

DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

*ACCELEROGRAMS RECORDED AT
USGS NATIONAL STRONG-MOTION NETWORK STATIONS
DURING THE $M_s=6.6$ NORTHRIDGE, CALIFORNIA
EARTHQUAKE OF JANUARY 17, 1994*

BY

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PREFACE

The National Strong-Motion Program (NSMP) designs, develops, and operates a nation-wide earthquake instrumentation network in order to record potentially damaging ground motion and to monitor the structural response of buildings, bridges, and dams in seismically prone regions. The Program also disseminates resultant data and information about recordings, sites, and structures to the international earthquake engineering research and design community. The network consists of approximately 1,000 accelerographs located in 39 states and Puerto Rico, and includes instrumentation at more than 600 ground sites, 56 dams, 5 bridges, and more than 60 large buildings.

The NSMP is administered by the U. S. Geological Survey, Office of Earthquakes, Volcanoes, and Engineering, Branch of Earthquake and Geomagnetic Information, in cooperation with both private industry and Federal, State, and local government agencies and organizations. Primary participants in the NSMP cooperative network include the Army Corps of Engineers, the Department of Veterans Affairs, and the Metropolitan Water District of Southern California.

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INTRODUCTION

On January 17, 1994 an $M_s=6.6$ earthquake occurred at 0431 local time (PST), near the city of Northridge in the San Fernando Valley of southern California. The main shock was located at 34.211 deg. N. lat. and 118.538 deg. W. long., at a depth of approx. 18 km (Caltech., Feb. 3, 1994). The earthquake triggered several hundred strong-motion recorders in the greater Los Angeles region, including those operated by the University of Southern California, the State of California, and the U. S. Geological Survey (USGS). Maximum horizontal ground accelerations that approached and in some cases exceeded 1g were recorded at several permanent stations in the epicentral area.

This report contains peak acceleration data from approximately 150 accelerographs operated by the USGS's National Strong-Motion Program (NSMP), which were triggered by the main shock; these recorders are located at nearly 100 permanent stations scattered throughout the southern California region. These stations include more than 30 high-rise buildings, seven major hospitals, 12 dams, six fire stations, one bridge structure, seven water/power distribution facilities, and more than 60 ground sites. Instrumentation consists of more than 140 triaxial accelerographs; 11 multiple (9-24) -channel structure arrays are located at two hospitals, seven high-rise buildings, one earthfill dam, and one bridge structure. Data were recorded at two base-isolated structures: a 3-story building in West Los Angeles and a bridge supporting a pipeline across the Santa Ana River near Riverside.

Peak horizontal ground accelerations exceeded 0.25g at 11 sites within a 30-km epicentral distance. At least 25 sites at distances greater than 100 km were triggered during the main shock; peak recorded ground motions at these larger distances were predominantly in the range 0.01-0.05 g. Skinner Dam, at a distance of 153 km, was the most distant station triggered.

Table 1 contains the station name, geographic coordinates, and main-shock epicentral distance; the maximum acceleration and direction of each recording channel; and the number of the page containing a copy of the analog record (table 1 data are listed in order of increasing epicentral distance). The map index number identifies the location of the station, which can be seen in either figure 1 (regional) or figure 2 (Los Angeles). Figure 3 is a map showing peak ground accelerations recorded at selected close-in stations during the main shock.

ACKNOWLEDGEMENTS

In addition to those agencies acknowledged in the Preface, the U.S. Geological Survey extends its appreciation to the many smaller organizations, private companies, and numerous individuals for their assistance in providing suitable locations for the long-term operation of NSMP instrumentation. We acknowledge E. Anjal, L. Foote, and W. Jungblut for contributing many long hours to the record recovery and development effort during the first days following the main shock; and we thank P. Mork and J. Switzer for their assistance in the preparation and compilation of figures 1-3 and table 1 in this report.

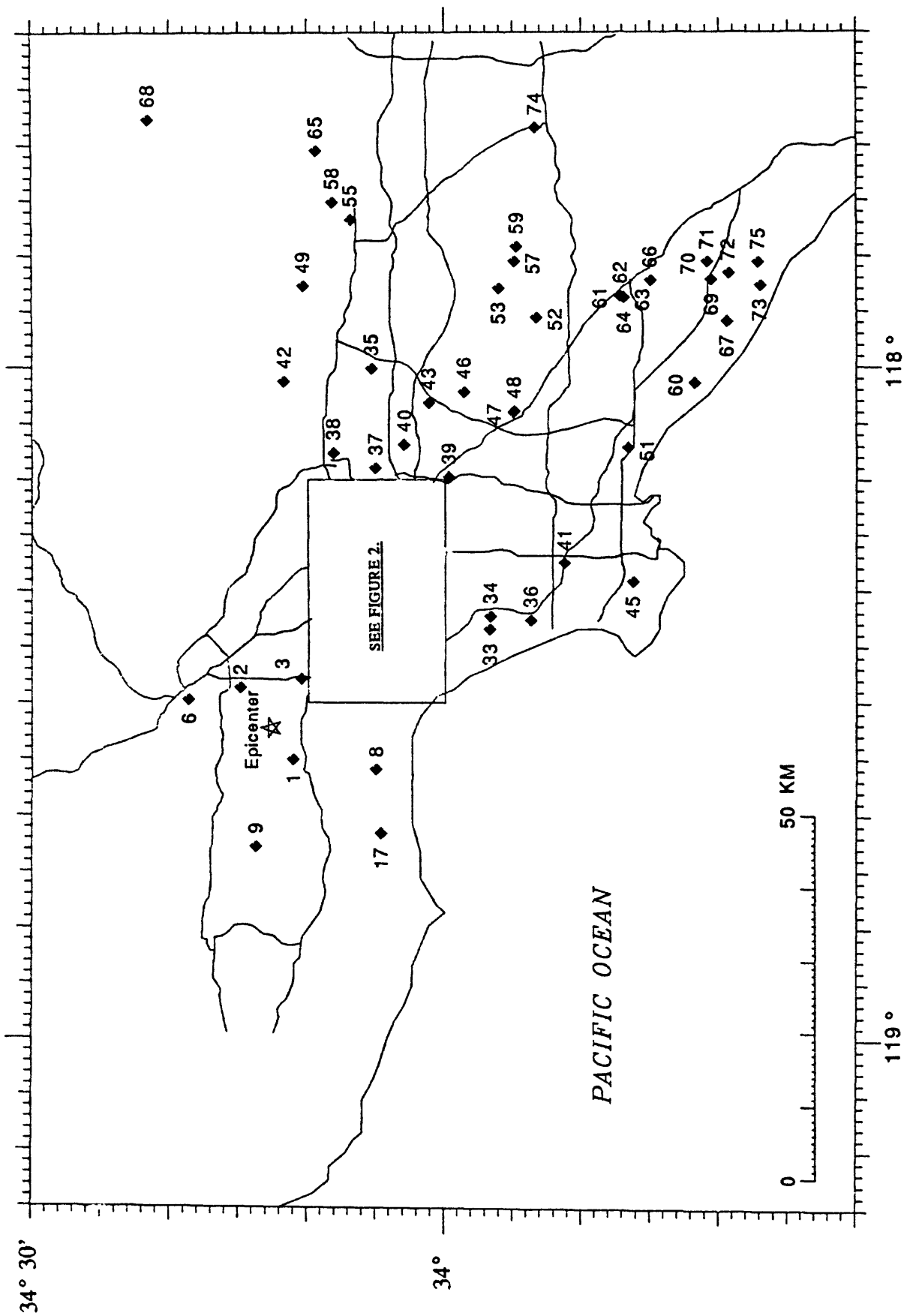


Figure 1. NSMP stations in the southern California region that recorded the main shock (excluding those in Kern County, the San Bernardino area, and along the San Andreas fault).

Downtown – Wilshire Blvd Area

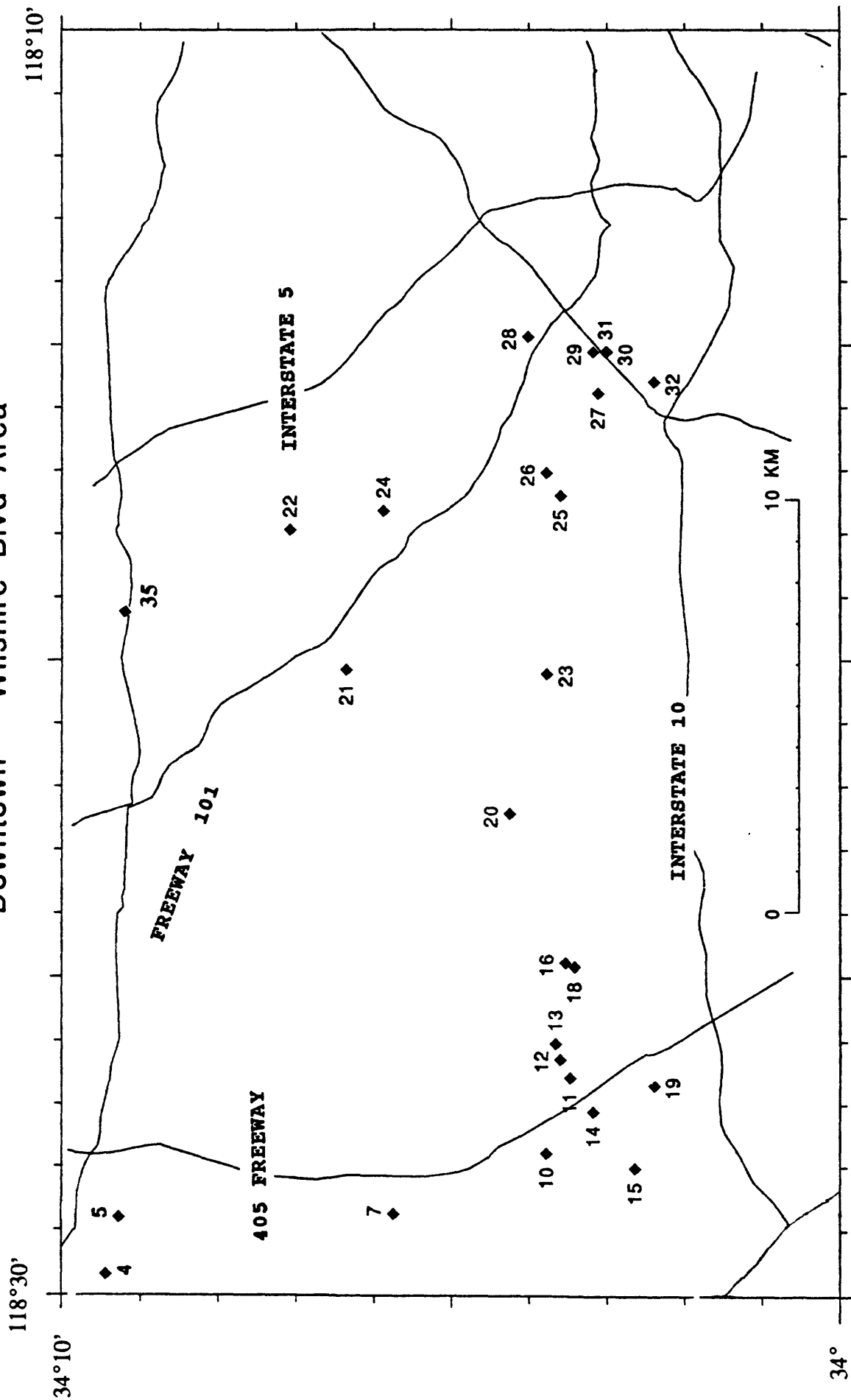


Figure 2. NSMP stations in the downtown Los Angeles area that recorded the main shock.

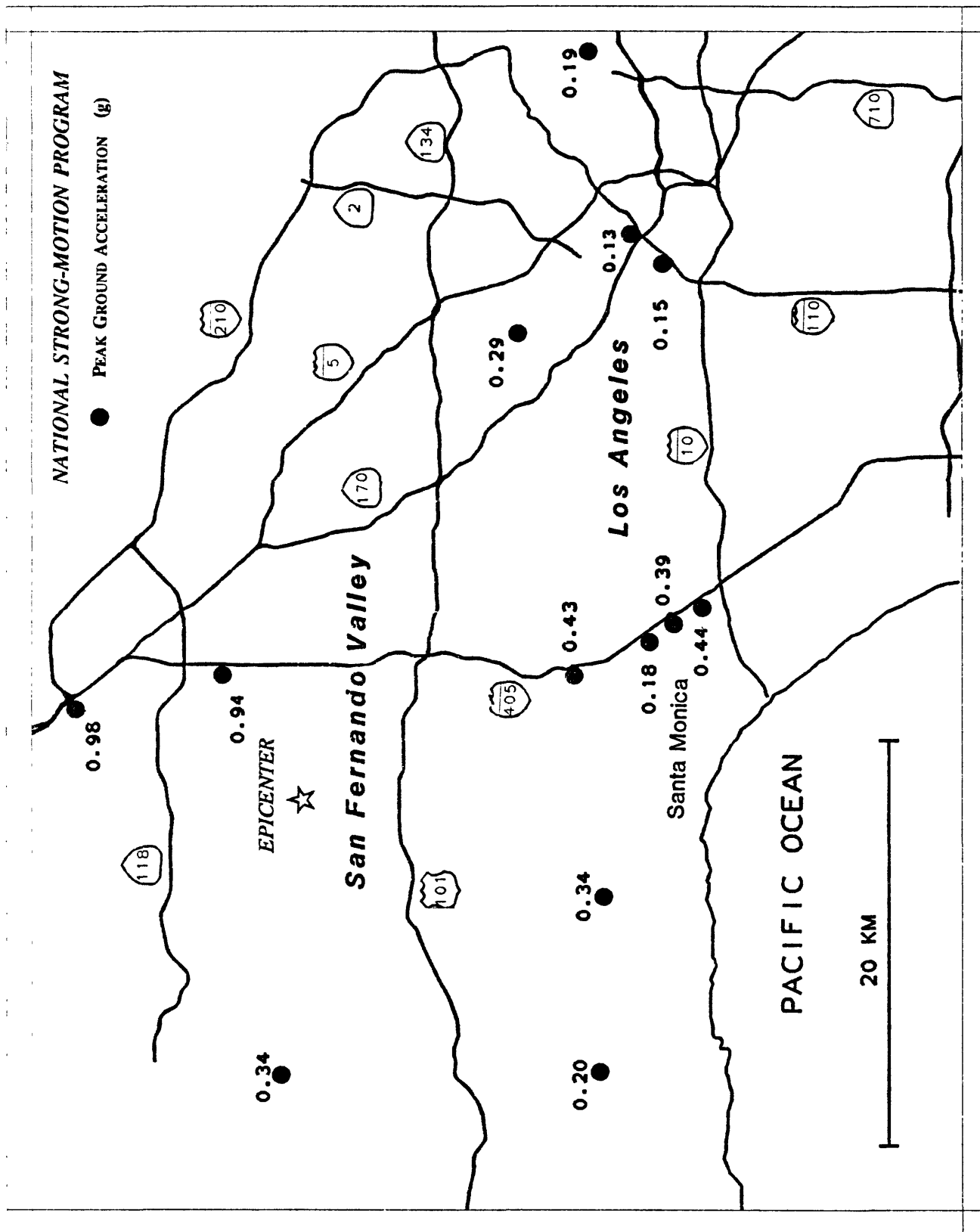


Figure 3. Peak ground accelerations recorded at close-in NSM stations during the main shock.

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA
EARTHQUAKE OF JANUARY 17, 1994

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
1	Los Angeles 6301 Owensmouth Ave. [CODE] Roof (12)	34.185 118.584	5	360 Up 270	0.48 0.48 0.39	53
2	Los Angeles Sepulveda VA Hospital [VA] Ground	34.249 118.475	7	360 Up 270	0.94 0.48 0.74	22
3	Los Angeles 5805 Sepulveda Blvd. [CODE] Roof (9)	34.175 118.465	8	360 Up 270	0.76 0.50 0.64	**
4	Los Angeles 16000 Ventura Blvd. [CODE] Roof (13)	34.156 118.480	8	120 Up 030	0.37 0.37 0.41	24
5	Los Angeles 15250 Ventura Blvd. [CODE] Roof (13)	34.157 118.476	8	360 Up 270	0.61 0.43 0.27	24
6	Jensen Filter Plant Administration Building [MWD] Basement	34.312 118.496	12	022 Up 292	0.40 0.40 0.62	23
6	Jensen Filter Plant Generator Building [MWD] Ground	34.313 118.498	12	022 Up 292	0.56 0.52 0.98	22
6	Jensen Filter Plant Reservoir Roof [MWD]	34.309 118.499	12	022 Up 292	0.65 0.51 0.84	23
7	Sepulveda Canyon Spillway Building [MWD] Ground	34.097 118.475	14	166 Up 076	0.26 0.16 0.43	25
8	Topanga Fire Station [USGS] Ground	34.084 118.599	15	360 Up 270	0.34 0.19 0.21	27
9	Santa Susana ETEC, Bldg. 026 [DOE] Ground	34.232 118.710	16	325 Up 235	0.32 0.27 ---	*
9	Santa Susana ETEC, Bldg. 462 [DOE] 1st Floor	34.230 118.712	16	090 Up 360	0.24 0.23 0.34	26
9	Santa Susana ETEC, Bldg. 462 [DOE] 6th Floor	34.230 118.712	16	090 Up 360	0.41 0.40 0.60	26
9	Santa Susana ETEC, Bldg. 463 [DOE] Roof	34.230 118.713	16	090 Up 360	0.41 0.66 0.76	*

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA EARTHQUAKE OF JANUARY 17, 1994 (Continued)

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
9	Santa Susana ETEC, Freefield [DOE] Ground	34.231 118.713	16	090	0.29	25
				Up	0.16	
				360	0.23	
10	Los Angeles Brentwood VA Hospital [VA] Ground	34.063 118.463	18	285	0.16	27
				Up	0.14	
				195	0.18	
11	Los Angeles 10920 Wilshire Blvd. [CODE] 19th Level	34.058 118.443	19	070	0.14	32
				Up	0.24	
				340	0.17	
12	Los Angeles 10751 Wilshire Blvd. [CODE] Roof (12)	34.060 118.438	19	252	0.40	28
				Up	0.39	
				162	0.30	
13	Los Angeles 10660 Wilshire Blvd. [CODE] Roof (19)	34.061 118.434	19	160	0.43	28
				Up	0.51	
				070	1.00	
14	Los Angeles Wadsworth VA Hospital (VA) Structural Array Ch. 1 - 6th Floor, North 2 - 6th Floor, North-center 3 - 6th Floor, Center 4 - 6th Floor, Center 5 - 6th Floor, South 6 - 6th Floor, South 7 - Basement, North-center 8 - Basement, North-center 9 - Basement, North-center	34.053 118.452	19			29
14	Los Angeles Wadsworth VA Hospital [USGS] North Ground Site	34.054 118.453	19	325	0.26	31
				Up	0.17	
				235	0.26	
14	Los Angeles Wadsworth VA Hospital [USGS] South Ground Site	34.050 118.448	19	325	0.39	31
				Up	0.14	
				235	0.30	
15	Los Angeles 12121 Wilshire Blvd. [CODE] Roof (15)	34.044 118.467	20	226	0.27	32
				Up	0.37	
				136	0.32	
16	Los Angeles 2029 Century Park East [CODE] 43rd Floor	34.059 118.413	20	320	0.31	**
				Up	0.46	
				230	0.32	
17	Malibu Canyon Monte Nido Fire Station [USGS] Ground	34.078 118.693	21	360	0.20	33
				Up	0.13	
				270	0.17	

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA
EARTHQUAKE OF JANUARY 17, 1994 (Continued)

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
18	Los Angeles 2121 Ave. of the Stars [CODE] Roof (36)	34.057 118.414	21	330 Up 240	0.43 0.63 0.37	33
19	Los Angeles 1955 1/2 Purdue Ave. [USGS] Basement	34.040 118.445	21	235 Up 145	0.44 0.16 0.39	34
19	Los Angeles 1955 1/2 Purdue Ave. [USGS] 1st Level	34.040 118.445	21	235 Up 145	0.50 0.48 0.49	34
19	Los Angeles 1955 1/2 Purdue Ave. [USGS] 3rd Level	34.040 118.445	21	235 Up 145	0.63 0.46 0.46	35
20	Los Angeles 444 S. San Vicente [CODE] Roof (12)	34.071 118.374	22	335 Up 245	0.55 0.31 0.64	36
21	Los Angeles 2005 N. Highland Ave. [CODE] Roof (8)	34.106 118.336	22	360 Up 270	0.36 0.21 0.42	36
22	Los Angeles Griffith Observatory [USGS] Ground	34.118 118.299	24	360 Up 270	0.18 0.15 0.29	35
23	Los Angeles 4929 Wilshire Blvd. [CODE] Roof (11)	34.063 118.337	25	180 Up 090	0.42 0.31 0.34	37
24	Los Angeles 1526 N. Edgemont St. [CODE] Roof (8)	34.098 118.294	26	090 Up 360	0.84 0.27 0.78	37
25	Los Angeles 695 S. Vermont [CODE] 18th Floor	34.060 118.290	28	360 Up 270	0.12 0.19 0.11	38
26	Los Angeles 600 S. Commonwealth [CODE] 19th Floor	34.063 118.284	29	028 Up 298	0.24 0.22 0.17	38
27	Los Angeles 1100 Wilshire Blvd. [USGS] Bsmt 3 NE	34.052 118.263	31	298 Up 208	0.13 0.09 0.15	41
27	Los Angeles 1100 Wilshire Blvd. [USGS] Bsmt 3 SE	34.052 118.263	31	298 Up 208	0.14 0.07 0.10	41
27	Los Angeles 1100 Wilshire Blvd. [USGS] Bsmt 4 NW	34.052 118.263	31	298 Up 208	0.11 0.06 0.12	40

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA EARTHQUAKE OF JANUARY 17, 1994 (Continued)

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
27	Los Angeles 1100 Wilshire Blvd. [USGS] Structural Array	34.052 118.263	31			
	Ch. 1 - 12th Floor North			298	0.16	42
	2 - 12th Floor North			208	0.22	
	3 - 12th Floor South			208	0.16	
	4 - 13th Floor North			298	0.16	
	5 - 13th Floor North			208	0.28	
	6 - 13th Floor South			208	0.16	
	7 - 32nd Floor North			298	0.14	
	8 - 32nd Floor North			208	0.35	
	9 - 32nd Floor South			208	0.16	
	10 - Ground Floor North			298	0.18	
	11 - Ground Floor North			208	0.11	
	12 - Ground Floor South			208	0.19	
28	Los Angeles 1111 Sunset Blvd. [MWD] Basement	34.067 118.248	31	348 Up 258	0.13 0.06 0.13	39
28	Los Angeles 1111 Sunset Blvd. [MWD] 4th Floor	34.067 118.248	31	348 Up 258	0.17 0.09 0.18	39
28	Los Angeles 1111 Sunset Blvd. [MWD] Roof (8)	34.067 118.248	31	348 Up 258	0.23 0.16 0.23	40
29	Los Angeles 333 South Hope [CODE] 55th Floor	34.053 118.252	32	083 Up 353	0.11 0.18 0.11	45
30	Los Angeles 500 S. Grand Ave. [CODE] 25th Level	34.049 118.252	32	045 Up 315	0.19 0.17 0.17	44
31	Los Angeles 520 S. Grand Ave. [CODE] 11th Level	34.050 118.252	32	045 Up 315	0.15 0.13 0.24	44
32	Los Angeles 1150 South Hill [CODE] 10th Floor	34.039 118.259	32	307 Up 217	0.13 0.15 0.08	45
33	Los Angeles 6101 Century Blvd. [CODE] 15th Level	33.946 118.391	32	270 Up 180	0.14 0.10 0.18	46
34	Los Angeles 5250 Century Blvd. [CODE] Roof (8)	33.945 118.372	33	090 Up 360	0.16 0.22 0.15	46

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA
EARTHQUAKE OF JANUARY 17, 1994 (Continued)

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
35	Burbank 3601 W. Olive Ave [CODE] Roof (9)	34.152 118.337	20	360 Up 270	0.56 0.81 0.52	47
36	Lawndale 15000 Aviation Blvd. [USGS] Ground	33.895 118.377	38	360 Up 270	0.18 0.09 0.13	49
37	Alhambra 900 South Fremont Ave. [USGS] Structural Array	34.085 118.149	38			50
	Ch. 1 - 12th Floor Center			360	0.11	
	2 - 12th Floor Center			090	0.16	
	3 - 12th Floor North end			090	0.13	
	4 - 6th Floor Center			090	0.24	
	5 - 6th Floor Center			360	0.15	
	6 - 6th Floor North end			090	0.20	
	7 - 2nd Floor Center			090	0.60	
	8 - 2nd Floor Center			360	0.39	
	9 - 2nd Floor North end			090	0.40	
	10 - Basement Center			360	0.13	
	11 - Basement Center			Up	0.10	
	12 - Basement Center			090	0.19	
38	Pasadena (Analog) 535 S. Wilson Ave. [USGS] Ground	34.136 118.127	39	360 Up 270	0.16 0.10 0.15	47
38	Pasadena (Digital) 535 S. Wilson Ave. [USGS] Ground	34.136 118.127	39	180 Down 270	0.19 0.11 0.15	48
39	Los Angeles Bulk Mail Facility (Bell) [USGS] Ground	33.996 118.162	42	360 Up 270	0.27 0.09 0.16	49
40	Garvey Reservoir Crest [MWD]	34.050 118.114	43	114 Up 024	0.16 0.08 0.18	52
40	Garvey Reservoir Abutment Building [MWD] Ground	34.048 118.111	43	114 Up 024	0.14 0.07 0.12	52
41	Los Angeles 19191 S. Vermont [CODE] Roof (11)	33.855 118.291	46	360 Up 270	0.14 0.10 0.22	53
42	Chantry Flat Forest Station, Heliport [USGS] Ground	34.196 118.021	48	110 Down 200	0.20 0.12 0.26	54

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA
EARTHQUAKE OF JANUARY 17, 1994 (Continued)

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
43	Whittier Narrows Dam Crest [ACOE]	34.020 118.053	49	208 Down 298	0.19 0.07 0.21	55
43	Whittier Narrows Dam Upstream (Baseyard) [ACOE]	34.031 118.054	49	180 Down 270	0.22 0.08 0.15	56
	Leona Valley Fire Station [USGS] Ground	34.620 118.290	51	120 Up 030	0.05 0.06 0.07	57
45	Palos Verdes Reservoir Abutment Bldg. [MWD] Ground	34.774 118.321	53	210 Up 120	0.15 0.10 0.12	59
45	Palos Verdes Reservoir Crest [MWD]	33.772 118.319	53	210 Up 120	0.12 0.07 0.15	59
46	Whittier 7215 Bright Ave., Basement [CODE/USGS]	33.977 118.036	53	180 Up 090	0.15 0.07 0.12	57
46	Whittier 7215 Bright Ave., 5th Floor [CODE/USGS]	33.977 118.036	53	180 Up 090	0.30 0.10 0.15	58
46	Whittier 7215 Bright Ave., 10th Floor [CODE/USGS]	33.977 118.036	53	180 Up 090	0.18 0.12 0.24	58
47	Norwalk 12400 Imperial Highway [USGS] North Ground Site	33.917 118.067	54	090 Up 360	0.08 0.06 0.08	60
48	Norwalk 12440 Imperial Highway [USGS] North Ground Site	33.917 118.065	55	090 Up 360	0.06 0.06 0.08	61
48	Norwalk 12440 Imperial Highway [USGS] Basement	33.916 118.065	55	090 Up 360	0.06 0.04 0.06	61

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA EARTHQUAKE OF JANUARY 17, 1994 (Continued)

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
48	Norwalk 12440 Imperial Highway [USGS] Structural Array	33.916 118.065	55			62
	Ch. 1 - 9th Level(Roof) Center			090	0.14	
	2 - 6th Level Center			090	0.11	
	3 - 3rd Level Center			090	0.08	
	4 - 2nd Level Center			090	0.07	
	5 - 1st Level(Bsmt) East end			180	0.06	
	6 - 6th Level West-center			180	0.11	
	7 - 1st Level(Bsmt) Center			Up	0.14	
	8 - 1st Level(Bsmt) Center			090	---	
	9 - 1st Level(Bsmt) Center			180	0.07	
	10 - Downhole (30') Center			Up	0.03	
	11 - Downhole (30') Center			090	---	
	12 - Downhole (30') Center			180	0.06	
48	Norwalk 12440 Imperial Highway [USGS] Structural Array	33.916 118.065	55			63
	Ch. 13 - 9th Level Roof East end			180	0.14	
	14 - 6th Level East end			180	0.09	
	15 - 3rd Level East end			180	0.05	
	16 - 2nd Level East end			180	0.06	
	17 - 9th Level Roof Bldg ctr			180	0.18	
	18 - 6th Level Bldg Ctr			180	0.13	
	19 - 3rd Level Bldg Ctr			180	0.09	
	20 - 2nd Level Bldg Ctr			180	0.08	
	21 - 9th Level Roof West end			180	0.12	
	22 - 6th Level West end			180	0.08	
	23 - 3rd Level West end			180	0.06	
	24 - 2nd Level West end			180	0.07	
49	Morris Dam Left abutment [MWD]	34.173 117.879	61	246 Up 156	0.04 0.03 0.03	60
	Littlerock Post Office [USGS] Ground	34.52 117.99	61	300 Up 210	0.13 0.08 0.18	65
51	Long Beach VA Hospital Basement [VA]	33.778 118.118	62	360 Up 270	0.07 0.04 0.05	66
51	Long Beach VA Hospital 6th Floor [VA]	33.778 118.118	62	360 Up 270	0.15 0.06 0.11	67
51	Long Beach VA Hospital 11th Floor [VA]	33.778 118.118	62	360 Up 270	0.20 0.08 0.21	67

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA EARTHQUAKE OF JANUARY 17, 1994 (Continued)

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
51	Long Beach VA Hospital Ground Site [VA]	33.777 118.115	62	360 Up 270	0.07 0.03 0.07	66
52	Brea Dam Crest [ACOE]	33.890 117.925	67	132 Up 042	0.14 0.09 0.23	69
52	Brea Dam Left Abutment [ACOE]	33.890 117.924	67	132 Up 042	0.08 0.08 0.10	68
52	Brea Dam Downstream [ACOE]	33.889 117.926	67	132 Up 042	0.19 0.05 0.12	68
53	Orange County Reservoir Crest [MWD]	33.936 117.884	68	090 Up 360	0.20 0.09 0.19	70
53	Orange County Reservoir Abutment [MWD]	33.935 117.883	68	090 Up 360	0.11 0.05 0.11	70
	Valyermo Forest Station [USGS] Ground	34.44 117.85	68	300 Up 210	0.08 0.05 0.07	65
55	Weymouth Filter Plant Ground Site [MWD]	34.114 117.778	71	017 Up 287	0.05 0.04 0.05	71
55	Weymouth Filter Plant Tank Top [MWD]	34.115 117.779	71	017 Up 287	0.16 0.11 0.11	71
	Paradise Springs Camp [USGS] Ground	34.40 117.80	71	120 Up 030	0.06 0.03 0.05	*
57	Carbon Canyon Dam Crest [ACOE]	33.914 117.839	72	131 Up 041	0.11 0.08 0.19	73
57	Carbon Canyon Dam Left Abutment [ACOE]	33.913 117.837	72	131 Up 041	0.11 0.03 0.10	72
57	Carbon Canyon Dam Right Abutment [ACOE]	33.916 117.842	72	131 Up 041	0.14 0.06 0.14	72
58	Live Oak Reservoir Abutment [MWD]	34.140 117.749	73	180 Up 090	0.04 0.01 0.03	69

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA
EARTHQUAKE OF JANUARY 17, 1994 (Continued)

