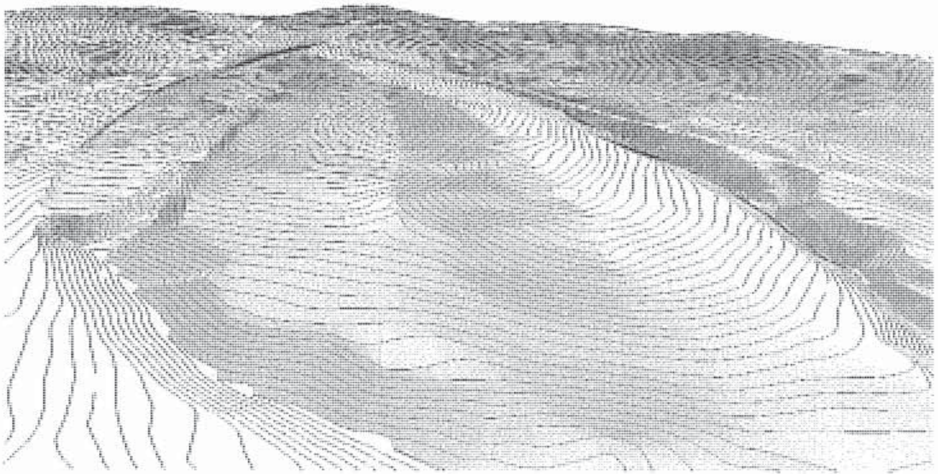
Bear Valley Parkway
Date: 2/19/13
Temp DLN :\1086\ &Ewk\Tentative Map\Bear Valley Pkwy
2-18-13

Job: Bear Valley Parkway
Units: Ft-CY
Tue Feb 19, 2013 09:01:23 Page 1

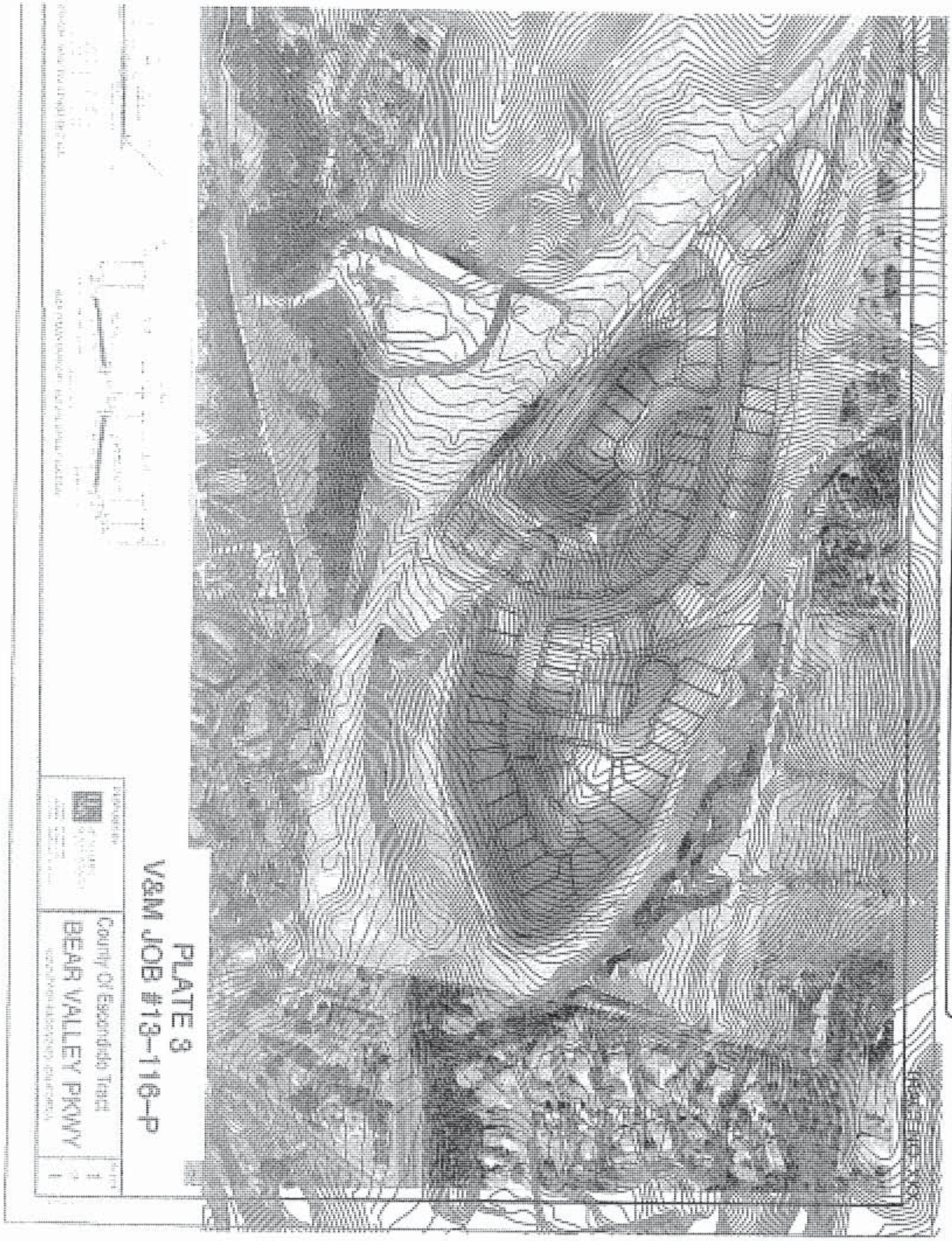
Volume Report
Design vs. Existing

		Area			Volume		Comp/Ratio		Compact		Export	Change
	Total	Cut	Fill	OnGrade	Cut	Fill	Cut	Fill	Cut	Fill	-Import	Per .1 Ft
Job Site	1,281,506	616,314	651,147	14,045	253,393	288,645	1.00	1.00	253,393	288,645	-35,252	4,746





PRELIMINARY DEVELOPMENT



PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils.

GRAIN SIZES U.S. STANDARD SERIES SIEVE

200	40	10	4	3/4"	3"	12"

CLEAR SQUARE SIEVE OPENINGS

SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

RELATIVE DENSITY

SANDS, GRAVELS AND NON-PLASTIC SILTS	BLOWS/FOOT
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

CONSISTENCY

CLAYS AND PLASTIC SILTS	STRENGTH	BLOWS/FOOT
VERY SOFT	0 - ¼	0 - 2
SOFT	¼ - ½	2 - 4
FIRM	½ - 1	4 - 8
STIFF	1 - 2	8 - 16
VERY STIFF	2 - 4	16 - 32
HARD	OVER 4	OVER 32

1. Blow count, 140 pound hammer falling 30 inches on 2 inch O.D. split spoon sampler (ASTM D-1586)
2. Unconfined compressive strength per SOILTEST pocket penetrometer CL-700

▼ Sand Cone Test ■ Bulk Sample ☒ $^{2}4_{6}$ = Standard Penetration Test (SPT) (ASTM D-1586) with blow counts per 6 inches

☐ Chunk Sample ○ Driven Rings ☒ $^{2}4_{6}$ = California Sampler with blow counts per 6 inches

VINJE & MIDDLETON ENGINEERING, INC.
2450 Auto Park Way
Escondido, CA 92029-1229

KEY TO EXPLORATORY BORING LOGS
Unified Soil Classification System (ASTM D-2487)

PROJECT NO.		KEY
13-116-P		

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-1

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
		SM	**COLLUVIUM (Qcol):** Silty fine to medium sand. Brown color. Damp. Loose. ST-1					
2		CL-ML	Sandy silt to sandy clay. Red brown color. Moist. Soft to loose. Plastic. ST-2	■	14	104	79	56
4								
6		SW-GP	**BEDROCK (Kgb):** Gabbroic rock. Fine to medium grained. Red brown color. Weathered. Friable. Massive. ST-3					
			Becomes blocky at 7 feet. Dense.	□	12	-	Sample Disturbed	-

Bottom of test pit at 7.5 feet.

■ BULK SAMPLE □ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 4

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-2

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
2		SM-SC	**COLLUVIUM (Qcol):** Silty to clayey fine to medium sand. Brown to red brown color. Damp. Loose. ST-1	■				
4				□	7	105.8	77	29
6		SW-GP	**BEDROCK (Kgb):** Gabbroic rock. Fine to coarse grained. Red brown to grey color. Weathered. Friable. Massive. Dense. Excavates gravelly. ST-3	■				
				□	4	136.7	100+	38

Bottom of test pit at 7.0 feet.

■ BULK SAMPLE □ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 5

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-3

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
2		SM	**COLLUVIUM (Qcol):** Silty fine to medium sand. Brown color. Damp. Loose. ST-1					
4		SW-GP	**BEDROCK (Kgb):** Gabbroic rock. Fine to coarse grained. Red brown to grey color. Weathered. Friable. Massive. ST-3	☐	8	128.1	98	58
6			Excavates somewhat blocky to gravelly at 6 feet. Dense.					

Bottom of test pit at 7.0 feet.

BULK SAMPLE ☐ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 6

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-4

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
2		SM	**COLLUVIUM (Qcol):** Clayey sand. Red brown color. Moist. Soft to loose. Low plastic. ST-2					
4		SC-CL	Clayey sand / sandy clay (residual soil). Red brown color. Moist. Firm to stiff. Low - medium plastic. ST-4	■				
6		SW-GP	**BEDROCK (Kgb):** Gabbroic rock. Fine to coarse grained. Red brown color. Weathered. Blocky. Dense. ST-3	□	6	138.7	100+	61
8			A mining excavation was encountered at 4-6 feet below the surface. The mining excavation appears to be an adit and measures approximately 7 feet wide and approximately 6 feet high. The excavation is trending N75E, and may be descending slightly in a northeast direction.					
10								
12		SW-GP	Gabbroic rock. Dense.					

Bottom of test pit at 13.0 feet.

■ BULK SAMPLE □ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 7

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-5

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
0			**COLLUVIUM (Qcol):** Clayey sand. Red brown color. Moist. Soft to loose. Low plastic. ST-2					
2			Becomes somewhat blocky and medium dense at 2.5 feet.					
		SC		■ □	13	112.7	86	64
4								
6		SM	Silty fine to medium sand. Brown color. Moist. Somewhat blocky. Medium dense. ST-1	□	15	116.7	84	82
8		GP	**BEDROCK (kgr):** Granitic rock. Fine grained. Tan to reddish color. Fractured. Includes quartz veins. Local polished surfaces. Dense. Excavates blocky to gravelly. ST-5	□	14	119.6	91	81
10			Bottom of test pit at 10.0 feet.					

■ BULK SAMPLE □ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 8

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-6

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
2		SM	**COLLUVIUM (Qcol):** Silty fine to medium sand. Red brown color. Moist. Loost to firm. ST-1					
4								
6		SW-GP	**BEDROCK (Kgb):** Gabbroic rock. Fine to medium grained. Red brown color. Weathered. Friable. Massive. ST-3					
			Becomes somewhat blocky to gravelly at 7 feet. Dense.	☐	5	132.0	100+	41

Bottom of test pit at 7.5 feet.

BULK SAMPLE ☐ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 9

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-7

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: Caving within fill deposits. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
0			**FILL (af):**					
			Sandy clay / clayey sand. Brown color. Moist. Very loose. Significant caving of the sidewalls until bedrock is exposed. Appears to be a mining excavation (shaft). ST-4					
2			Gabbroic bedrock is exposed at 3 feet below the surface and on all sides of the excavation. The shaft appears near vertical and measures approximately 9 feet by 9 feet square.					
4								
6								
8		SC-CL						
			Appears to be a possible filled excavation on the southwest side to the shaft at 9 feet below the surface. The filled excavation appears to continue downward in a N75W direction.					
10								
12								
14								
			Platic coke bottle at 15 feet. Continues moist and very loose.					
16			End at 16 feet - extent of the backhoe.					
			Bottom of test pit at 16.0 feet.					

BULK SAMPLE | CHUNK SAMPLE | DENSITY TEST | GROUND WATER

PLATE 10

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-8

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
2		SM	**TOPSOIL:** Silty fine to medium sand. Brown color. Damp. Loose. ST-1					
4		SW-GP	**BEDROCK (Kgb):** Gabbroic rock. Fine to coarse grained. Grey color. Weathered. Friable. Massive. ST-3 Excavates gravelly at 4 feet. Dense.					
6								

Bottom of test pit at 6.0 feet.

BULK SAMPLE CHUNK SAMPLE DENSITY TEST GROUND WATER

PLATE 11

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-9

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: Caving within fill deposits. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
2		SC	**FILL (af):** Clayey sand. Red brown color. Moist. Very loose. Sidewall caving. Placed to cover a mining excavation. ST-4 Gabbroic bedrock is exposed at 3 feet below the surface.					
4			At 4 feet a mine excavation was exposed (adit). The mine opening measures 7 feet wide by 6 feet in height. This excavation size extends due east 17 feet into the hillside. At this point the excavation narrows to approximately 3 feet wide and continues horizontally east for approximately 50-60 feet, where the excavation appears to turn northwards. Gabbroic bedrock is exposed throughout the visible portions of the mine excavation.					
6								
8								
10			Gabbroic bedrock. Dense.					

Bottom of test pit at 11.0 feet.

BULK SAMPLE | CHUNK SAMPLE | DENSITY TEST | GROUND WATER

PLATE 12

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-10

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
			COLLUVIUM (Qcol):					
			Silty fine to medium sand. Brown color. Dry at the surface, damp at 2 feet. Somewhat blocky. Medium dense. ST-1					
2				■				
4			Very tight and blocky at 4 feet. Moist. Slow digging. Appears to be an ancient colluvium. Dense.	□	11	120.4	87	65
		SM						
6				□	10	118.0	85	56
8								
10			Continues very tight and blocky. Dense. Backhoe refusal at 10.5 feet.	□	11	120.3	87	65
			Bottom of test pit at 10.5 feet.					

■ BULK SAMPLE □ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 13

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-11

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: Caving to 9 feet. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
2		SW	**CANYON ALLUVIUM (Qal):** Fine to medium sand. Brown color. Damp. Very loose. Sidewall caving. ST-3					
4		SC-CL	Sandy clay / clayey sand. Red brown to brown color. Moist. Soft to very loose. Sidewall caving. ST-4					
6								
8								
10		SW-GP	**BEDROCK (Kgb):** Gabbroic rock. Fine to coarse grained. Red brown color. Weathered. Friable. Somewhat blocky. Dense. ST-3 Bottom of test pit at 10.0 feet.					

BULK SAMPLE | CHUNK SAMPLE | DENSITY TEST | GROUND WATER

PLATE 14

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-12

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
			COLLUVIUM (Qcol):					
			Silty fine to medium sand. Brown color. Damp. Loose. ST-1					
2			Becomes sowewhat blocky and tight at 2 feet. Appears ancient. Medium dense to dense.	☐	9	123.5	89	58
4				☐	13	117.2	85	71
6				☐	12	109.7	79	55
8		SC-ML	Tight and blocky at 8 feet. Continues medium dense to dense.					
10				☐	10	123.6	89	65
12								
14				☐	11	119.0	86	64
16			End at 16.5 feet - extent of backhoe.					

Bottom of test pit at 16.5 feet.

BULK SAMPLE ☐ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 15

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-13

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
			COLLUVIUM (Qcol):					
			Silty fine to medium sand. Brown color. Damp. Loose. ST-1					
2			Becomes blocky and relatively tight at 2 feet. Medium dense.					
		SM						
4								
				☐	13	117.1	89	71
		GP	**BEDROCK (Kgb):**					
6			Gabbroic rock. Fine to coarse grained. Red brown color. Weathered. Friable. Massive. Blocky. Medium dense to dense. ST-3					

Bottom of test pit at 6.0 feet.

■ BULK SAMPLE ☐ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 16

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-14

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 2/28/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
			COLLUVIUM (Qcol):					
			Silty fine to medium sand. Red brown color. Moist. Loose. ST-1					
2								
			Becomes somewhat blocky at 3 feet. Very loose.					
4				☐	12	108.8	78	54
6		SM	Blocky at 6 feet. Appears ancient. Medium dense to dense.					
8				☐	12	120.7	87	73
10				☐	13	117.9	85	73
			Continues blocky at 11 feet. Becomes hard. Very slow digging.					
12				☐	11	119.9	87	65
			Backhoe refusal at 13 feet.					

Bottom of test pit at 13.0 feet.

■ BULK SAMPLE ☐ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 17

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-15

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 3/1/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: Caving within fill deposit. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
0		SM	**FILL (af):** Silty fine to medium sand. Brown color. Dry. Very loose. Sidewall caving. Placed to cover a mining excavation. ST-1					
2			Gabbroic bedrock is exposed at 3 feet below the surface, and on the sides of the excavation.					
4			Metal pipe at 4 feet.					
6								
8			A partially filled mining excavation on the north side of the test pit at 7 feet below the surface. Appears to be a horizontal adit. Exposed opening in the bedrock measures approximately 7 feet high by 4 feet wide. Appears to trend N25E into the hillside.					
10								
12								
14			Gabbroic bedrock. Massive. Hard.					

Bottom of test pit at 15.0 feet.

BULK SAMPLE | CHUNK SAMPLE | DENSITY TEST | GROUND WATER

PLATE 18

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-16

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 3/1/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
			COLLUVIUM (Qcol):					
			Silty fine to medium sand. Brown color. Dry to damp. Loose. ST-1					
2								
			Becomes blocky and relatively tight at 3.5 feet. Appears ancient. Medium dense to dense.					
4		SM		☐	6	119.9	87	36
			Color changes to red brown at 5 feet. Damp. Continues medium dense to dense.					
6				☐	10	120.0	87	59
8								
		SW-GP	**BEDROCK (Kgb):**					
			Gabbroci rock. Fine to coarse grained. Red brown color. Weathered. Blocky. Very dense. ST-3	☐	5	138.9	100+	51
			Bottom of test pit at 9.5 feet.					

■ BULK SAMPLE ☐ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 19

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-17

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 3/1/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
			COLLUVIUM (Qcol):					
			Silty fine to medium sand. Brown color. Damp. Loose. ST-1					
2								
		SM						
4								
			Becomes somewhat blocky at 5 feet. Medium dense to dense.	☐	9	120.7	87	55
6								
		SW-GP	**BEDROCK (Kgb):**					
			Gabbroic rock. Fine to coarse grained. Red brown color. Weathered. Gravelly to blocky. Dense. ST-3					
			Bottom of test pit at 7.5 feet.					

■ BULK SAMPLE ☐ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 20

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-18

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 3/1/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
		SM	**TOPSOIL:** Silty fine to medium sand. Brown color. Damp. Loose. ST-1					
2		SW-GP	**BEDROCK (Kgb):** Gabbroic rock. Fine to coarse grained. Grey color. Weathered. Friable. Massive. ST-3					
4			Becomes blocky at 4 feet. Very dense.					

Bottom of test pit at 5.0 feet.

BULK SAMPLE | CHUNK SAMPLE | DENSITY TEST | GROUND WATER

PLATE 21

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-19

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 3/1/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
2		SM	**TOPSOIL:** Silty fine to medium sand. Brown color. Damp. Loose. ST-1					
4		SW-GP	**BEDROCK (Kgb):** Gabbroic rock. Fine to coarse grained. Red brown color. Gravelly. Dense. ST-3					

Bottom of test pit at 5.0 feet.

BULK SAMPLE | CHUNK SAMPLE | DENSITY TEST | GROUND WATER

PLATE 22

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-20

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 3/1/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
			COLLUVIUM (Qcol):					
			Silty fine to medium sand. Red brown color. Damp. Loose. ST-1					
2			Becomes blocky at 2 feet. Appears ancient. Medium dense to dense.	☐	9	123.2	89	58
		SM						
4				■				
6			Hard at 6 feet. Slow digging. Dense.	☐	13	123.3	89	84
			Backhoe refusal at 6.5 feet.					
			Bottom of test pit at 6.5 feet.					

■ BULK SAMPLE ☐ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 23

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-21

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 3/1/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
0			**COLLUVIUM (Qcol):**					
			Silty fine to medium sand. Brown color. Moist. Very loose. ST-1					
2		SM						
4			Continues moist. Loose to firm.					
6			**BEDROCK (Kgb):**					
		SW-GP	Gabbroic rock. Fine to coarse grained. Red brown color. Weathered. Friable. Massive. ST-3					
8			Somewhat blocky at 8 feet. Dense.	☐	4	129.3	99	30

Bottom of test pit at 8.5 feet.

■ BULK SAMPLE ☐ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 24

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-22

PROJECT: Proposed Residential Subdivision CLIENT: Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P PROJECT LOCATION: 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 3/1/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
		SW	**FILL (af):** Fine to coarse sand. Grey color. Loose. ST-3					
2			**COLLUVIUM (Qcol):** Silty fine to medium sand. Red brown color. Damp to moist. Loose to firm. ST-1					
4		SM	Becomes somewhat blocky at 5 feet. Medium dense.	☐	10	117.1	85	55
6								
8								
		SW-GP	**BEDROCK (Kgb):** Gabbroic rock. Fine to coarse grained. Red brown color. Weathered. Friable. Gravelly. Dense. ST-3	☐	7	121.4	93	43

Bottom of test pit at 9.5 feet.

■ BULK SAMPLE ☐ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 25

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-23

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 3/1/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
2		SM	**COLLUVIUM (Qcol):** Silty fine to medium sand. Red brown color. Damp to moist. Loose. ST-1					
4								
6		SW	**BEDROCK (Kgb):** Gabbroic rock. Fine to coarse grained. Grey color. Weathered. Friable. Massive. Medium dense to dense. ST-3	☐	14	113.4	87	70

Bottom of test pit at 7.0 feet.

BULK SAMPLE ☐ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 26

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-24

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 3/1/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: Sidewall caving to 5 feet. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
2		SM	**COLLUVIUM (Qcol):** Silty fine to medium sand. Brown color. Moist. Very loose. Sidewall caving. ST-1					
4								
6		SW-GP	**BEDROCK (Kgb):** Gabbroic rock. Fine to coarse grained. Grey color. Weathered. Friable. Massive. ST-3 Somewhat blocky to gravelly at 6 feet. Dense.	☐	10	125.4	96	68

Bottom of test pit at 7.0 feet.

■ BULK SAMPLE ☐ CHUNK SAMPLE ▼ DENSITY TEST ▽ GROUND WATER

PLATE 27

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-25

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 3/1/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
2		SM	**TOPSOIL:** Silty fine to medium sand. Brown color. Damp. Very loose. ST-1					
4		SW-GP	**BEDROCK (Kgb):** Gabbroic rock. Fine to coarse grained. Grey color. Weathered. Friable. Massive. ST-3 Excavates gravelly at 4.5 feet. Dense.					

Bottom of test pit at 5.5 feet.

BULK SAMPLE | CHUNK SAMPLE | DENSITY TEST | GROUND WATER

PLATE 28

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-26

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 3/1/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: No caving. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
2		SM	**TOPSOIL:** Silty fine to medium sand. Brown color. Damp. Loose. ST-1					
4		SW-GP	**BEDROCK (Kgb):** Gabbroic rock. Fine to coarse grained. Grey color. Weathered. Friable. Massive. ST-3 Somewhat blocky to gravelly at 4.5 feet. Dense.					
6			Bottom of test pit at 6.0 feet.					

BULK SAMPLE | CHUNK SAMPLE | DENSITY TEST | GROUND WATER

PLATE 29

VINJE & MIDDLETON ENGINEERING, INC.

TEST PIT: TP-27

PROJECT: Proposed Residential Subdivision **CLIENT:** Speith & Wohlford, Inc.

PROJECT NUMBER: 13-116-P **PROJECT LOCATION:** 661 Bear Valley Pkwy, Escondido (APN's 237-131-01 & 02)

Date Excavated: 3/1/13 **Logged By:** SJM

Equipment: Caterpiller 420 Backhoe

Remarks: Caving within fill deposit. No groundwater.

DEPTH (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	SAMPLE TYPE	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	RELATIVE DENSITY (%)	DEGREE OF SATURATION (%)
			FILL (af):					
			Silty fine to medium sand. Brown color. Moist. Very loose. Sidewall caving. ST-1					
			Unknown if excavation is associated with mining actvities.					
2								
		SM	Plastic and metal irrigation pipe in the uppper 3 feet.					
4								
			Organics and stumps at 5 feet. Continues very loose.					
6								
		SW-GP	**BEDROCK (Kgb):**					
			Gabbroic rock. Fine to coarse grained. Red brown color. Weathered. Gravelly. Dense. ST-3					

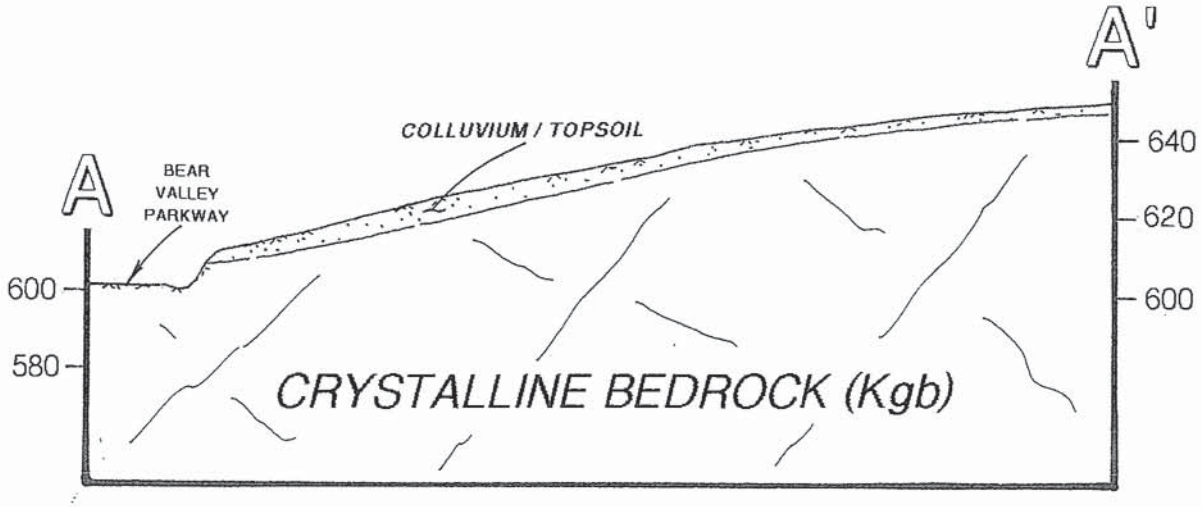
Bottom of test pit at 7.0 feet.

BULK SAMPLE | CHUNK SAMPLE | DENSITY TEST | GROUND WATER

PLATE 30

GEOLOGIC CROSS-SECTIONS

SCALE: 1" = 50'



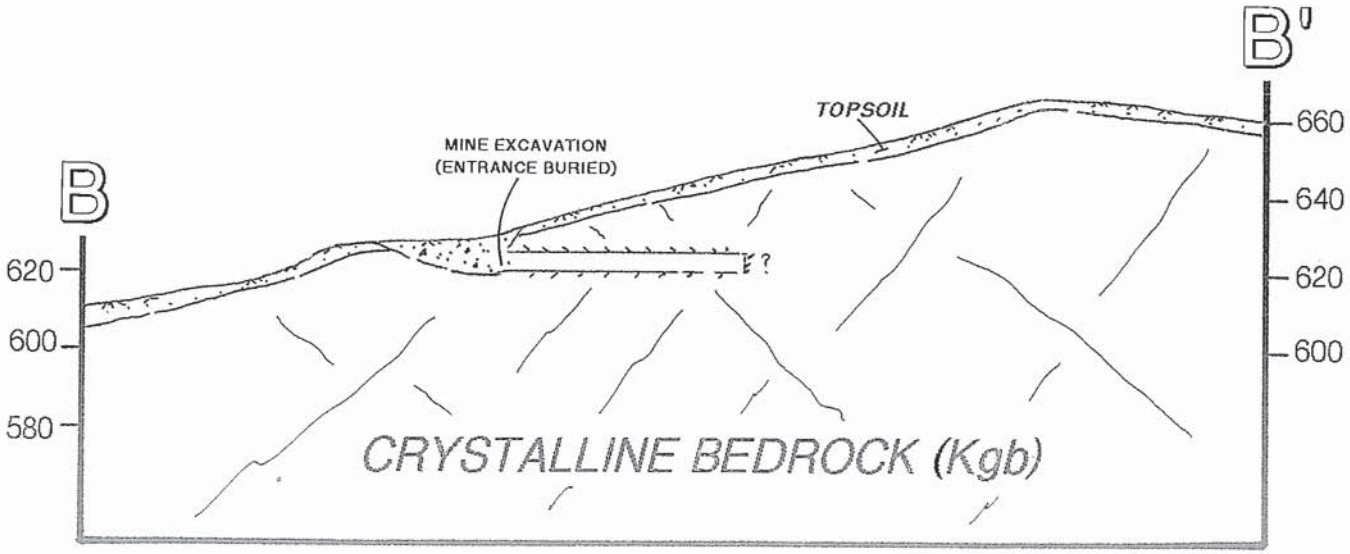
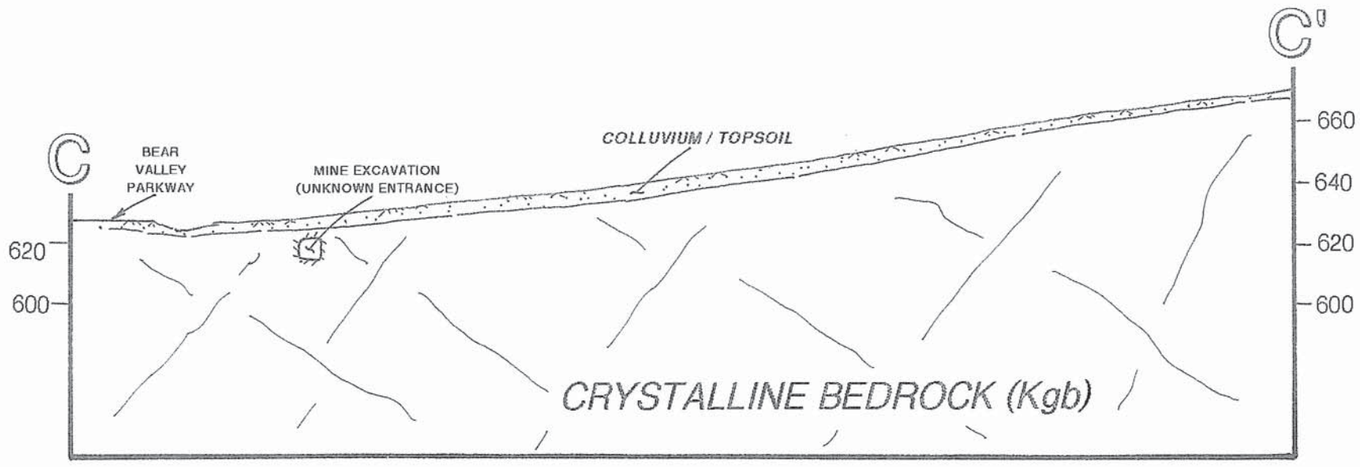
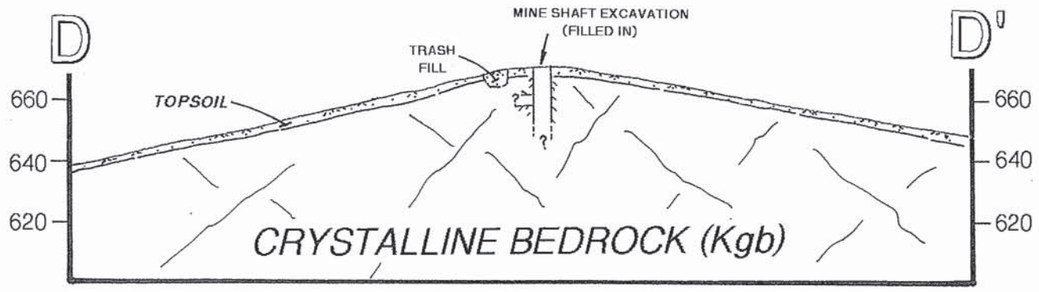


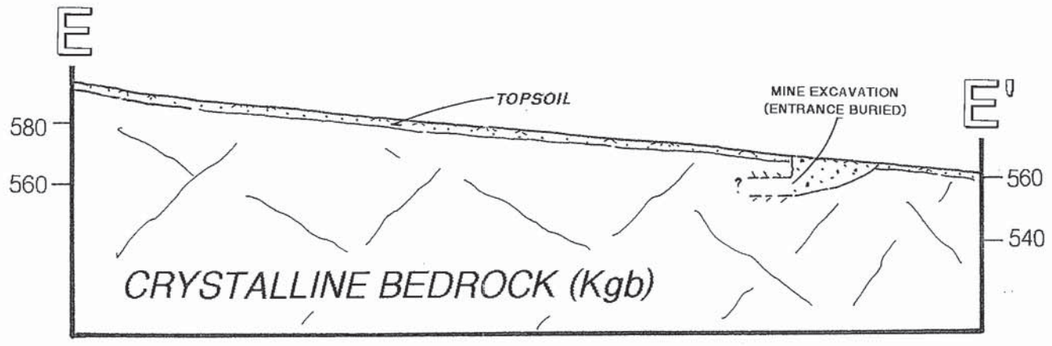
PLATE 31
V&M JOB #13-116-P

GEOLOGIC CROSS-SECTIONS

SCALE: 1" = 50'







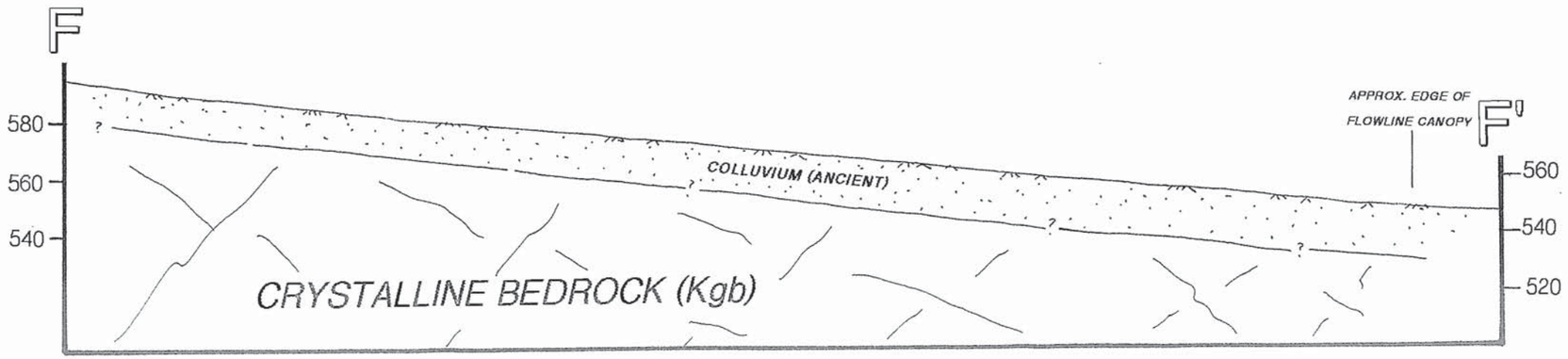
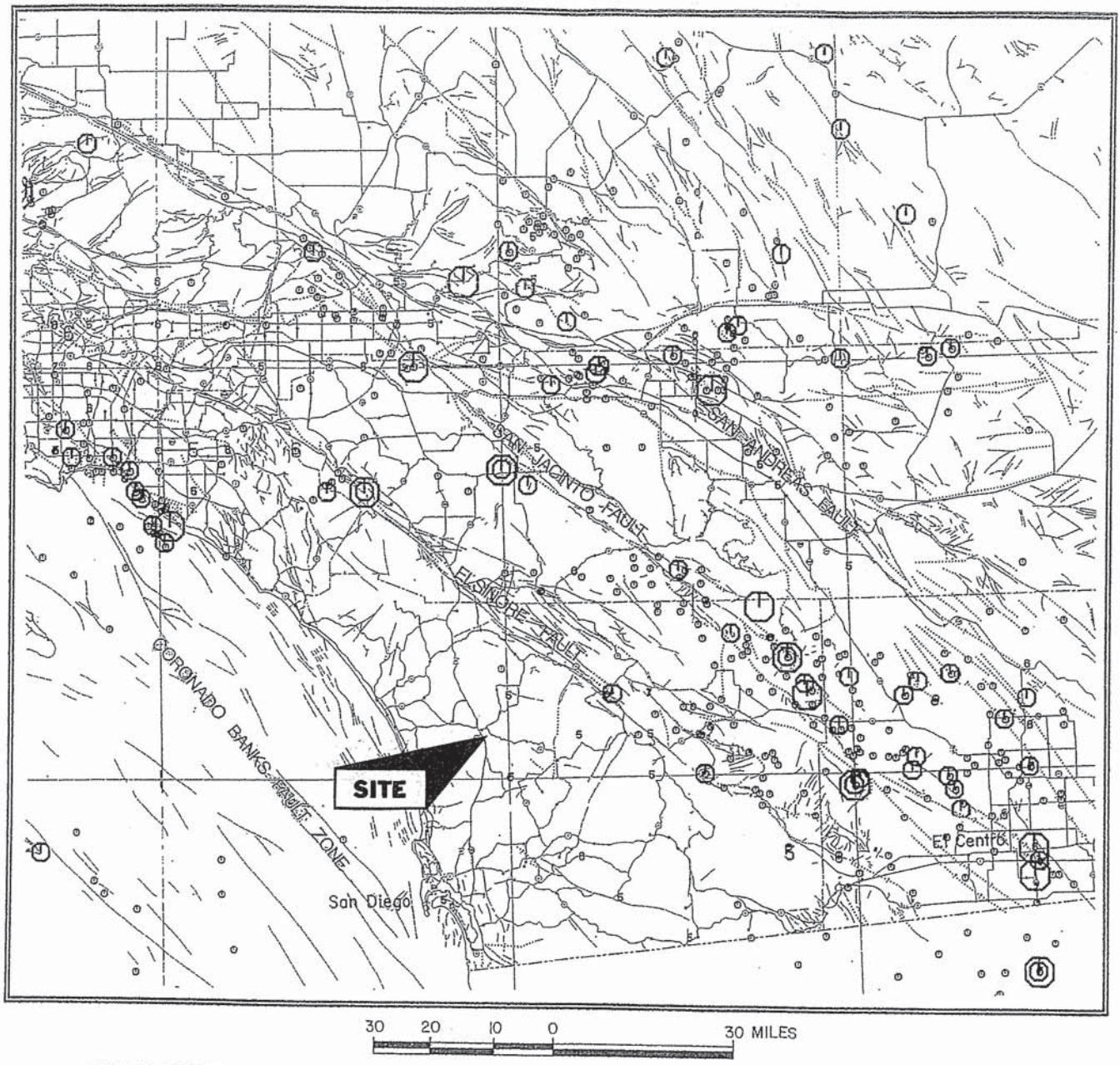


PLATE 32
V&M JOB #13-116-P

FAULT–EPICENTER MAP
SAN DIEGO COUNTY REGION



INDICATED EARTHQUAKE EVENTS THROUGH 75 YEAR PERIOD (1900-1974)

Map data is compiled from various sources including California Devision of Mines and Geology, California Institute of Technology and the National Oceanic and Atmospheric Administration. Map is reproduced from California Division of Mines and Geology, "Earthquake Epicenter Map of California; Map Sheet 39." 1978

MAGNITUDE

..... 4.0 TO 4.9
..... 5.0 TO 5.9
..... 6.0 TO 6.9

Fault

661 BEAR VALLEY PARKWAY
ESCONDIDO

VINJE & MIDDLETON ENGINEERING

DSA FILE # _____ DSA APPL. # _____

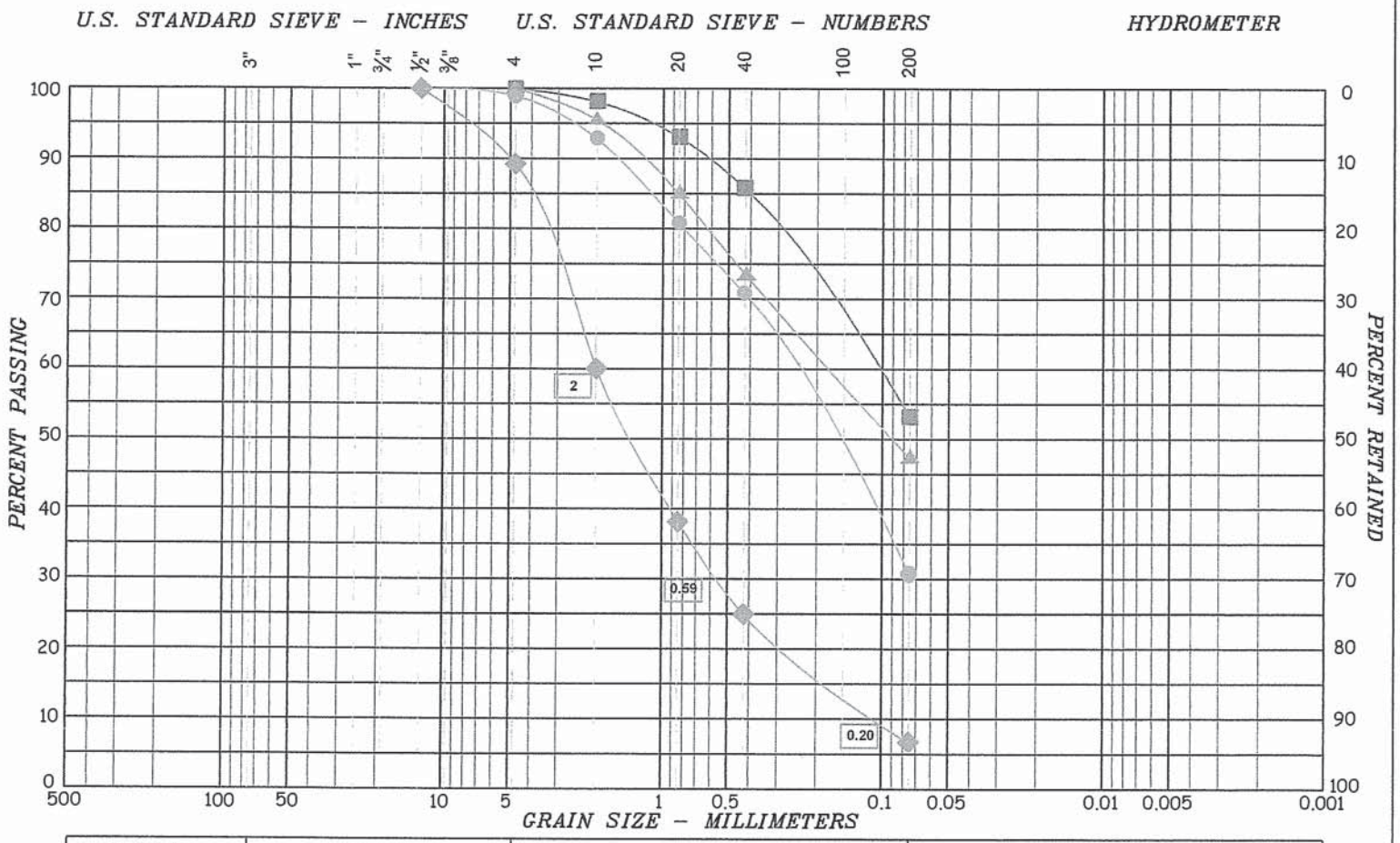
DSA/LEA # _____ Job # 13-116-P Soil Type: 1, 2, 3, & 4

Project: Residential Subdivision Location: 661 Bear Valley Parkway, Escondido

ASTM Test Method: _____ Date: March 2013 Tech: B.B. & R.F.