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
59	Diemer Filter Plant Administration Building [MWD] Basement	33.913 117.819	74	281 Up 191	0.07 0.04 0.12	73
59	Diemer Filter Plant Reservoir Roof [MWD]	33.911 117.817	74	281 Up 191	0.06 0.05 0.11	74
60	Huntington Beach 18401 Springdale [USGS] Ground	33.697 118.023	74	360 Up 270	0.12 0.02 0.11	76
61	Orange 200 S. Manchester Ave. [CODE] Roof (9)	33.789 117.894	76	360 Up 270	0.16 0.16 0.11	*
62	Orange 333 City Boulevard West [CODE] 22nd Level	33.787 117.894	76	360 Up 270	0.04 0.10 0.06	*
63	Orange 600 City Parkway West [CODE] 11th Floor	33.783 117.896	76	360 Up 270	0.11 0.10 0.14	*
64	Orange 505 City Parkway West [CODE] 11th Floor	33.782 117.896	76	360 Up 270	0.11 0.11 0.08	*
65	San Antonio Dam Downstream [ACOE]	34.156 117.675	80	090 Up 360	0.05 0.03 0.09	76
66	Santa Ana, 400 Civic Cntr Dr. Orange County Engineering Bl. [USGS] Basement	33.751 117.870	80	360 Up 270	0.08 0.03 0.06	77
67	Costa Mesa Fire Station #4 2300 Placentia Ave. [USGS] Ground	33.658 117.931	83	360 Up 270	0.08 0.04 0.05	77
68	Wrightwood Post Office [USGS] Ground	34.360 117.629	85	360 Up 270	0.08 0.03 0.07	78
69	Costa Mesa John Wayne Airport [USGS] Ground	33.677 117.869	86	360 Up 270	0.09 0.03 0.07	78
70	Irvine 2603 Main Street [CODE] Ground	33.682 117.842	87	360 Up 270	0.06 0.03 0.11	74
70	Irvine 2603 Main Street [CODE] 7th Level	33.682 117.842	87	360 Up 270	0.11 0.07 0.11	75

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA EARTHQUAKE OF JANUARY 17, 1994 (Continued)

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
70	Irvine 2603 Main Street [CODE] 13th Level	33.682 117.842	87	360 Up 270	0.10 0.08 0.09	75
71	Irvine 2601 Main Street [CODE] 13th Level	33.682 117.842	87	360 Up 270	0.11 0.07 0.11	*
72	Irvine 1990 MacArthur Blvd. [USGS] Basement	33.656 117.859	88	060 Up 330	0.07 0.02 0.04	79
72	Irvine 1990 MacArthur Blvd. [USGS] Structural Array	33.656 117.859	88			80
	Ch. 1 - Roof NE corner			060	0.18	
	2 - Roof SW corner			060	0.17	
	3 - 7th Floor NE			060	0.13	
	4 - 7th Floor SW			060	0.13	
	5 - 1st Floor South side			060	0.07	
	6 - Roof, SW corner			330	0.11	
	7 - 7th Floor, SW			330	0.12	
	8 - 1st Floor West side			330	0.07	
	9 - 1st Floor South side			330	0.06	
	10 - 7th Floor SW corner			Down	0.14	
	11 - 1st Floor West side			Down	0.01	
	12 - 1st Floor South side			Down	0.03	
73	Newport Beach 800-840 Newport Center Drive [USGS] Structural Array	33.618 117.878	90			82
	Ch. 1 - Tower 2 Level 1 Center			020	0.06	
	2 - Tower 2 Level 1 Center			Up	0.02	
	3 - Tower 2 Level 1 Center			110	0.04	
	4 - Tower 2 Level 2 West			110	0.09	
	5 - Middle Building Level 2			020	0.11	
	6 - Middle Building Level 2			110	0.10	
	7 - Tower 2, Level 9 South			110	0.07	
	8 - Tower 2, Level 10 Center			020	0.05	
	9 - Tower 2, Level 10 Center			110	0.07	
	10 - Tower 1, Level 9 East			110	0.06	
	11 - Tower 1, Level 10 Ctr			020	0.06	
	12 - Tower 1, Level 10 Ctr			110	0.04	
74	Prado Dam Crest [ACOE]	33.890 117.641	90	090 Up 360	0.09 0.07 0.10	84
74	Prado Dam Downstream [ACOE]	33.888 117.640	90	090 Up 360	0.20 0.06 0.18	79

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA EARTHQUAKE OF JANUARY 17, 1994 (Continued)

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
74	Prado Dam Left Abutment [ACOE]	33.890 117.637	90	090 Up 360	0.06 0.04 0.14	84
75	San Joaquin Reservoir Crest [MWD]	33.620 117.842	92	087 Up 357	0.04 0.02 0.04	85
75	San Joaquin Reservoir Left Abutment [MWD]	33.620 117.844	92	087 Up 357	0.12 0.07 0.14	85
	Newport Beach 800 Marguerite [USGS] Ground	33.600 117.866	92	360 Up 270	0.03 0.02 0.05	*
	Lytle Creek Mt. Lakes Resort [USGS] Ground	34.251 117.490	96	360 Up 270	0.08 0.03 0.07	86
	San Bernardino Array Devore Water Department [USGS] Ground	34.235 117.407	104	360 Up 270	0.05 0.02 0.07	89
	Riverside Santa Ana River Bridge [USGS/MWD] N. Abutment	33.968 117.447	104	166 Up 076	0.05 0.03 0.04	86
	Riverside Santa Ana River Bridge [USGS/MWD] Structural Array	33.968 117.447	104			87
	Ch. 1 - North abutment			346	0.04	
	2 - North abutment			Down	0.02	
	3 - North abutment			076	0.03	
	4 - Pier 7-8, mid-span			346	0.16	
	5 - Pier 7-8, mid-span			Down	0.12	
	6 - Pier 7-8, mid-span			076	0.11	
	7 - Pier 8, below bearing			346	0.09	
	8 - Pier 8, below bearing			Down	0.02	
	9 - Pier 8, below bearing			076	0.03	
	10 - Pier 8 above bearing			346	0.11	
	11 - Pier 8 above bearing			Down	0.02	
	12 - Pier 8 above bearing			076	0.17	
	Lake Mathews Dam Dike Toe [MWD]	33.852 117.451	108	252 Up 162	0.03 0.03 0.05	89
	San Bernardino Array Rialto Fire Station [USGS] Ground	34.134 117.368	108	360 Up 270	0.03 0.03 0.03	*

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA EARTHQUAKE OF JANUARY 17, 1994 (Continued)

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
	San Bernardino Array	34.086	114	360	0.05	90
	San Bernardino Valley College	117.309		Up	0.03	
	[USGS] Ground			270	0.07	
	San Bernardino Array	34.183	114	360	0.05	90
	North "F" Street	117.295		Up	0.02	
	[USGS] Ground			270	0.06	
	San Bernardino	34.106	116	090	0.04	91
	385 N. Arrowhead Ave.	117.287		Up	0.02	
	[USGS] Ground Level			360	0.05	
	San Bernardino	34.106	116			
	385 N. Arrowhead Ave.	117.287				
	[USGS]					
	Structural Array					92
	Ch. 1 - 2nd Floor NW			360	0.07	
	2 - 2nd Floor NE			090	0.07	
	3 - 2nd Floor NE			360	0.08	
	4 - 2nd Floor SW			090	0.07	
	5 - 4th Floor SW			090	0.14	
	6 - 4th Floor NW			360	0.11	
	7 - Roof (6th) NE			090	0.15	
	8 - Roof (6th) NW			360	0.25	
	9 - Roof (6th) SW			090	0.21	
	10 - Roof (6th) NE			360	0.21	
	11 - 4th Floor NE			090	0.10	
	12 - 4th Floor NE			360	0.15	
	San Bernardino	34.106	116	360	0.04	91
	385 N. Arrowhead Ave.	117.287		Up	0.02	
	[USGS] East Ground Site			270	0.04	
	Mills Filter Plant	33.920	117	360	0.02	
	[MWD] Ground	117.320		Up	0.02	*
				270	0.02	
	Loma Linda University	34.050	119	360	0.04	
	Medical Center	117.263		Up	0.02	*
	[USGS] Ground			270	0.04	
	Loma Linda VA Hospital	34.051	120	360	0.05	94
	North Ground Site	117.248		Up	0.02	
	[VA]			270	0.05	
	Loma Linda VA Hospital	34.049	120	360	0.04	94
	South Ground Site	117.250		Up	0.03	
	[VA]			270	0.05	

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA EARTHQUAKE OF JANUARY 17, 1994 (Continued)

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
	Loma Linda VA Hospital [VA]	34.050 117.249	120			
	Structural Array					95
	Ch. 1 - Ground Floor Center			Down	0.02	
	2 - Ground Floor Center			180	0.05	
	3 - Ground Floor Center			270	0.04	
	4 - 4th Floor Center			270	0.16	
	5 - Ground Floor North			270	0.05	
	6 - 4th Floor Center			180	0.10	
	7 - 4th Floor North			270	0.16	
	8 - Ground Floor South			180	0.03	
	9 - 4th Floor South			270	0.13	
	Maricopa Array #2	35.040	123	040	0.03	
	[CDWR] Ground	119.430		Up	0.01	*
				310	0.02	
	Reche Canyon	34.004	123	330	0.02	
	Olive Dell Ranch	117.223		Up	0.01	*
	[USGS] Ground			240	0.02	
	Maricopa Array #3	35.080	125	040	0.03	
	[CDWR] Ground	119.400		Up	0.02	*
				310	0.04	
	Maricopa Array #4	35.130	127	040	0.03	
	[CDWR] Ground	119.370		Up	0.01	*
				310	0.03	
	Buena Vista Pumping Plant	35.160	129	105	0.02	
	Basement	119.345		Up	0.01	*
	[CDWR]			015	0.02	
	Buena Vista Pumping Plant	35.160	129	105	0.02	
	Ground	119.345		Up	0.01	*
	[CDWR]			015	0.02	
	Buena Vista Pumping Plant	35.160	129	105	0.03	
	Freefield	119.345		Up	0.01	*
	[CDWR]			015	0.04	
	San Bernardino Array	34.080	132	360	0.02	
	Mill Creek Ranger Station	117.114		Up	0.02	*
	[USGS] Ground			270	0.03	
	Skinner Dam	33.580	153	178	0.01	100
	Left Abutment	117.070		Up	0.01	
	[MWD]			088	0.02	
	Skinner Dam	33.580	153	174	0.03	99
	Finished Water Reservoir	117.070		Down	0.03	
	[MWD] Crest			264	0.03	

TABLE 1. USGS STRONG-MOTION DATA FROM THE Ms=6.6 NORTHRIDGE, CALIFORNIA EARTHQUAKE OF JANUARY 17, 1994 (Continued)

MAP INDEX NO.	STATION LOCATION [OWNER]	COORDINATES (Lat. ° N Long. ° W)	EPICENTRAL DISTANCE (km)	ACCELERATION		RECORD PAGE NO.
				DIRECTION (Degrees)	MAXIMUM (g)	
	Skinner Dam - Toe	33.580	153			
	[MWD]	117.070				
	Structural Array					97
	Ch. 1 - Center crest			180	0.05	
	2 - Center crest			Up	0.02	
	3 - Center crest			270	0.08	
	4 - Left crest			180	0.05	
	5 - Left crest			270	0.05	
	6 - Left slope			270	0.04	
	7 - Center slope			180	0.03	
	8 - Center slope			Up	0.02	
	9 - Center slope			270	0.04	
	10 - Center toe			180	0.02	
	11 - Center toe			Up	0.02	
	12 - Center toe			270	0.03	

* Recording not reproduced in this report.

** Recording is not reproducible.

[OWNER CODE]

ACOE - U.S. Army Corps of Engineers

CDWR - Calif. Dept. of Water Resources

CODE - Building Owner

DOE - U.S. Dept. of Energy

MWD - Metropolitan Water District of So. Calif.

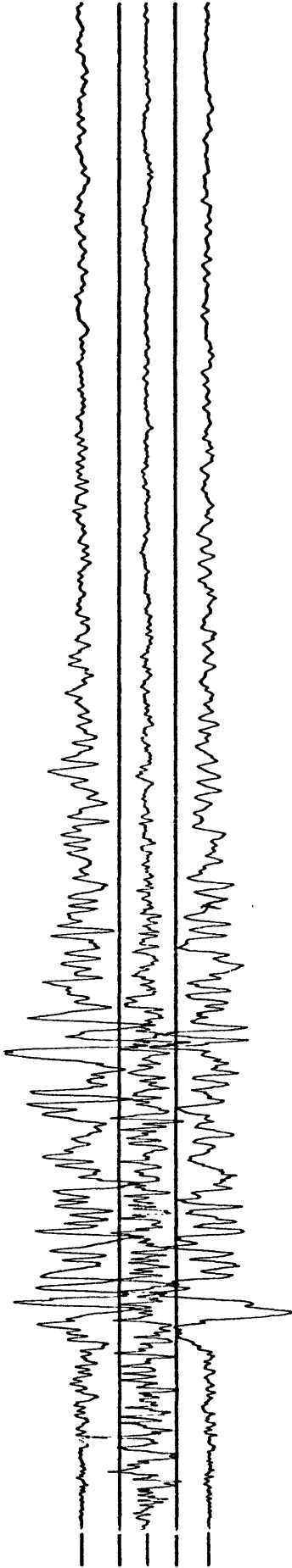
USGS - U.S. Geological Survey

VA - U.S. Dept. of Veterans Affairs

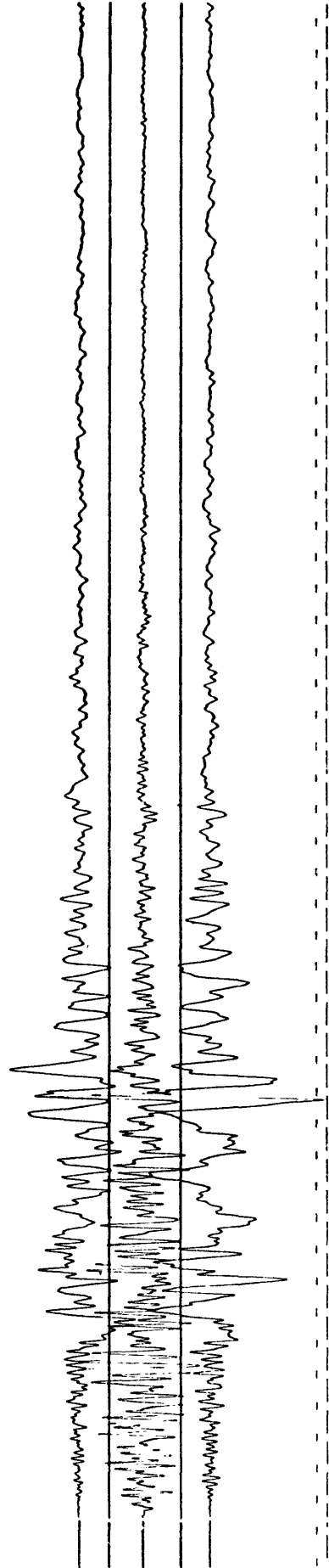
APPENDIX A

COPIES OF MAIN-SHOCK ACCELEROGRAMS FROM 94 NSMP STATIONS,
WITH PLAN/SECTION DRAWINGS FOR 11 EXTENSIVELY INSTRUMENTED
STRUCTURES. (SEE TABLE 1 FOR PEAK ACCELERATIONS FOR EACH TRACE,
AND FOR CROSS-REFERENCING OF THE PAGE NUMBER AND THE MAP INDEX
NUMBER. FILM SPEED IS 1 cm/sec, TIME MARKS ARE 0.5cm)

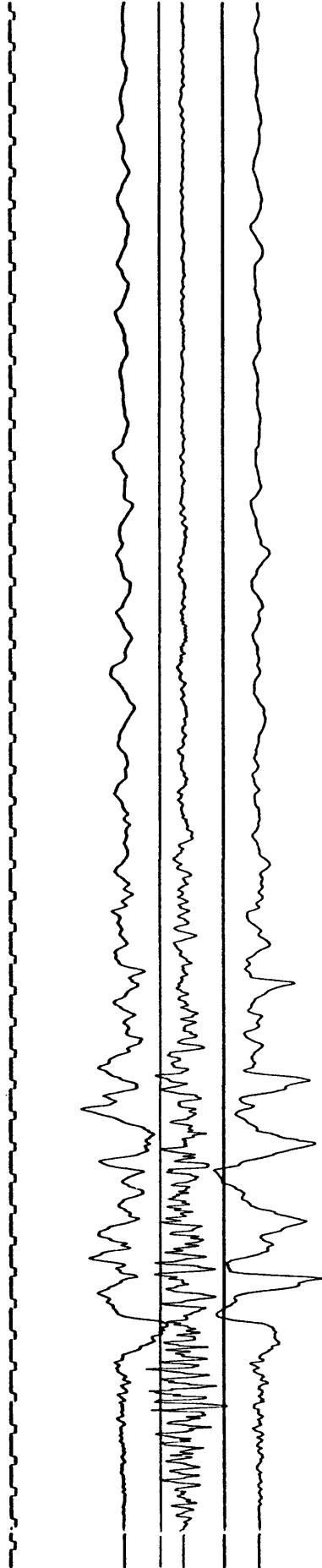
Sepulveda V.A. Hospital, Bldg #40 - Ground level (VA)



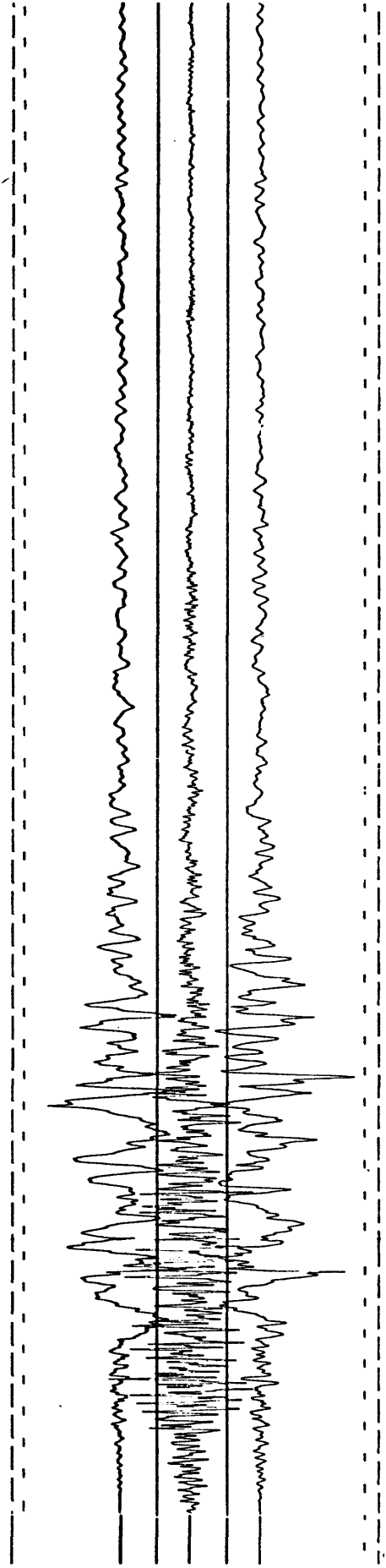
Jensen Filter Plant - Generator Bldg, Ground level (MWD)



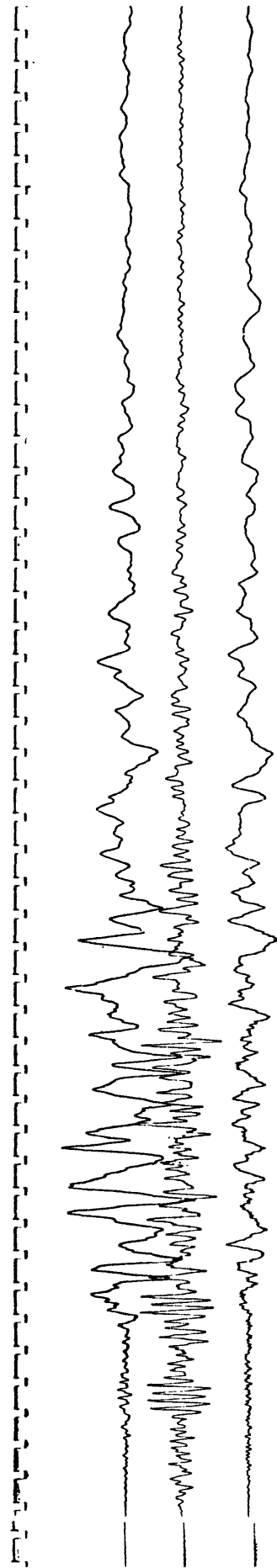
Jensen Filter Plant - Admin Bldg, Basement (MWD)



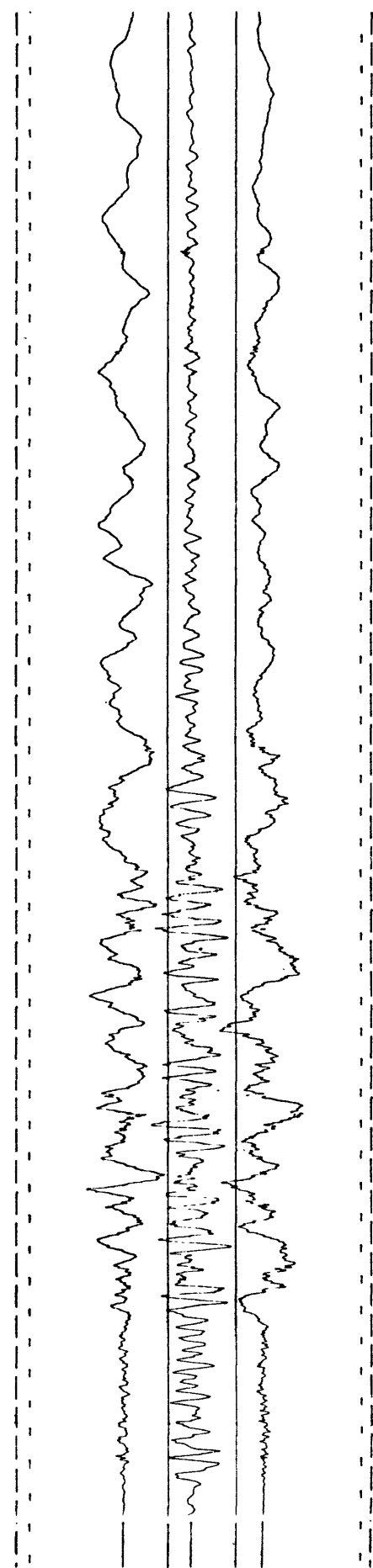
Jensen Filter Plant - Reservoir, roof (MWD)



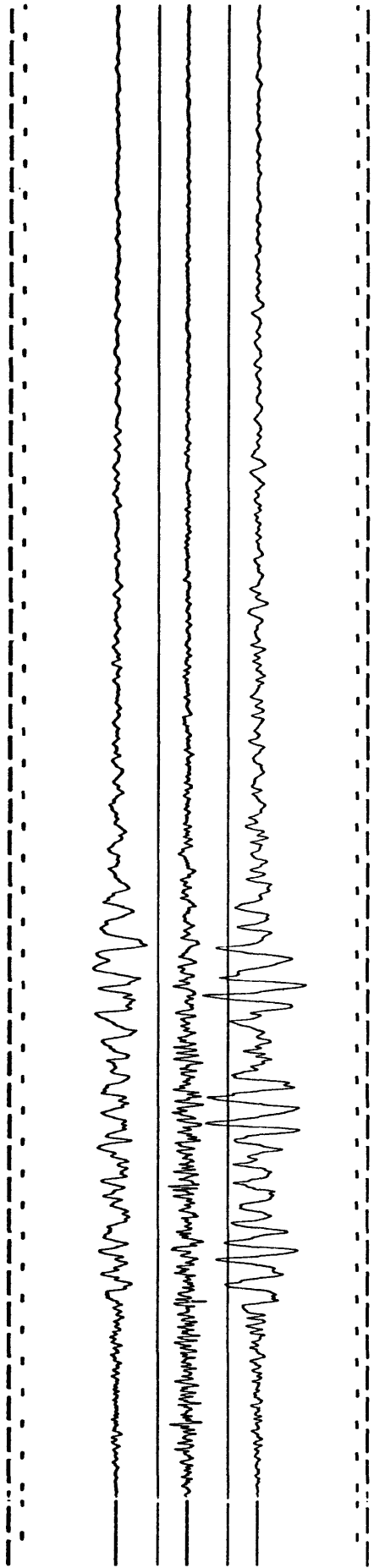
15250 Ventura Blvd - 13th Level (CODE)



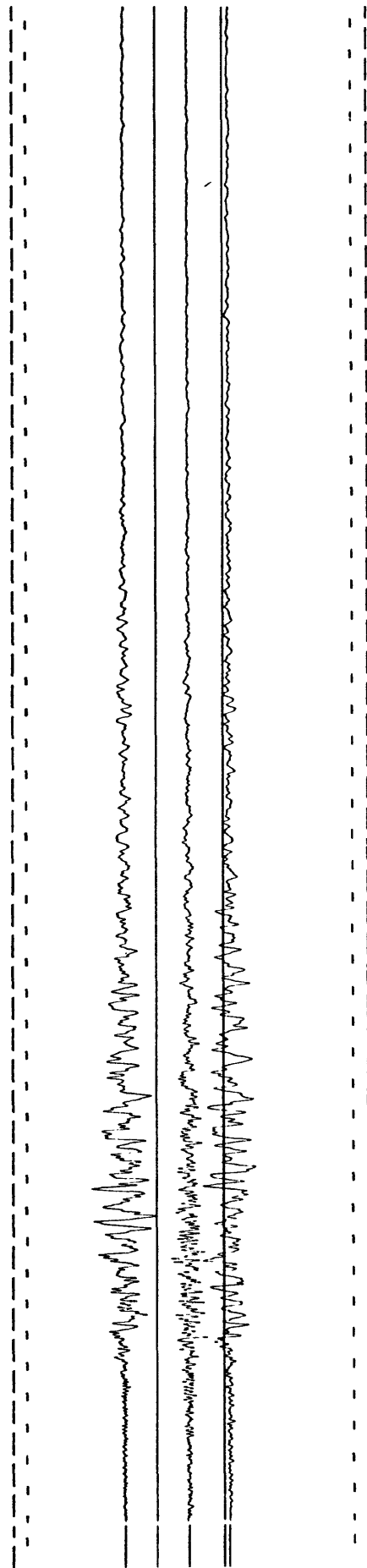
16000 Ventura Blvd - 13th Level (CODE)



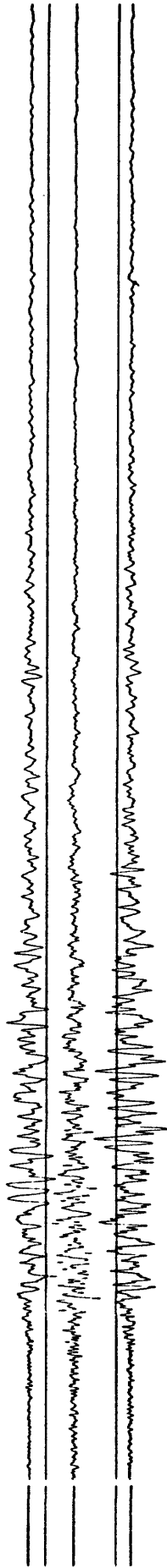
Sepulveda Canyon - Control Facility, Spillway (MWD)



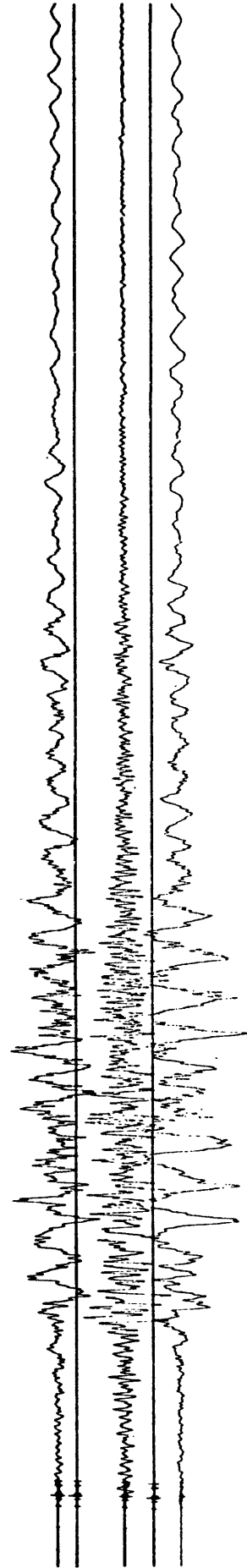
Santa Susana (ETEC) - Ground Site (DOE)



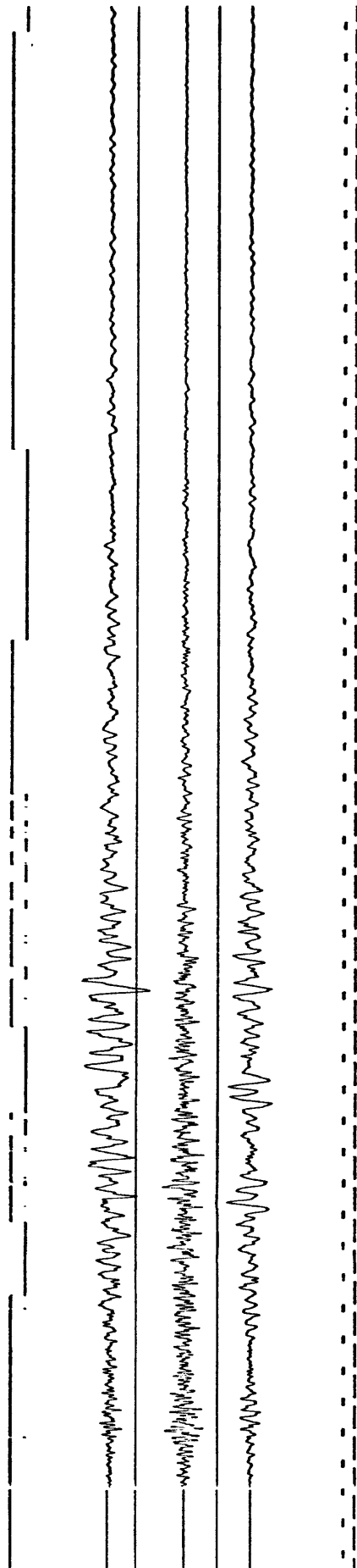
Santa Susana (ETEC) - Bldg 462, 1st floor (DOE)



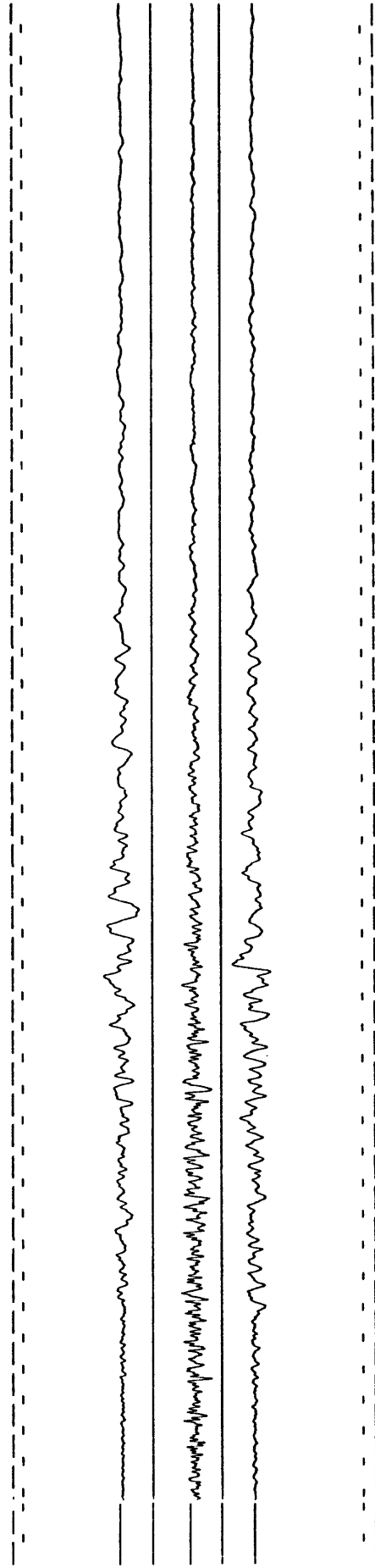
Santa Susana (ETEC) - Bldg 462, 6th floor (DOE)



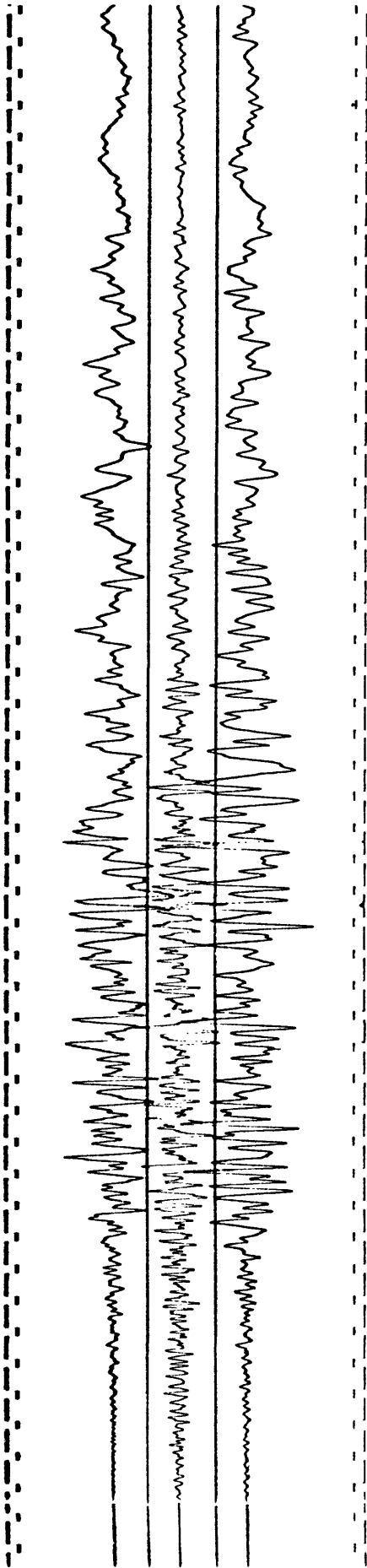
Topanga Fire Station - Ground level (USGS)