Supervising Lab Tech: Ray Fox NICET 129713 Exp. Date: 7/1/2013

Supervising Lab Manager: S. Mehdi S. Shariat RCE # 46174 Exp. Date: 12/31/2014



Cobbles	Gravel		Sand		SILT OR CLAY
	Coarse	Fine	Coarse to medium	Fine	

SAMPLE LOCATION	DEPTH (FT)	SYMBOL	USGS	NAT. ω%	LL	PL	PI	Cu (D_{60}/D_{10})	Cc ($D_{30}^2/D_{60}D_{10}$)
TP-1 (ST-2)	2	■	CL/ML	14					
TP-2 (ST-1)	½	●	SM/SC	-					
TP-4 (ST-4)	3 ½	▲	CL/SC	-					
TP-8 (ST-3)	4 ½	◆	GW/GP	-	-	-	-	>4	1.4

PLATE 34

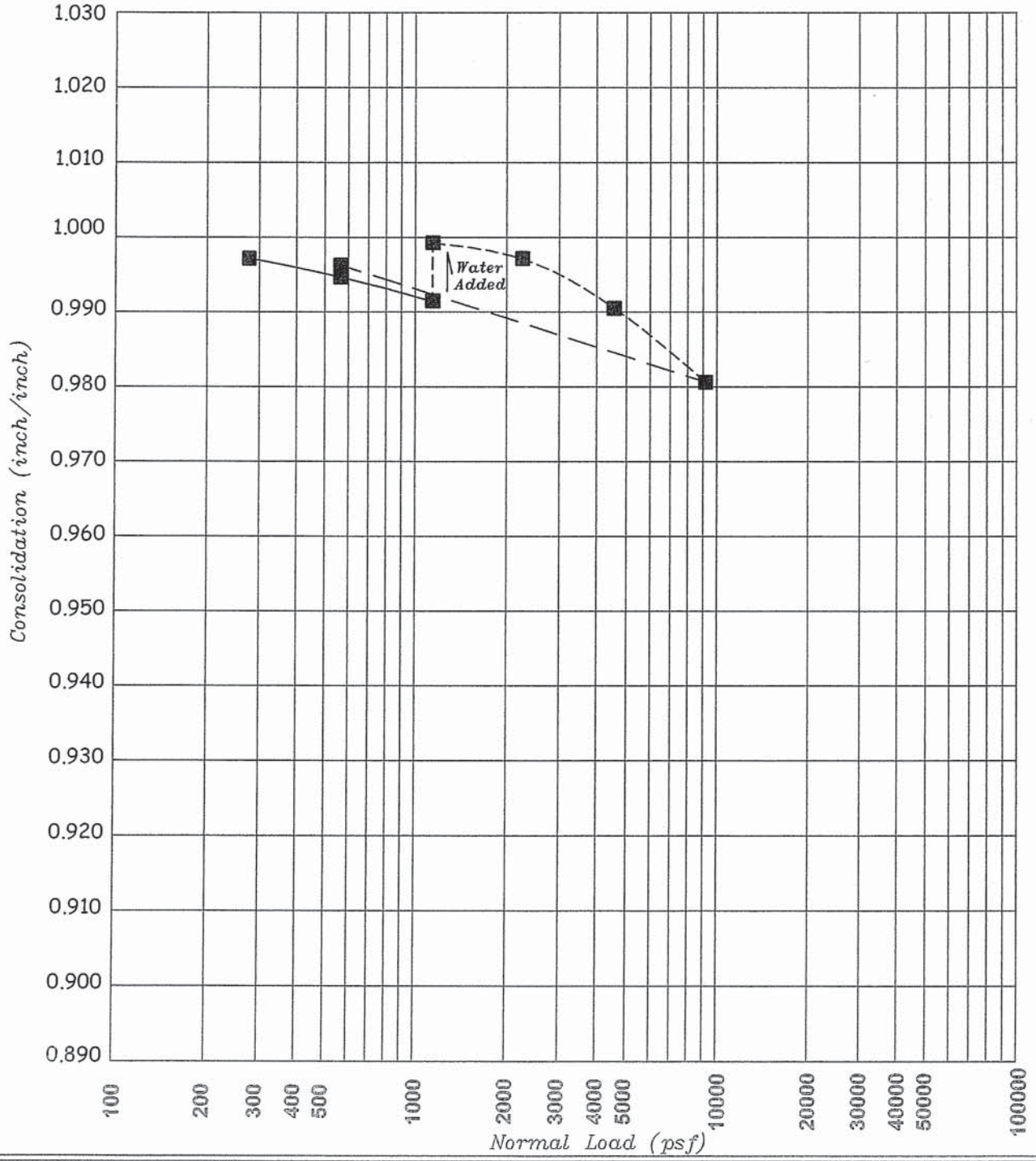
cc: ____Project Architect ____Structural Engineer ____Project Inspector ____DSA Regional Office

March 2013

DSA FILE # _____ DSA APPL. # _____ DSA / LEA # _____ Test Method: ASTM D4186

Job # 13-116-P Date: March 2013 Job Name: 661 Bear Valley Parkway, Escondido (40-ac. site)

Sample Location	Depth (ft.)	Sample Symbol	Sample Condition	Explanation
TP-1	2	■	Remolded to 90% of MDD	——— FIELD MOISTURE
				- - - - - - - - - SAMPLE SATURATED
				— — — — REBOUND



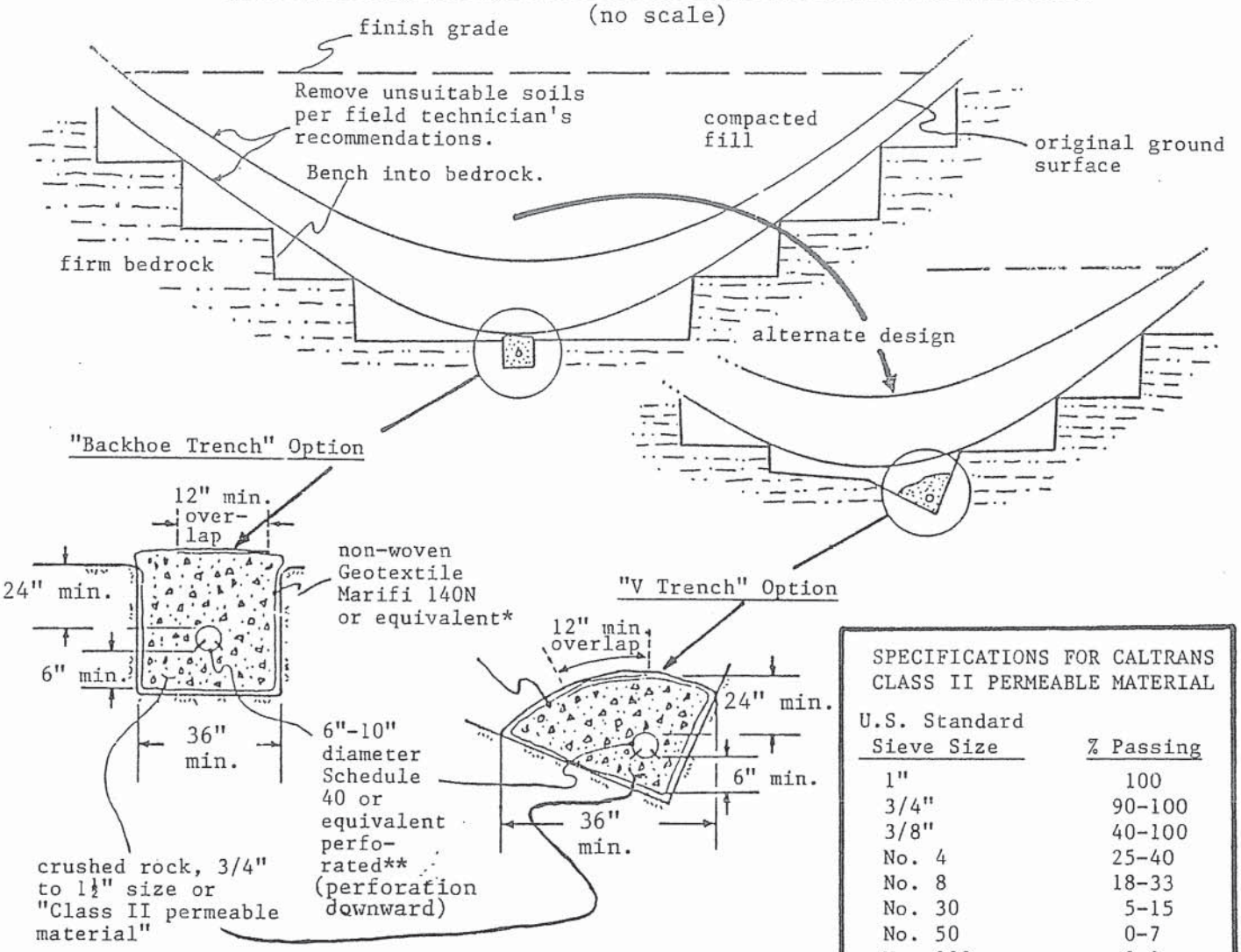
Supervising Lab Tech: Ray Fox Supervising Lab Manager: S. Mehdi S. Shariat

NICET: 129713 Exp. Date: 7/1/2013 RCE # 46174 Exp. Date: 12/31/2014

cc: ___Project Architect ___Structural Engineer ___Project Inspector ___DSA Regional Office

TYPICAL CANYON SUBDRAIN DETAILS

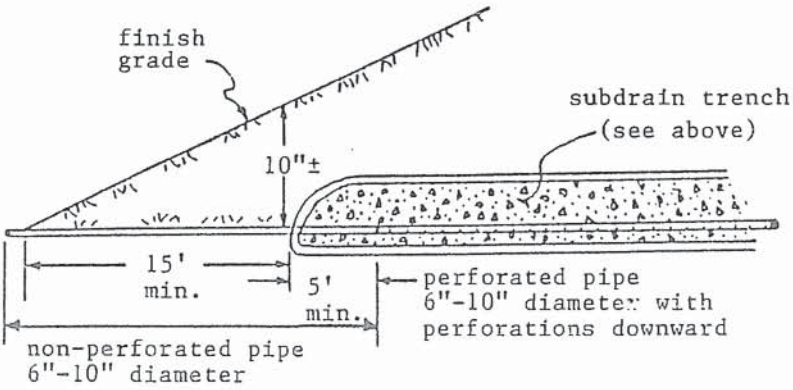
(no scale)



SPECIFICATIONS FOR CALTRANS CLASS II PERMEABLE MATERIAL

U.S. Standard Sieve Size	% Passing
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3
Sand Equivalent	75

DETAIL OF CANYON SUBDRAIN TERMINUS



NOTE: Subdrain to be installed in competent material as evaluated by the field representative. Non-perforated pipe to be installed in regions recommended by the field representative.

*If Caltrans Class II permeable material is used in place of 3/4"-1½" gravel, fabric filter may be deleted.

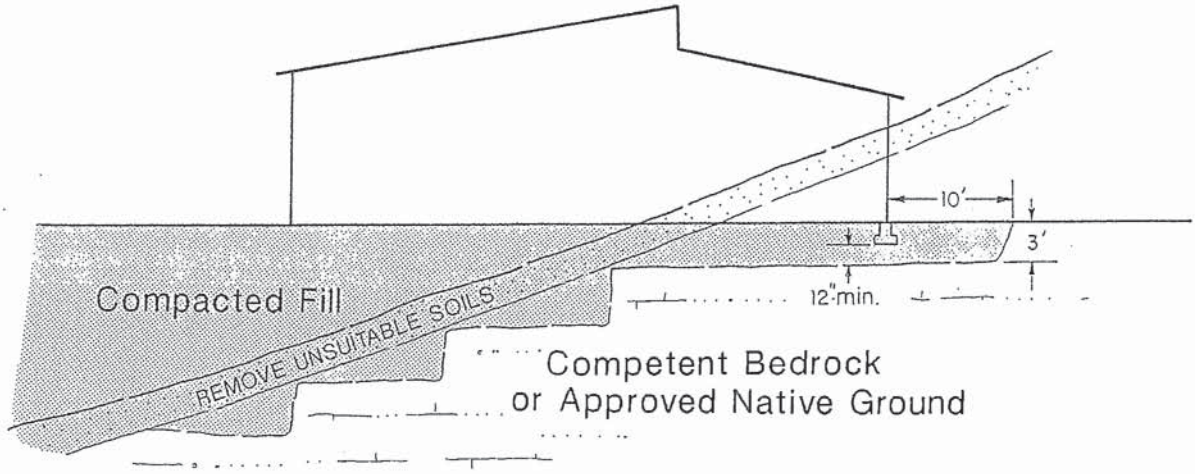
**SUBDRAIN TYPE - Subdrain type should be Acrylonitrile Butadiene Stryene (A.B.S.), Polyvinyl Chloride (PVC) or approved equivalent. Class 125, SDR 32.5 should be used for maximum fill depths of 35 feet. Class 200, SDR 21 should be used for maximum fill depths of 100 feet.

PLATE 36
V&M JOB #13-116-P

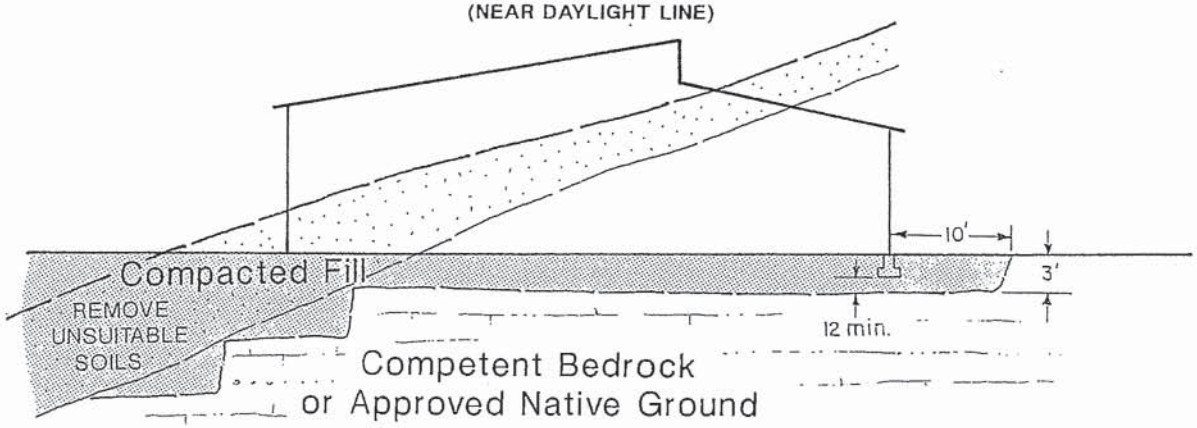
UNDERCUTTING DETAILS

Typical - no scale

CUT/FILL TRANSITION



CUT LOT
(NEAR DAYLIGHT LINE)



NOTE: Some agencies require complete removal and recompaction of the entire cut portion of the lot. Also, removal and recompaction of the entire cut portion may be required by the project geotechnical engineer based upon soil and groundwater conditions at the site.

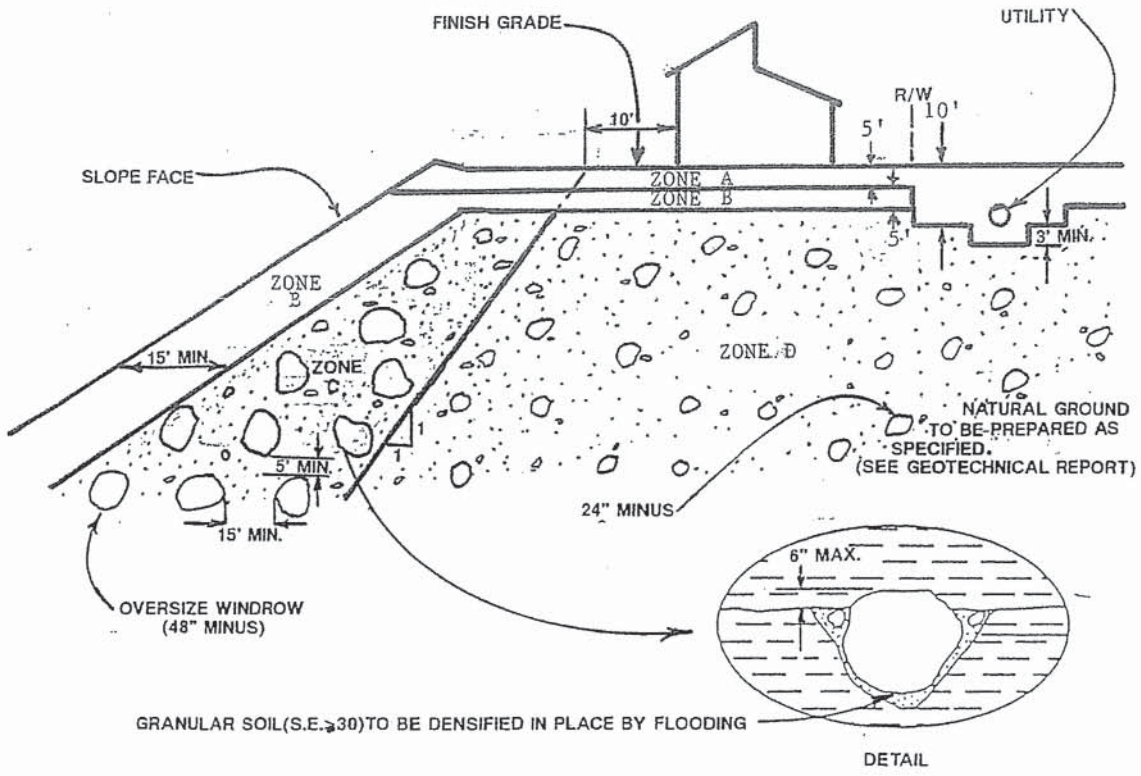
Vertical and horizontal limits of over-excavation are subject to additional revision by the project geotechnical consultant based upon the actual site conditions. Subdrains may also be necessary as determined by the geotechnical consultant.

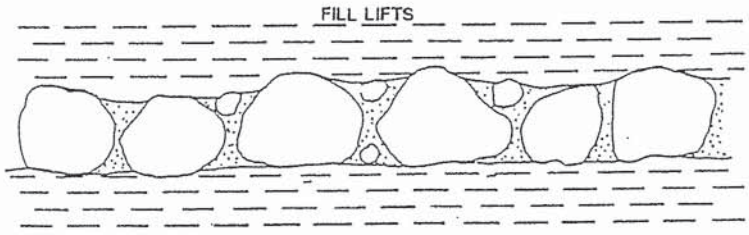
VINJE & MIDDLETON ENGINEERING, INC.

PLATE 37
V&M JOB #13-116-P

ROCK DISPOSAL RECOMMENDATIONS

WINDROW METHOD
Typical - no scale





WINDROW DETAIL (EDGE VIEW)

MATERIAL AND CONSTRUCTION SPECIFICATIONS ARE PROVIDED ON THE ATTACHED SHEET (ALSO SEE GEOTECHNICAL REPORT).

VINJE & MIDDLETON ENGINEERING, INC.

PLATE 38
V&M JOB #13-116-P

ROCK DISPOSAL RECOMMENDATIONS

ZONE A:

Shall be measured 5 feet vertically from the finished building pad grade. In public right-of-way and easement, Zone A shall be 10 feet minimum or must extend 3 feet below the deepest utility, whichever is greater. Zone A must consist of compacted soil only (no rock fragments over six inches in maximum dimension) and shall contain at least 40% soil sizes passing the ¼-inch sieve.

ZONE B:

Shall be 15 feet measured horizontally from face of slope and 5 feet measured vertically below Zone A. Zone B shall be similar to Zone A except individual rocks up to 12 inches in maximum dimension shall be allowed.

ZONE C:

Oversize rocks not larger than 48 inches in maximum diameter must either be individually placed or windrowed. For individual placement, rocks must be uniformly distributed and spaced so as to permit placement and compaction of soil conforming to Zone A. For windrows, rocks shall be placed in excavations in well compacted soil conforming to Zone A. Approved granular soil ($SE \geq 30$) must be flooded in the windrows to completely fill the voids around and beneath rocks. All windrows must be parallel and may be placed either parallel or perpendicular to face of slope depending on site geometry.

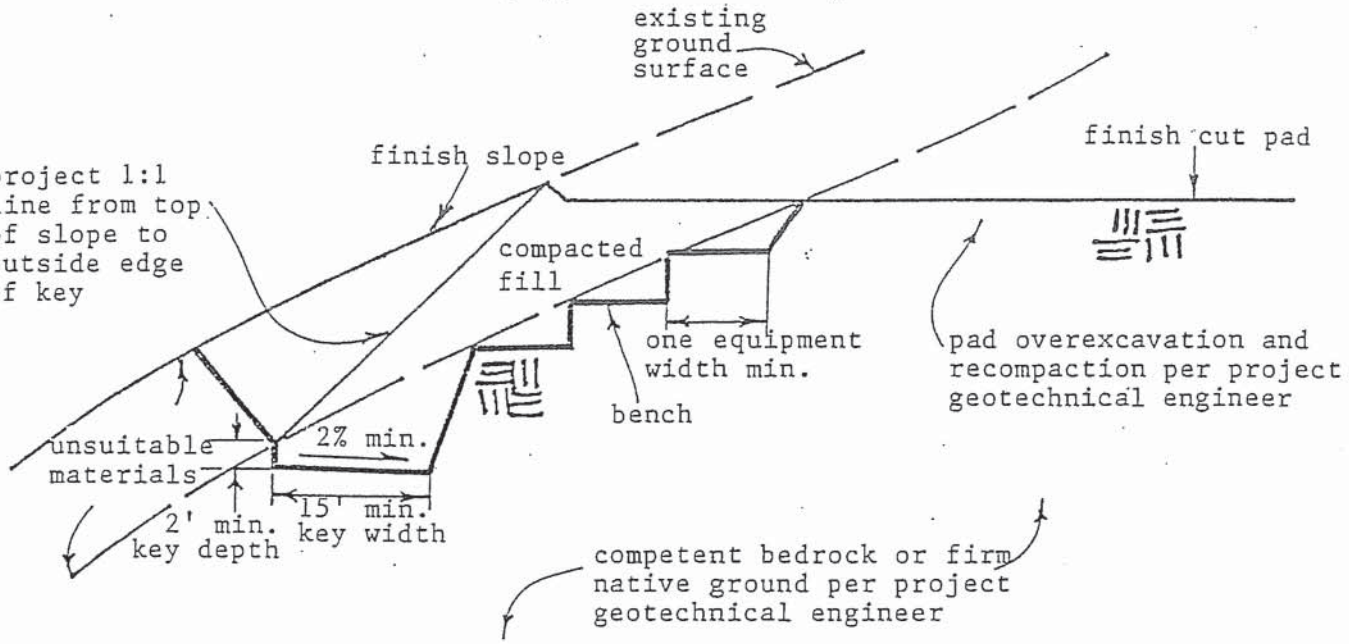
ZONE D:

Shall be similar to Zone A except individual rocks up to 2 feet in maximum dimension shall be allowed providing rocks larger than approximately 12 inches are well spaced so as to permit placement and compaction of soil around the larger rocks.

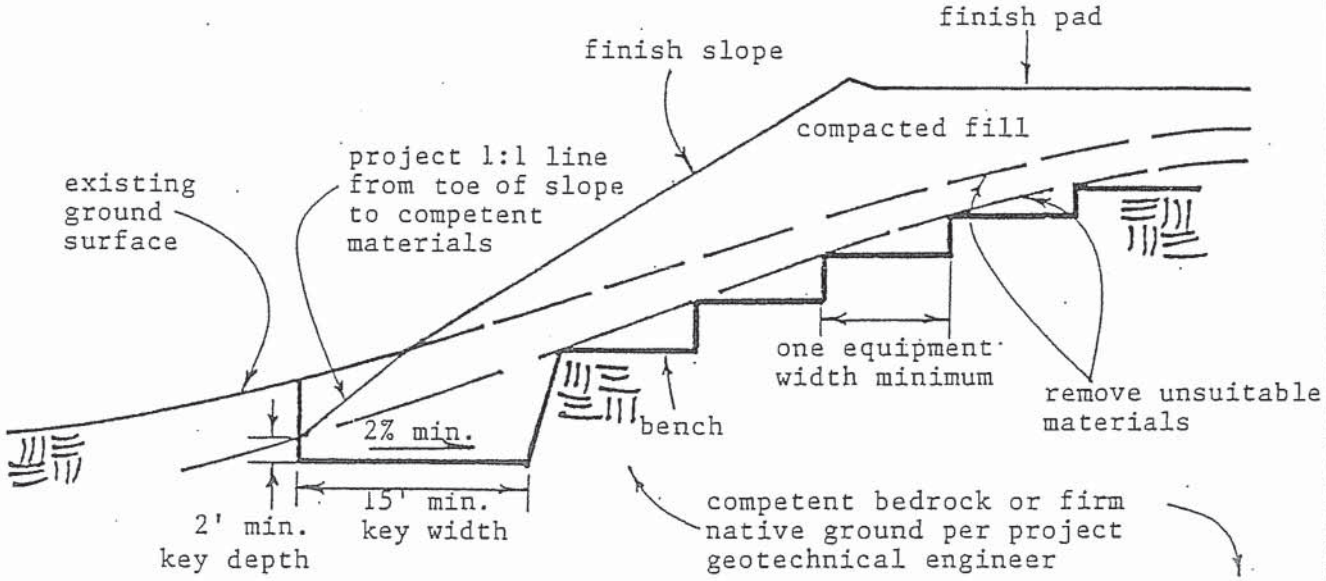
All rock placement, fill placement, and flooding of approved granular fill must be continuously observed by the geotechnical engineer.

PLATE 39
V&M JOB #13-116-P

KEY AND BENCHING DETAILS
(Typical - no scale)



Side Hill Stability Fill Slope

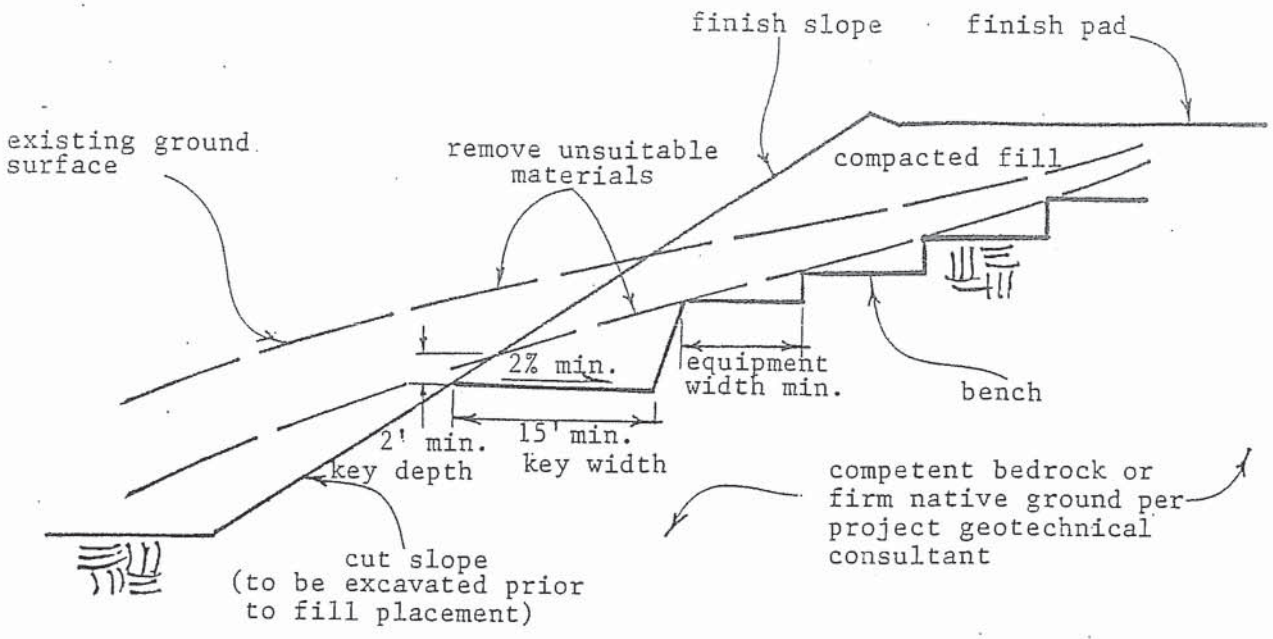


Fill Slope

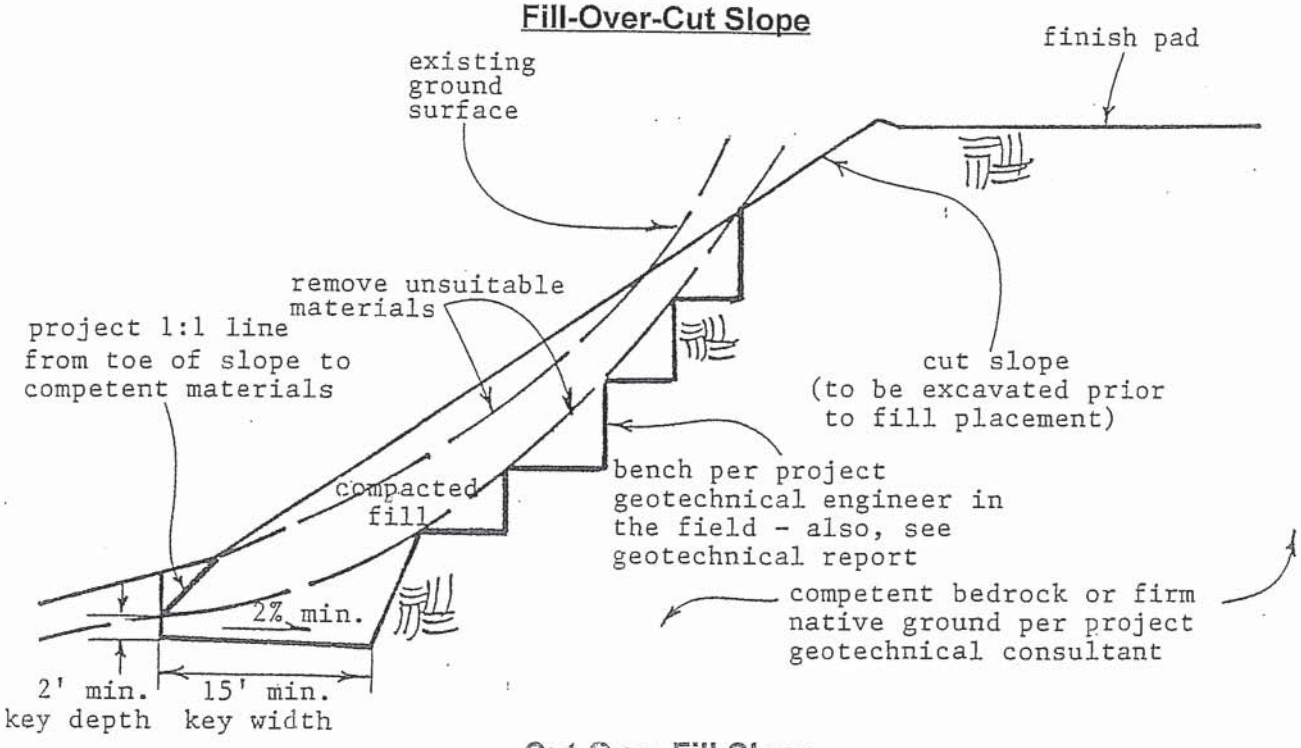
Note: Key and benching details shown herein are subject to revisions by the project geotechnical engineer based upon actual site conditions. Back drains may also be necessary as determined by the project geotechnical consultant.

PLATE 40
V&M JOB #13-116-P

KEY AND BENCHING DETAILS (Typical - No Scale)



Fill-Over-Cut Slope



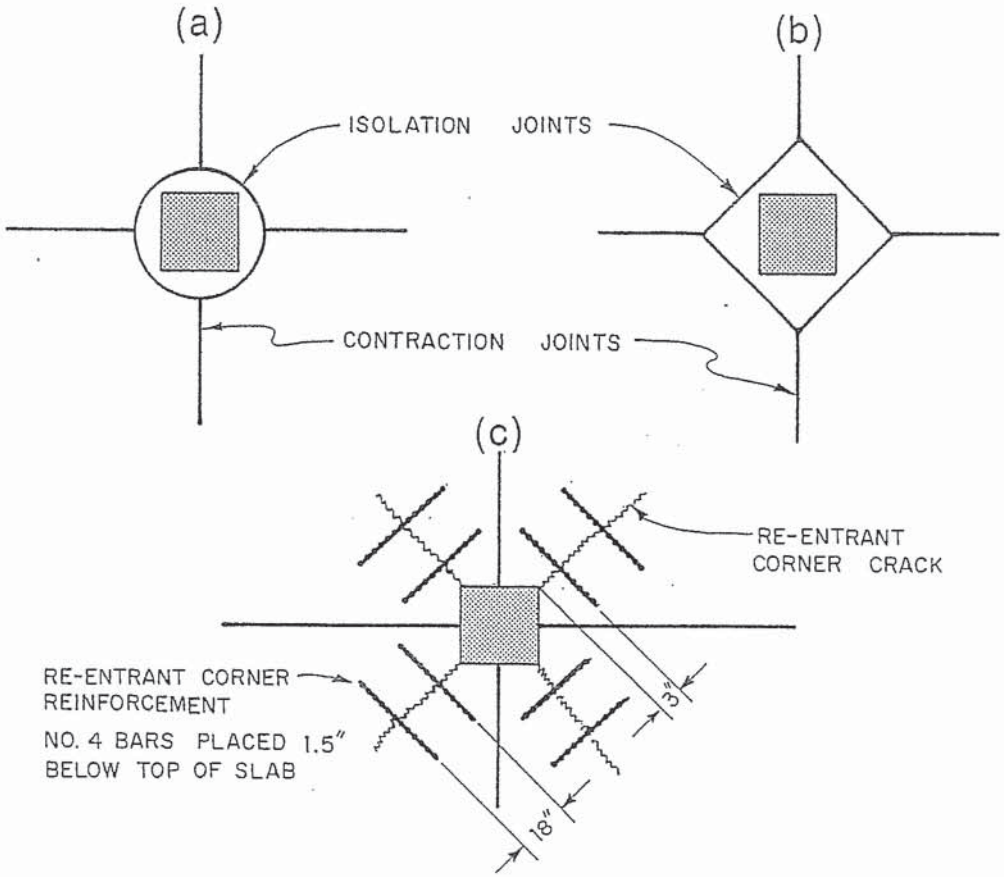
Cut-Over-Fill Slope

Note: Key and benching details shown herein are subject to revision by the project geotechnical engineer based upon actual site conditions. Back drains may also be necessary as determined by the project geotechnical consultant.

PLATE 41
V&M JOB #13-116-P

ISOLATION JOINTS AND RE-ENTRANT CORNER REINFORCEMENT

Typical - no scale



NOTES:

1. Isolation joints around the columns should be either circular as shown in (a) or diamond shaped as shown in (b). If no isolation joints are used around columns, or if the corners of the isolation joints do not meet the contraction joints, radial cracking as shown in (c)may occur (reference ACI).

2. In order to control cracking at the re-entrant corners (±270° corners), provide reinforcement as shown in (c).

3. Re-entrant corner reinforcement shown herein is provided as a general guideline only and is subject to verification and changes by the project architect and/or structural engineer based upon slab geometry, location, and other engineering and construction factors.

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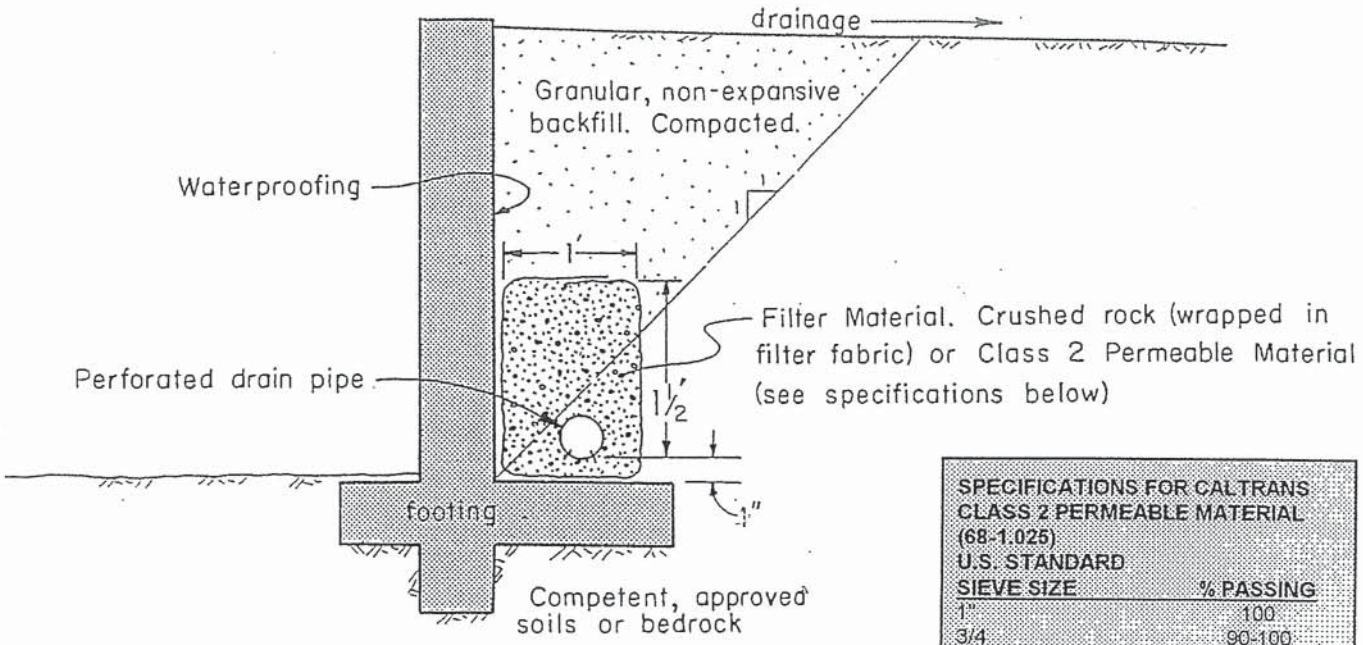
PLATE 42
V&M JOB #13-116-P

RETAINING WALL DRAIN DETAIL

Typical - no scale



SPECIFICATIONS FOR CALTRANS CLASS 2 PERMEABLE MATERIAL (68-1.025) U.S. STANDARD SIEVE SIZE	% PASSING
1"	100
3/4	90-100
3/8	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

Sand Equivalent > 75

CONSTRUCTION SPECIFICATIONS:

1. Provide granular, non-expansive backfill soil in 1:1 gradient wedge behind wall. Compact backfill to minimum 90% of laboratory standard.
2. Provide back drainage for wall to prevent build-up of hydrostatic pressures. Use drainage openings along base of wall or back drain system as outlined below.
3. Backdrain should consist of 4" diameter PVC pipe (Schedule 40 or equivalent) with perforations down. Drain to suitable outlet at minimum 1%. Provide ¾" - 1½" crushed gravel filter wrapped in filter fabric (Mirafi 140N or equivalent). Delete filter fabric wrap if Caltrans Class 2 permeable material is used. Compact Class 2 material to minimum 90% of laboratory standard.
4. Seal back of wall with waterproofing in accordance with architect's specifications.
5. Provide positive drainage to disallow ponding of water above wall. Lined drainage ditch to minimum 2% flow away from wall is recommended.