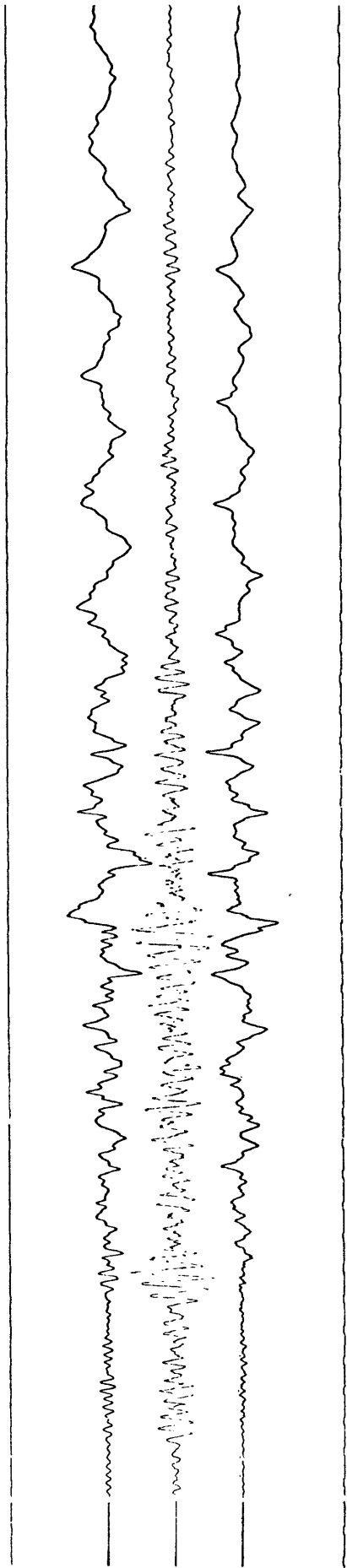
Brentwood V.A. Hospital - Ground level (VA)



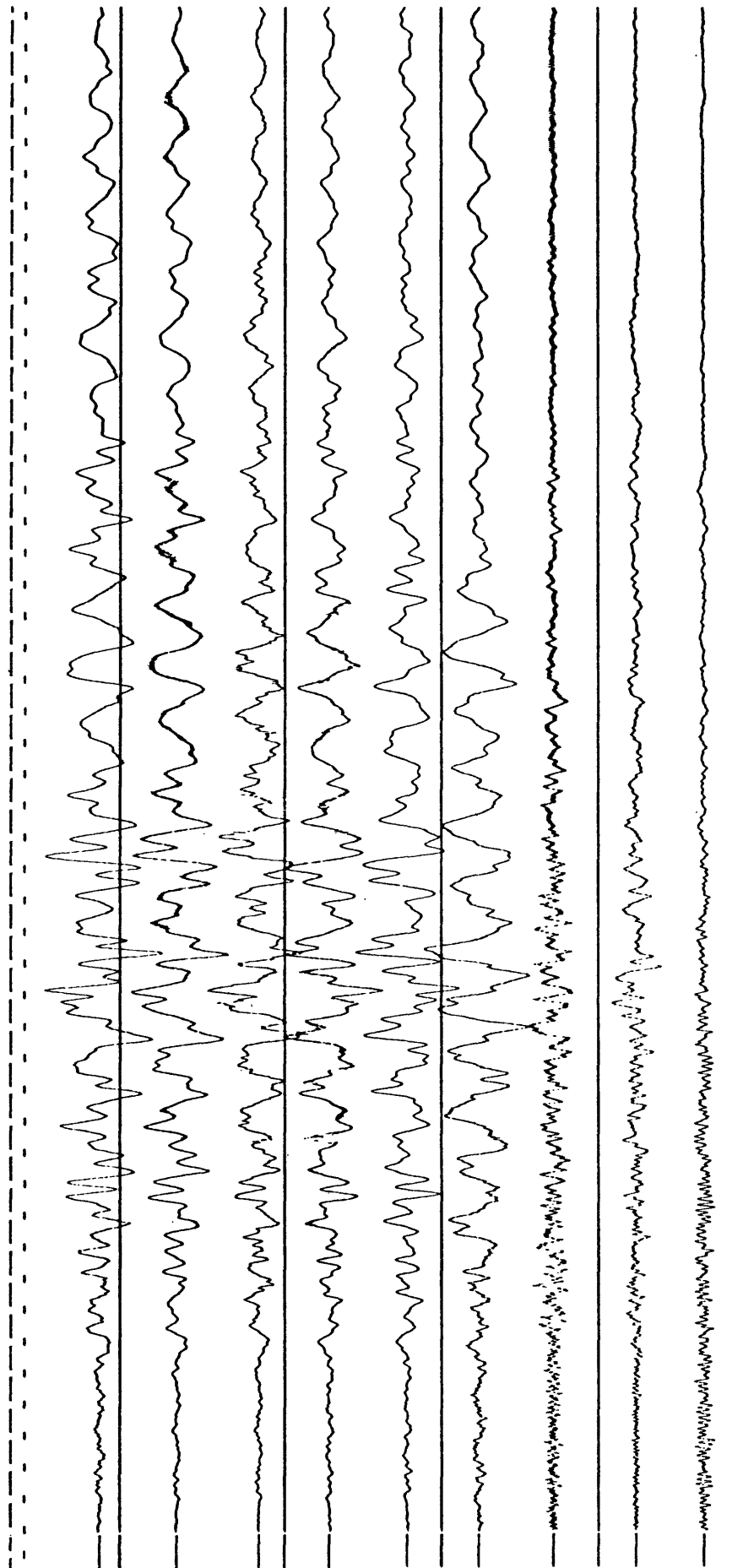
10660 Wilshire Blvd - 19th Level (CODE)



10751 Wilshire Blvd, 12th Level (CODE)

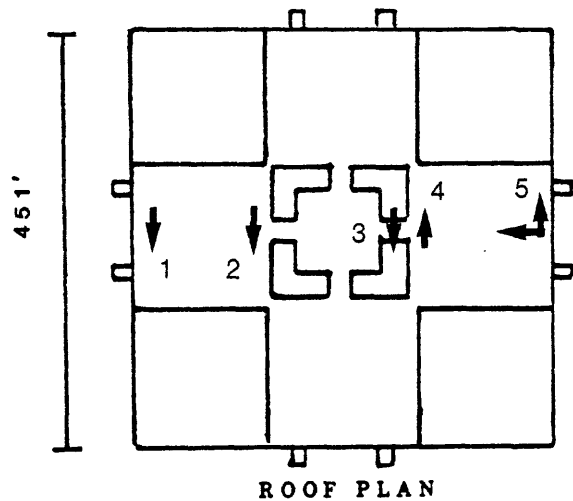
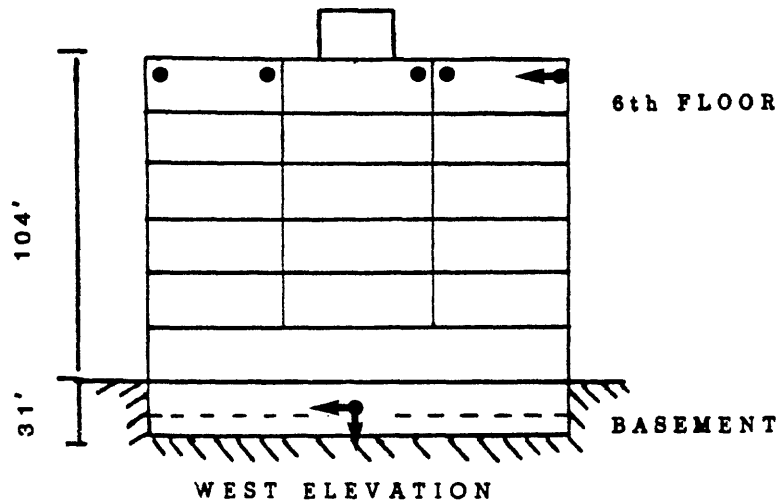


Wadsworth V.A. Hospital - Structure Array (VA)



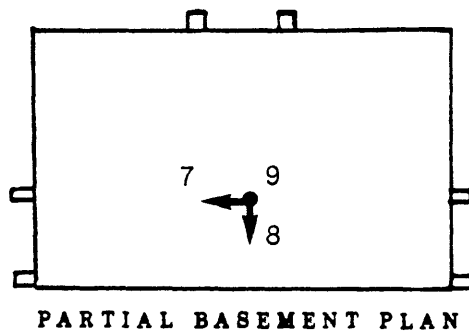
VETERANS ADMINISTRATION HOSPITAL
LOS ANGELES (WADSWORTH) , CALIFORNIA

STRONG-MOTION INSTRUMENTATION



STRUCTURE

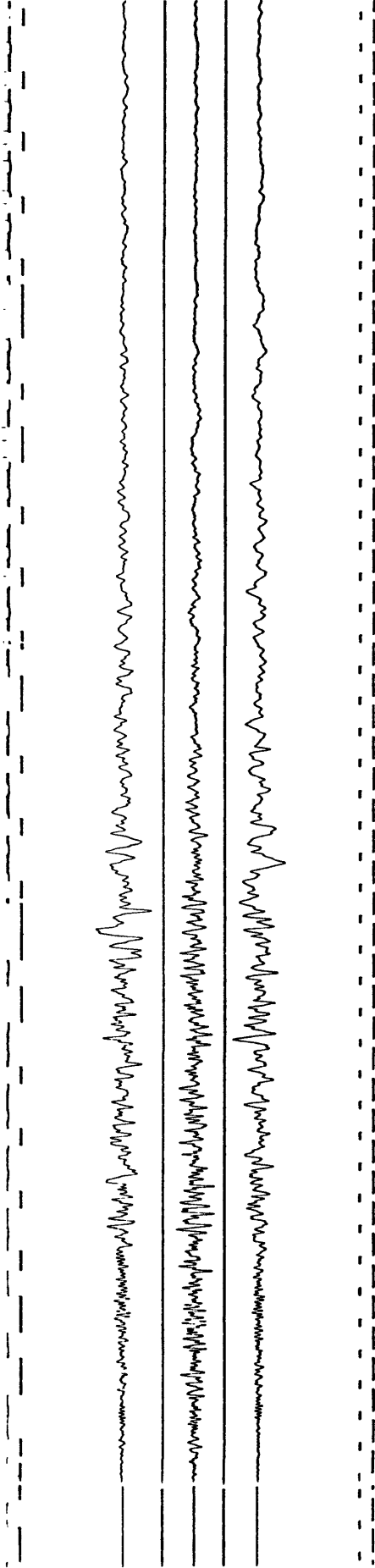
Rectangular base ,
cross-shaped towers (5 stories)
Core: steel frame
Wings: steel braced towers
Foundation: R C piles



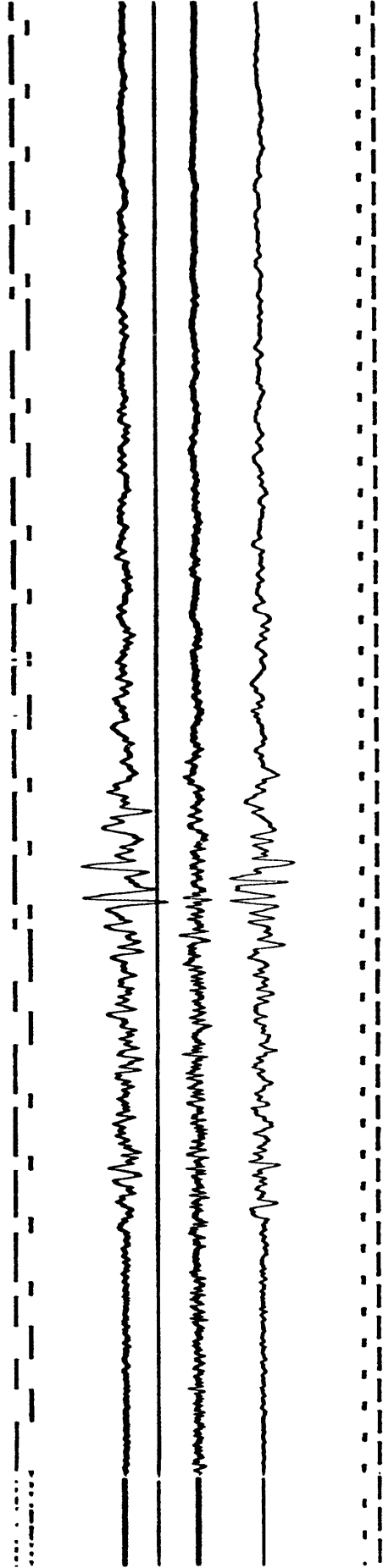
ACCELEROMETER DIRECTIONS

• INTO PLANE OF PLAN/ELEVATION
← AS SHOWN

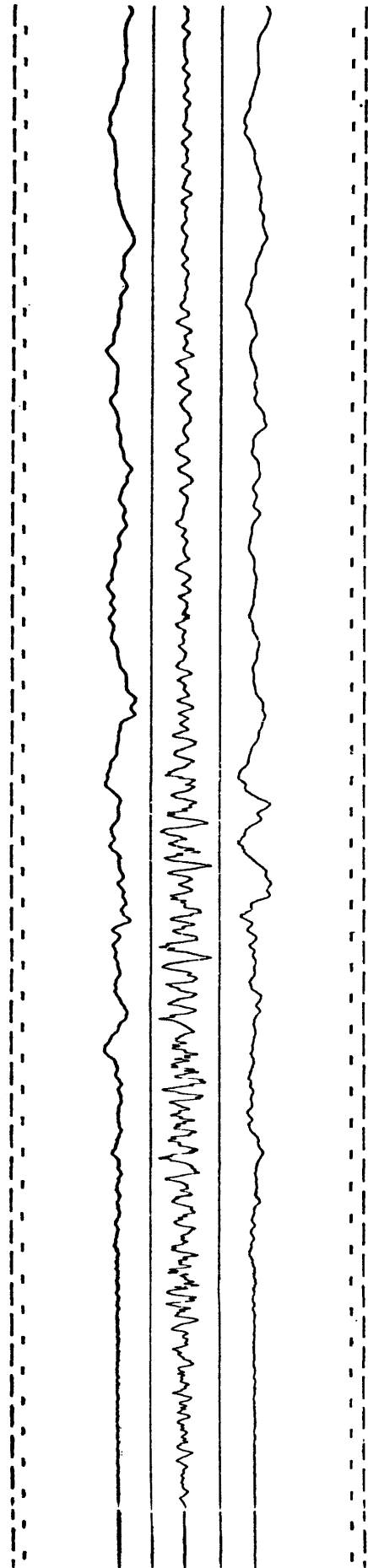
Wadsworth V.A. Hospital - North Ground Site (VA)



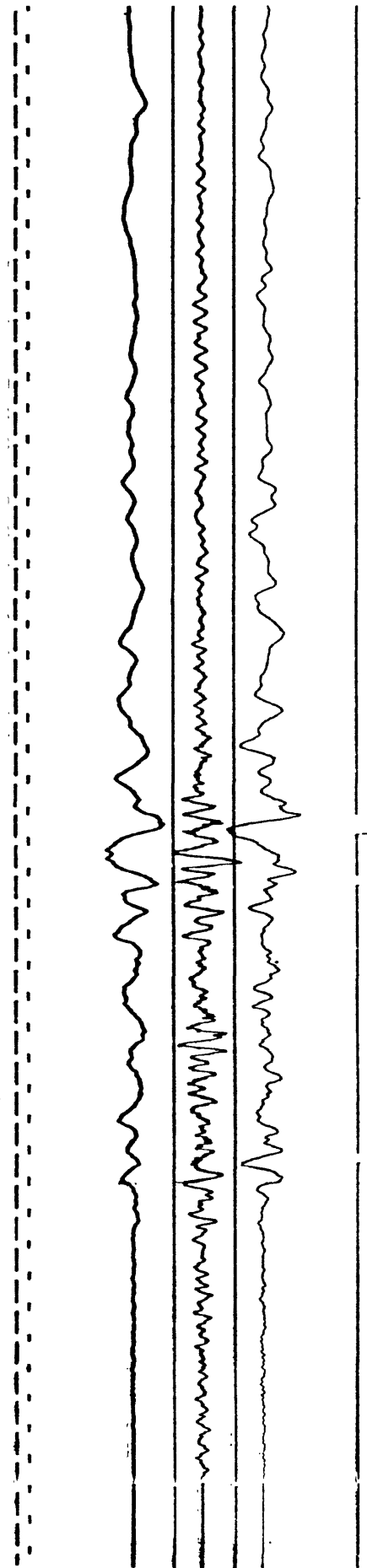
Wadsworth V.A. Hospital - South Ground Site (VA)



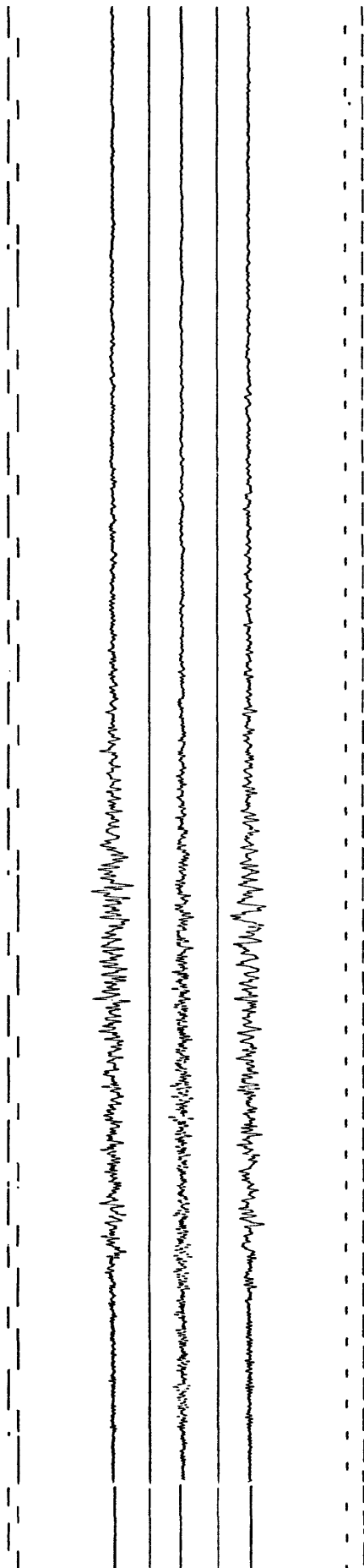
10920 Wilshire Blvd - 19th Level (CODE)



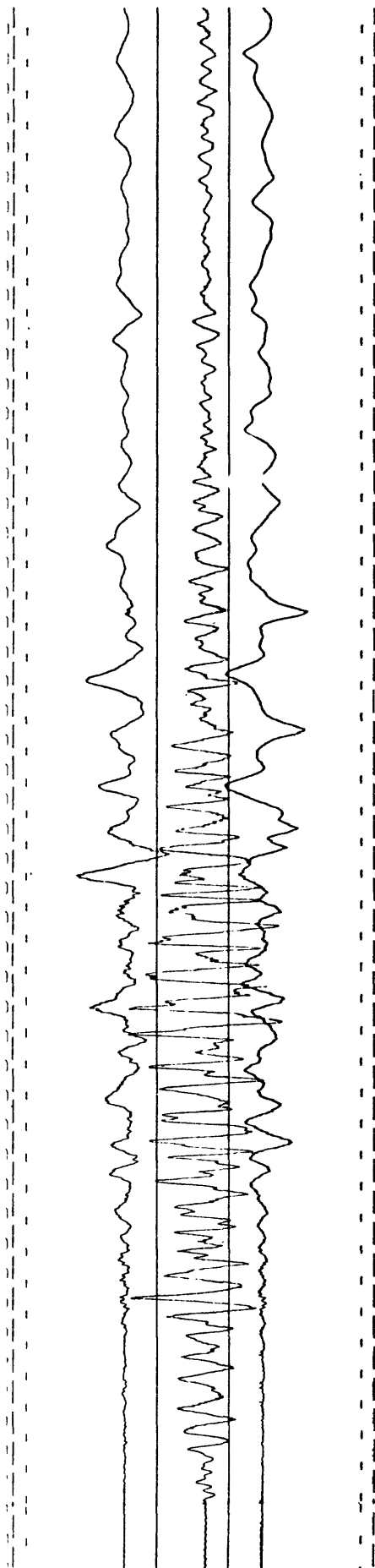
12121 Wilshire Blvd - 15th Level (CODE)



Monte Nido Fire Station - Ground level (USGS)

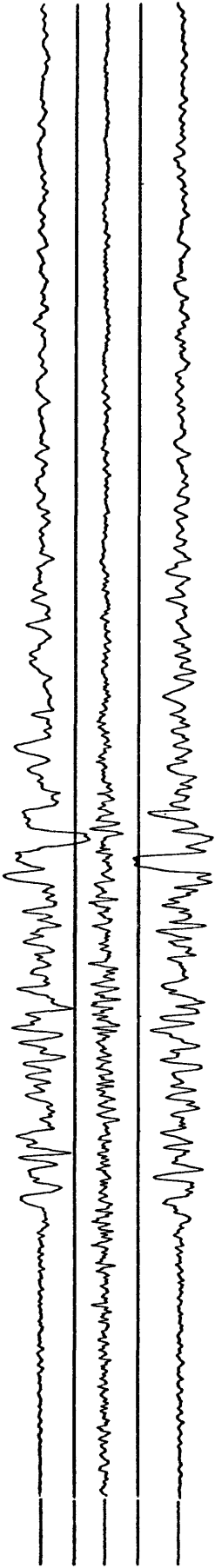


2121 Ave. of the Stars - 36th Floor (CODE)



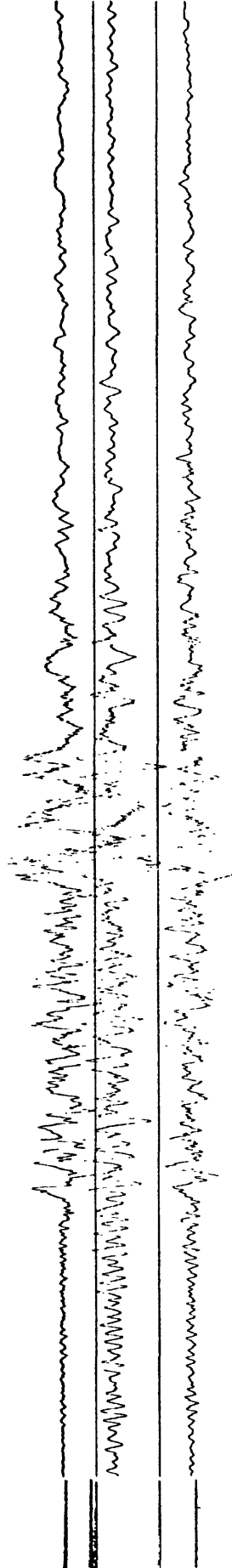
1955 1/2 Purdue Ave - Basement (USGS)

BELOW ISOLATOR

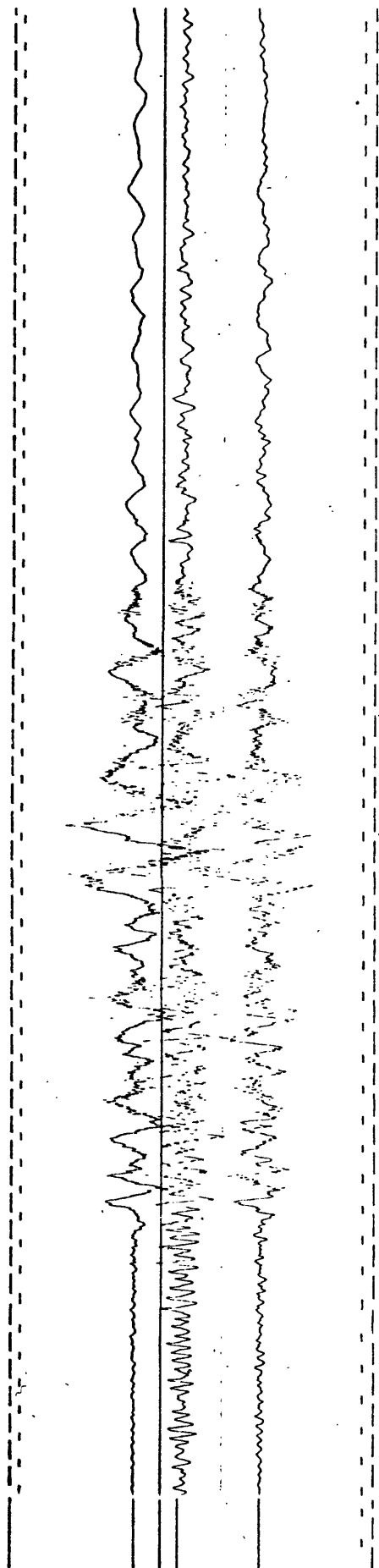


1955 1/2 Purdue Ave - 1st Level (USGS)

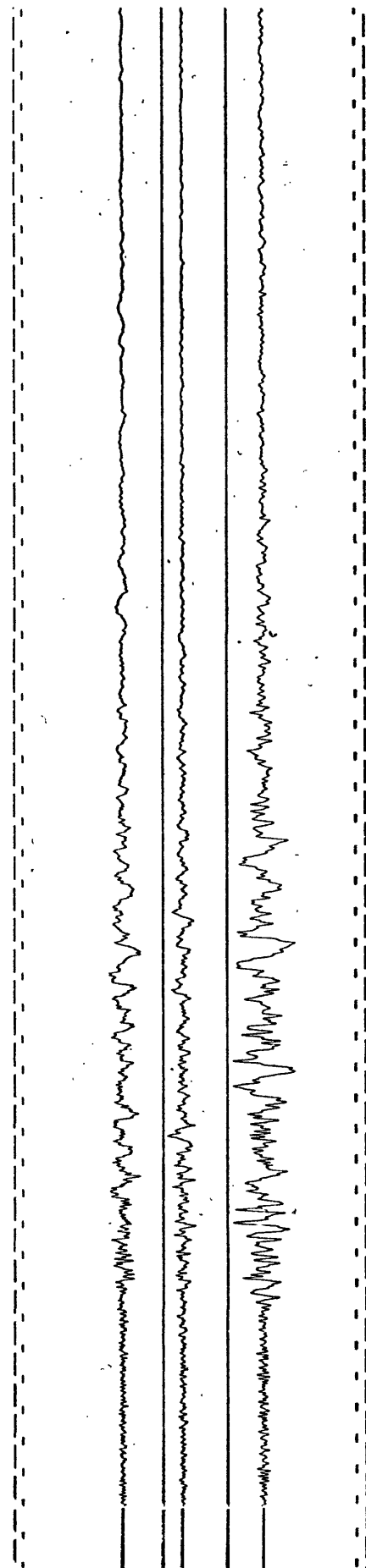
ABOVE ISOLATOR



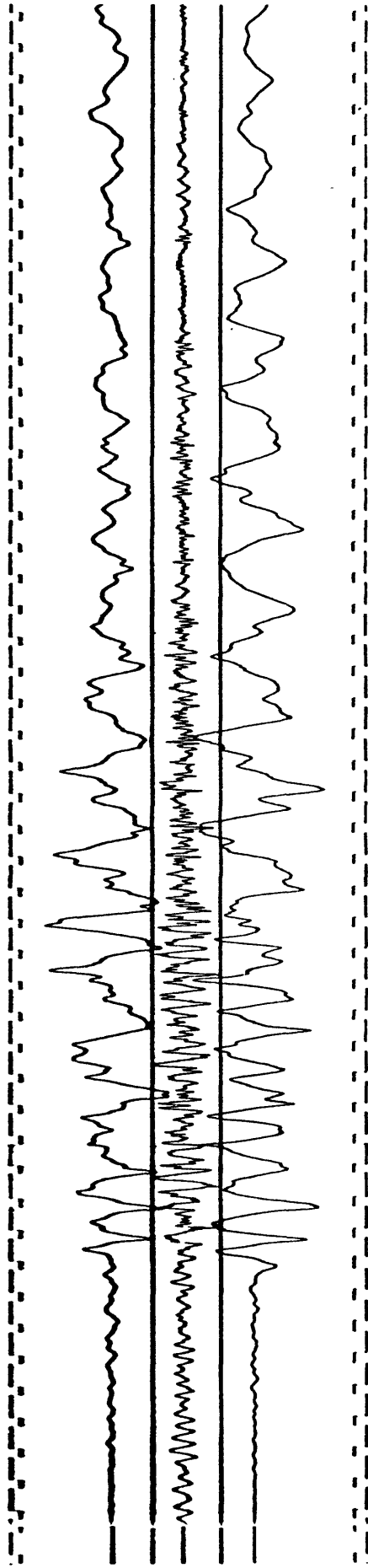
1955 1/2 Purdue Ave - 3rd Level (USGS)



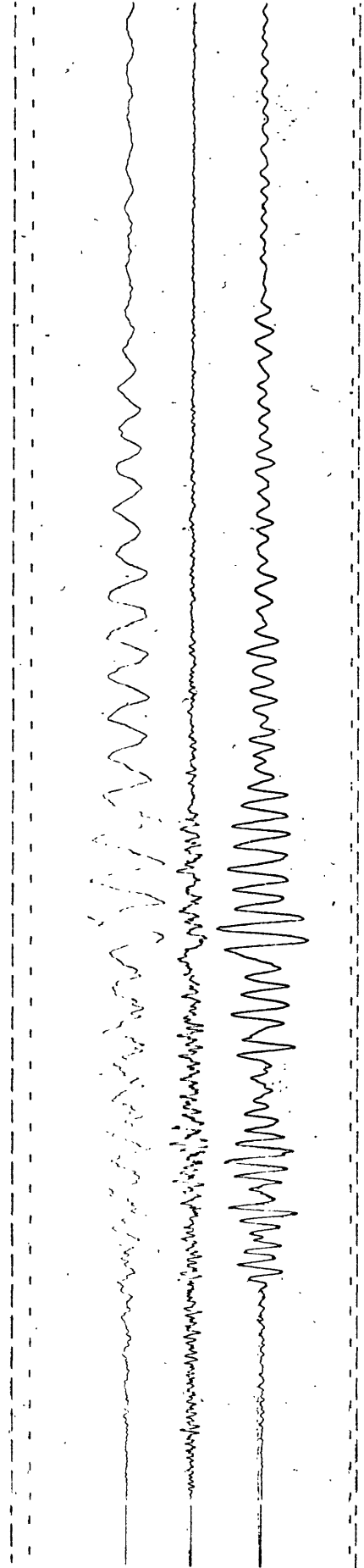
Griffith Observatory - Ground (USGS)



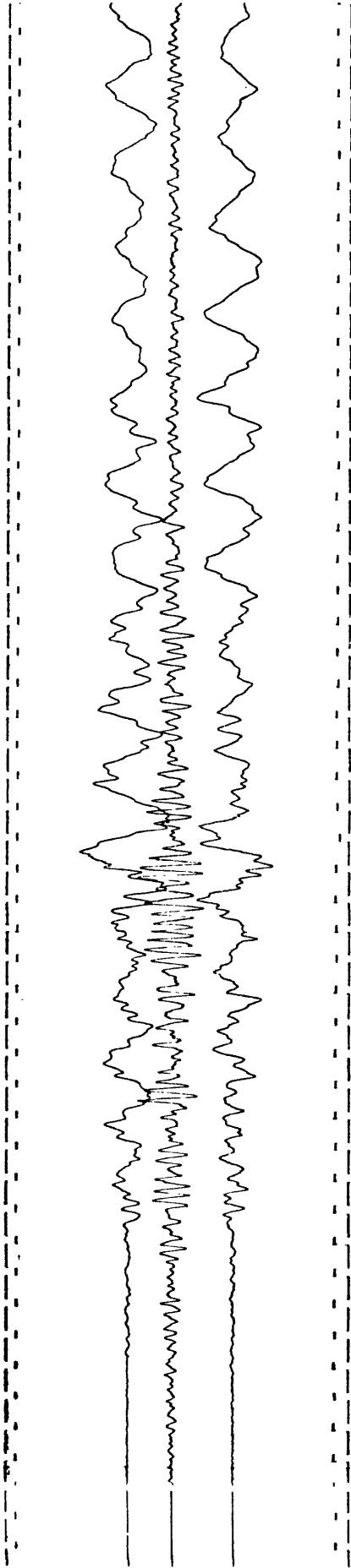
444 So. San Vicente - Roof (12) (CODE)