* Use 1½ cubic foot per foot with granular backfill soil and 4 cubic foot per foot if expansive backfill soil is used.

VINJE & MIDDLETON ENGINEERING, INC.

PLATE 43
V&M JOB #13-116-P

ATTACHMENT

Subsurface Surveys & Associates, Inc.
2075 Corte Del Nogal, Suite W Carlsbad, CA 92011
Phone: (760) 476-0492 Fax: (760) 476-0493

Vinje & Middleton Engineering, Inc.
2450 Auto Park Way
Escondido, CA 92029-1229

February 7, 2013

Attn: Steve Melzer

Re: Seismic Survey Summary Report
661 Bear Valley Parkway, Escondido

This report covers the results of a seismic refraction survey performed at 661 Bear Valley Parkway in Escondido, California. The two main objectives were: 1) to measure the compressional wave velocity of granitic bedrock for rippability assessment and 2) record profiles across staked target areas where buried mine shafts are thought to be located and analyze the data for evidence of void space or deeply filled ground.

The field work was conducted during January 16-17, 2013. Nine seismic lines, comprised of 14 individual spread layouts, were recorded at locations selected by VME. A survey location map is provided on Figure 1 that shows the position and orientation of the traverses.

GEOLOGIC SETTING

A review of the "Geologic Map of California, Santa Ana Sheet", (California Division of Mines and Geology, 1966) indicates the local area is underlain Mesozoic granitic rocks that are primarily granodiorite and tonalite. Surface deposits are mainly colluvium on the hillsides and alluvium along the valley floor.

DATA ACQUISITION AND FIELD METHODS

Seismic refraction data were recorded with a Bison 9024 signal enhancement seismograph and 30 Hz geophones. The standard spread layout used 24 geophones with a 10-foot spacing. Each spread used five shotpoints, one off each end (10-foot offset) and three within the interior of the spread. Seven shotpoints were used for traverses that crossed the suspected mine shaft locations to increase ray path coverage for tomographic modeling. Depth of investigation is approximately 60 feet.

Compressional wave energy was created by sledge hammer impacts on a metal plate. The signal enhancement feature of the seismograph allowed returns from repeated hits to be stacked, thus improving the signal. Each record was stored digitally on an internal hard disk and printed copies of each seismogram were made in the field on thermal paper. Example seismic records from this

survey are shown on Figure 2.

Relative elevations of all shotpoints and geophones were determined by differential leveling with a hand level. Geophone 1 (distance = 0 ft.) at the beginning of each line was assigned a elevation value based on data from Google Earth maps. All other elevation measurements along the line are relative to this point.

The endpoints of each seismic spread were recorded with a hand held Garmin GPS receiver. Latitude and longitude positions were converted to UTM coordinates, Zone 11 using the WGS 1984 North American Datum and used to prepare the Seismic Survey Location Map (Figure 1).

SEISMIC REFRACTION METHOD

The refraction method involves measuring the total time for compressional waves to travel from a shotpoint through the subsurface to a set of geophones placed linearly along the ground. Based on Snell's Law, when two or more layers are present with increasingly higher acoustic velocity, waves become critically refracted across the layer boundaries and begin traveling at the speed of the underlying layer. The advancing waves then generate new wavefronts back to the ground surface. The first surge of energy hitting the geophone is termed the "first arrival" and is depicted on the seismogram as a high angle deflection along each trace. Example field records from this survey that show the first arriving energy are provided on Figure 2.

Recognition of direct wave arrivals (non-refracted) verses refracted waves is a key element of refraction interpretation. To assist this process, the first arrival times measured from the seismic records are plotted on graphs of time verses distance called Time-Distance graphs. An example T-D graph from Line A is shown on Figure 3. Based on changes in slope on the graphs, a preliminary layer number (i.e. 1, 2, 3) is assigned to each segment of the graph. The layer assignments together with time, distance and elevation data are input to a computer for additional processing.

SEISMIC PROCESSING AND INVERSION MODELING

Seismic data from this survey was processed using two methods for generating seismic velocity cross sections. One method produces layered earth models and uses the average velocity across the spread to calculate the thickness of the layers. This is the most widely used approach for rippability surveys because depths to refracting (velocity) horizons can be measured directly from the cross sections. Layered models are best applied when there is not a significant lateral variation in velocity along the line and the layer interfaces are relatively flat.

The second modeling approach uses what is referred to as tomographic inversion and produces velocity gradient cross sections in color. Tomography does not perform refraction layer calculations or attempt to measure discrete depths. Instead, the main objective is to create a velocity distribution grid in the subsurface. Each node of the grid has a specific velocity

associated with it. The goal is to adjust or "iterate" the velocity matrix so that the computer derived travel-time curves match what was recorded in the field. The final velocity grid is then loaded into a contouring program that produces color-filled cross sections. This method is typically used for imaging the shape and configuration of complex structures such as faults, landslides and intrusions, and areas where strong lateral velocity gradients are suspected within the weathered profile.

Layered Models

Processing and interpretation of this data set was accomplished with "SIPT2", an interactive inversion modeling program developed by James Scott for the U.S. Bureau of Mines. The inversion algorithm uses the delay time method to construct a first pass depth model. The model is then adjusted by an iterative ray tracing process that attempts to minimize the discrepancies between the total travel times calculated along ray paths and the observed travel times measured in the field.

This program calculates refractor velocity in two ways. First, apparent velocities from each shot are determined by the inverse slope of a best fit (least squares) line through datum-corrected travel times. True velocity is estimated from the apparent velocities by using the following equation:

$$Vt = 2(Vu \times Vd)/(Vu + Vd)$$

where Vt = true velocity
Vu = apparent up dip velocity
Vd = apparent down dip velocity

The second method uses a more sophisticated set of equations (the Hobson-Overton formula) developed by the Canadian Geological Survey. The final velocity assigned to the refractor is a weighted average of the results of the two methods. The weighting is based on the number of arrival times used in the computations.

Velocity Gradient Models

The tomographic modeling program used for this survey is SeisOpt Version 3.5 from Optim LLC. It uses a proprietary inversion algorithm that applies a non-linear optimization technique called generalized simulated annealing to adjust the velocity grid points for the best statistical match. It is referred to as an optimization because it attempts to find the model that has the least minimum travel-time error between the calculated and observed (field) measurements.

SUMMARY OF RESULTS

Layer Velocity Cross Sections

Modeling results have been compiled as layered velocity cross sections for rippability assessment (see Appendix A). Velocities posted on the cross sections represent averages as described in the previous section. Therefore, minor localized changes in velocity may occur along any profile. A description of the layers is provided below and a cross section summary is shown in Table 1.

Layer 1 - is mostly unconsolidated colluvium and highly decomposed granitic bedrock. Thickness generally varies from 5 to15 feet.

Layer 2 - is interpreted to be weathered bedrock. The velocity range is 2654-3936 ft/sec and should be easily rippable.

Layer 3 - represents moderately weathered bedrock with velocity in the range of 3620- 5597 ft/sec and is also considered rippable (see Cat D-9 rippability chart on Figure 4). The minimum and maximum depth to the interface between Layer 2 and Layer 3, as measured from the ground surface, is provided on Table 1.

Table 1. Layer Model Summary

Line	Velocity Layer 1	Velocity Layer 2	Velocity Layer 3	Depth Range Layer 2/3 Interface
1 Spd-1	1320	2657	4779	22-48
1 Spd-2	1263	2818	3909	26-56
1 Spd-3	1389	2970	3620	28-44
1 Spd-4	1369	2830	3992	30-49
1 Spd-5	1247	3181	4074	31-46
2	1363	2654-3376	5019	22-52
3	1470	3936	5597	48-55
4 Spd-1	1411	3206	3950	30-45
4 Spd-2	1270	3514	4347	21-42
5	11301	2924	5373	43-64
6	VGM			
7	1327	2660	5792	41-60
8	VGM			
9	VGM			

Velocity in (ft/sec), Depth in (feet)
VGM - see velocity gradient model in Appendix B

The thickness of the weathered zone beneath this property is substantial. The average thickness well exceeds 30 feet, as indicated by the Depth Range Layer 2/3 Interface values listed above. Cuts and other earth work at this site should not be difficult.

In granitic rocks, weathering tends to be gradational and usually produces a gradual increase in velocity with depth. Variation of ± 10% from the posted averages may occur between the top and bottom of a layer. The colored velocity gradient models provided in Appendix B, graphically illustrate this gradual increase with depth.

Large boulders, some 5-10 feet in diameter, are exposed in the southeast portion of the property. These are floaters and do not appear to be attached to hard unweathered bedrock. The cross sections prepared for Lines 2 and 3 show evidence of shallow buried boulders at several locations. This may pose problems for construction work in this area.

Figure 4 presents a rippability chart (courtesy of Caterpillar Tractor Co.) for a D9N Ripper. Bar graphs show the relationship between seismic compressional wave velocity and ripper performance for various rock types in three categories: rippable, marginal, and non-rippable. Granitic rocks are listed as marginally rippable at approximately 6700 ft/sec and are considered non-rippable above 8000 ft/sec. This chart is provided only as a guide and should not be considered absolute. Other geologic factors that may influence bedrock rippability at this site are changes in composition of the granite and the presence of fractures and joints.

Velocity Gradient Models

Four seismic traverses were recorded across staked locations where possible buried mine shafts are thought to be located based on historical records. To increase resolution and detection capability of these suspected vertical structures, data from seven shotpoints was acquired and processed with tomography modeling software. Results are provided in Appendix B. The following is a brief summary of the findings.

Line 7 - this traverse was draped over the axis of the N-S trending ridge line with the targeted shaft location between geophones 9 and 10. The ground surface curvature was steep with low endpoints and a central high point neat the center of the line. Attempts to create a useable model for this traverse were unsuccessful due to the topographic modeling affects. As an alternative, Line 1- Spread 1 which was laid out along the ridge line and 10 feet east of the target stake, was processed using tomography. A layer model was produced for Line 7 with no problems.

Line 1 - Spread 1 - a broad low velocity zone extends to depths of 10-18 feet between stations 60-110 feet. The VME stake is 10 feet east of station 102 feet. This area is thought to be filled ground and may be related to previous mining activity or could be fill that was installed as part of road construction along the ridge.

Line 6 - was laid out at the bottom of the slope on the west side of the property and crosses the

paved driveway. The VME target stake is located at station 93 feet. Beneath this area and southward under the driveway, the weathered bedrock interface is irregular and shows evidence of a channel structure beneath station 150 feet. This could be an erosional remnant or a backfilled area where previous mining activity took place. The is no significant anomaly below the staked area that would indicate the presence of a vertical structure or large mine shaft.

Lines 8 and 9 - show no evidence of low velocity anomalies, vertical structures, or disturbed ground, that would indicate large void space or deep backfill beneath the staked target areas.

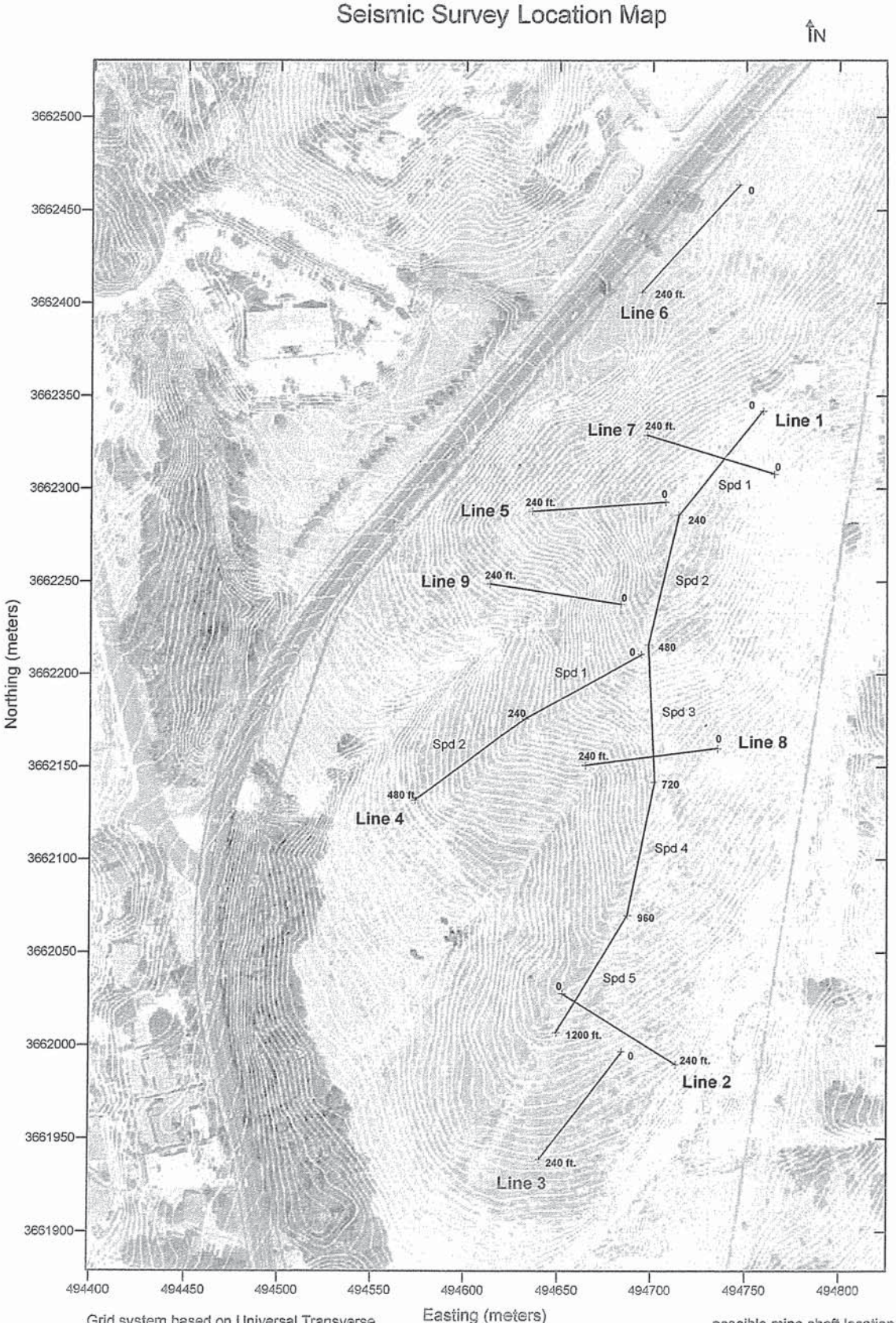
All data acquired during this survey is considered confidential and is available for review by your staff at any time. We appreciate the opportunity to participate in this project.

Please call if there are any questions.

PAWalen

Phillip A. Walen
Senior Geophysicist
CA Registration No. GP917

Seismic Survey Location Map



Grid system based on Universal Transverse Mercator coordinates, Zone 11. WGS 1984 North American Datum.

possible mine shaft location

Figure 1

Example Seismic Field Records

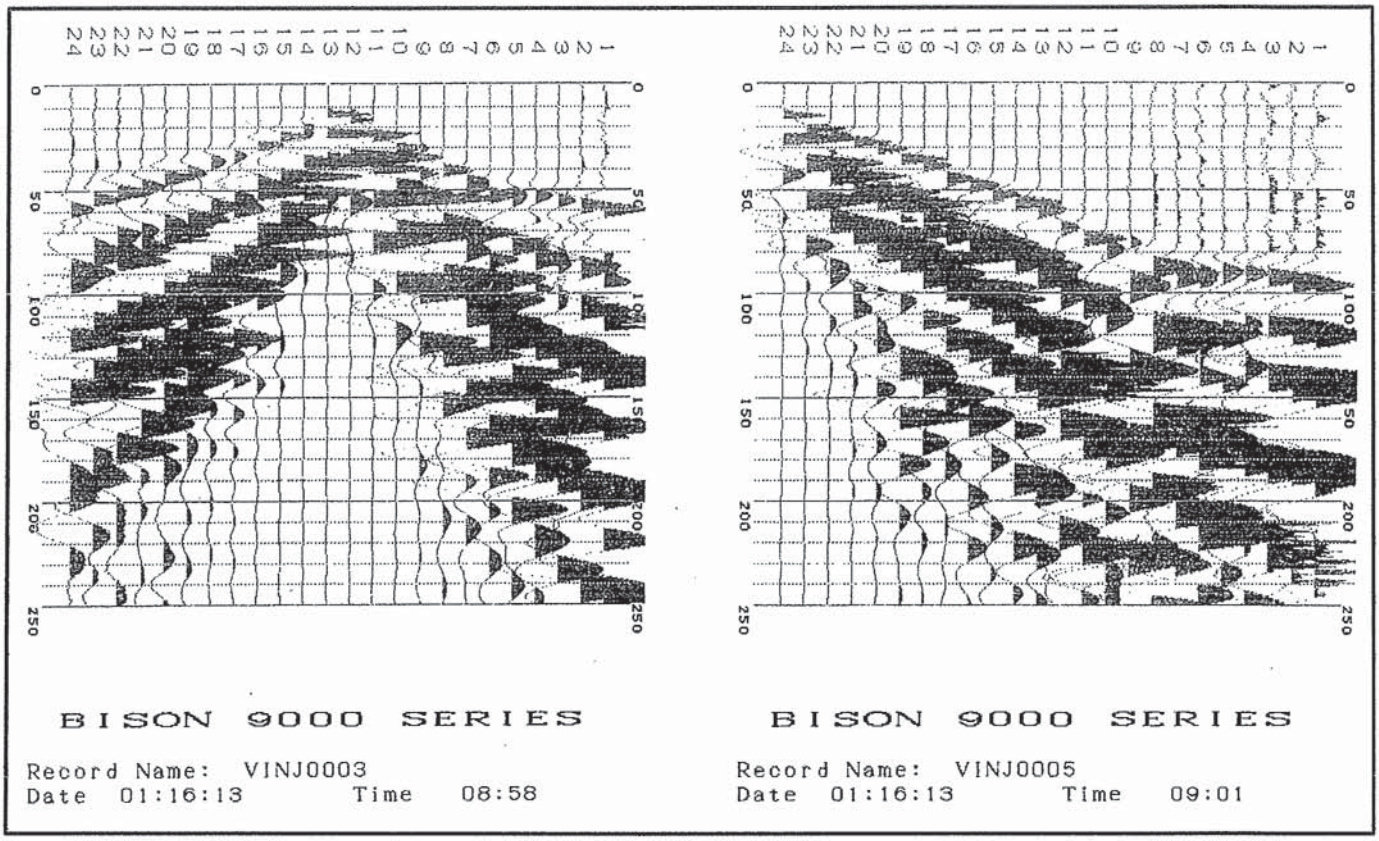
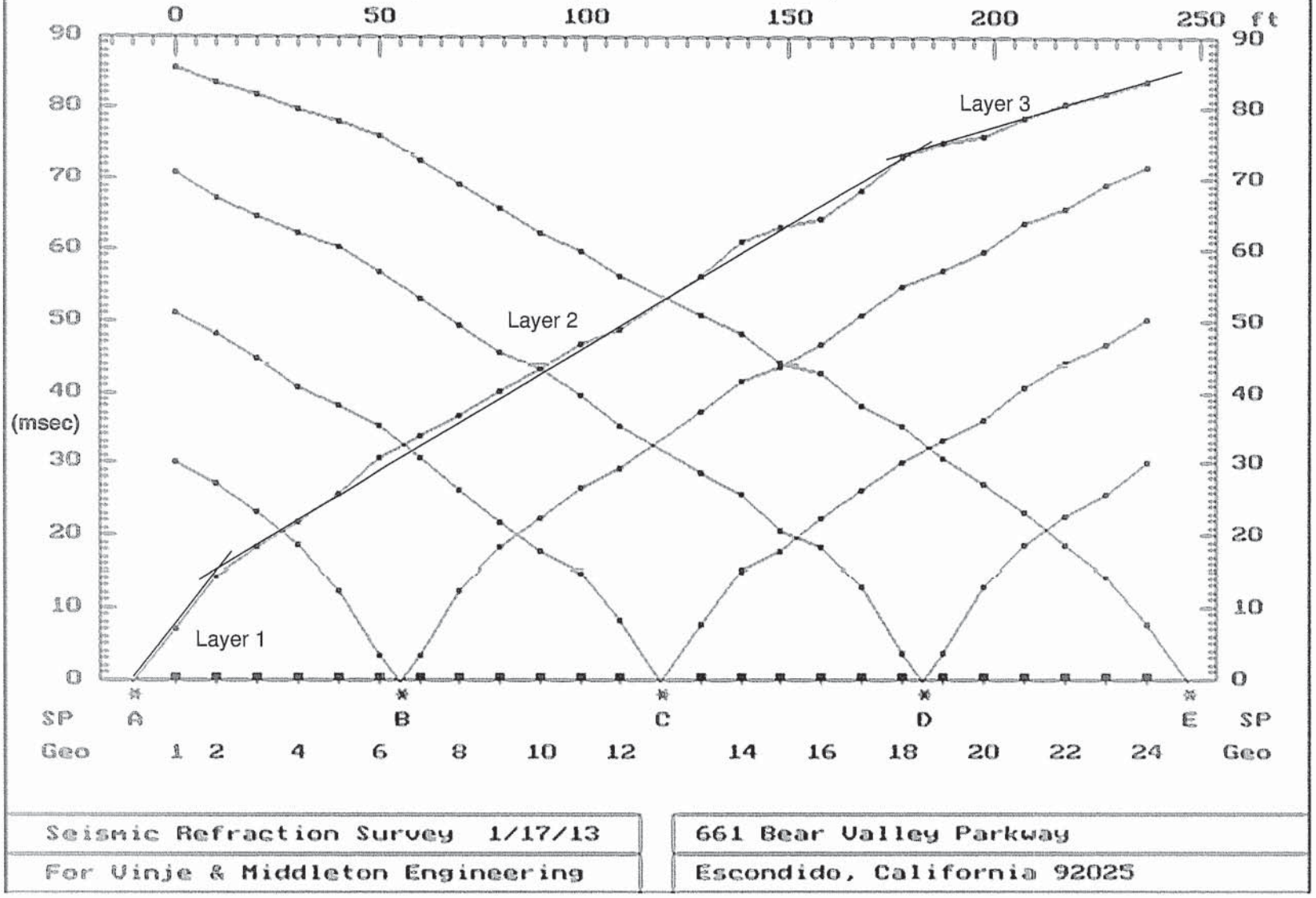


Figure 2

Figure 3. Example Time-Distance Graph -- Line 5



Rippers | Ripper Performance
- D9R/D9T

D9R/D9T
- **Multi or Single Shank No. 9 Ripper**
- **Estimated by Seismic Wave Velocities**

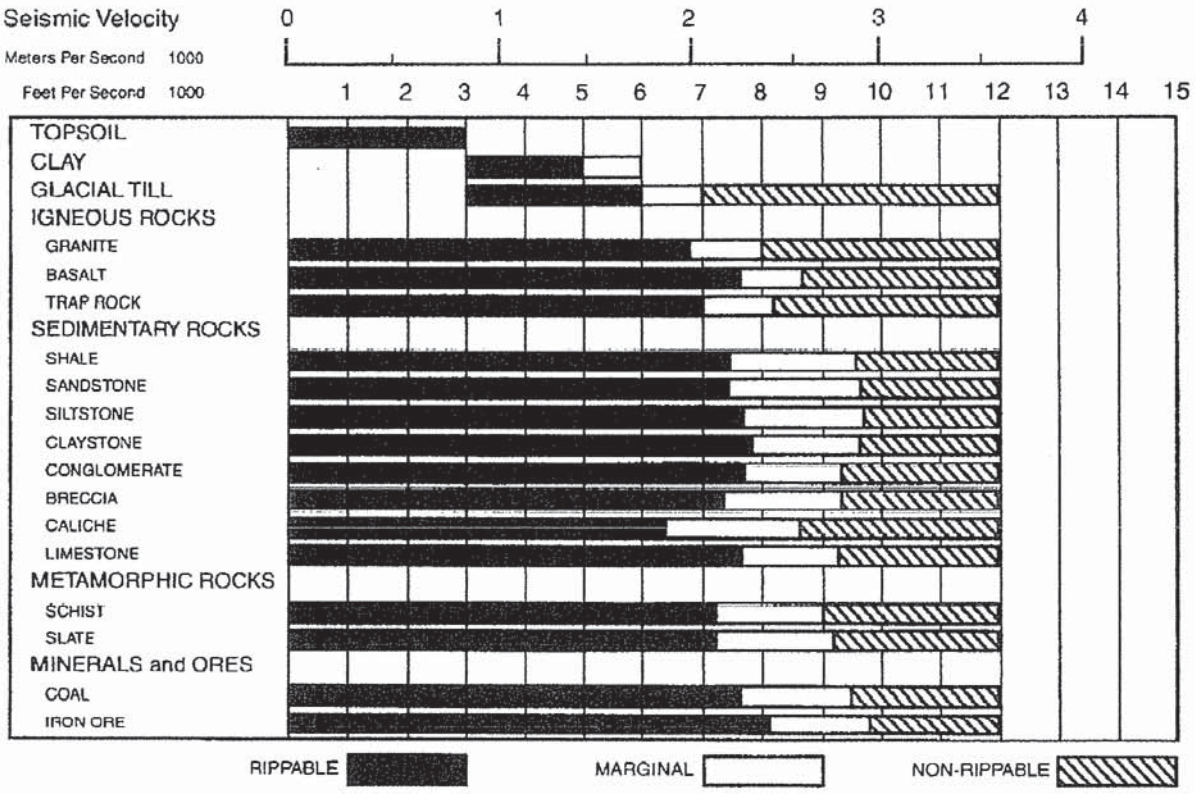
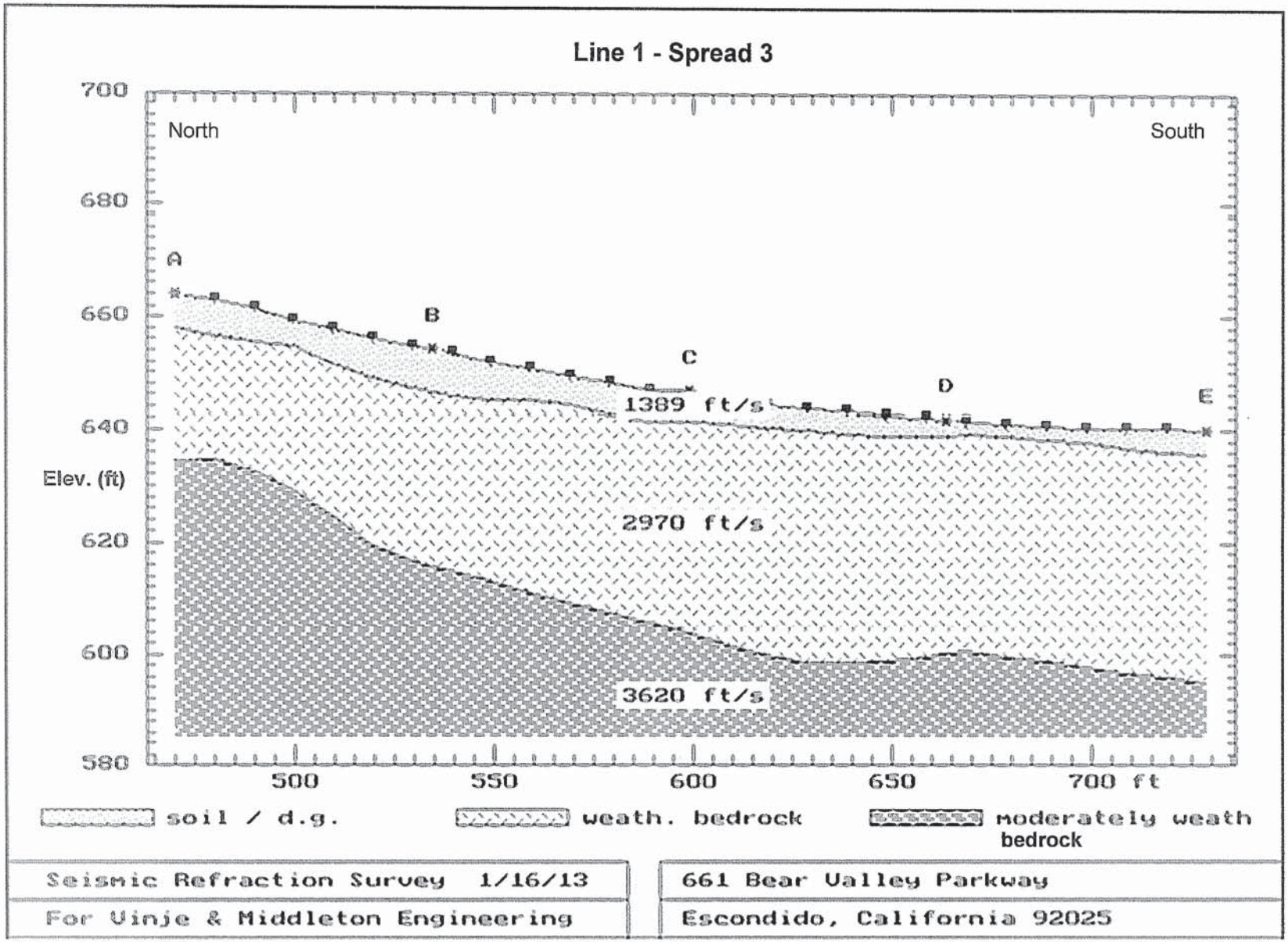


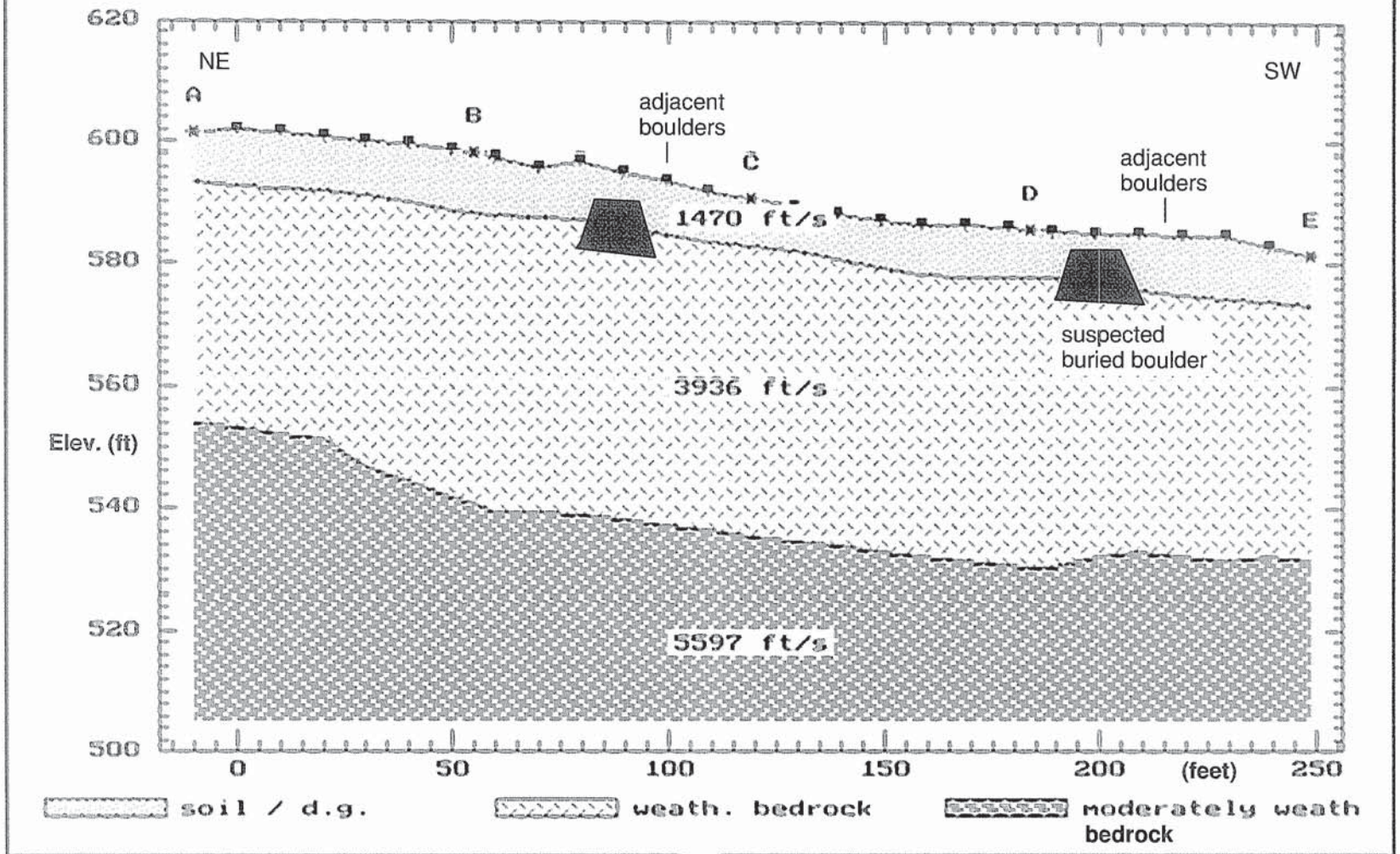
Figure 4

Appendix A

Layered Velocity Cross Sections


Line 1 - Spread 3
700
680
660
640
620
600
580
Elev. (ft)
North
South
A
B
C
D
E
1389 ft/s
2970 ft/s
3620 ft/s
500
550
600
650
700 ft
soil / d.g.
weath. bedrock
moderately weath bedrock
Seismic Refraction Survey 1/16/13
For Vinje & Middleton Engineering
661 Bear Valley Parkway
Escondido, California 92025

Line 3



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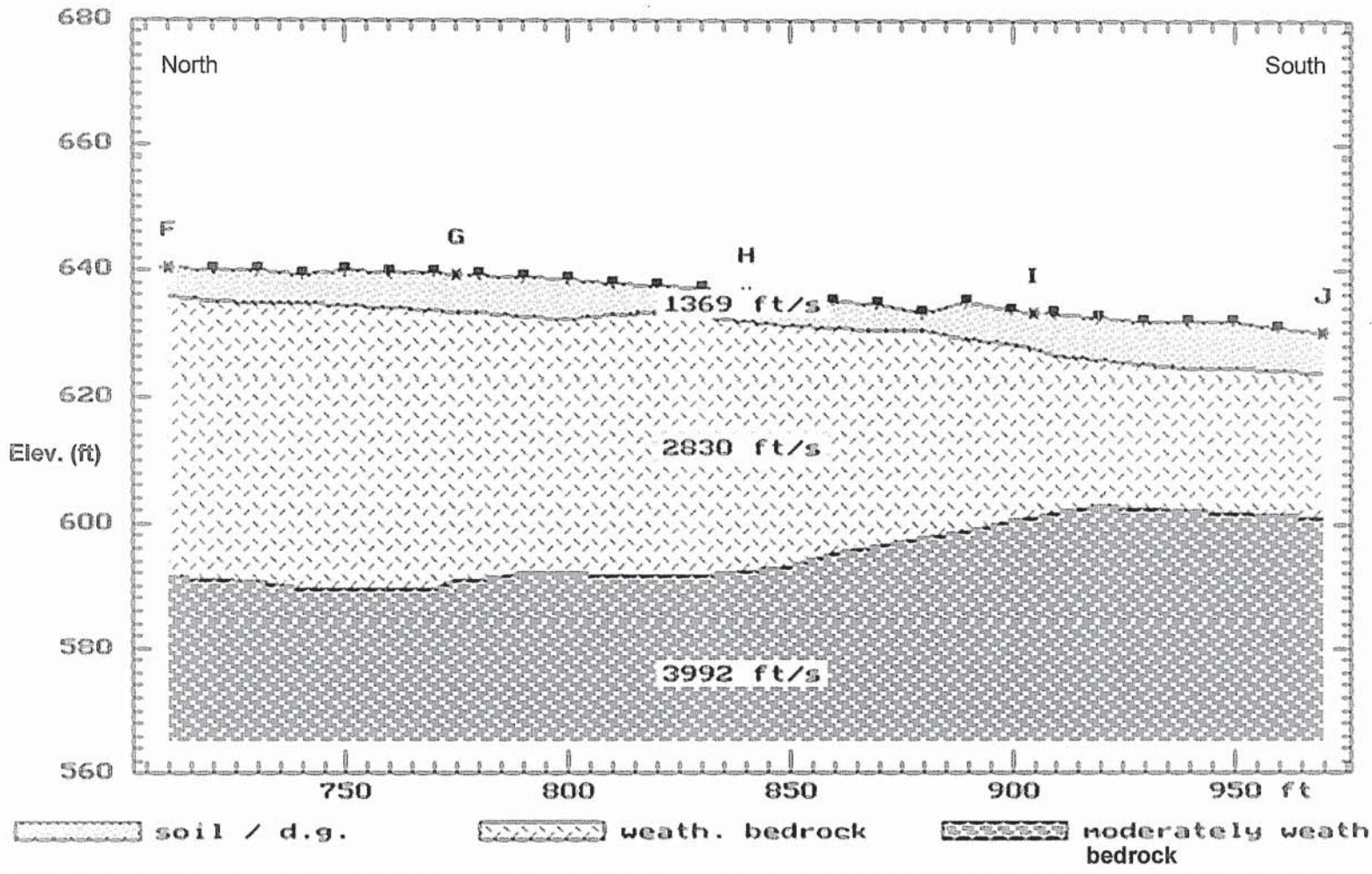
Line 1 - Spread 4