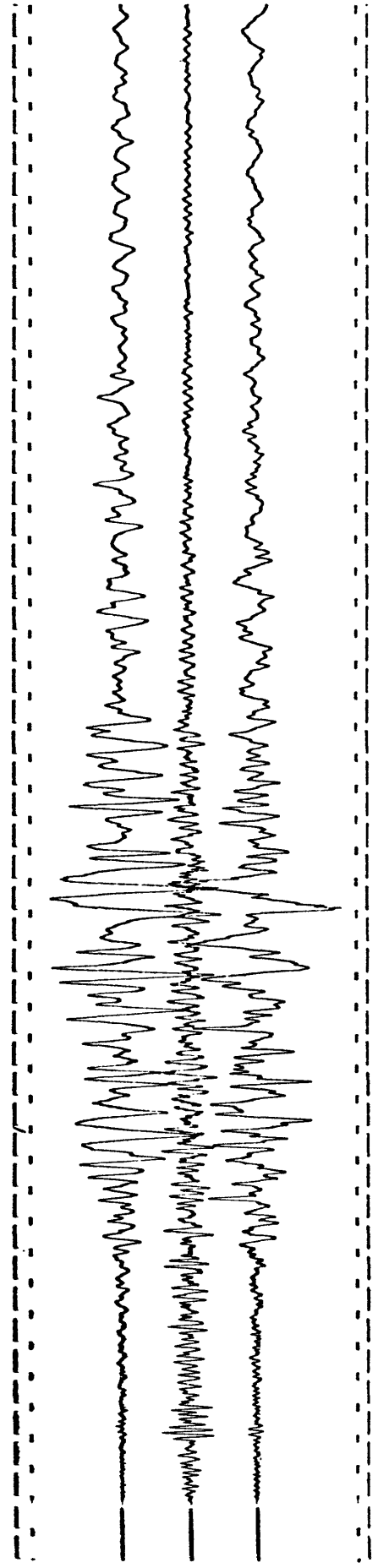
2005 North Highland - 8th Floor (CODE)



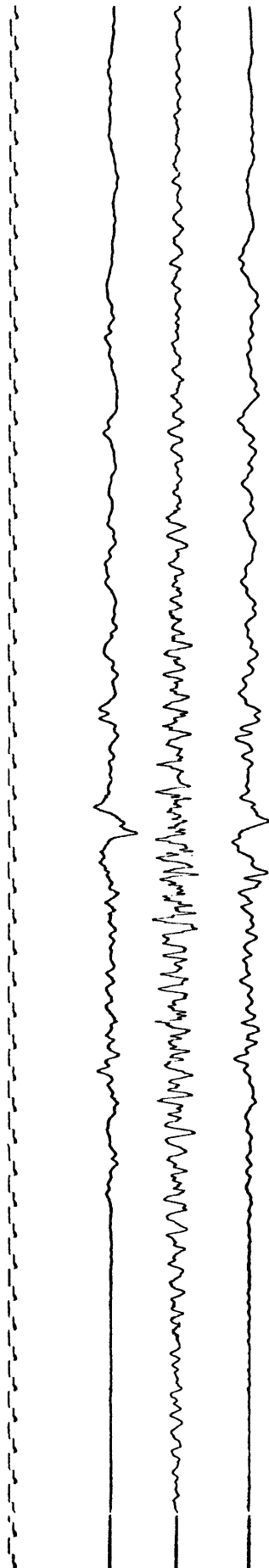
4929 Wilshire Blvd - 11th Floor (CODE)



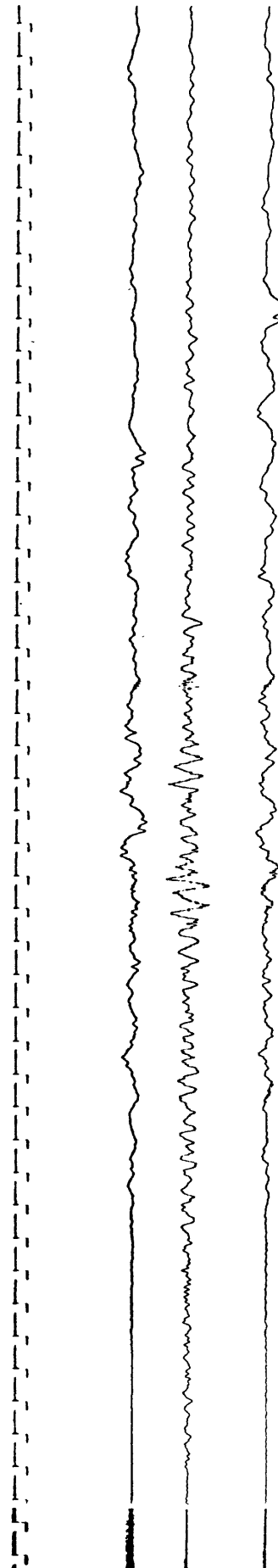
1526 Edgemoor Avenue - 8th Floor (CODE)



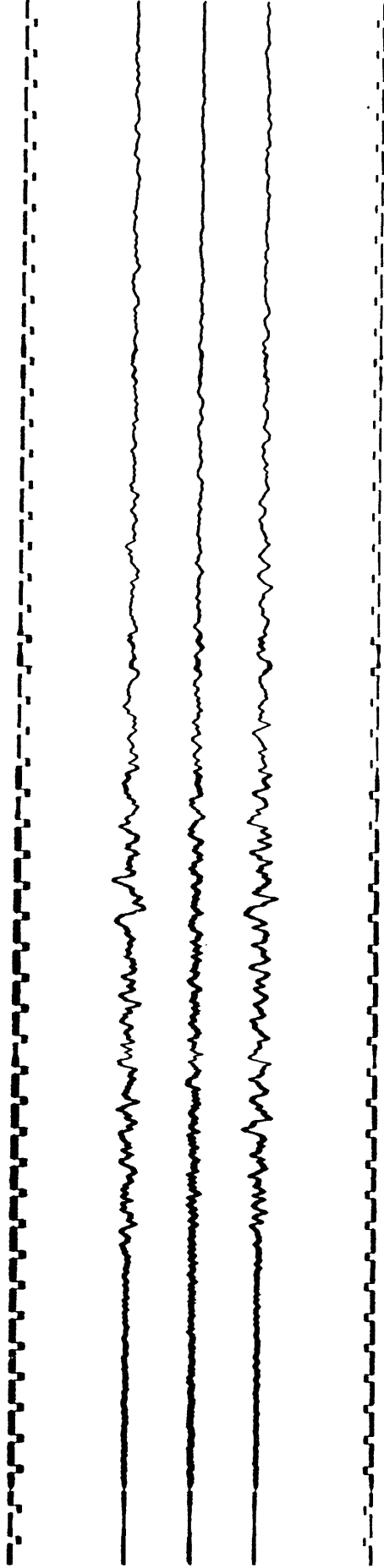
600 Commonwealth - 19th Level (CODE)



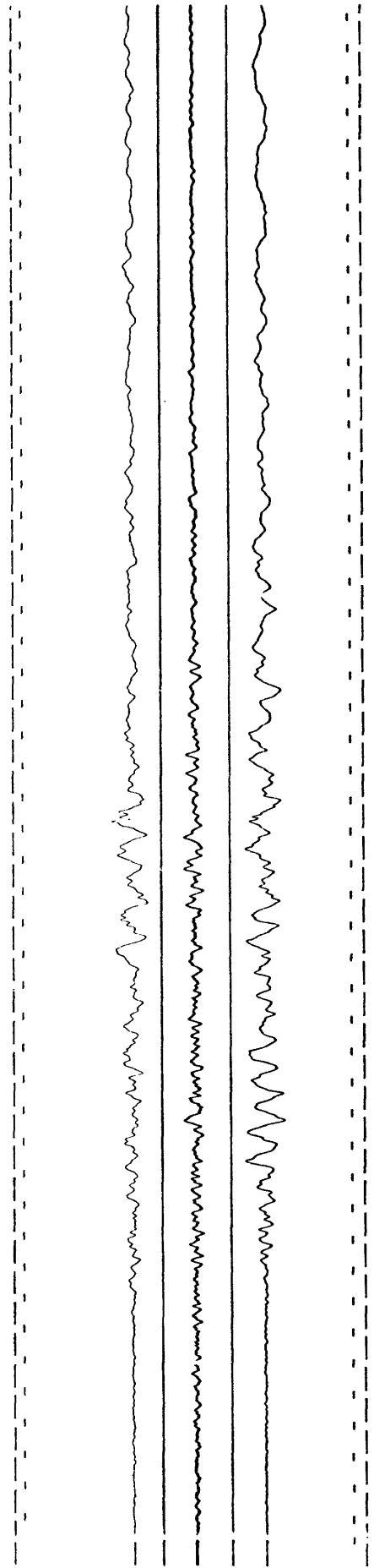
695 South Vermont - 18th Floor (CODE)



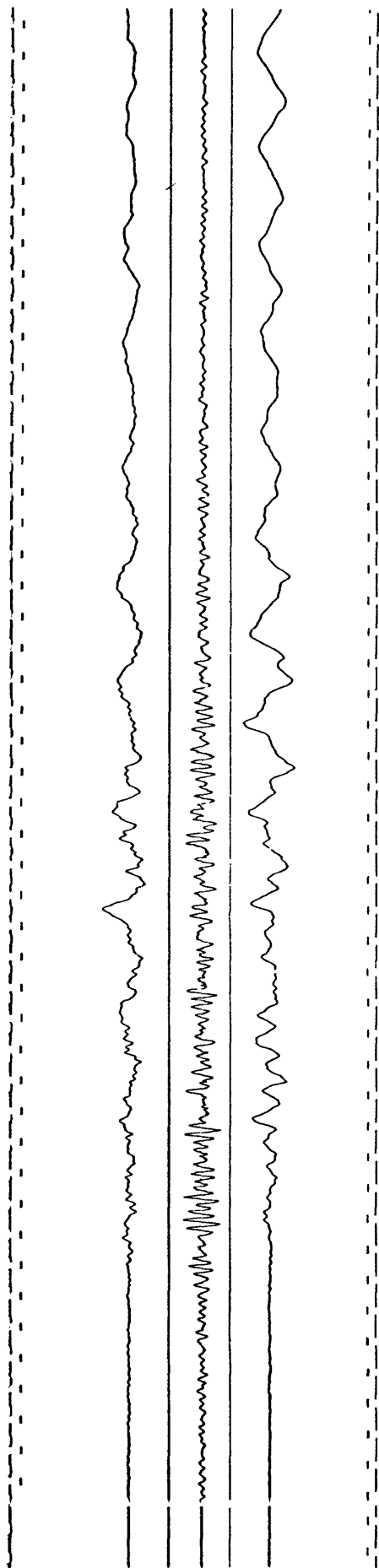
1111 Sunset Blvd - Basement (MWD)



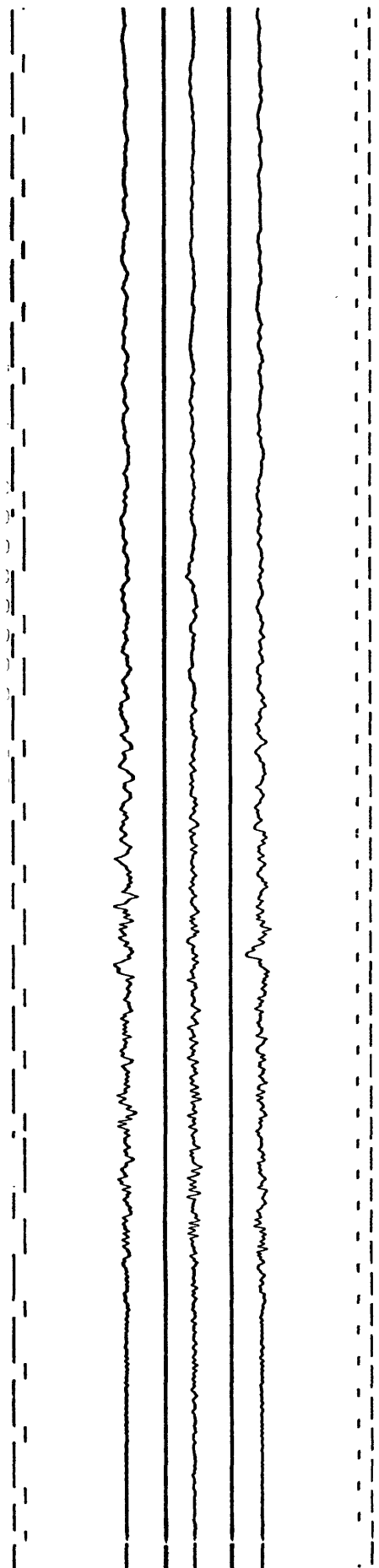
1111 Sunset Blvd - 4th floor (MWD)



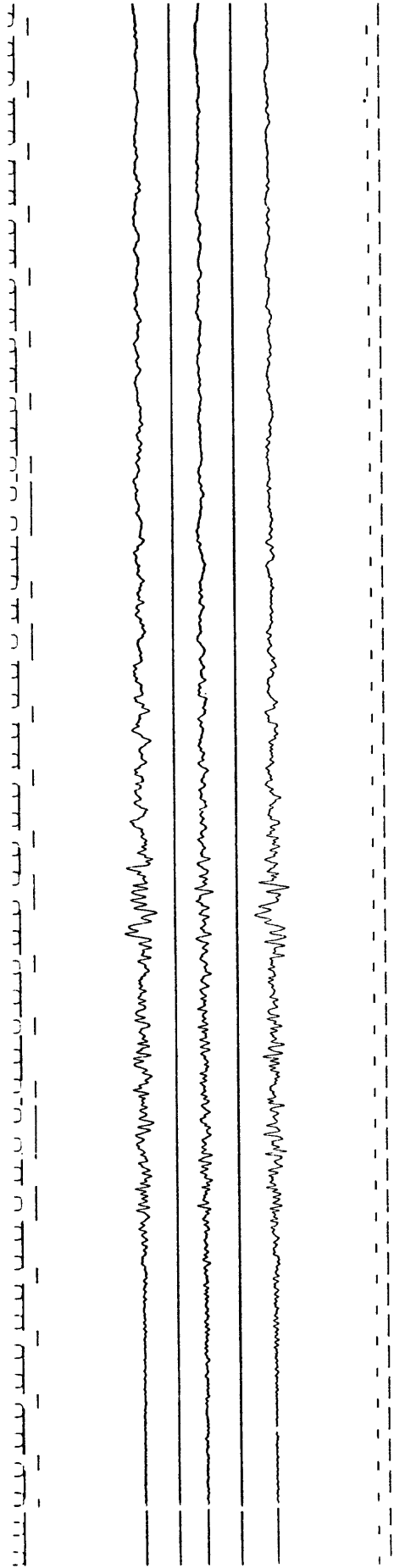
1111 Sunset Blvd - Roof (8) (MWD)



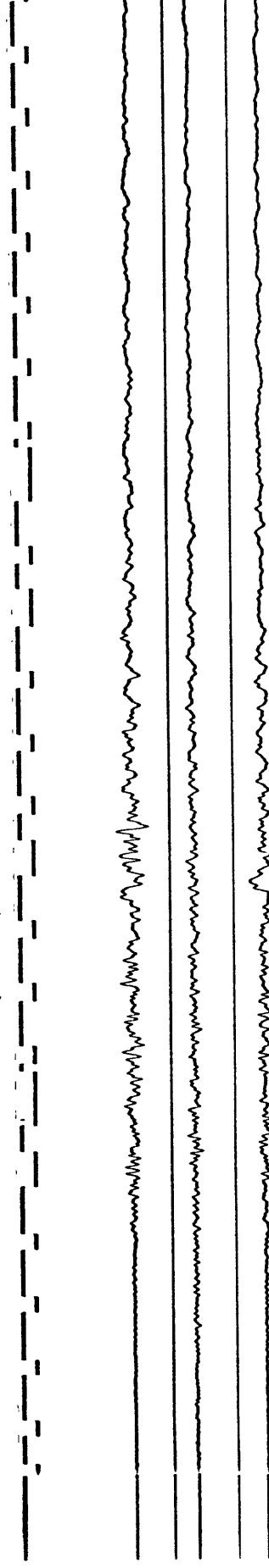
1100 Wilshire Blvd - Bsmt 4 NW (USGS)



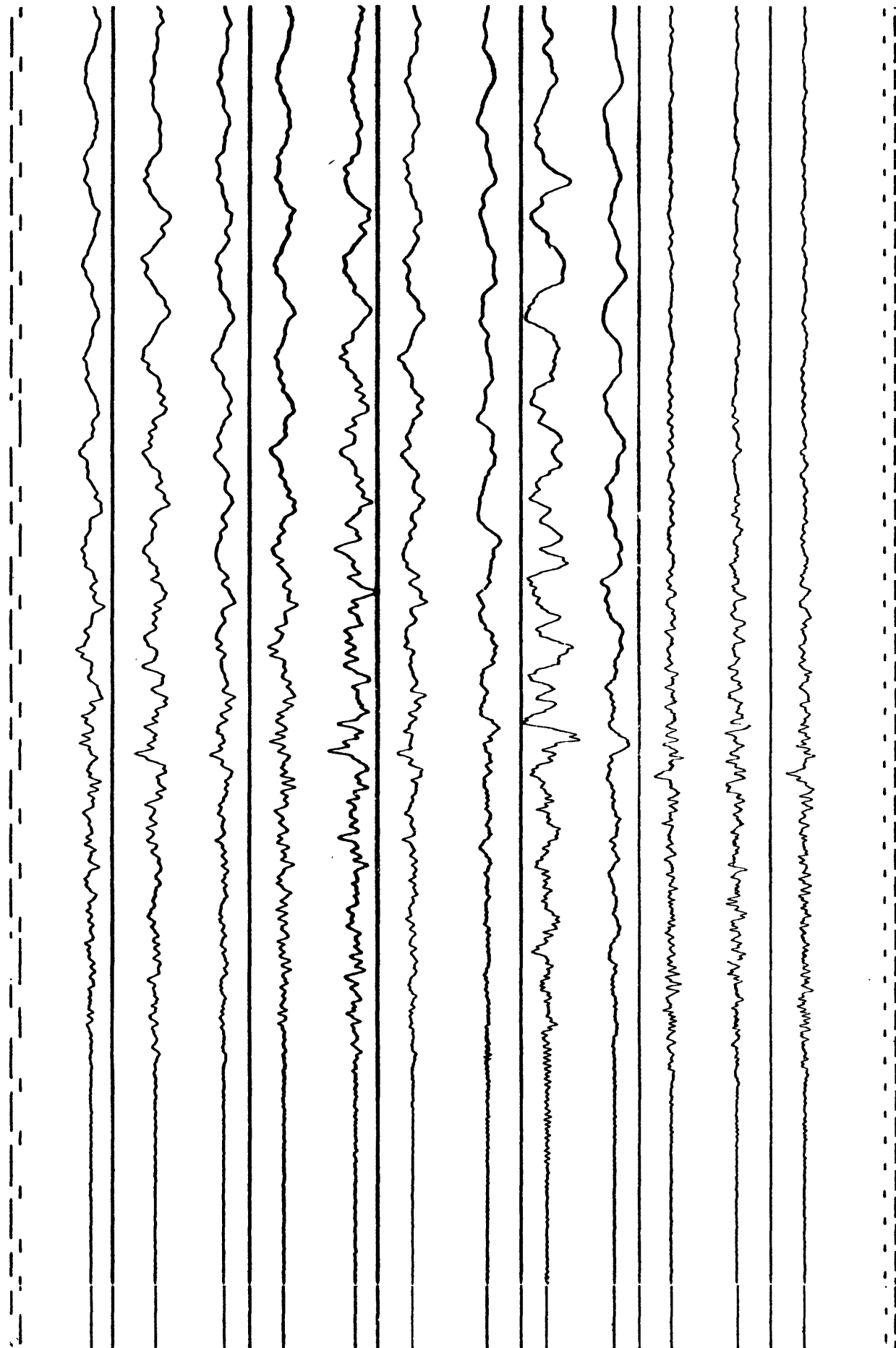
1100 Wilshire Blvd - Bsmt 3 NE (USGS)



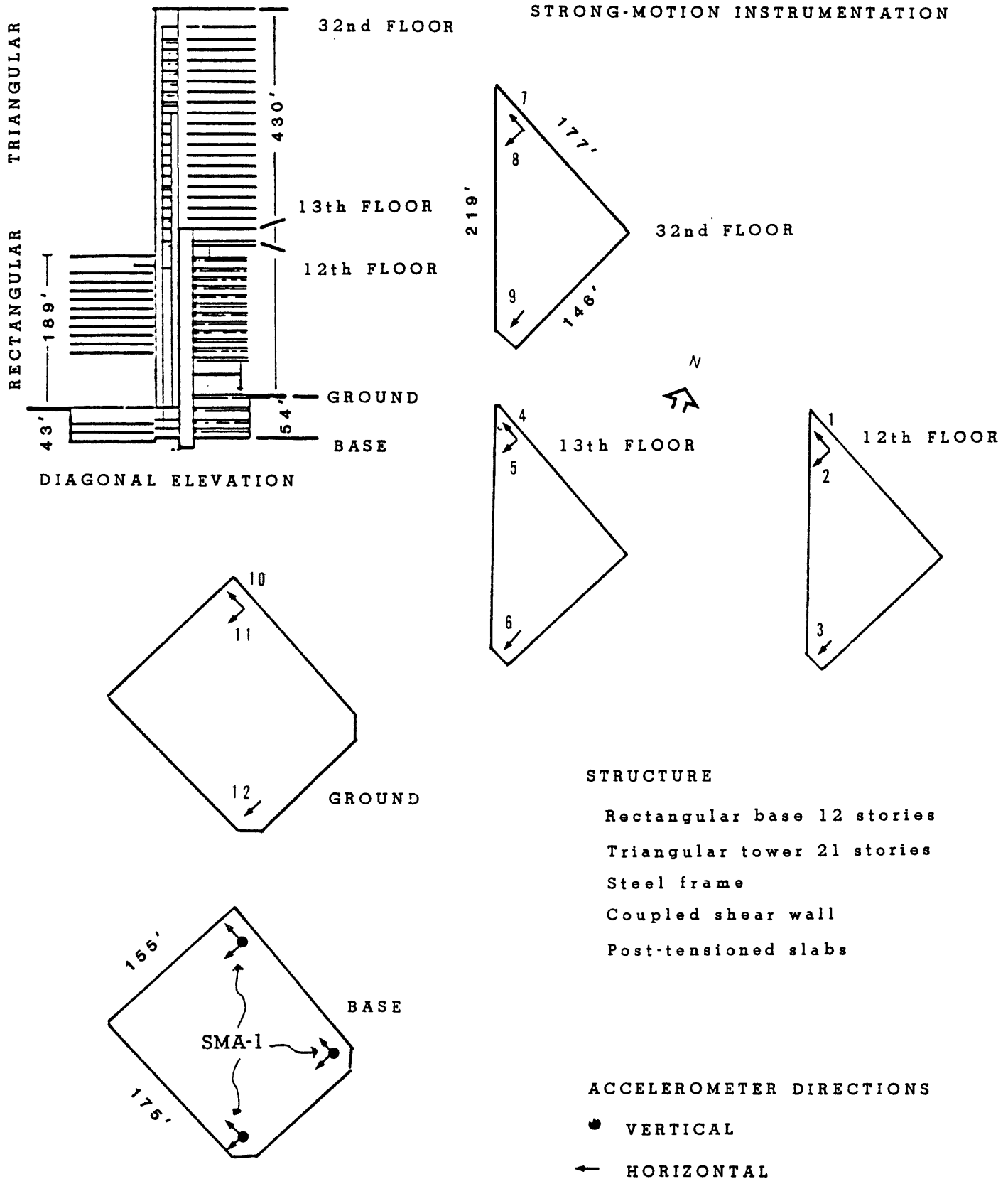
1100 Wilshire Blvd - Bsmt 3 SE (USGS)



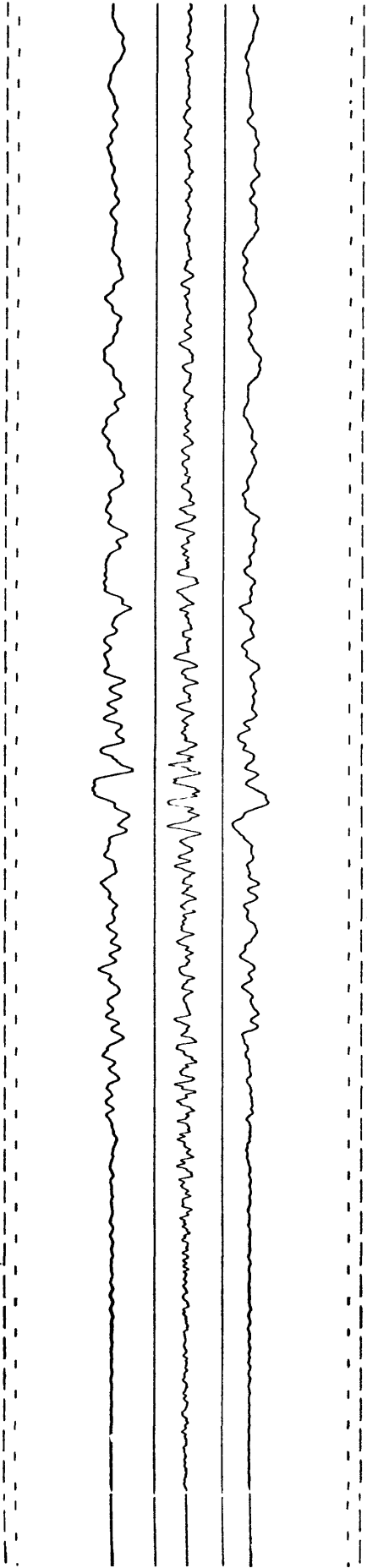
1100 Wilshire Blvd - Structure Array (USGS)



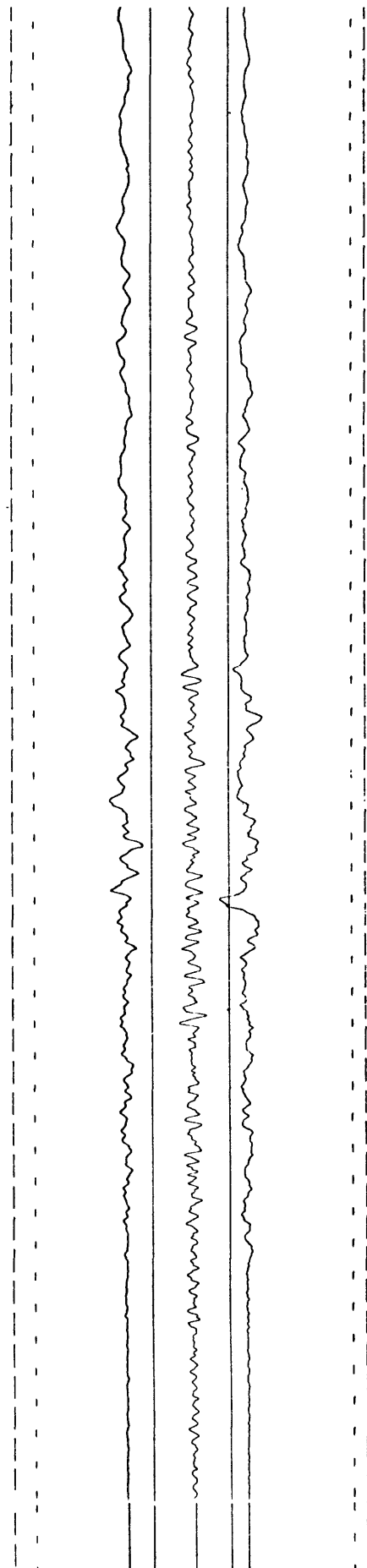
LOS ANGELES
1100 WILSHIRE BLVD



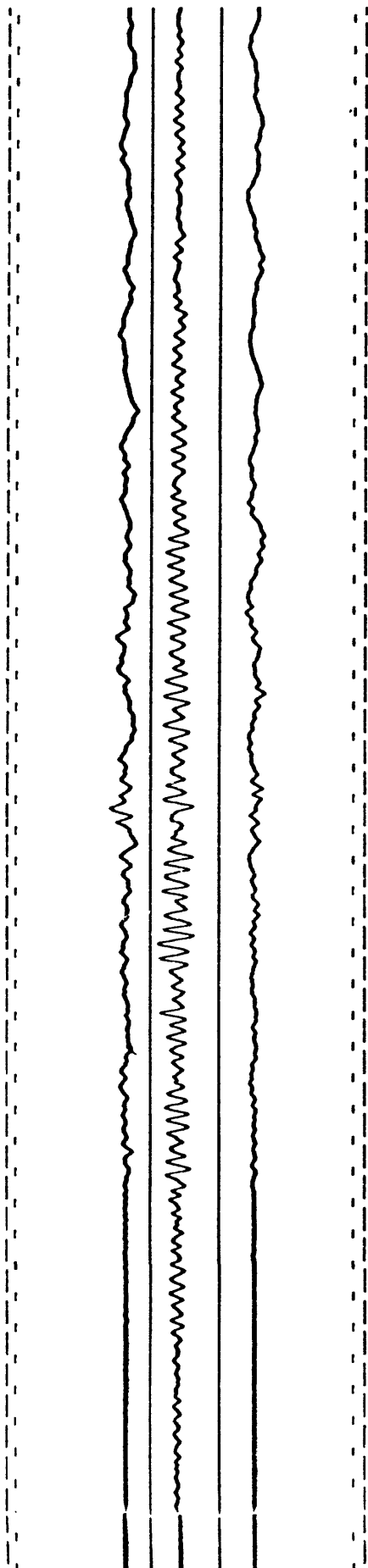
500 So. Grand Ave - 25th Level (CODE)



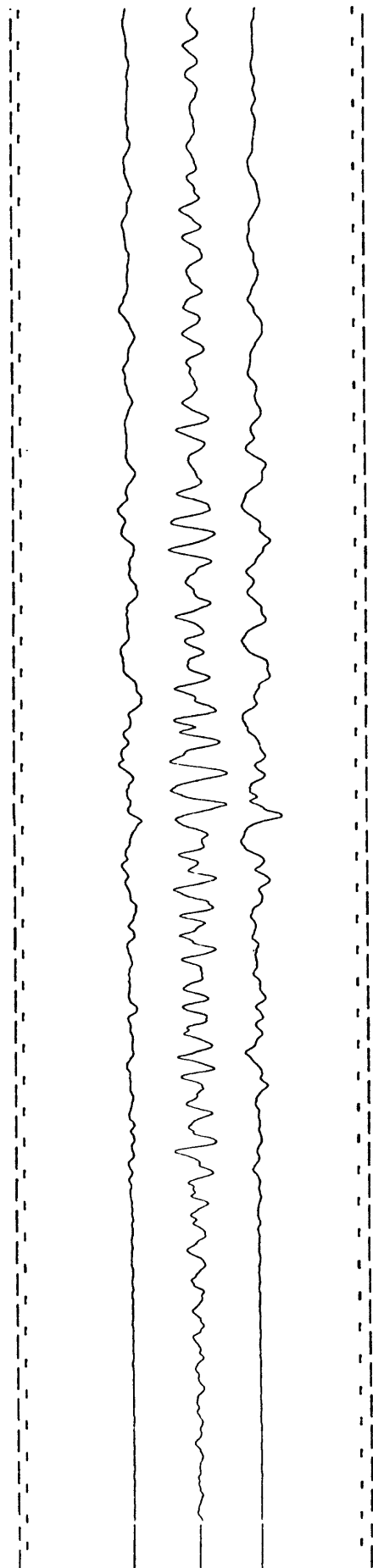
520 So. Grand Ave - 11th Level (CODE)