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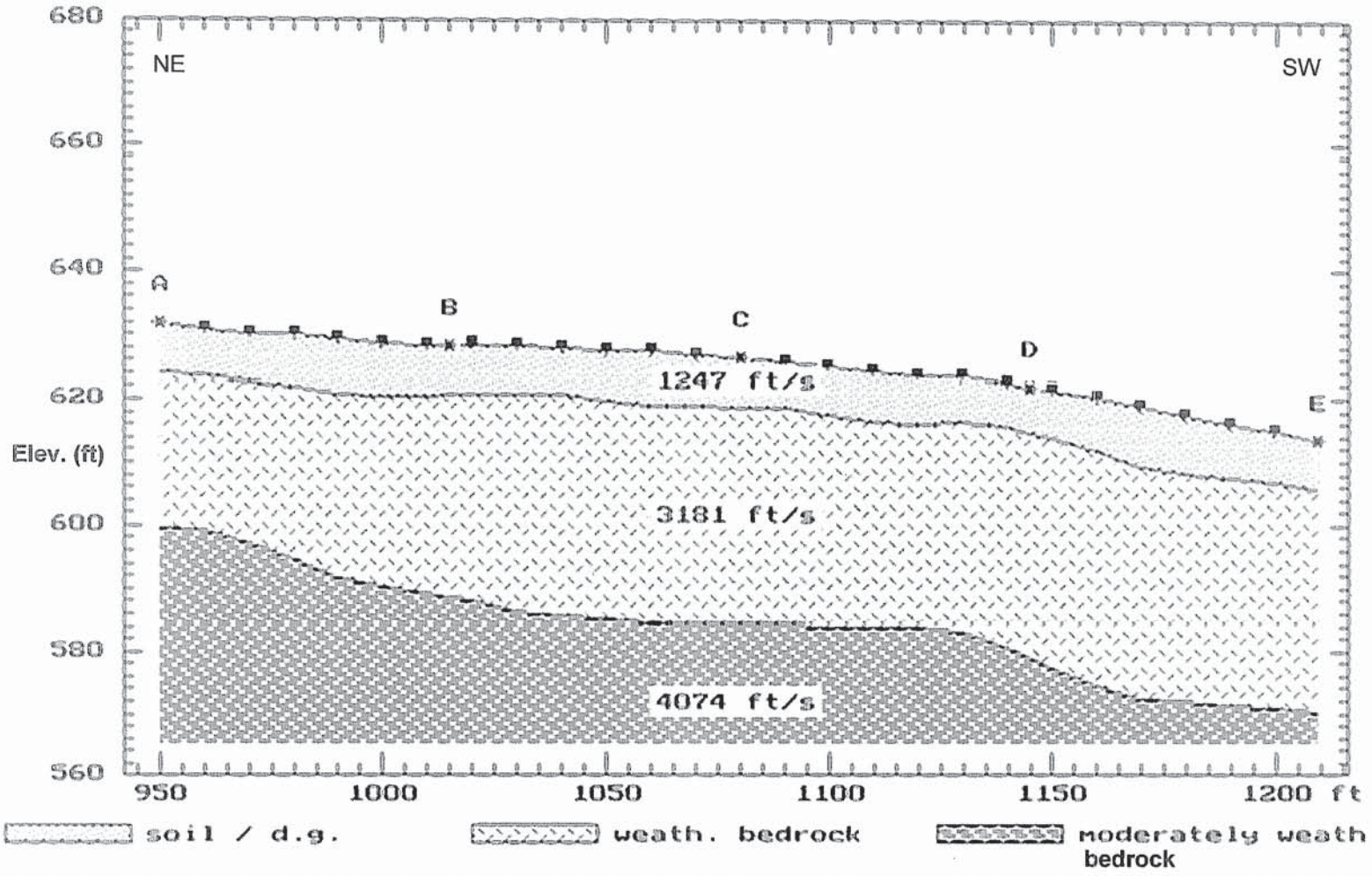
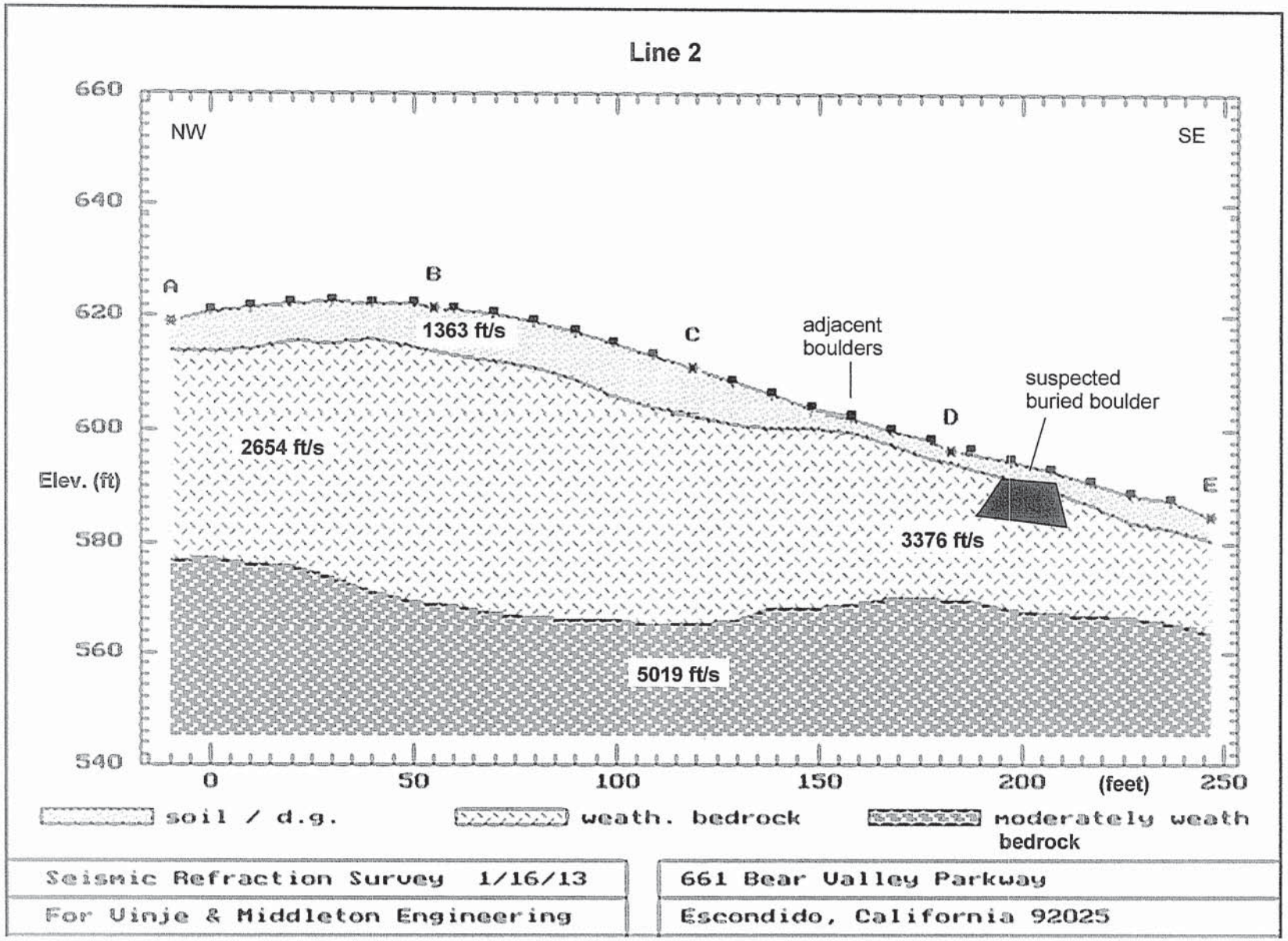
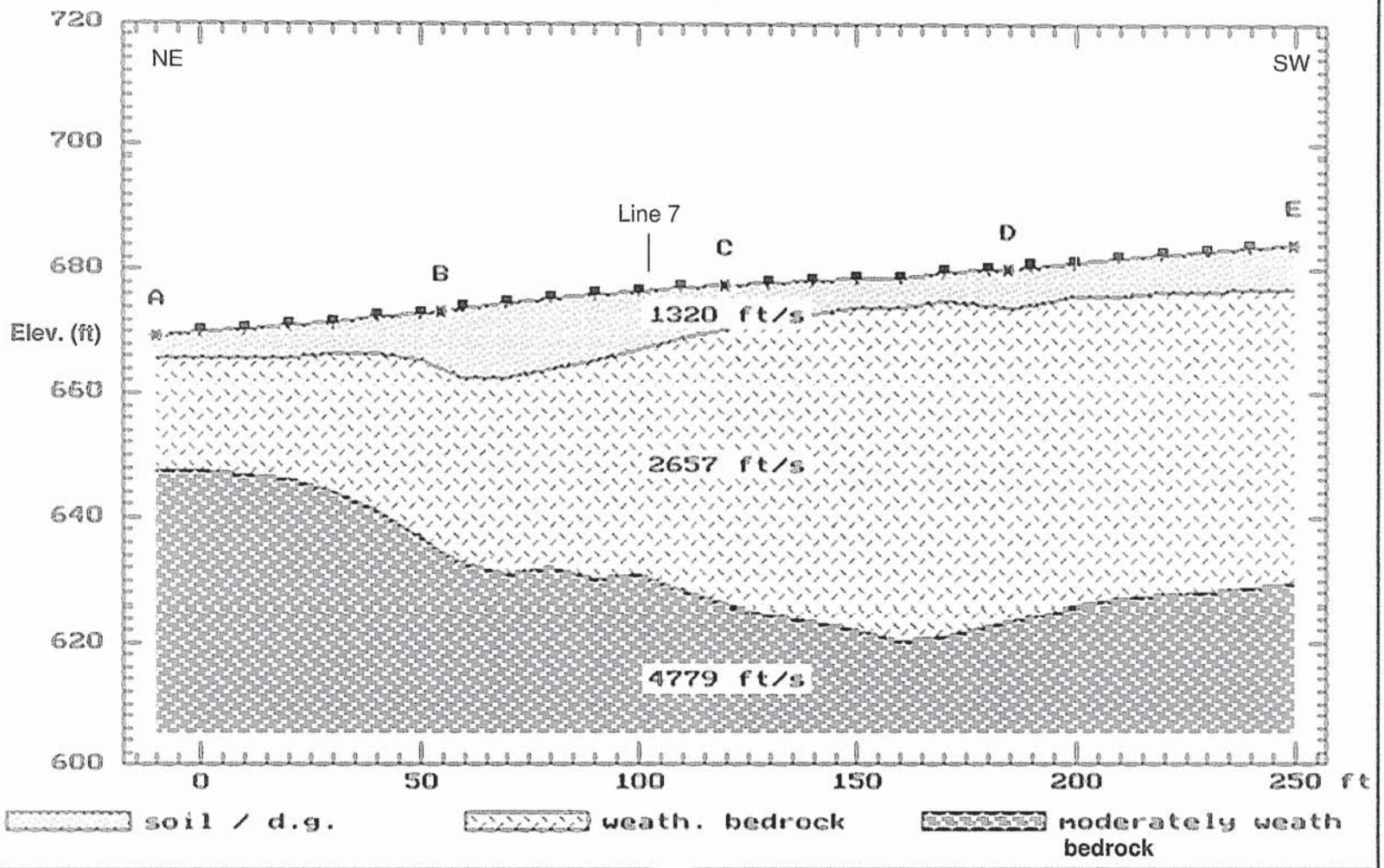
Line 1 - Spread 5



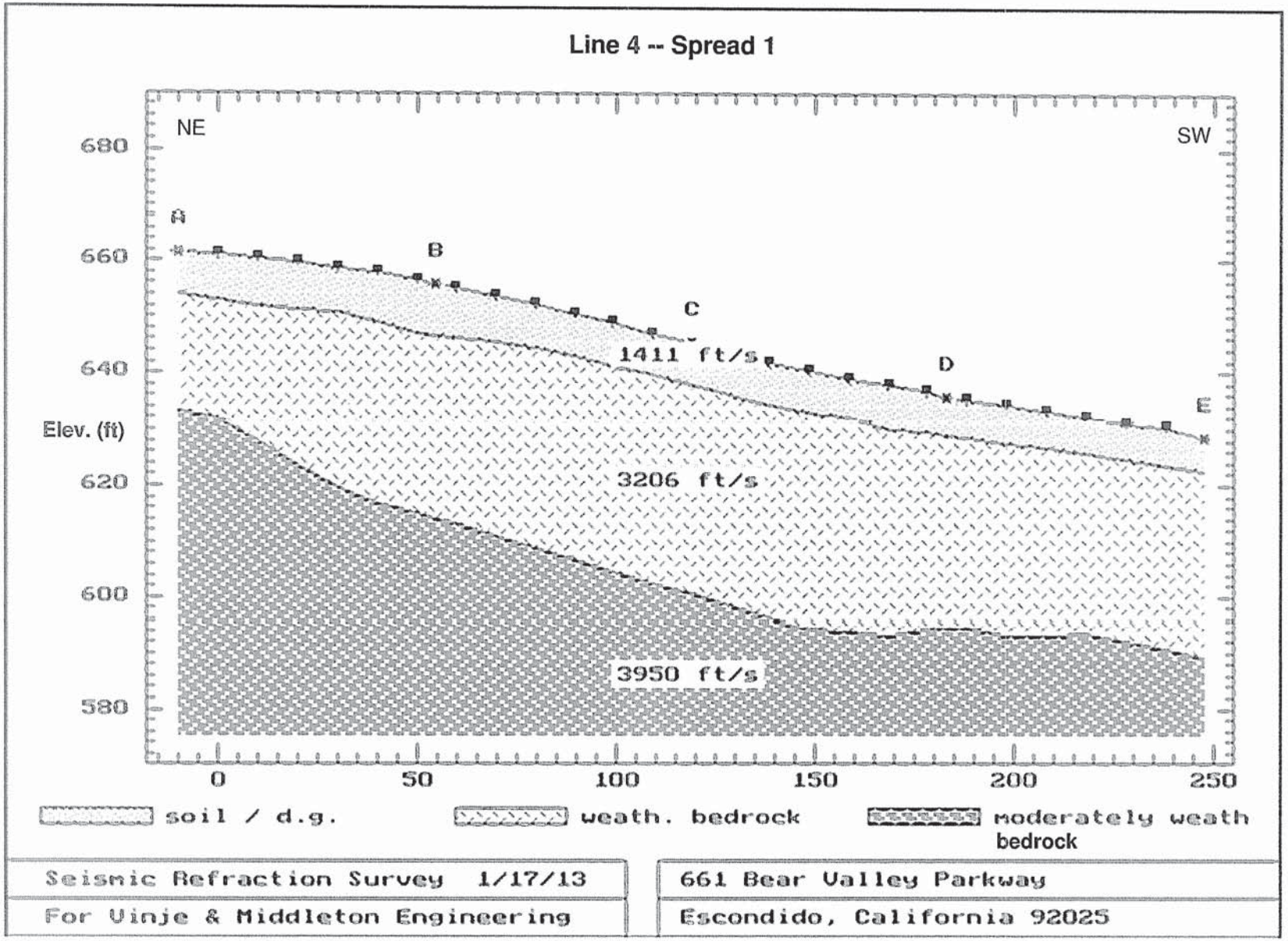
Seismic Refraction Survey 1/16/13	661 Bear Valley Parkway
For Vinje & Middleton Engineering	Escondido, California 92025


Line 2
660
640
620
600
580
560
540
Elev. (ft)
NW
SE
A
B
C
D
E
1363 ft/s
2654 ft/s
3376 ft/s
5019 ft/s
adjacent
boulders
suspected
buried boulder
0
50
100
150
200
(feet)
250
soil / d.g.
weath. bedrock
moderately weath
bedrock
Seismic Refraction Survey 1/16/13
For Vinje & Middleton Engineering
661 Bear Valley Parkway
Escondido, California 92025

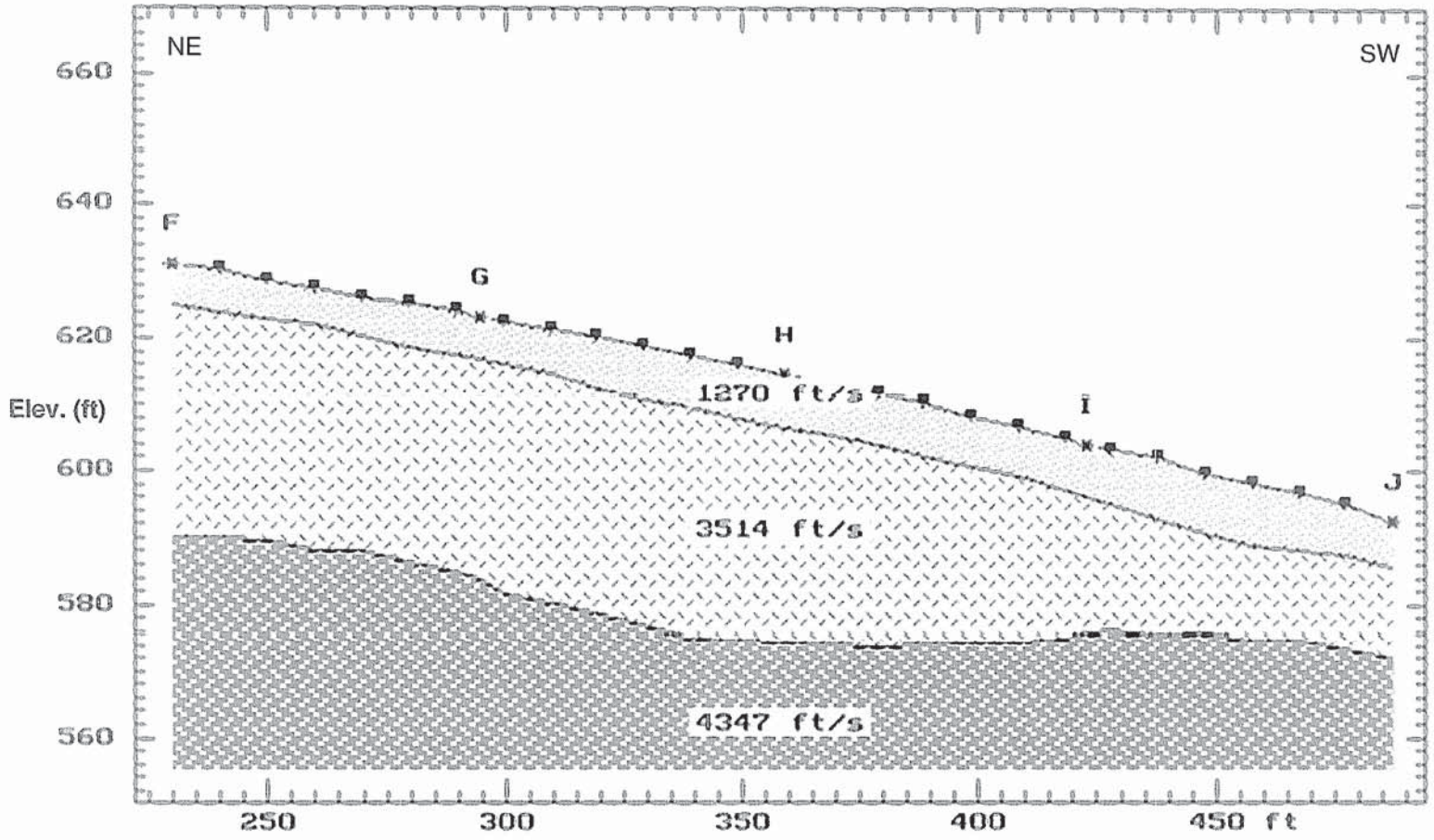
Line 1 - Spread 1



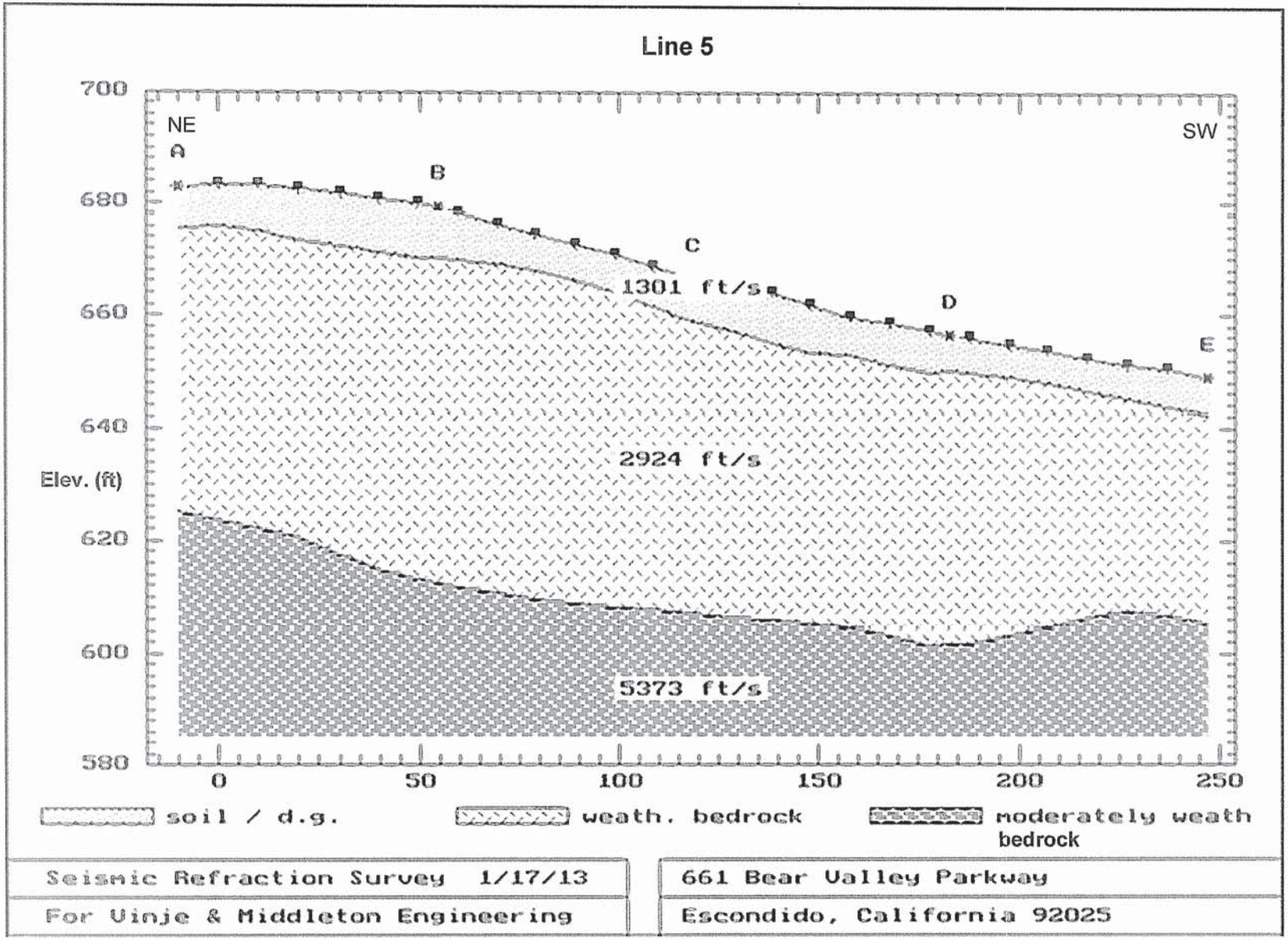
Seismic Refraction Survey 1/16/13	661 Bear Valley Parkway
For Vinje & Middleton Engineering	Escondido, California 92025


Line 4 -- Spread 1
NE
SW
680
660
640
620
600
580
Elev. (ft)
A
B
C
D
E
1411 ft/s
3206 ft/s
3950 ft/s
0
50
100
150
200
250
soil / d.g.
weath. bedrock
moderately weath bedrock
Seismic Refraction Survey 1/17/13
For Vinje & Middleton Engineering
661 Bear Valley Parkway
Escondido, California 92025

Line 4 -- Spread 2



Seismic Refraction Survey 1/17/13	661 Bear Valley Parkway
For Vinje & Middleton Engineering	Escondido, California 92025