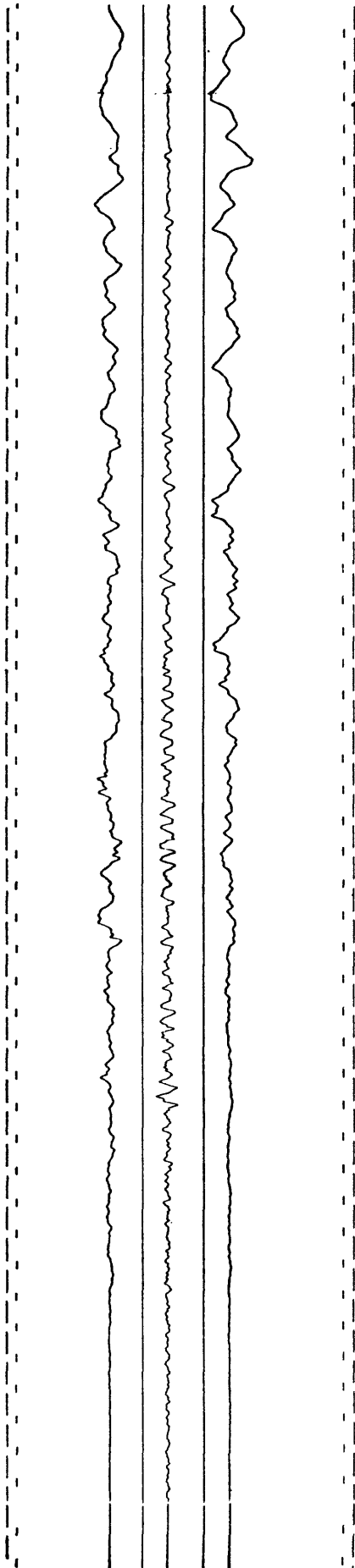
1150 South Hill Street - 10th Level (CODE)



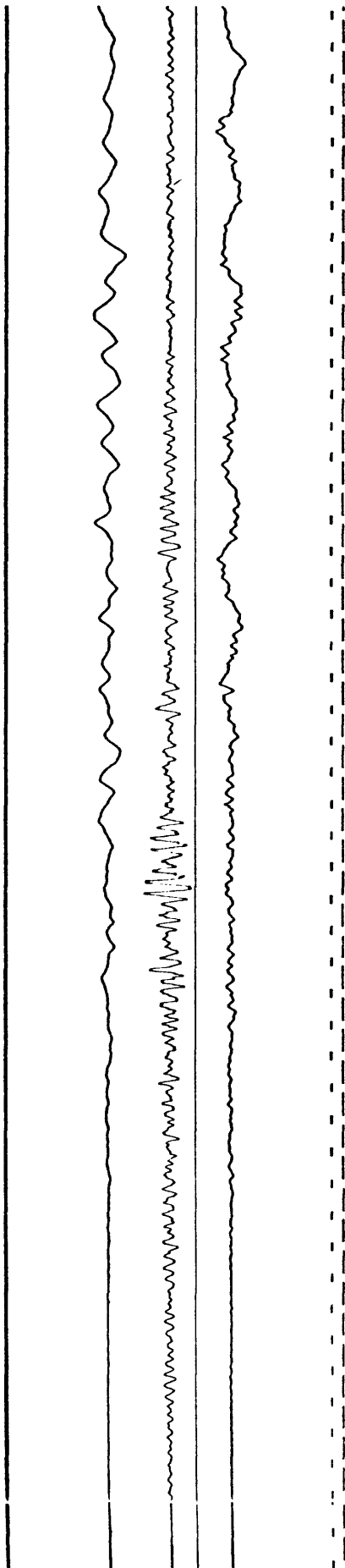
333 South Hope - 55th Level (CODE)



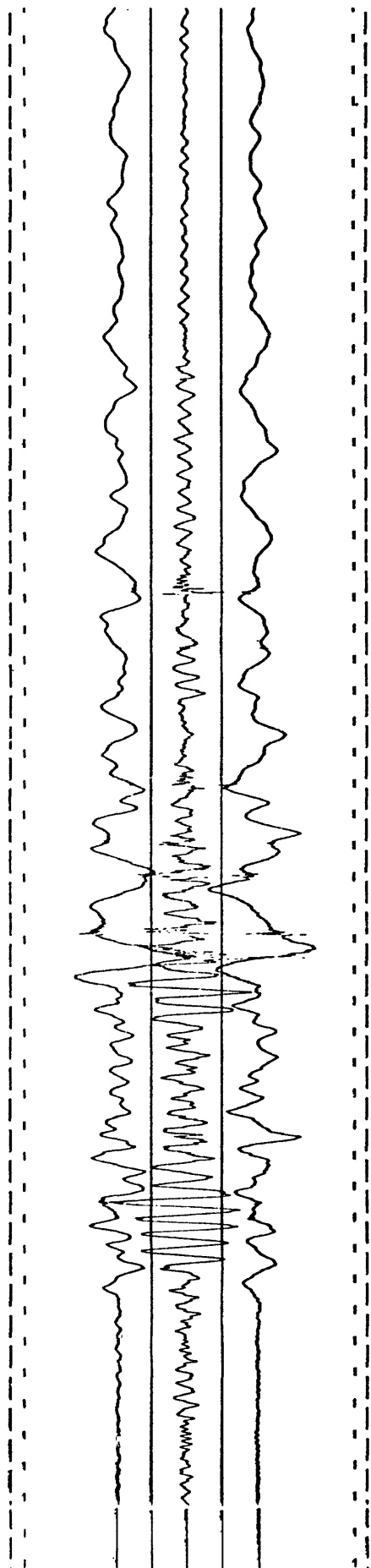
6101 Century Blvd - 15th Level (CODE)



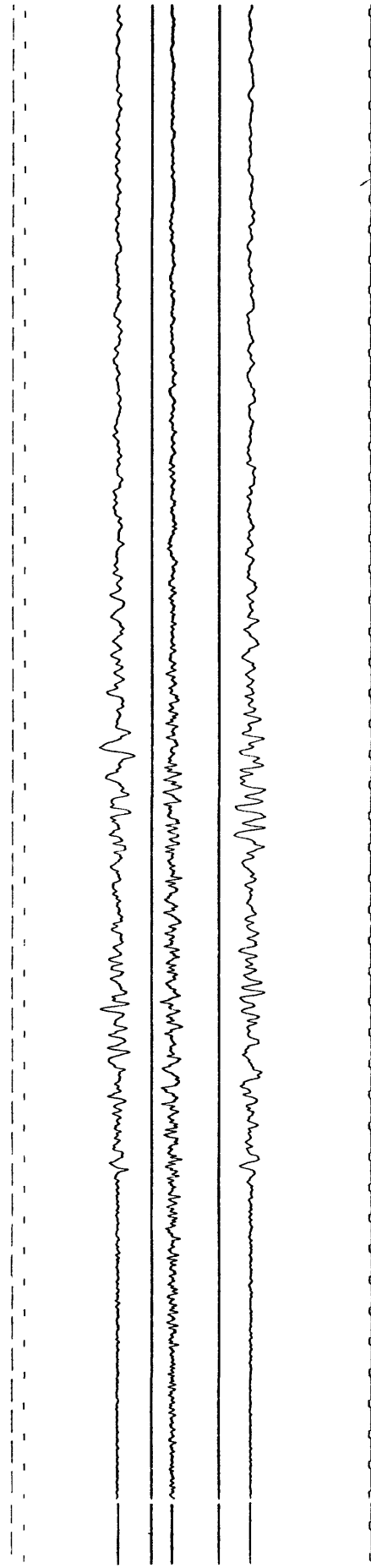
5250 Century Blvd - 8th Floor (CODE)



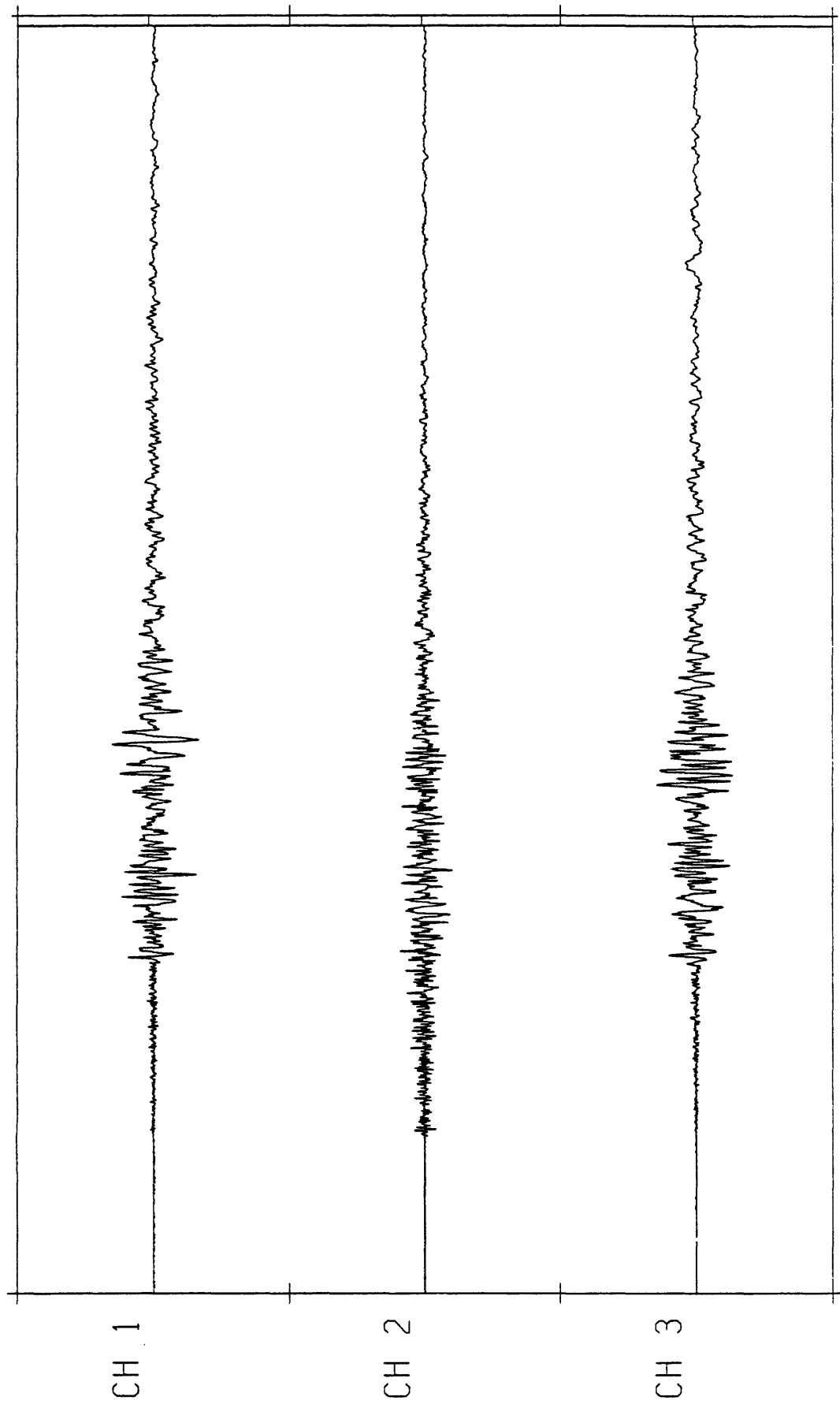
3601 W. Olive Ave, Burbank - Roof (9) (CODE)



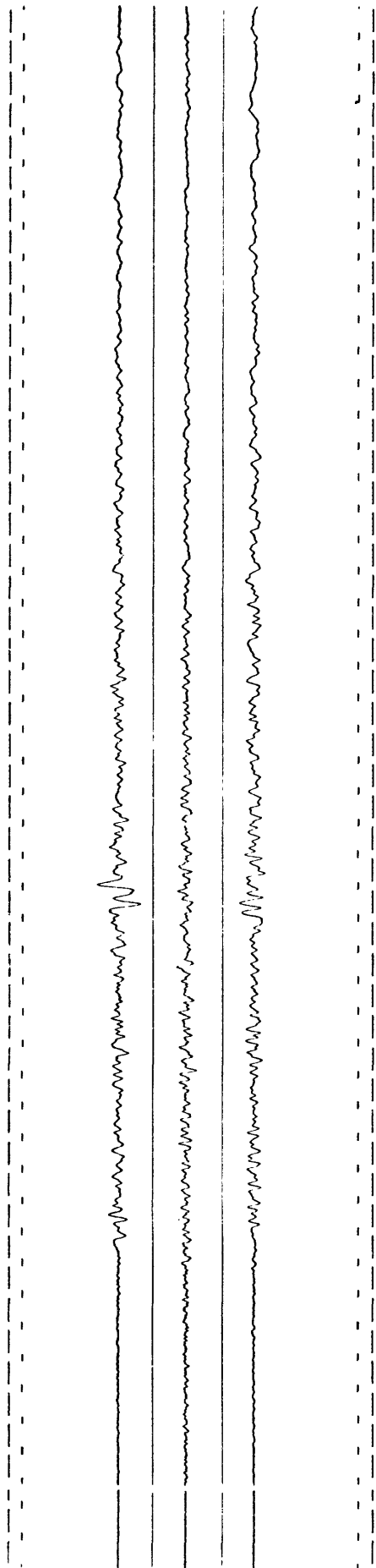
535 So Wilson, Pasadena - Ground level (USGS)
SMA-1 (Analog)



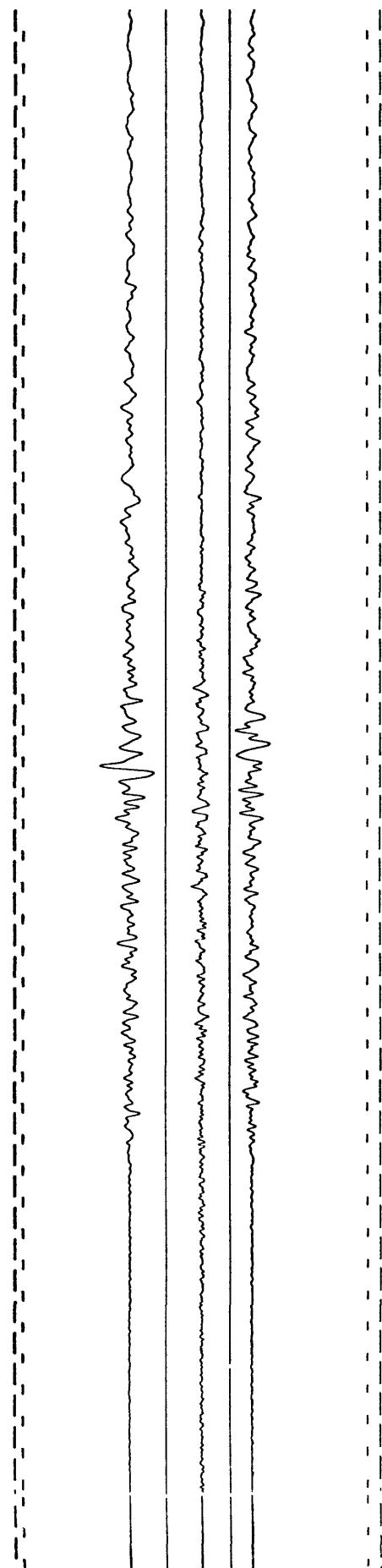
535 S. Wilson Ave, Pasadena - Ground (USGS)
SSA-1 (Digital)



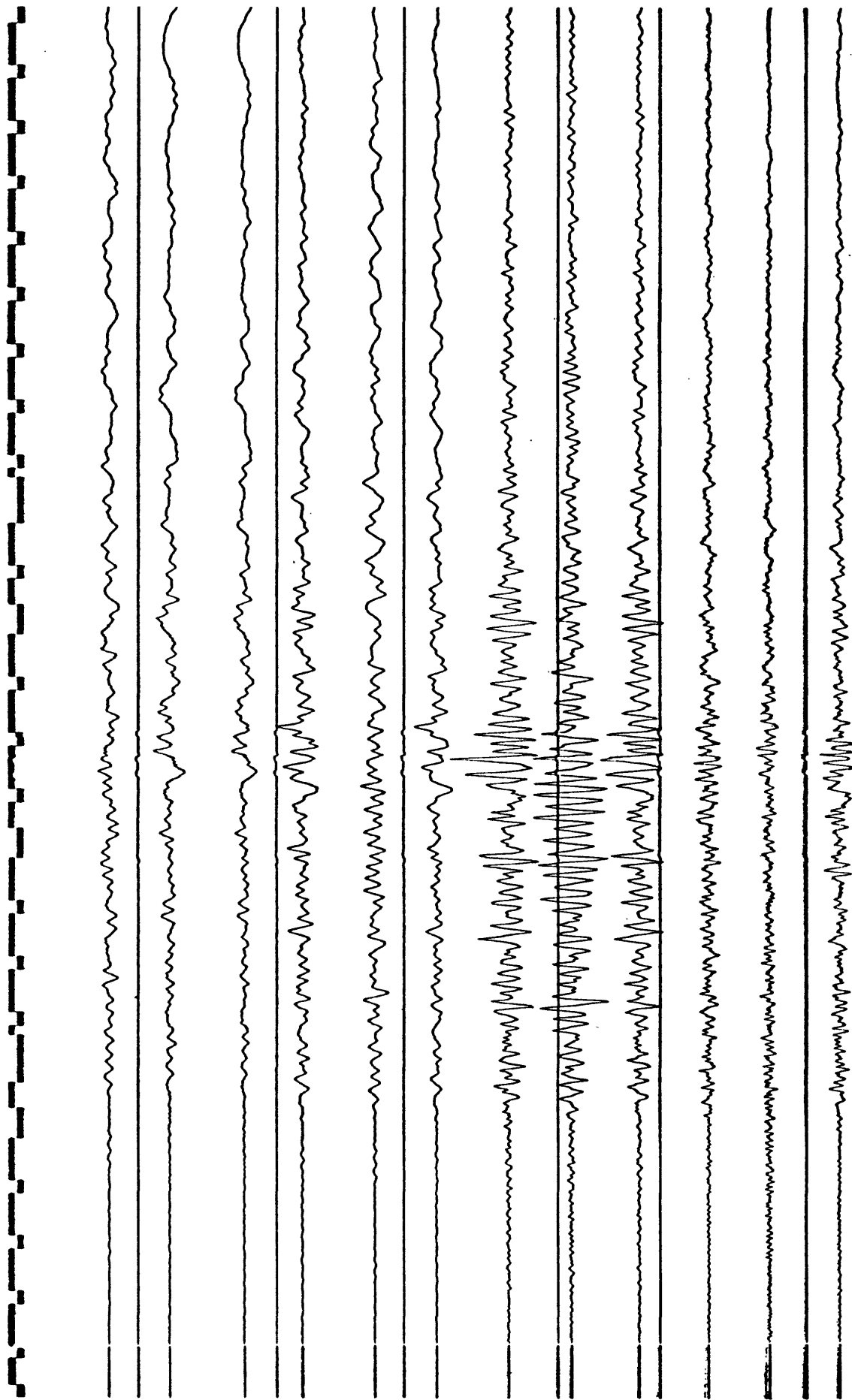
15000 Aviation Blvd, Lawndale - Ground level (USGS)

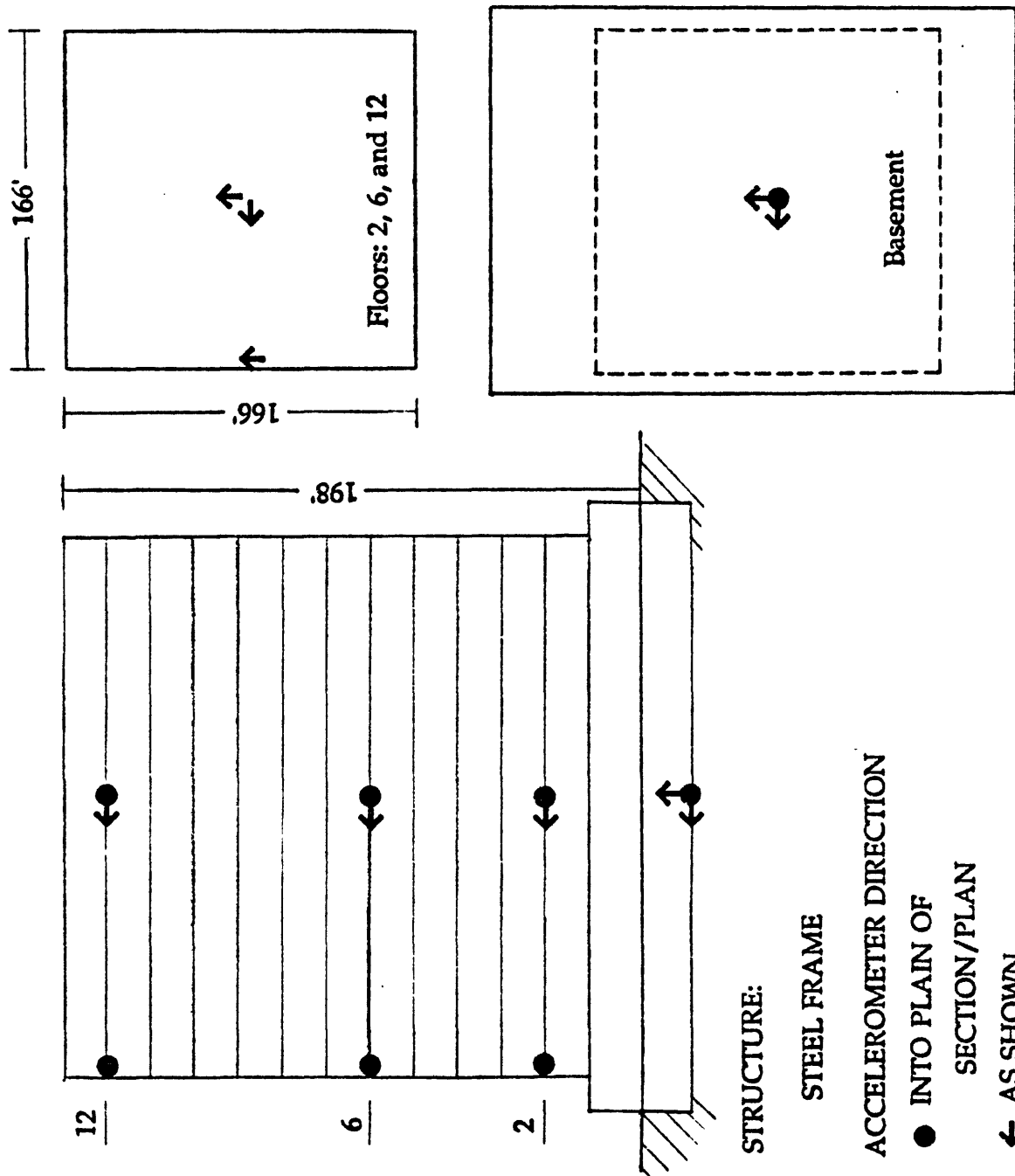


Los Angeles Bulk Mail Facility - Ground (USGS)



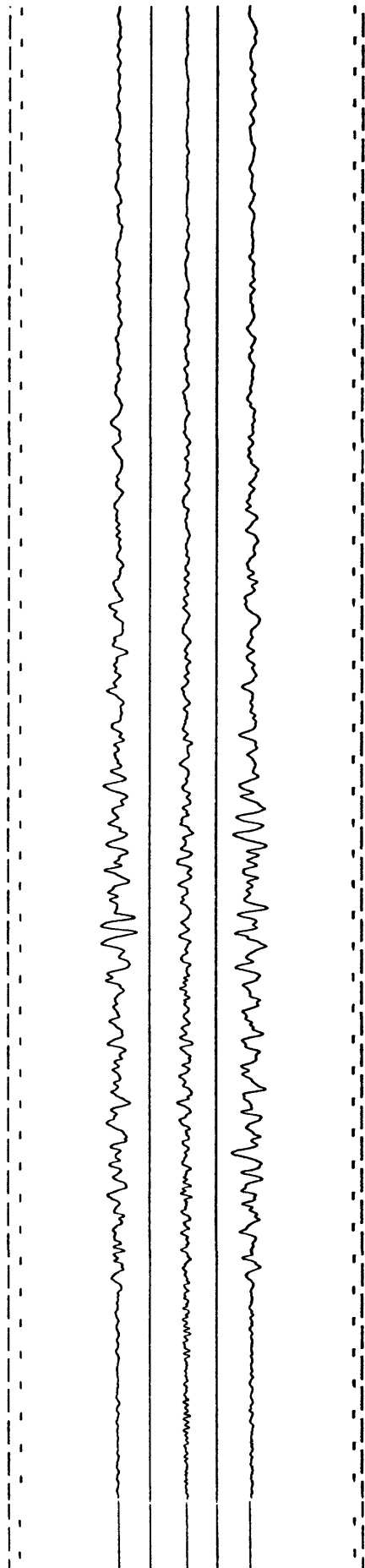
Alhambra, 900 S. Fremont - Structural Array (USGS)



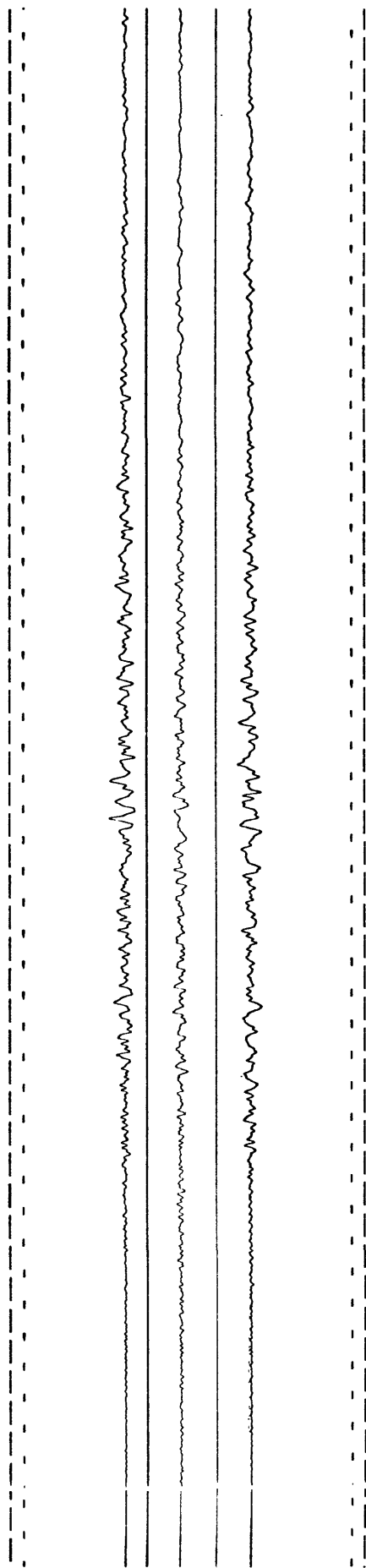


ALHAMBRA

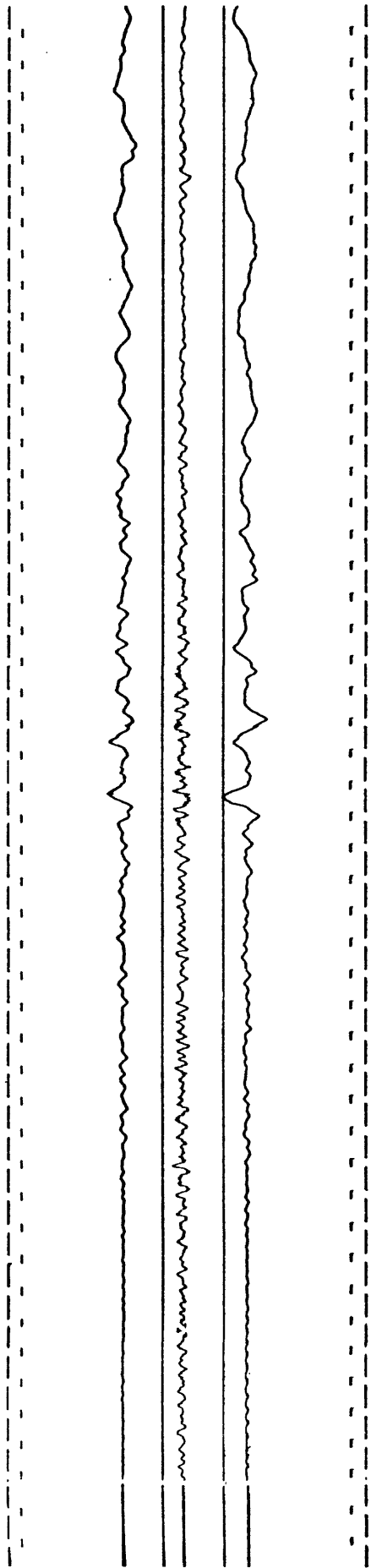
Garvey Reservoir - Crest (MWD)



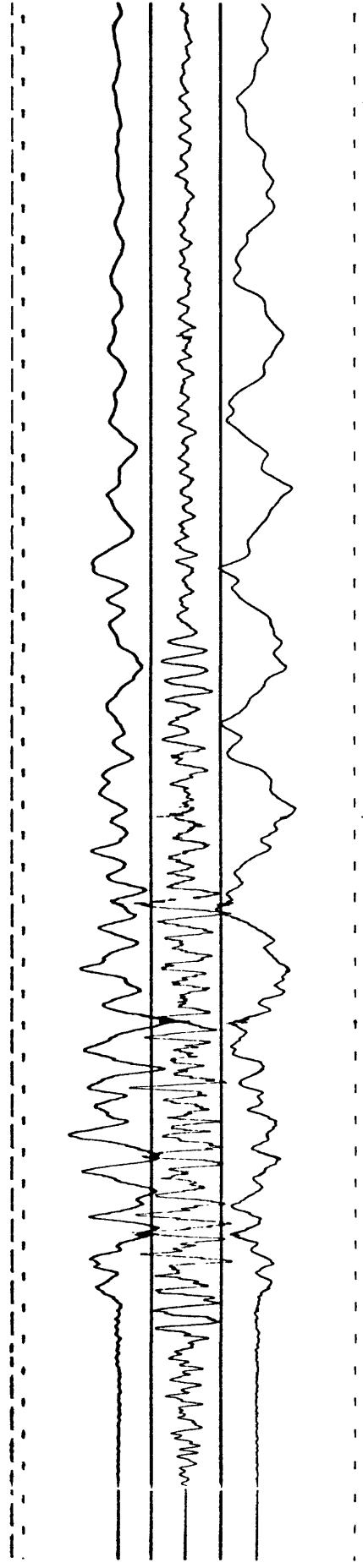
Garvey Reservoir - Abutment (MWD)



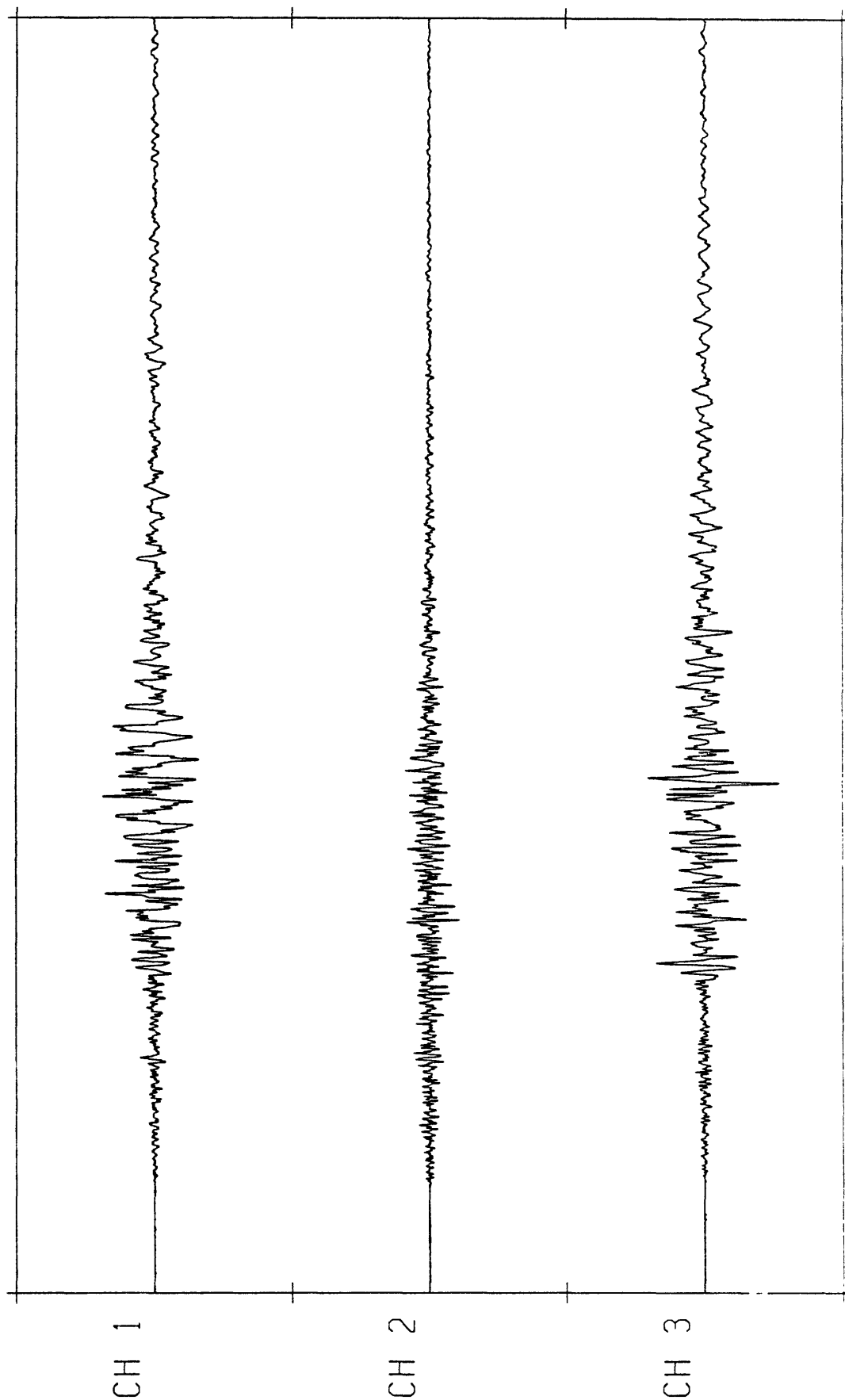
19191 S. Vermont - 11th Floor (CODE)



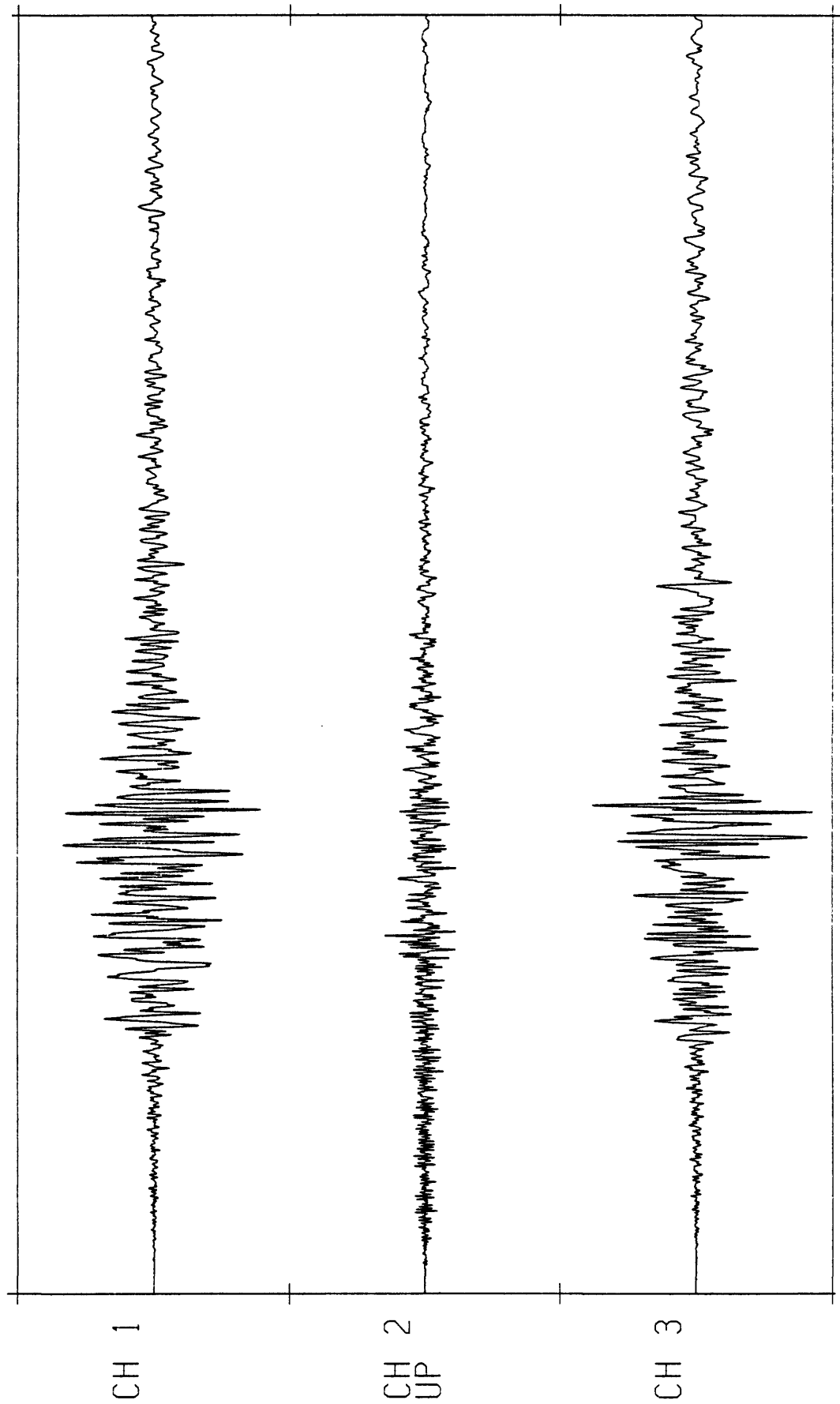
6301 Owensmouth Ave - 12th Level (CODE)



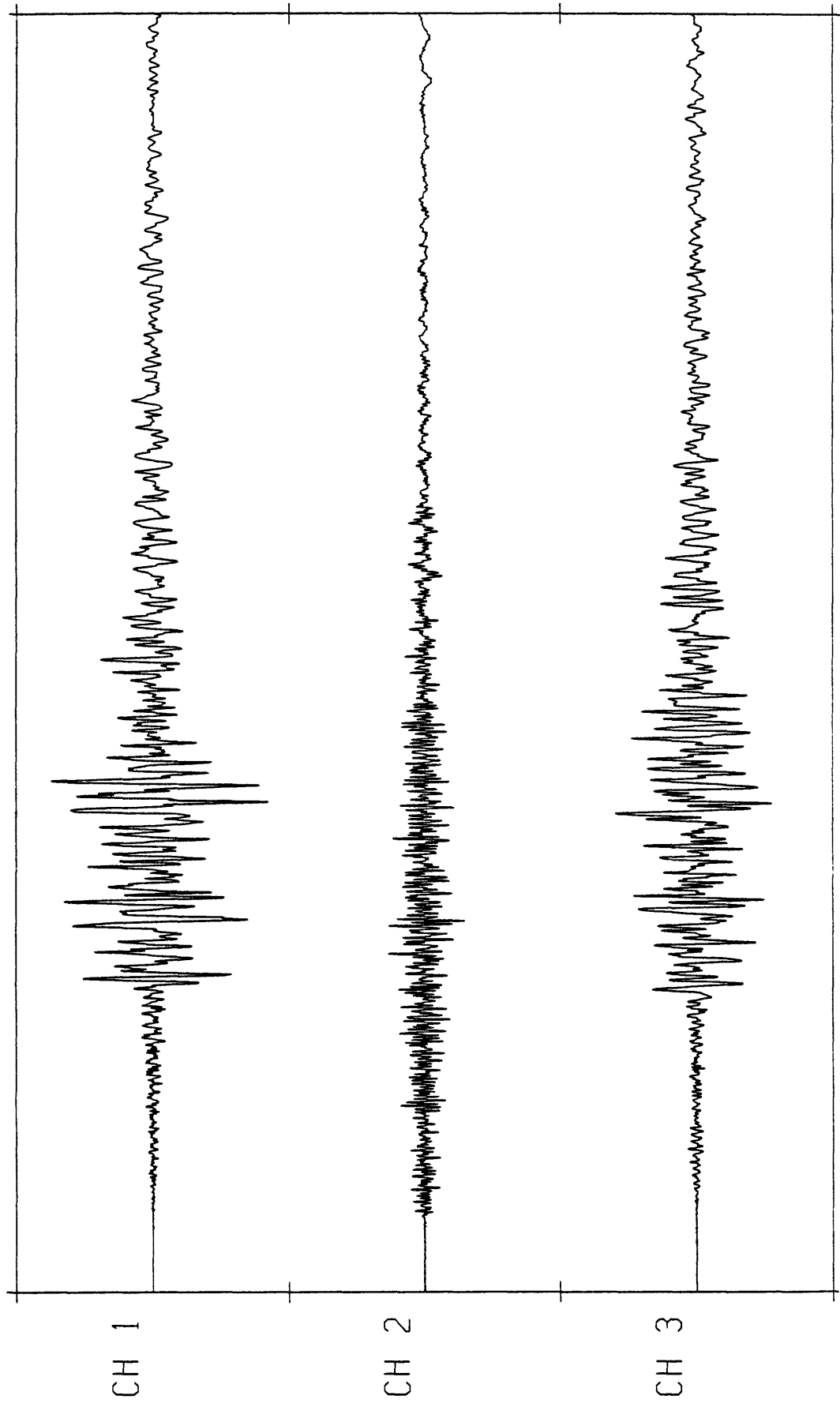
Chantry Flat Forest Station - Ground (USGS)
SSA-1 (Digital)



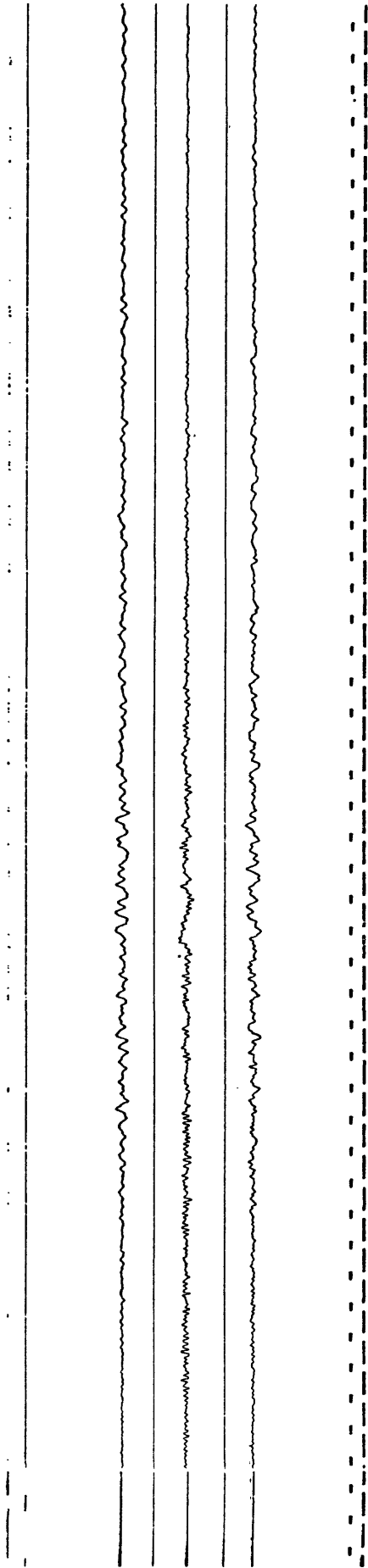
Whittier Narrows Dam - Crest (AE)
SSA-2 (Digital)



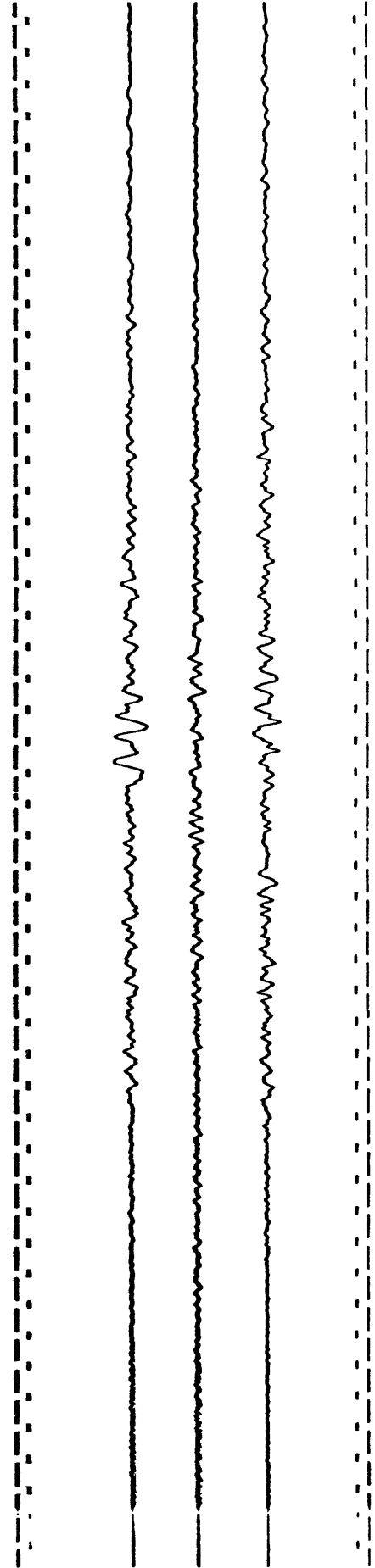
Whittier Narrows Dam - Upstream (AE)
SSA-2 (Digital)



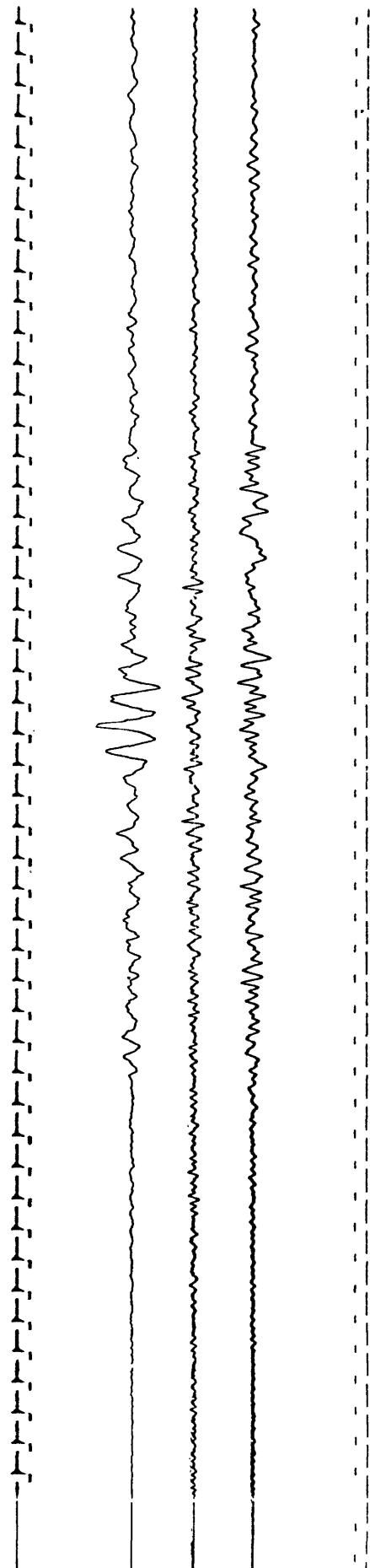
Leona Valley Fire Station - Ground (USGS)



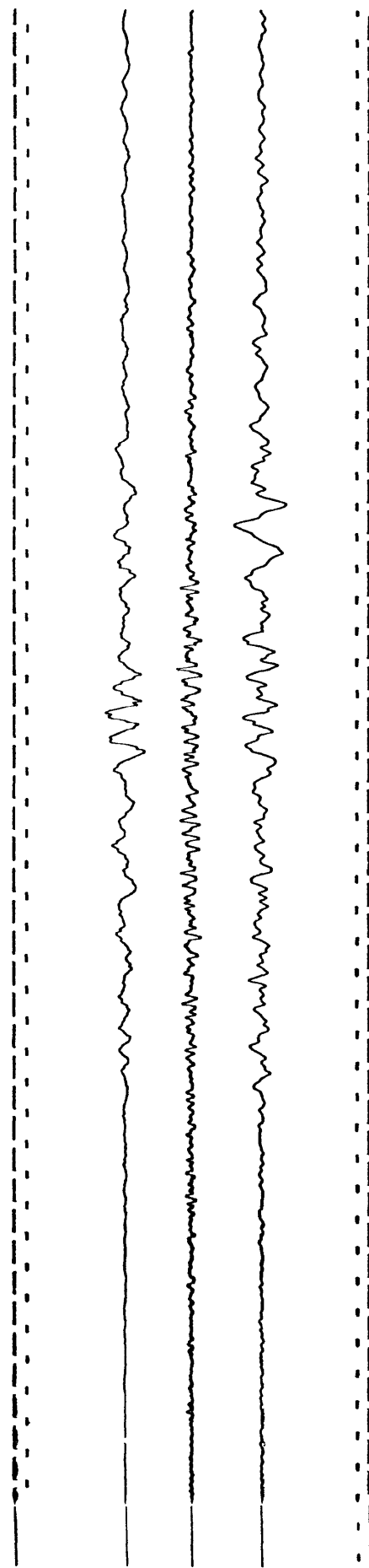
Whittier, 7215 Bright Ave - Basement (CODE)



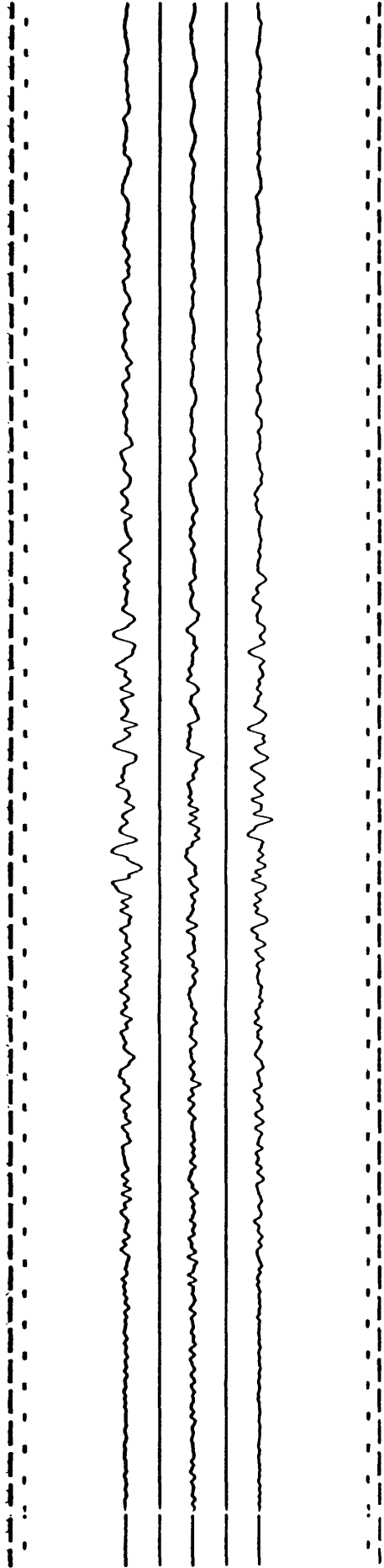
Whittier, 7215 Bright Ave - 5th Floor (CODE)



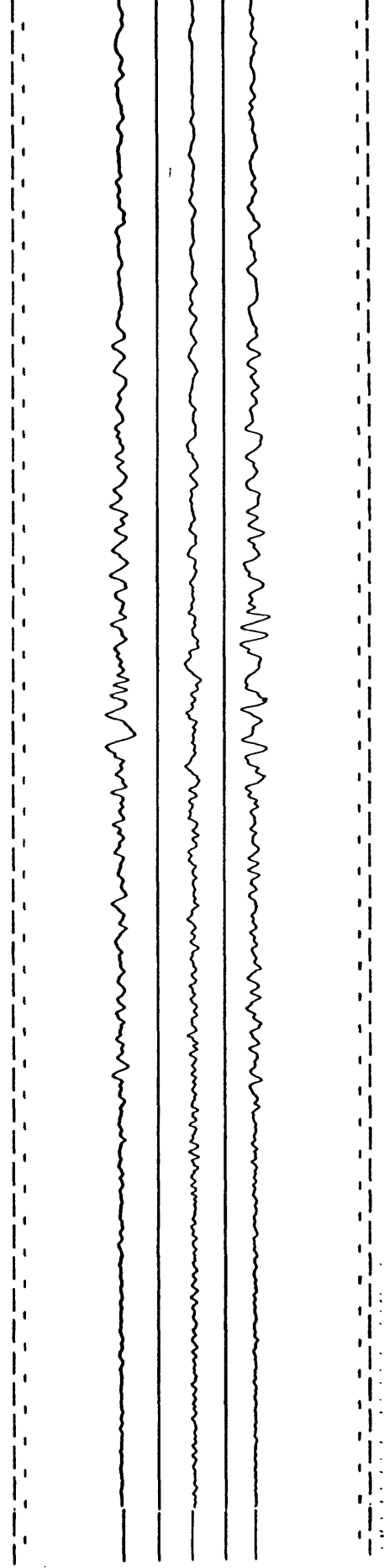
Whittier, 7215 Bright Ave - 10th Floor (CODE)



Palos Verdes Reservoir - Abutment Bldg, (MWD)



Palos Verdes Reservoir - Crest (MWD)



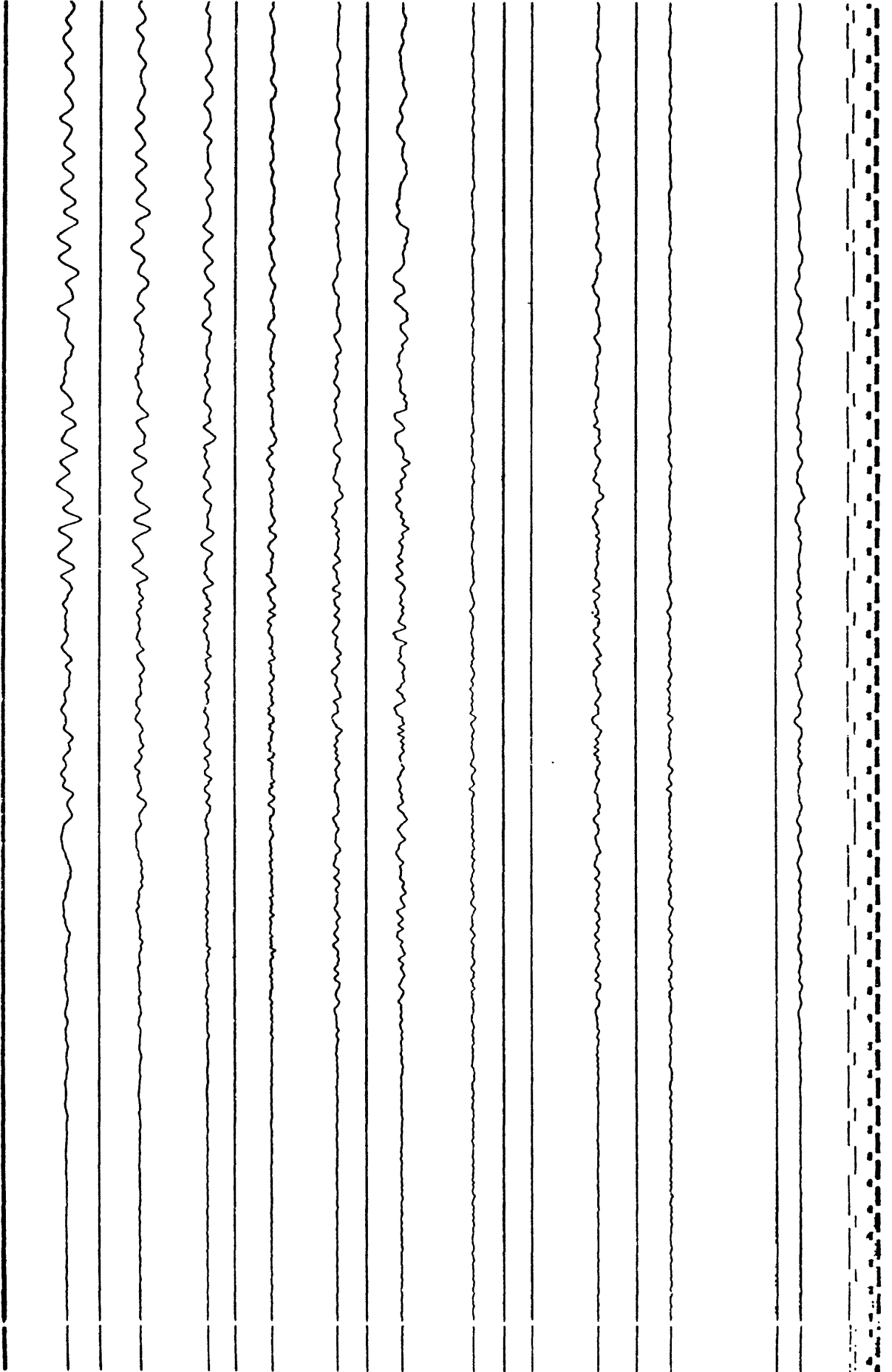
Morris Dam - Left Abutment (MWD)

Norwalk, 12400 Imperial Highway - North Ground Site (USGS)

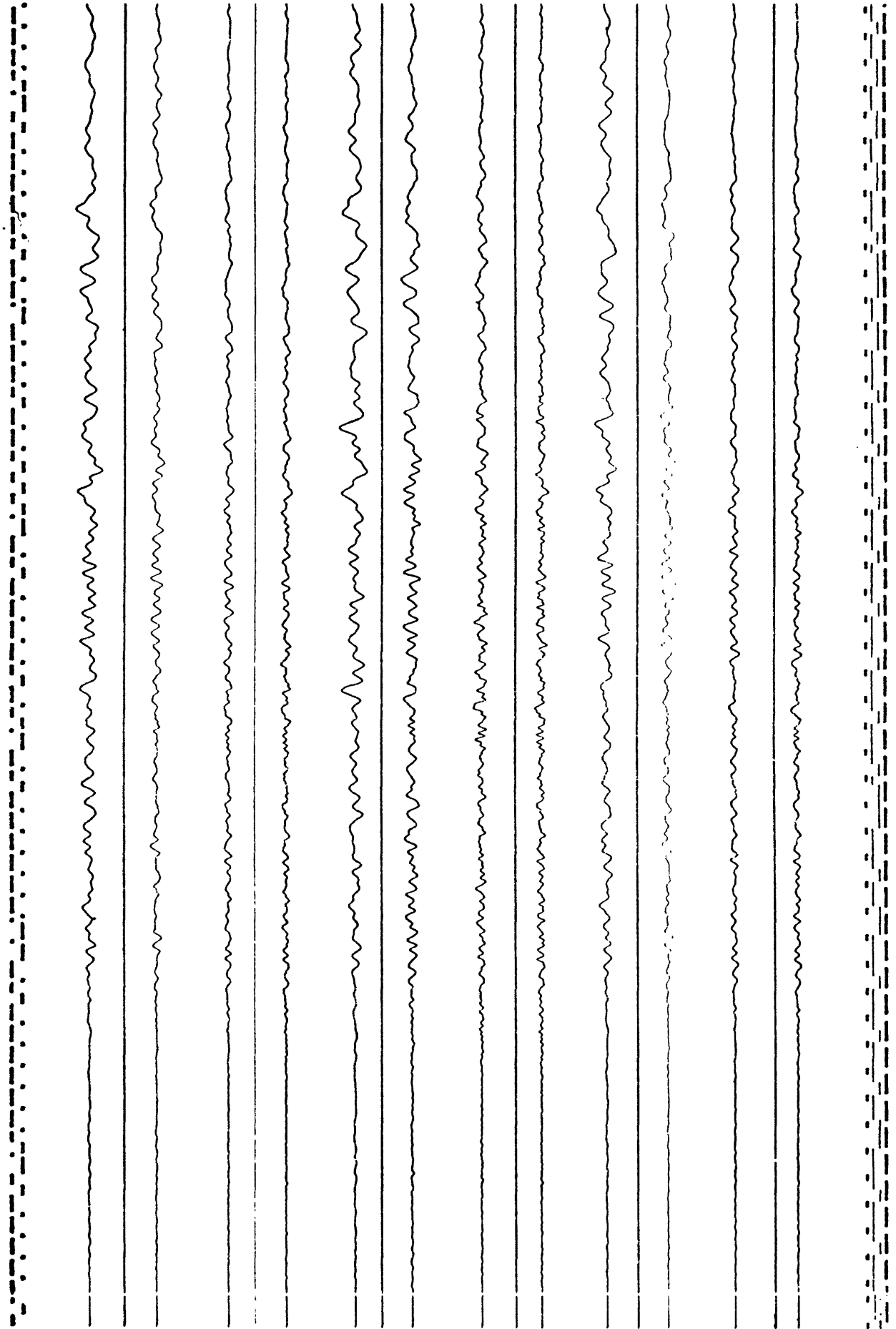
Norwalk, 12440 Imperial Highway - North Ground Site (USGS)

Norwalk, 12440 Imperial Highway - Basement , West (USGS)

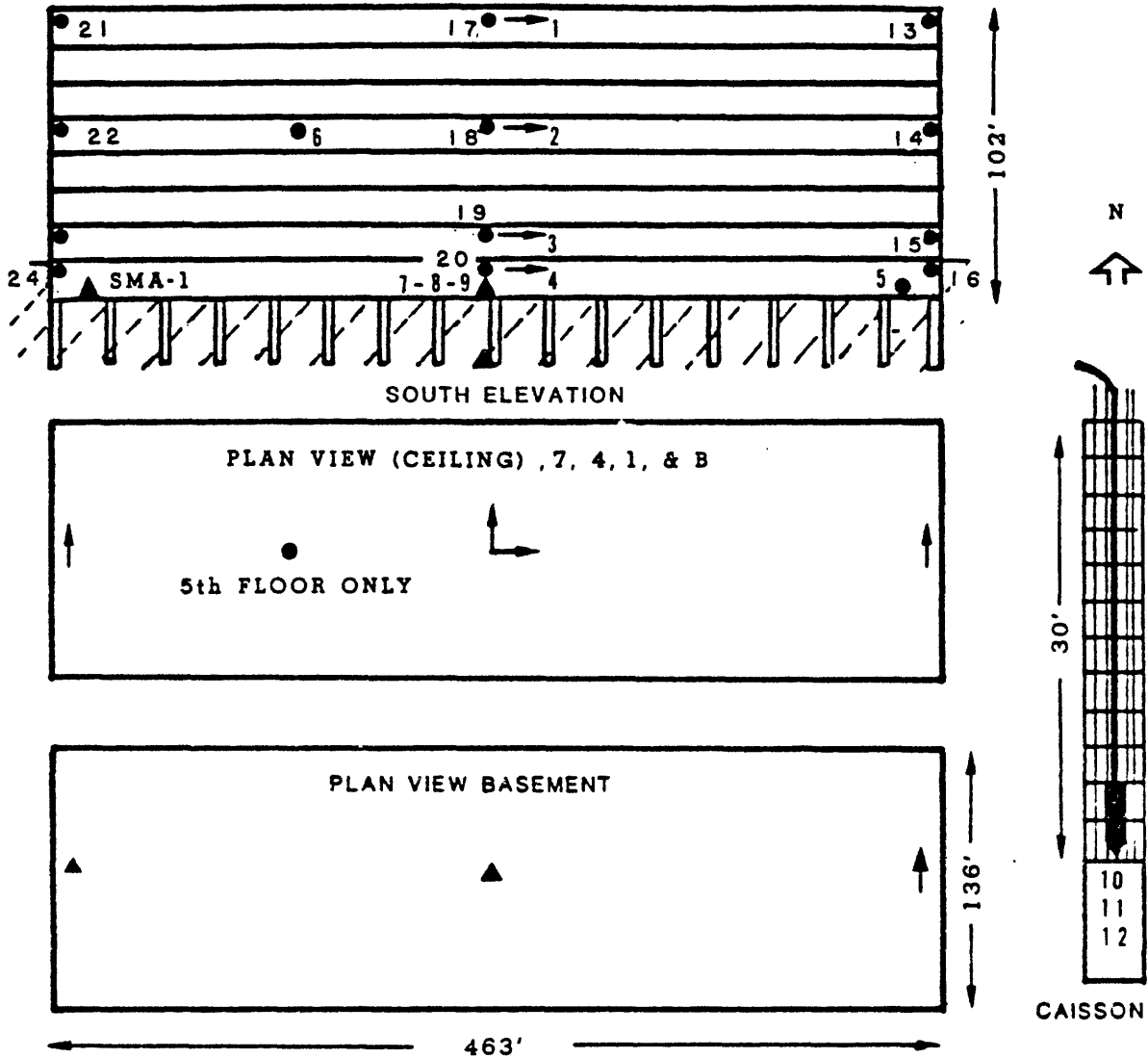
Norwalk, 12440 Imperial Highway - Structural Array #1 (USGS)



Norwalk, 12440 Imperial Highway - Structural Array #2 (USGS)