Line 5
700
680
660
640
620
600
580
Elev. (ft)
NE
SW
A
B
C
D
E
1301 ft/s
2924 ft/s
5373 ft/s
0
50
100
150
200
250
soil / d.g.
weath. bedrock
moderately weath bedrock
Seismic Refraction Survey 1/17/13
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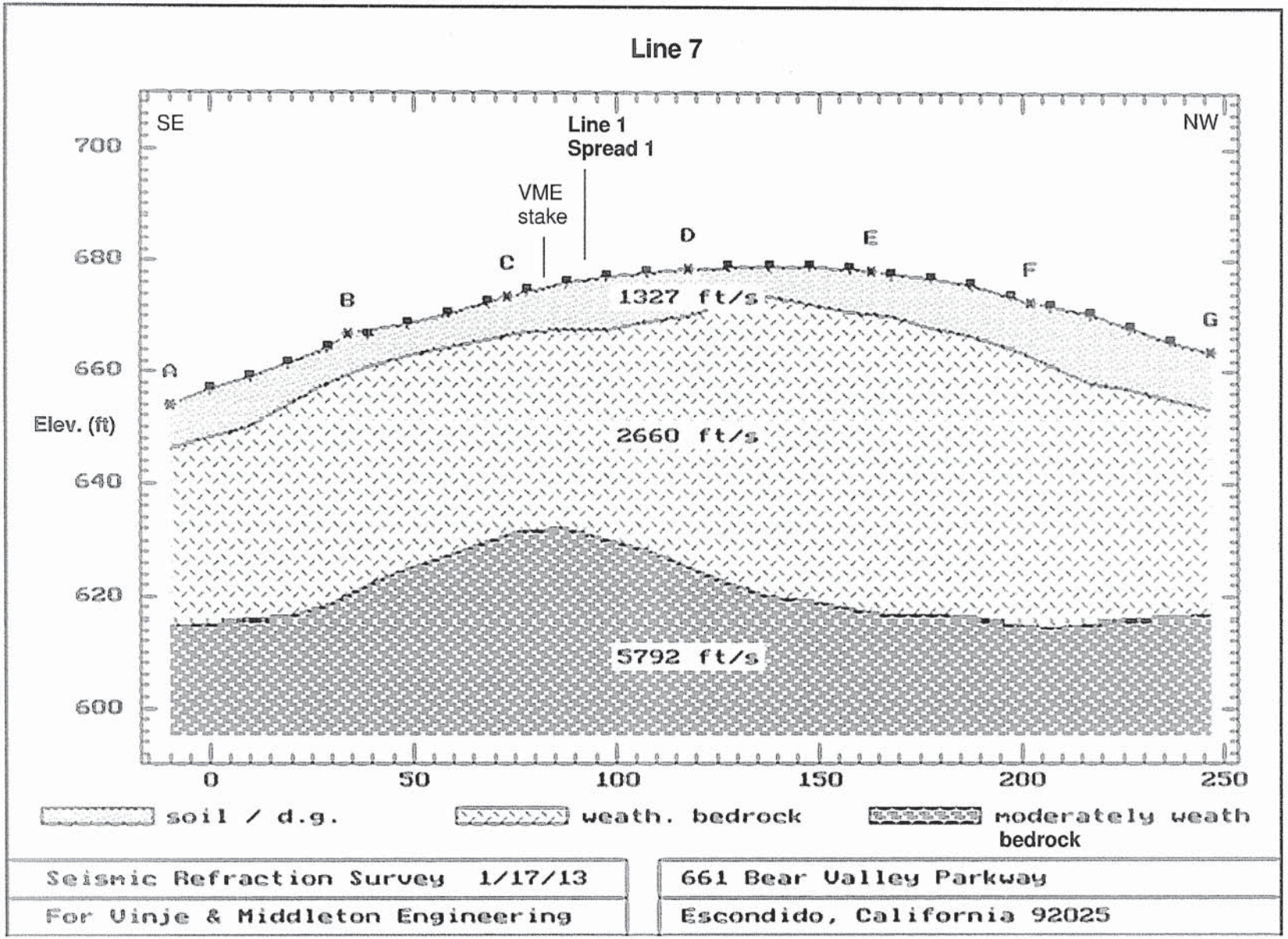
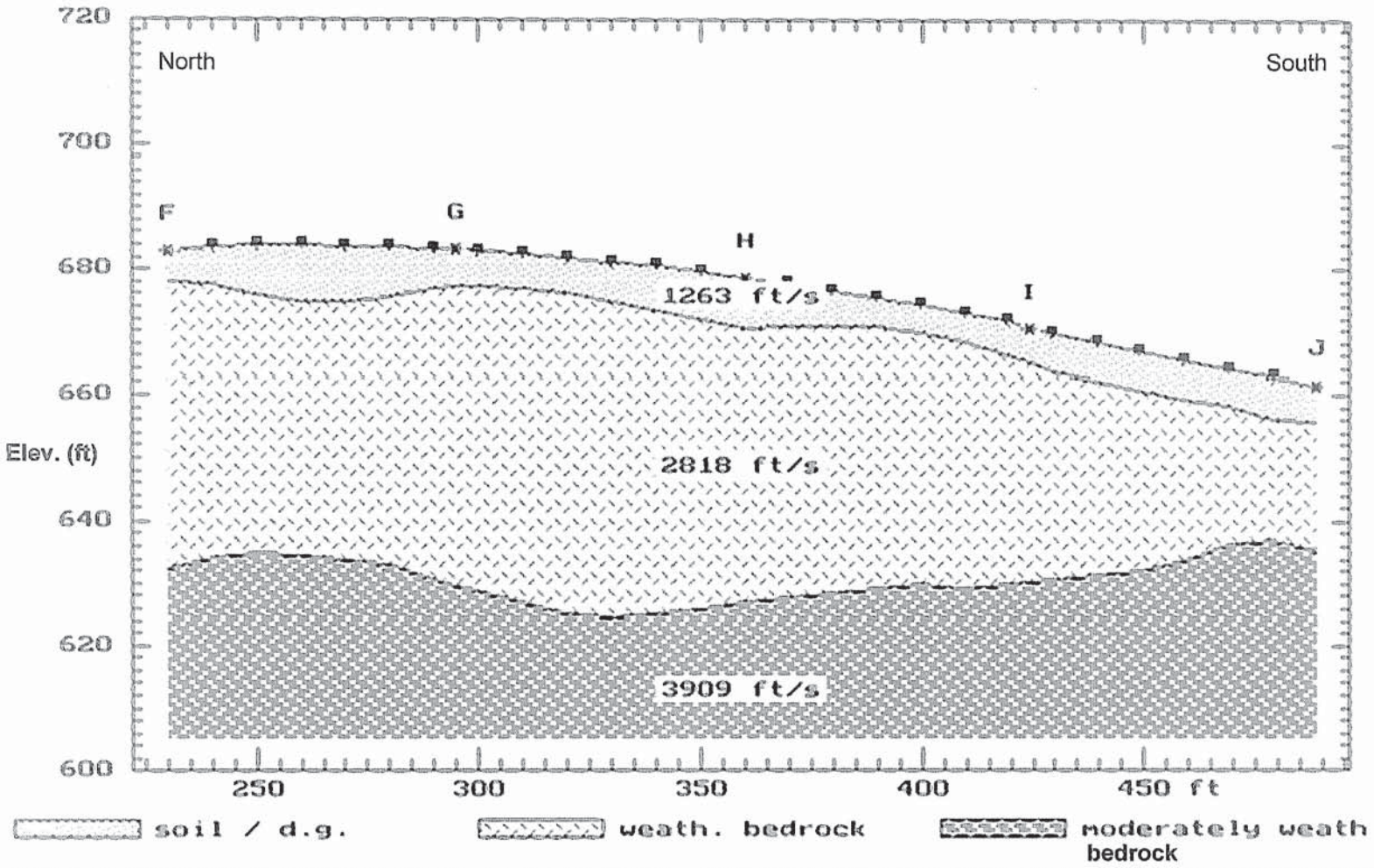
Escondido, California 92025


Line 7
SE
NW
Line 1
Spread 1
VME
stake
A
B
C
D
E
F
G
1327 ft/s
2660 ft/s
5792 ft/s
Elev. (ft)
700
680
660
640
620
600
0
50
100
150
200
250
soil / d.g.
weath. bedrock
moderately weath bedrock
Seismic Refraction Survey 1/17/13
For Vinje & Middleton Engineering
661 Bear Valley Parkway
Escondido, California 92025

Appendix B

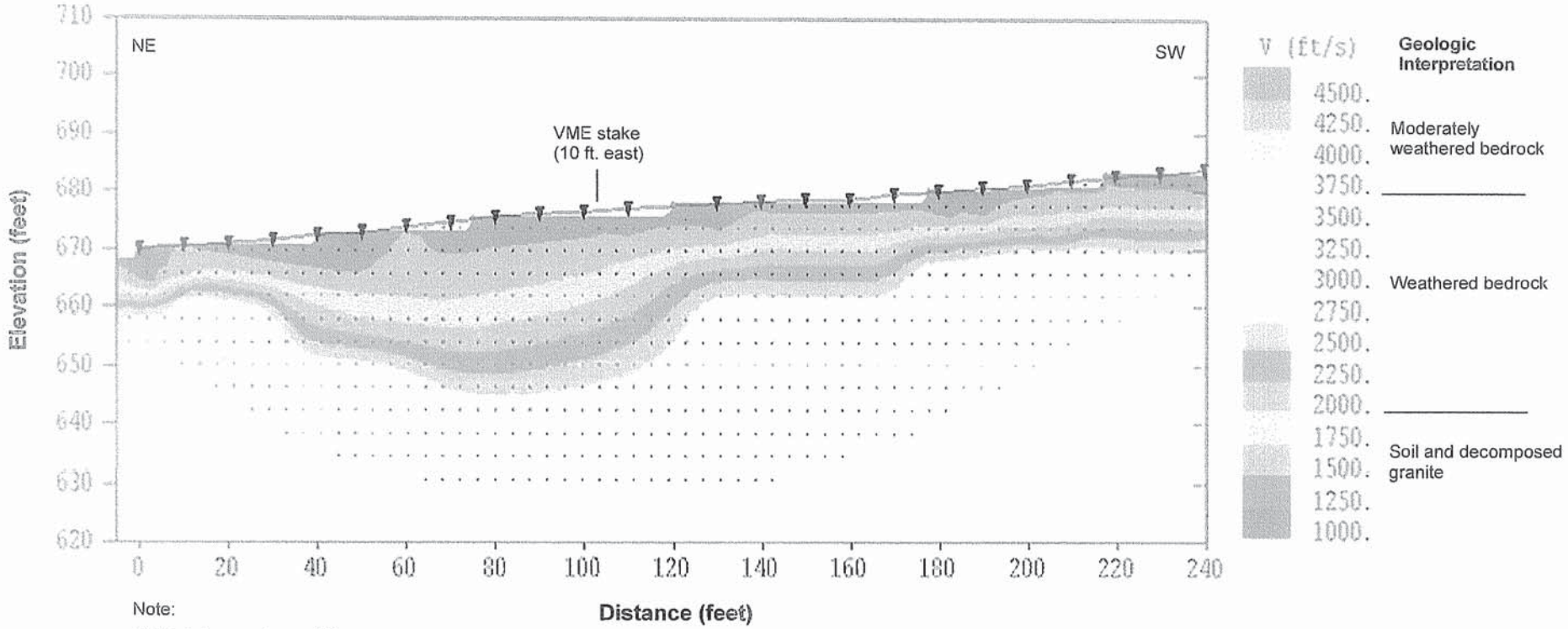
Velocity Gradient Models

Line 1 - Spread 2



Seismic Refraction Survey 1/16/13	661 Bear Valley Parkway
For Vinje & Middleton Engineering	Escondido, California 92025

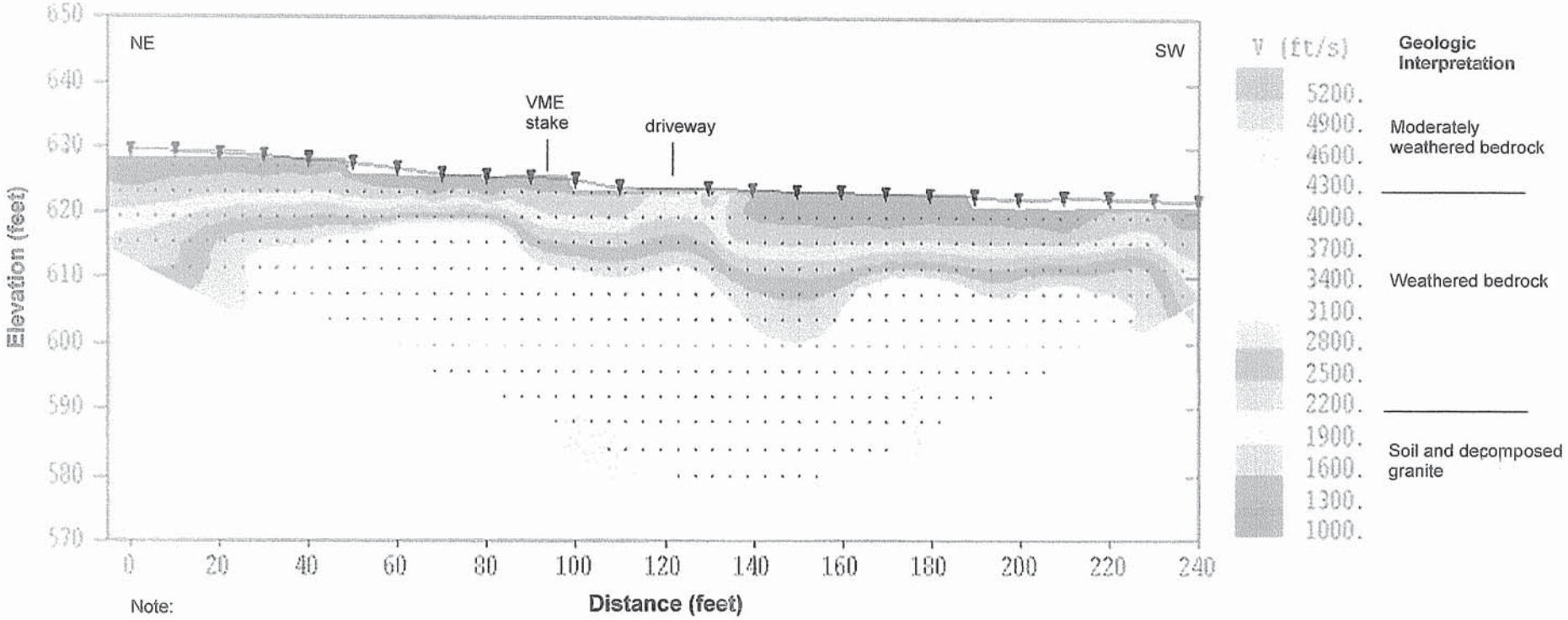
Velocity Gradient Model -- Line 1 - Spread 1



Note:

VME stakes mark possible mine shaft locations based on historical records.

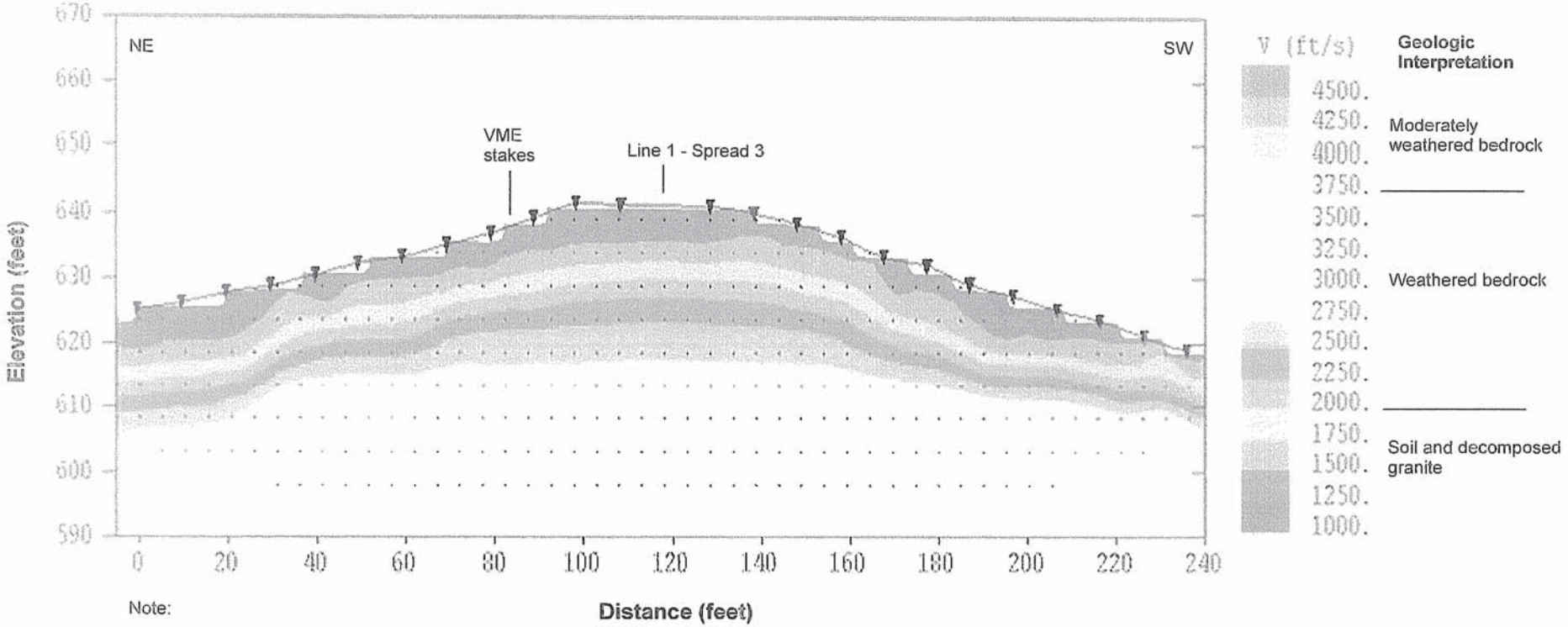
Velocity Gradient Model -- Line 6



Note:

VME stakes mark possible mine shaft locations based on historical records.

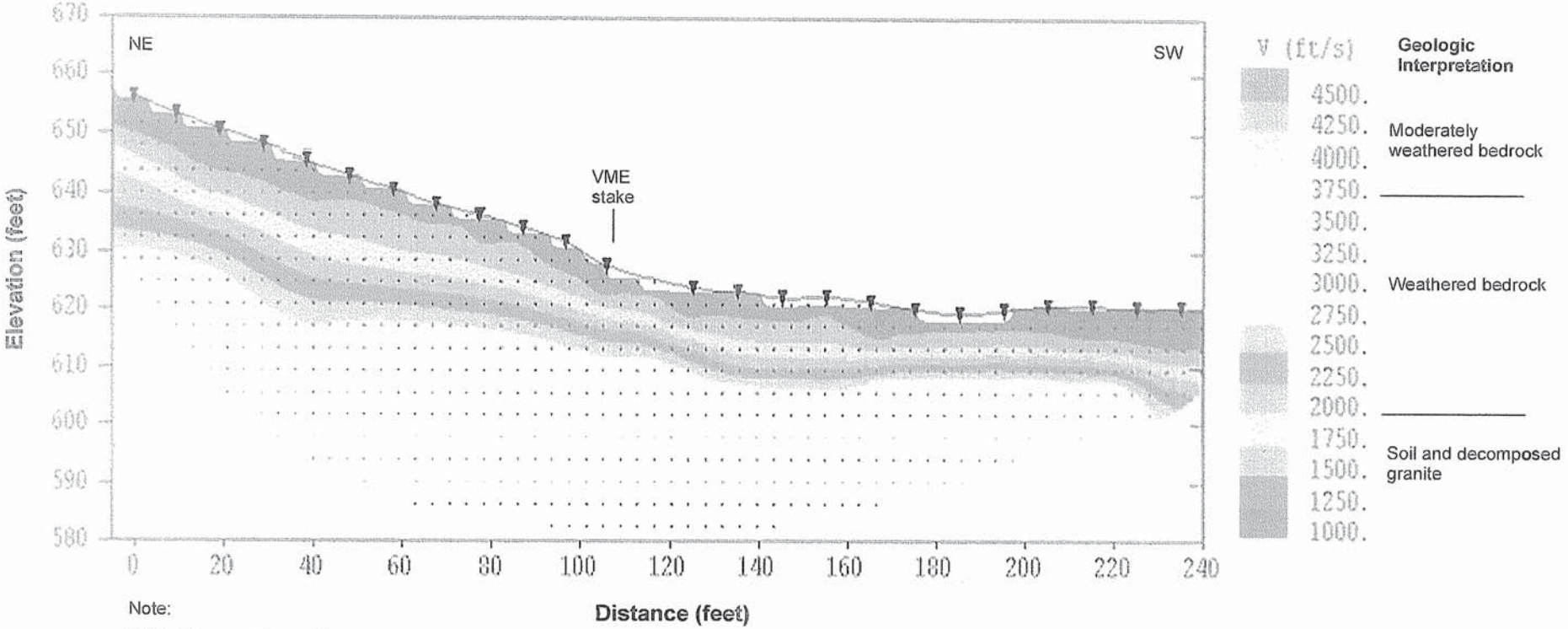
Velocity Gradient Model -- Line 8



Note:

VME stakes mark possible mine shaft locations based on historical records.

Velocity Gradient Model -- Line 9



Note:

VME stakes mark possible mine shaft locations based on historical records.