NORWALK
12440 IMPERIAL



STRUCTURE

FRAME, Steel ductile moment resisting

FOUNDATION, Drilled in place 30' caissons

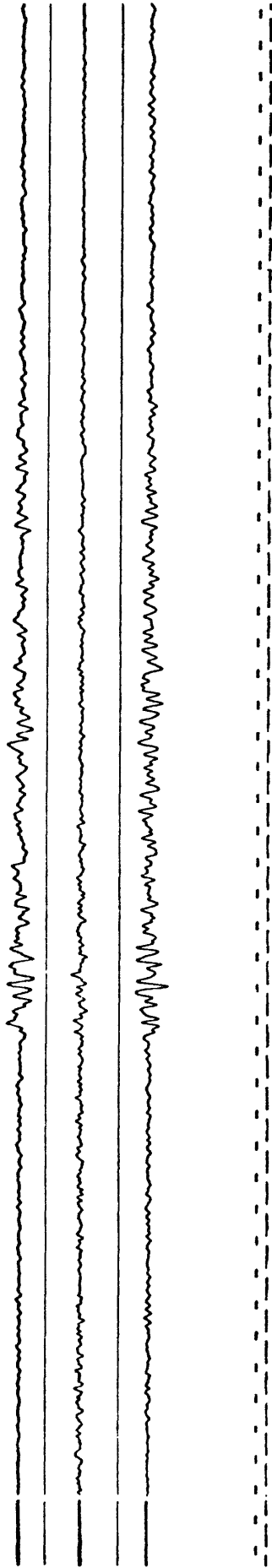
ACCELEROMETER DIRECTIONS

● INTO PLANE OF PLAN/ELEVATION

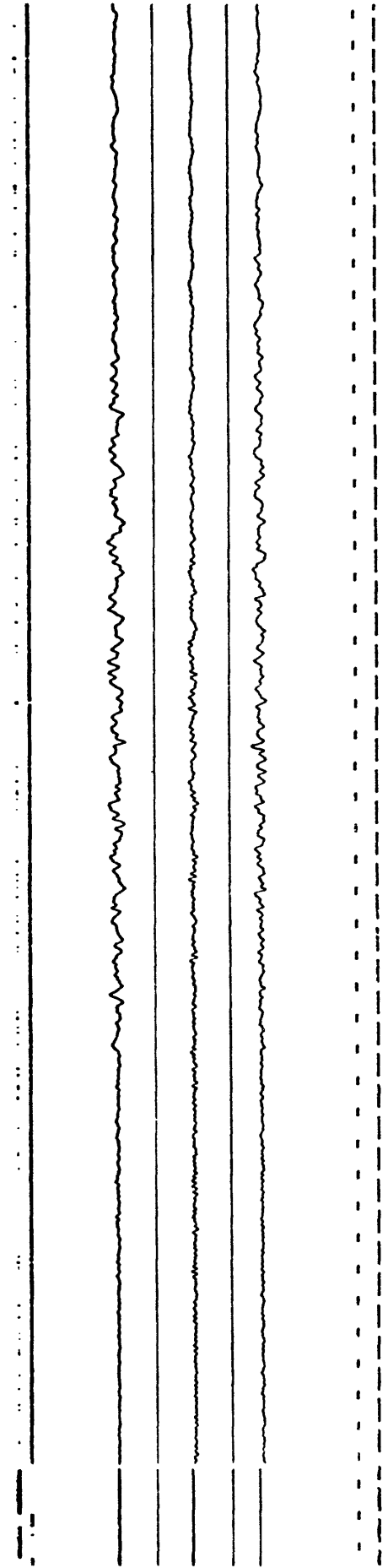
← AS SHOWN

▲ TRIAXIAL ACCELEROMETER

Littlerock Post Office - Ground (USGS)



Valyermo Forest Station - Ground (USGS)



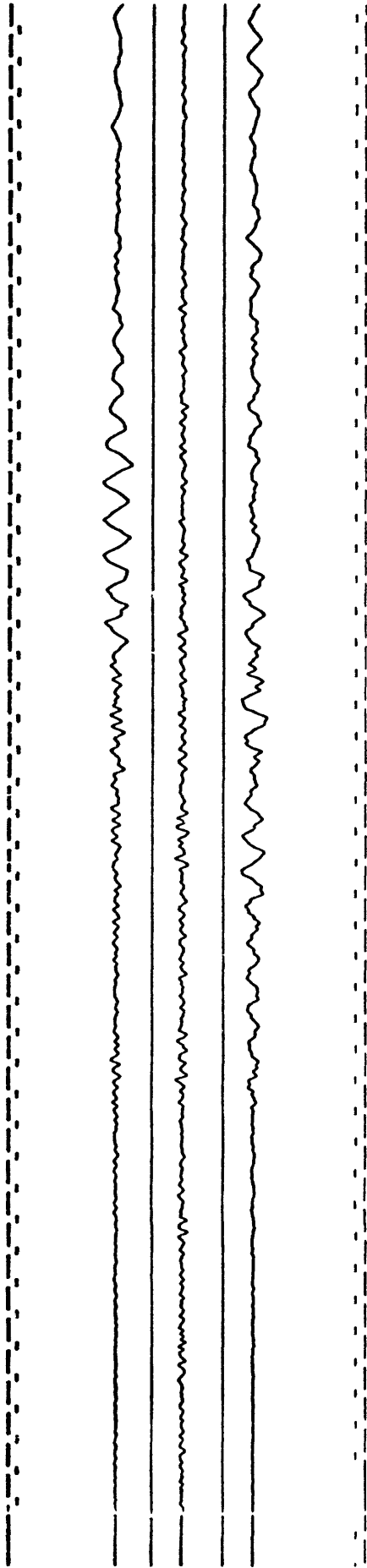
Long Beach V.A. Hospital - Basement (VA)

Handwritten notes on lined paper for Long Beach V.A. Hospital - Basement (VA). The notes are written in cursive and cover the entire page.

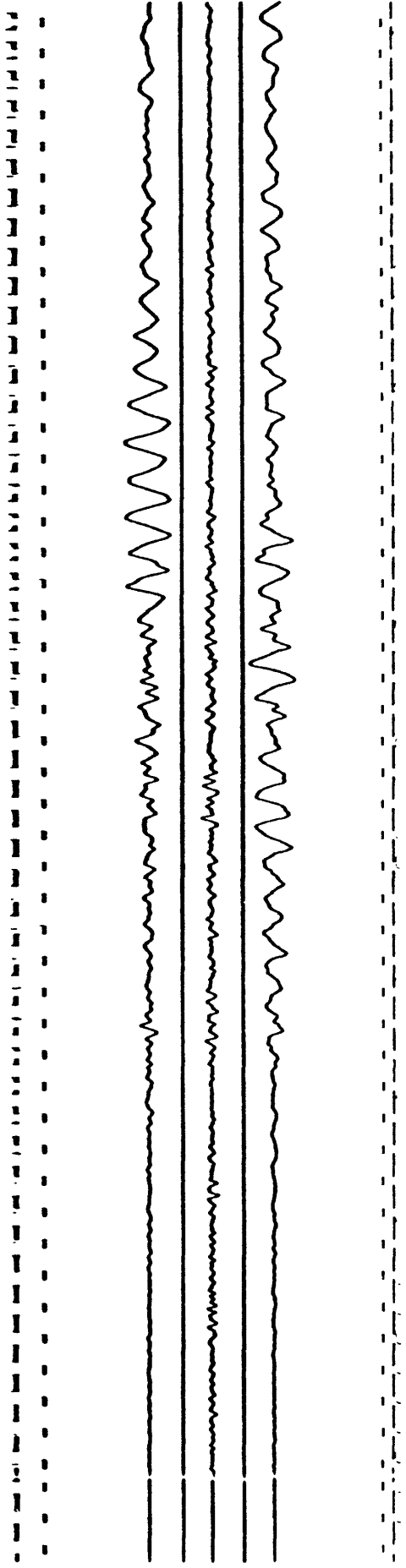
Long Beach V.A. Hospital - Ground Site (VA)

Handwritten notes on lined paper for Long Beach V.A. Hospital - Ground Site (VA). The notes are written in cursive and cover the entire page.

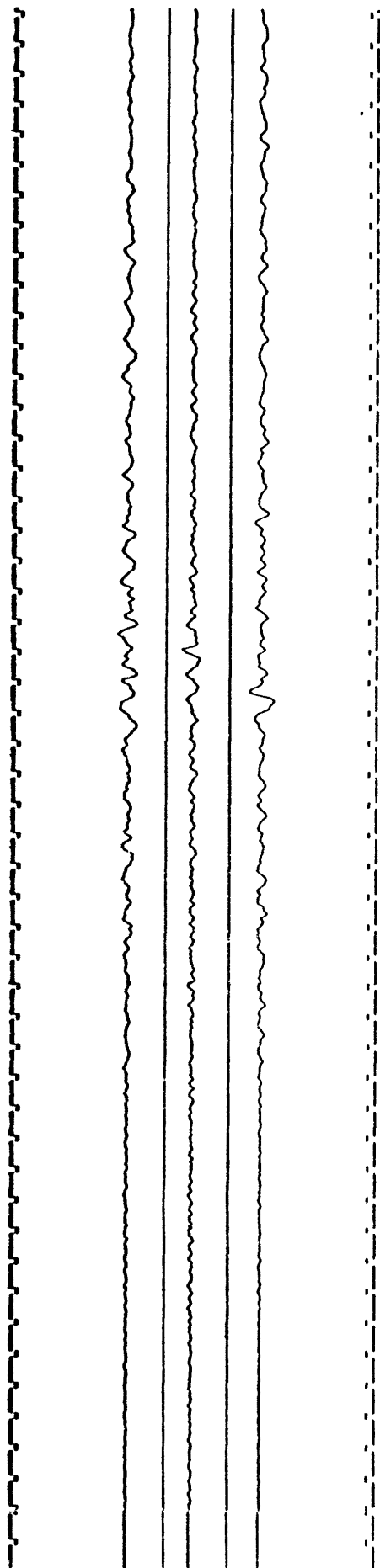
Long Beach V.A. Hospital - 6th Floor (VA)



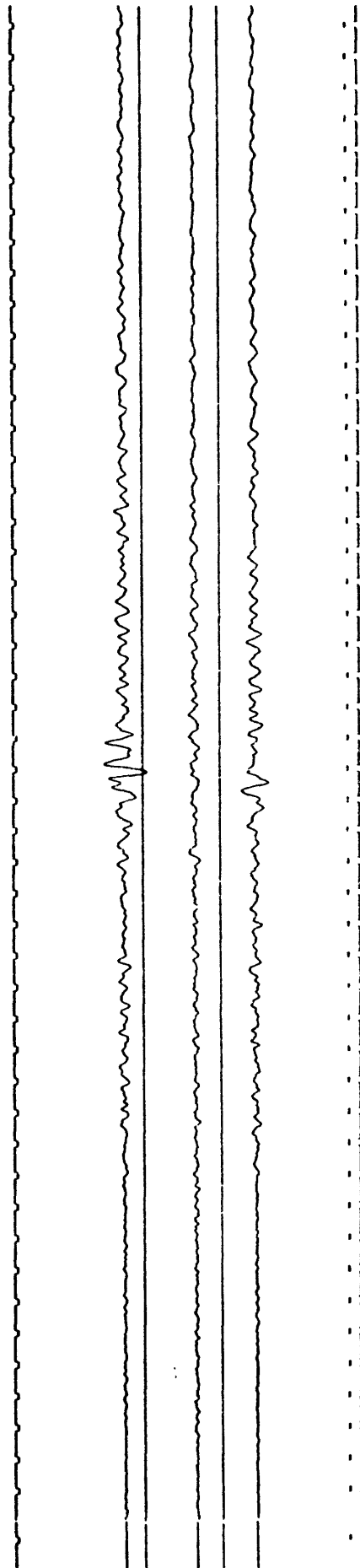
Long Beach V.A. Hospital - 11th floor (VA)



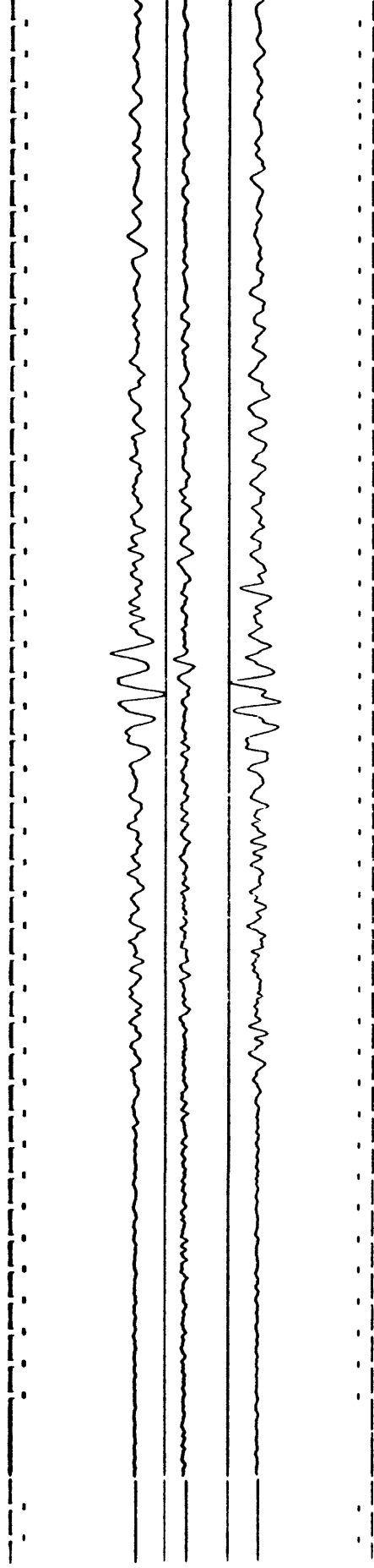
Brea Dam - Left Abutment (AE)



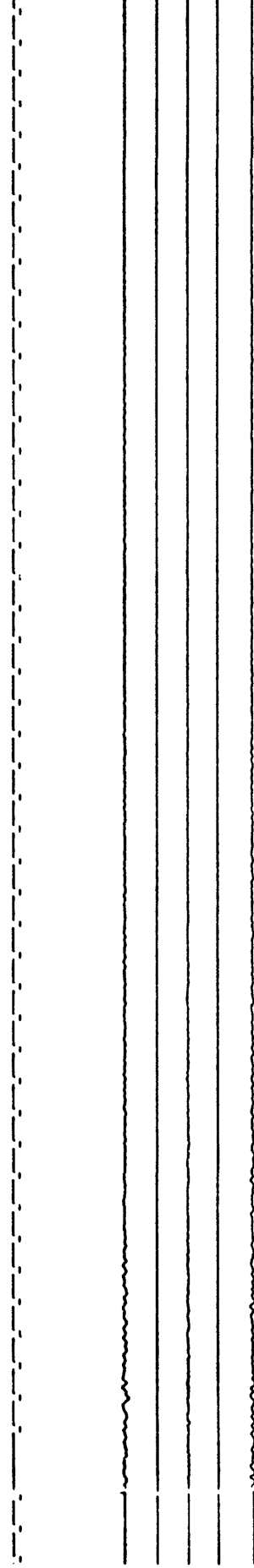
Brea Dam - Downstream (AE)



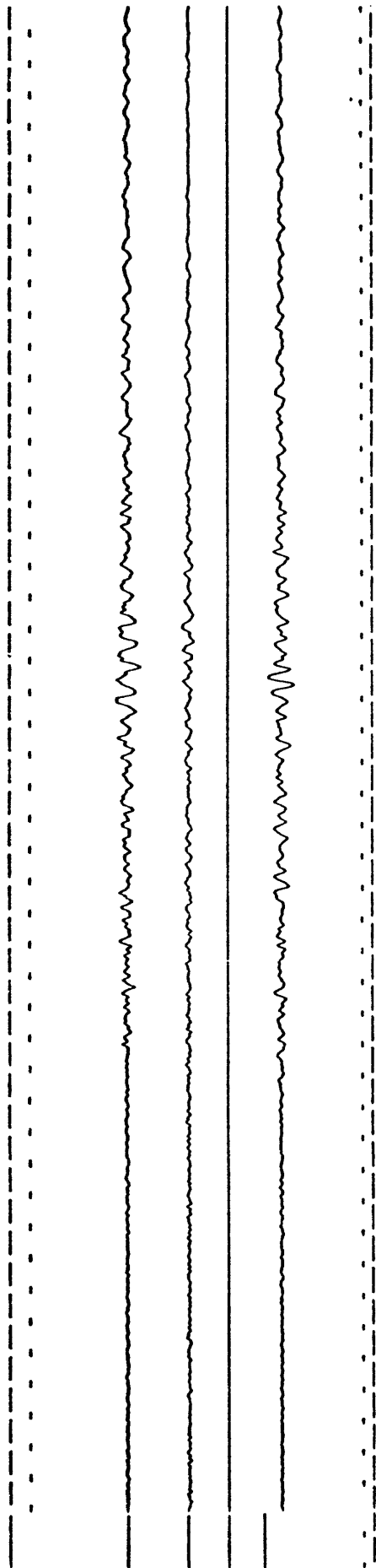
Brea Dam - Crest (AE)



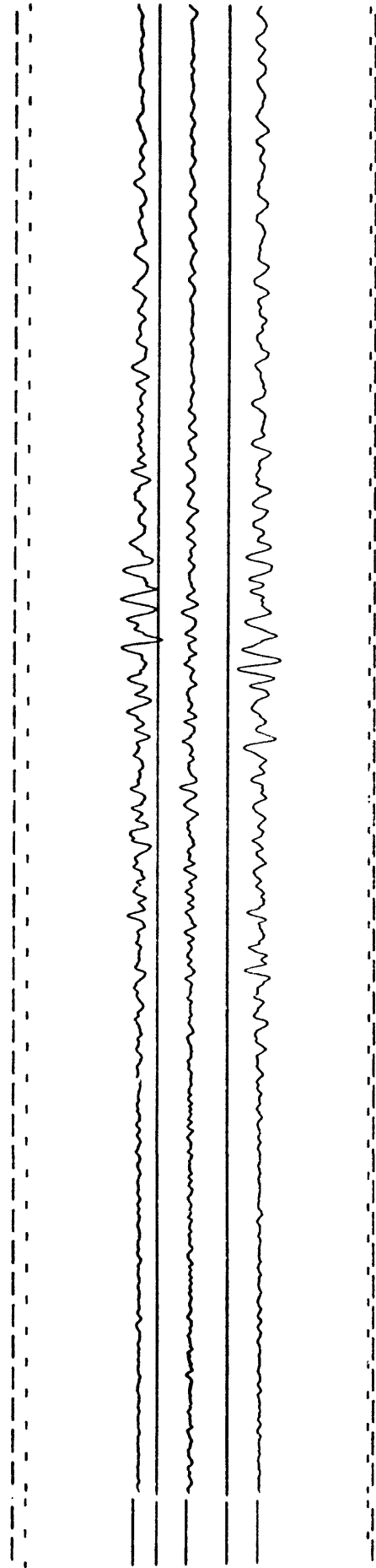
Live Oak Reservoir - Abutment (MWD)



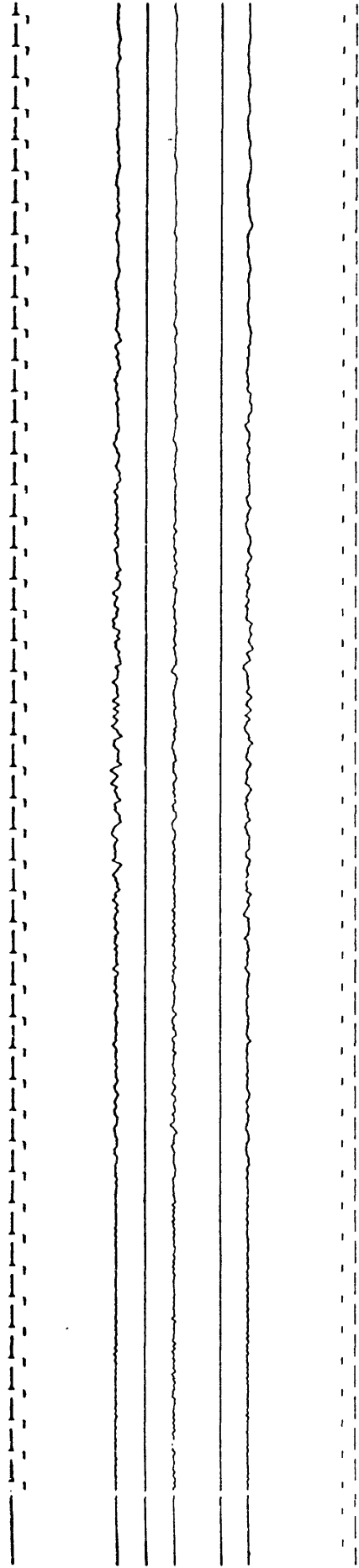
Orange County Reservoir - Abutment (MWD)



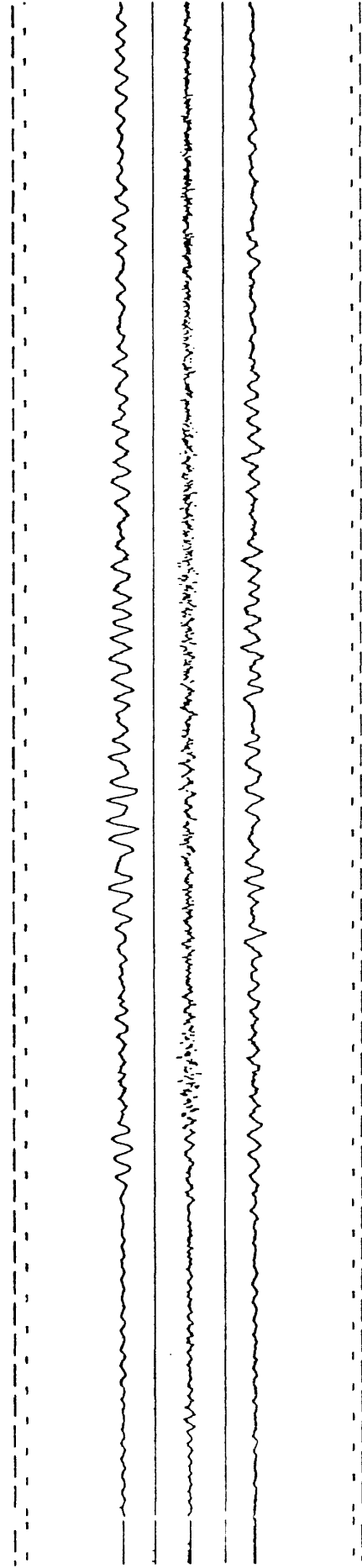
Orange County Reservoir - Crest (MWD)



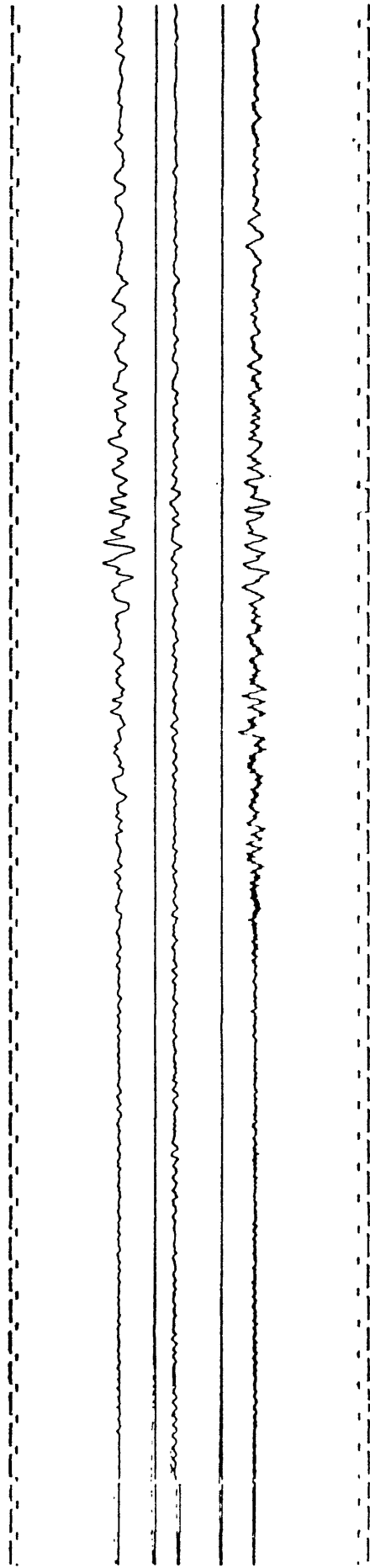
Weymouth Filtration Plant - Chemical Building, Ground (MWD)



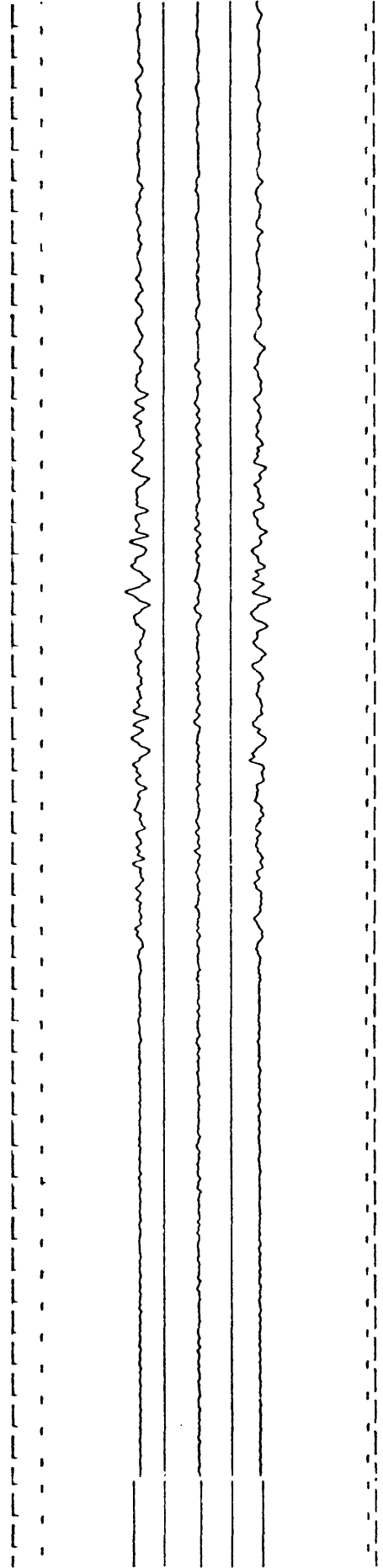
Weymouth Filtration Plant - East Water Tank, Top (MWD)



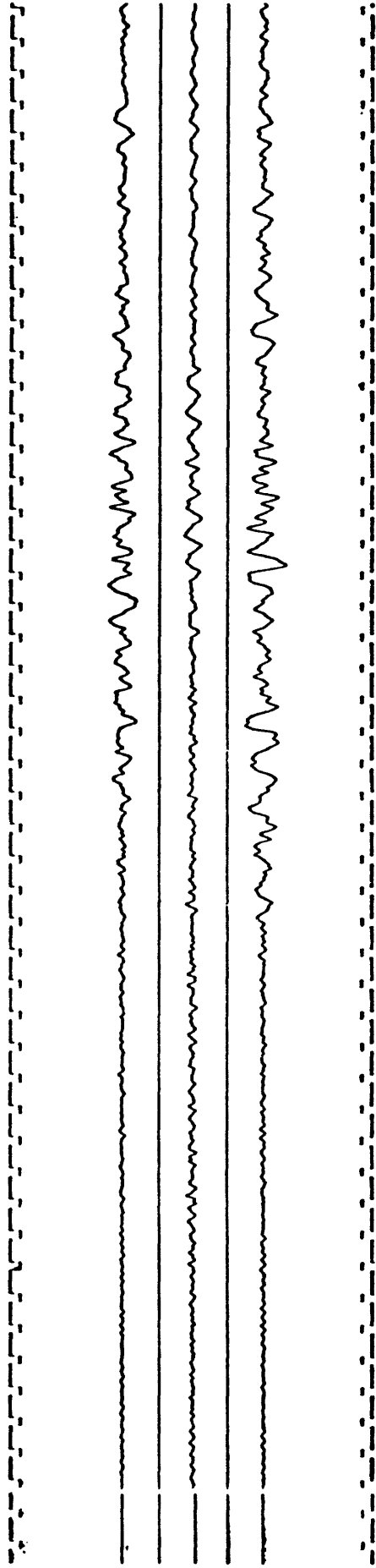
Carbon Canyon Dam - Right Abutment (AE)



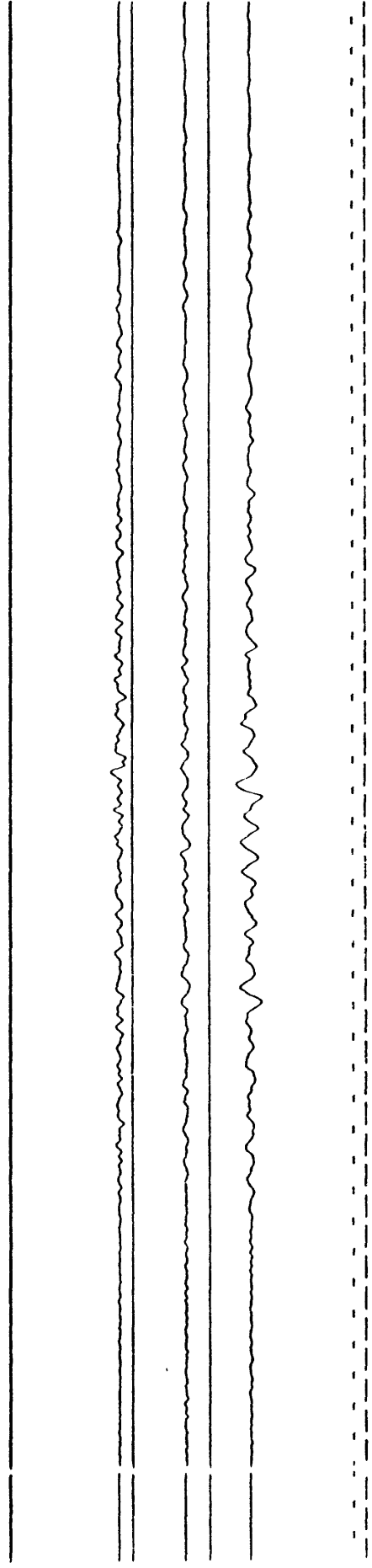
Carbon Canyon Dam - Left Abutment (AE)



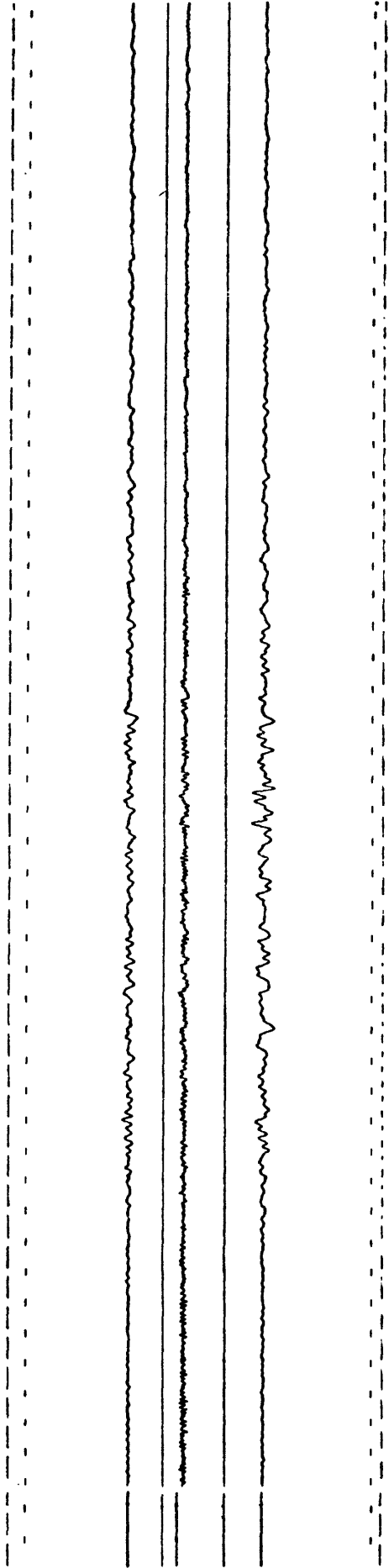
Carbon Canyon Dam - Crest (AE)



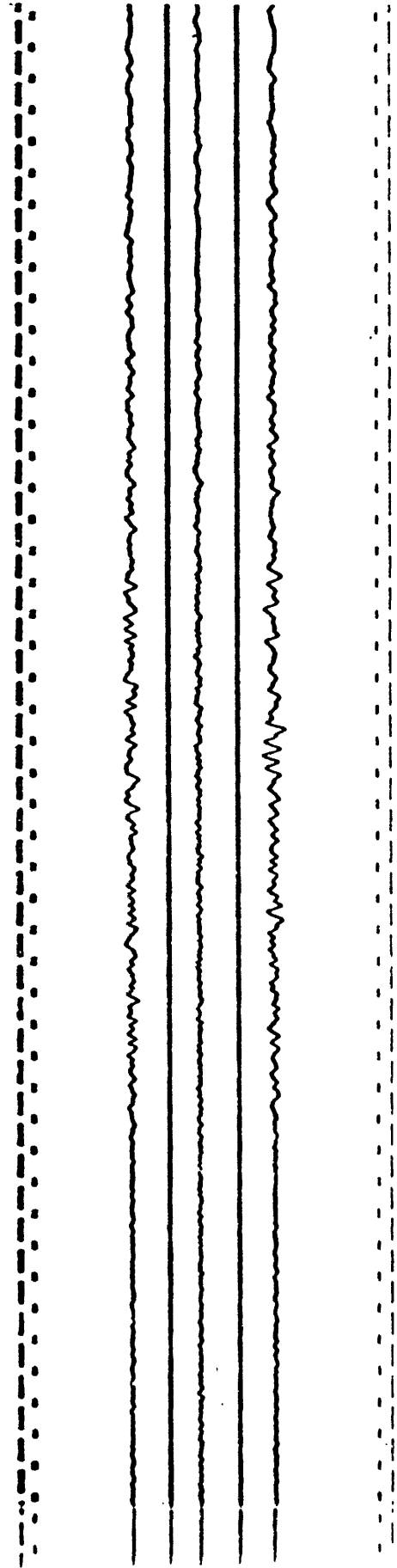
Diemer Filter Plant- Basement (MWD)



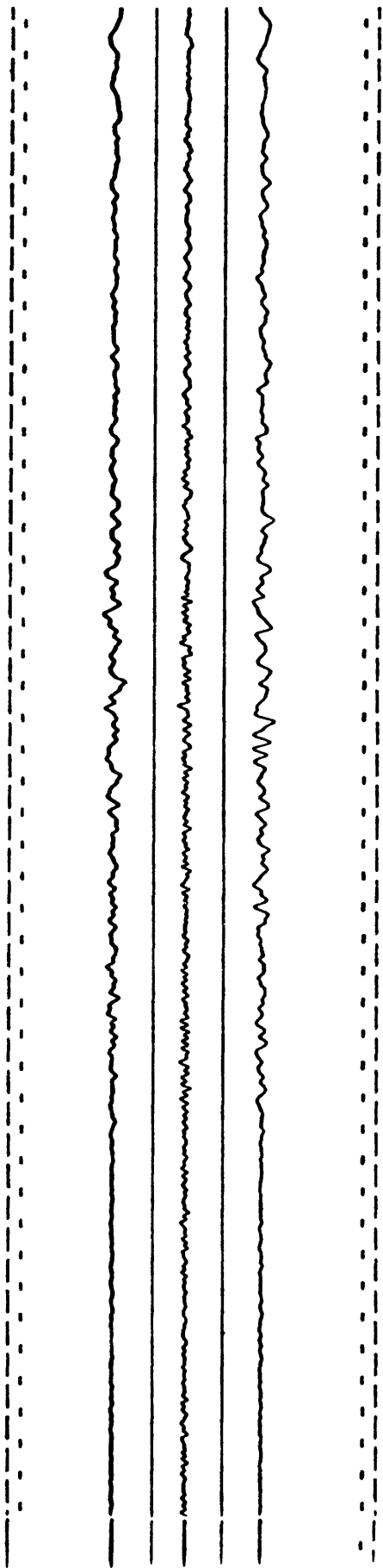
Diemer Filtration Plant - Reservoir Roof (MWD)



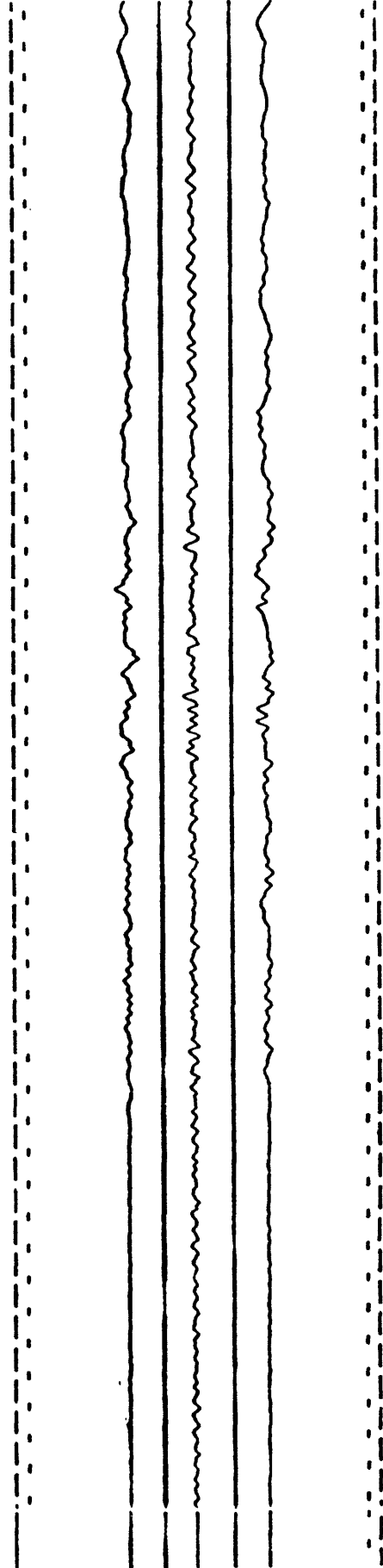
Irvine, 2603 Main Street - Ground Level (CODE)



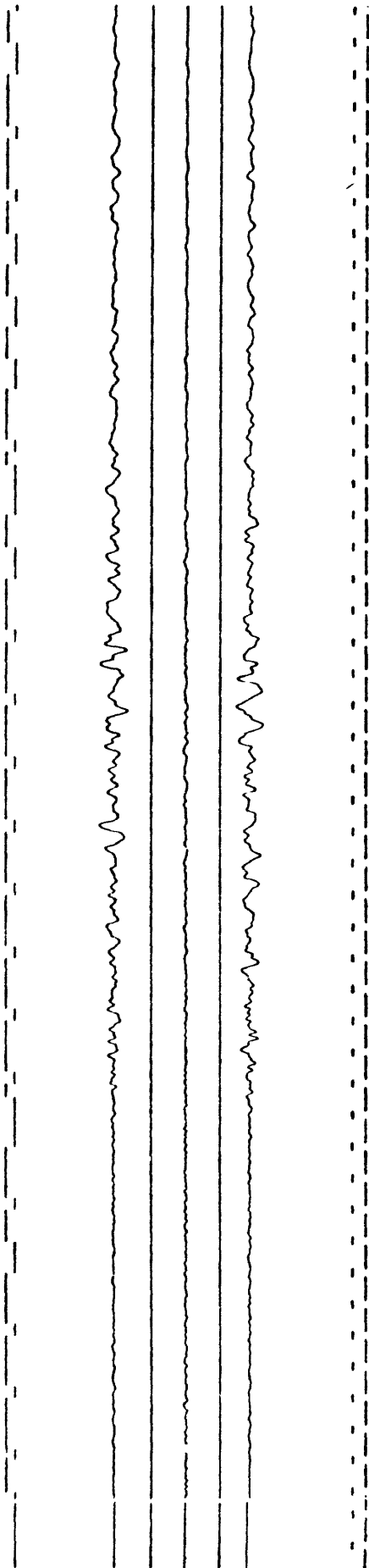
Irvine, 2603 Main Street - 7th Level (CODE)



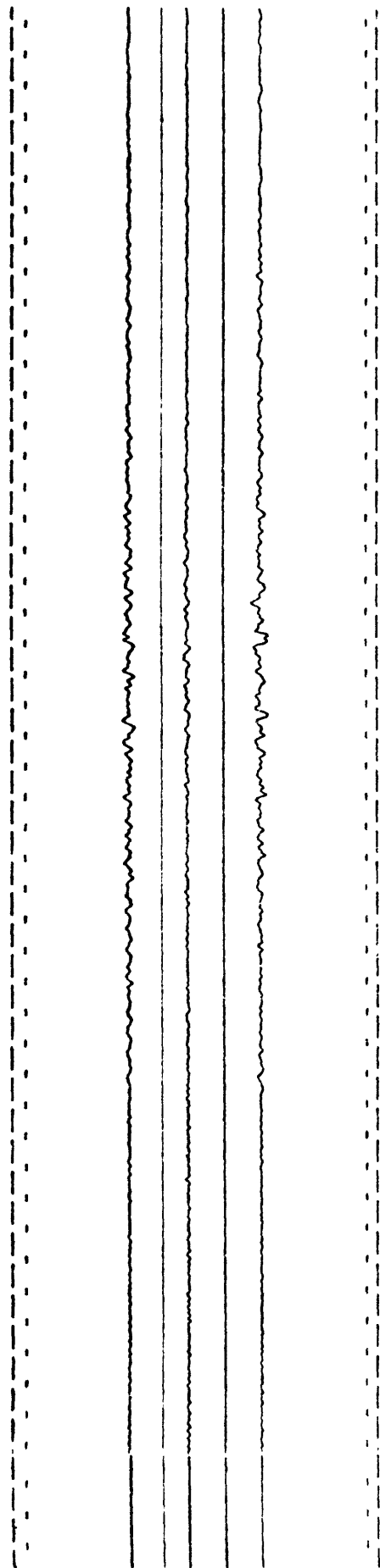
Irvine, 2603 Main Street - 13th Level (CODE)



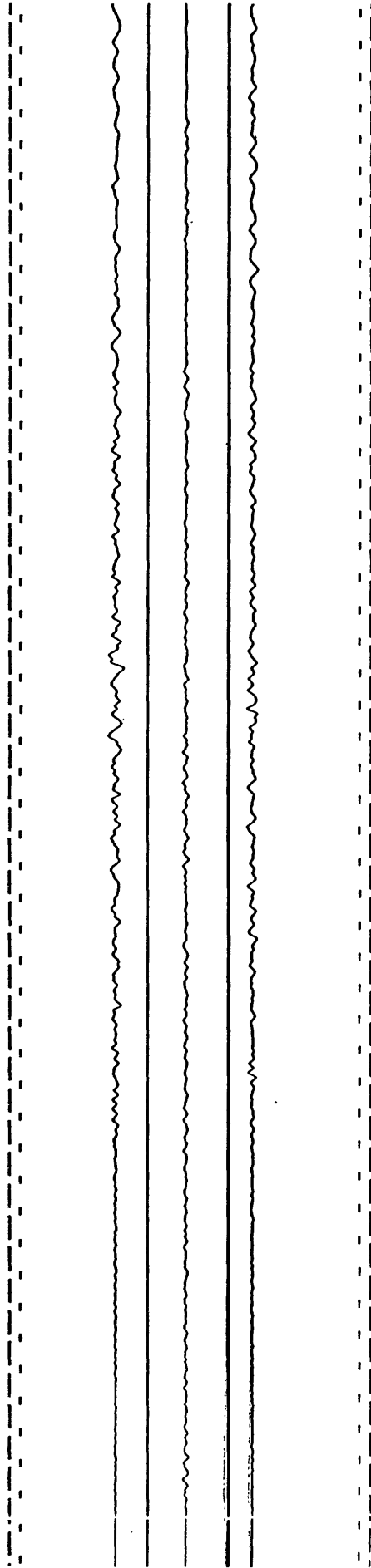
Huntington Beach, 18401 Springdale - Ground (USGS)



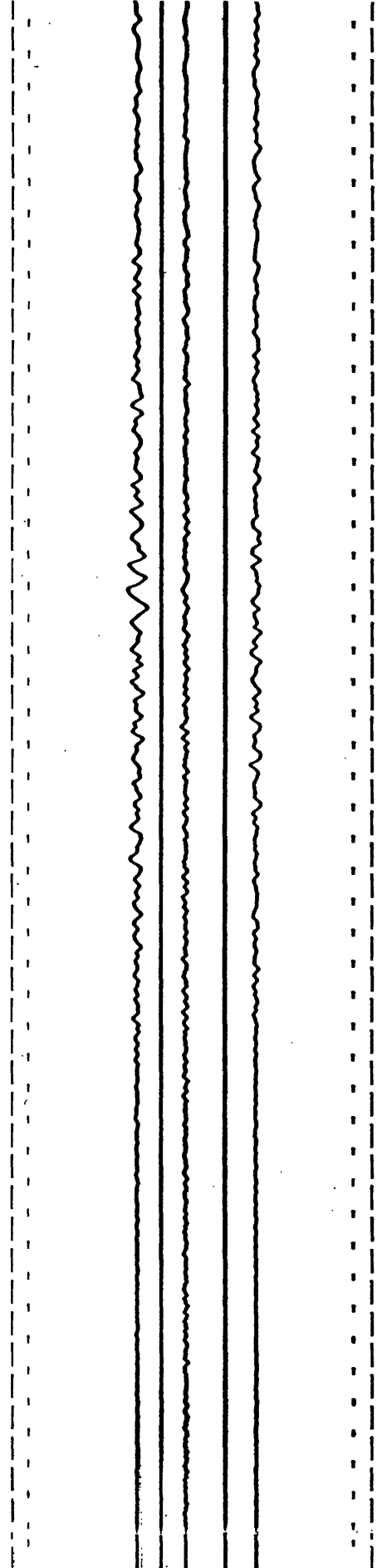
San Antonio Dam - Downstream (AE)



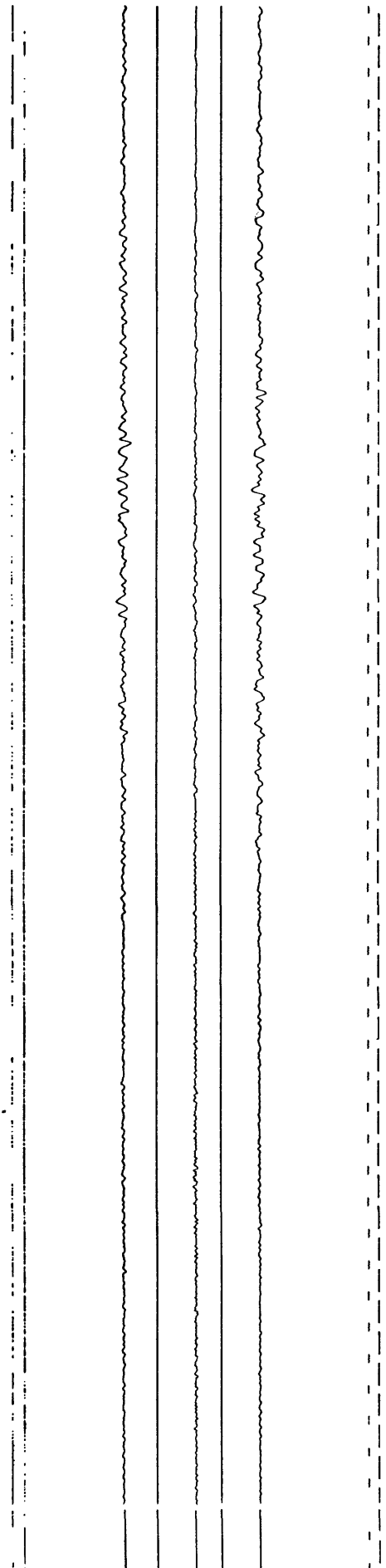
Santa Ana, 400 Civic Center Drive - Basement (USGS)



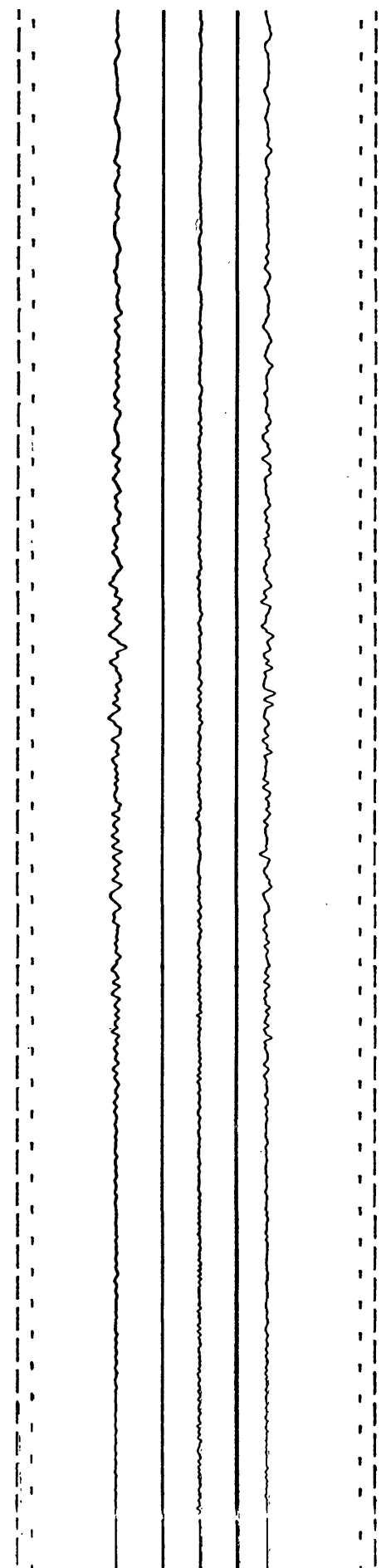
Costa Mesa, 2300 Placentia - Ground (USGS)



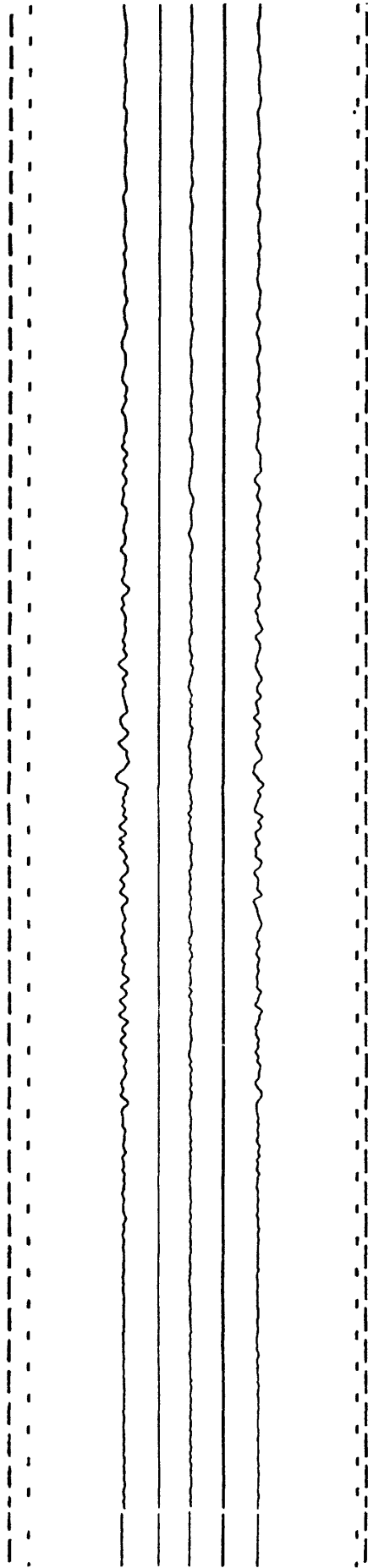
Wrightwood Post Office - Ground (USGS)



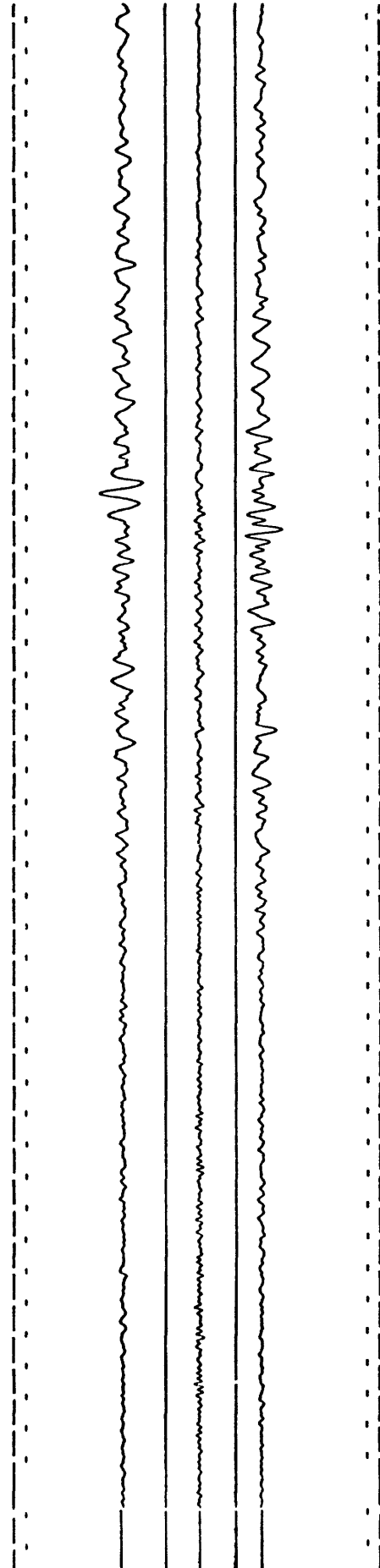
Costa Mesa, John Wayne Airport - Ground (USGS)



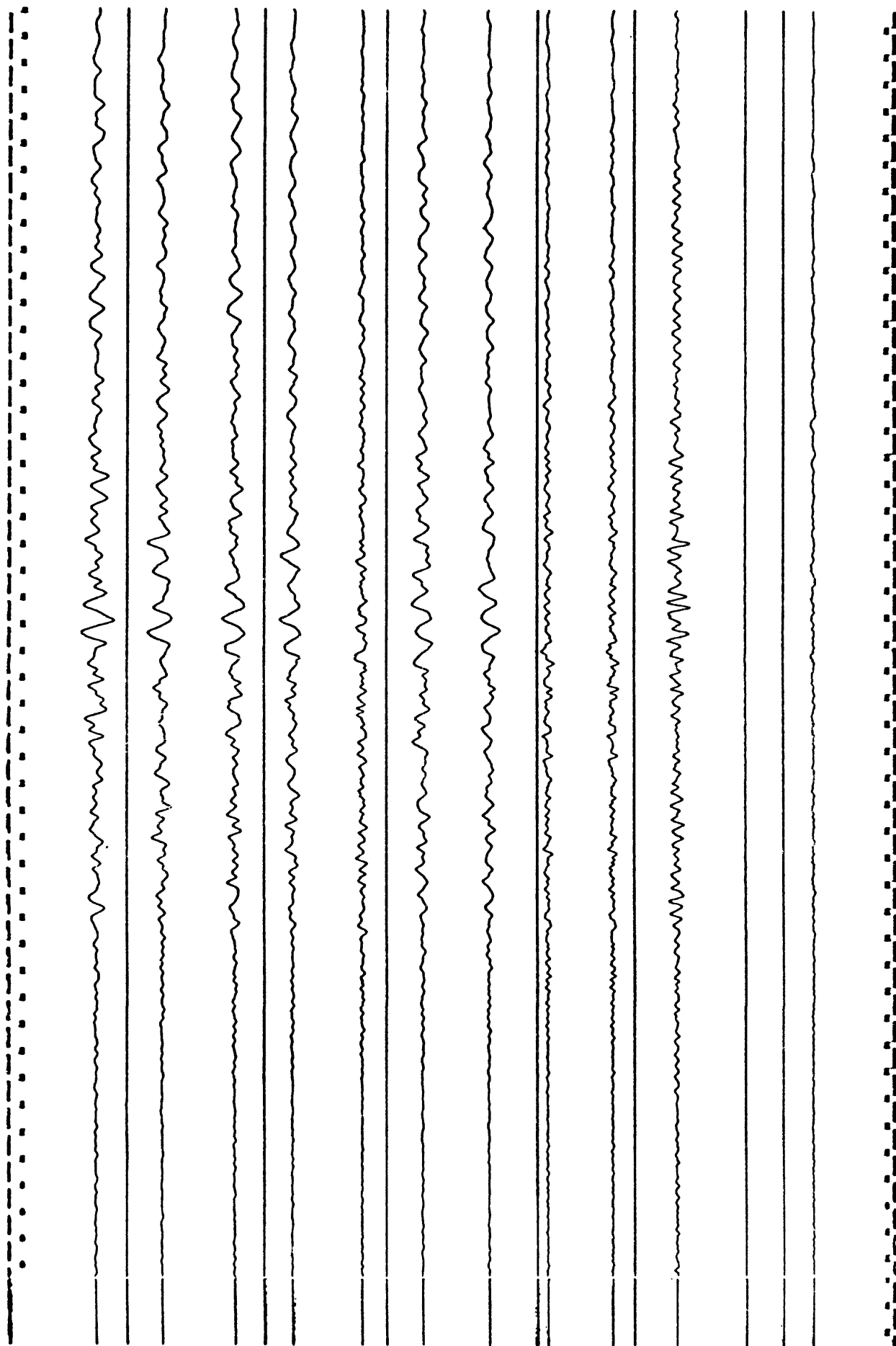
Irvine, 19900 MacArthur Blvd - Basement (USGS)

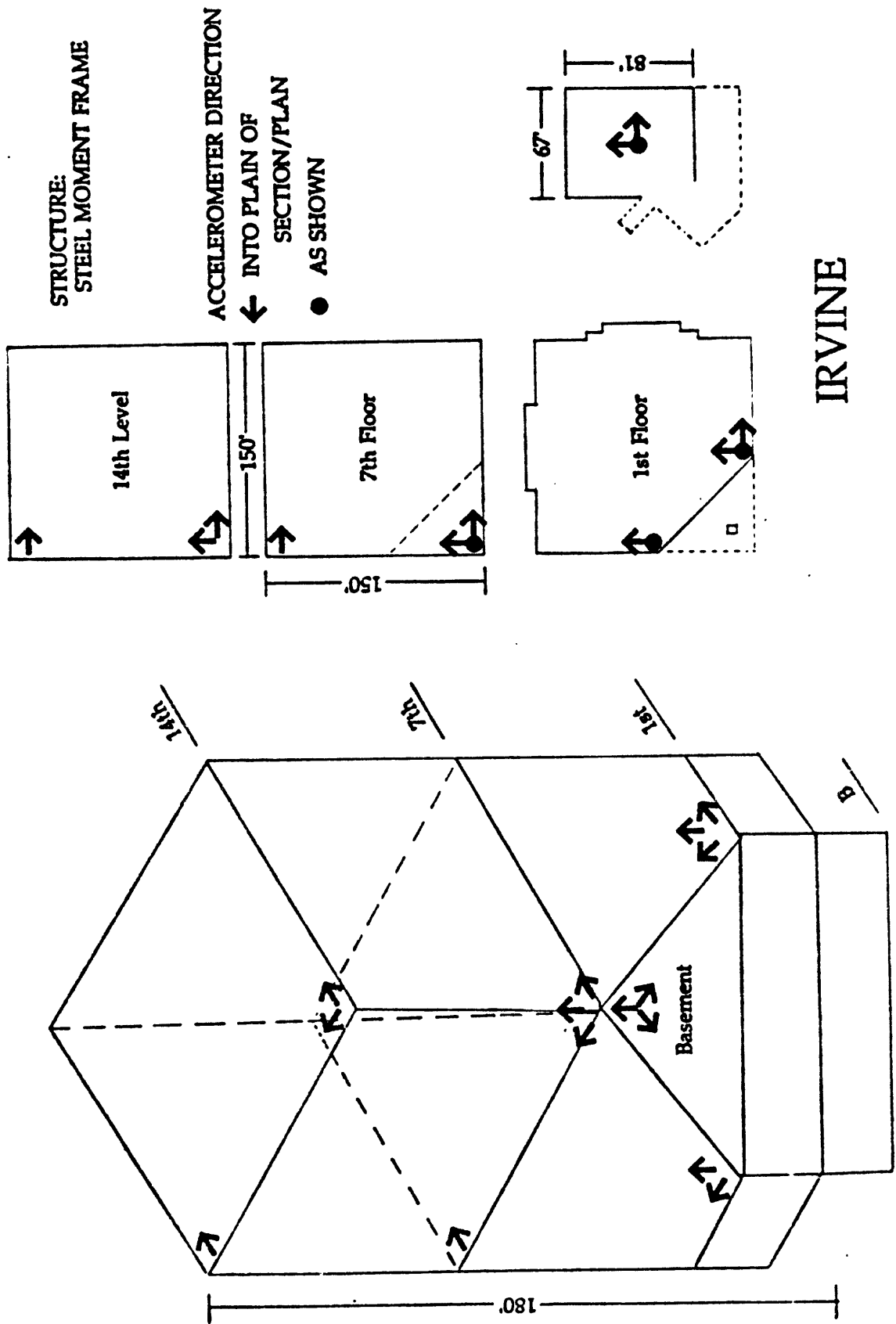


Prado Dam - Downstream (AE)

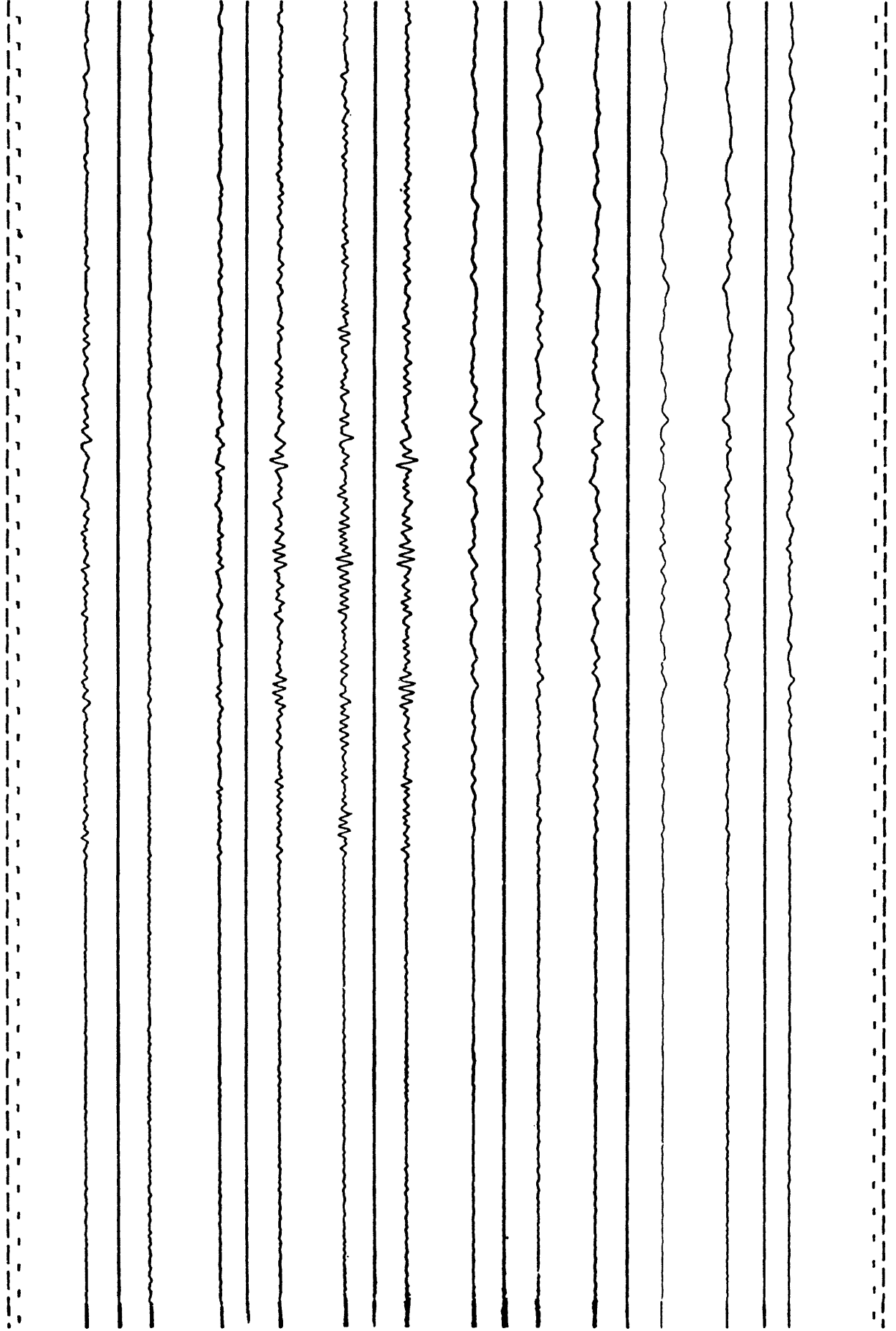


Irvine, 19900 MacArthur Blvd - Structural Array (USGS)

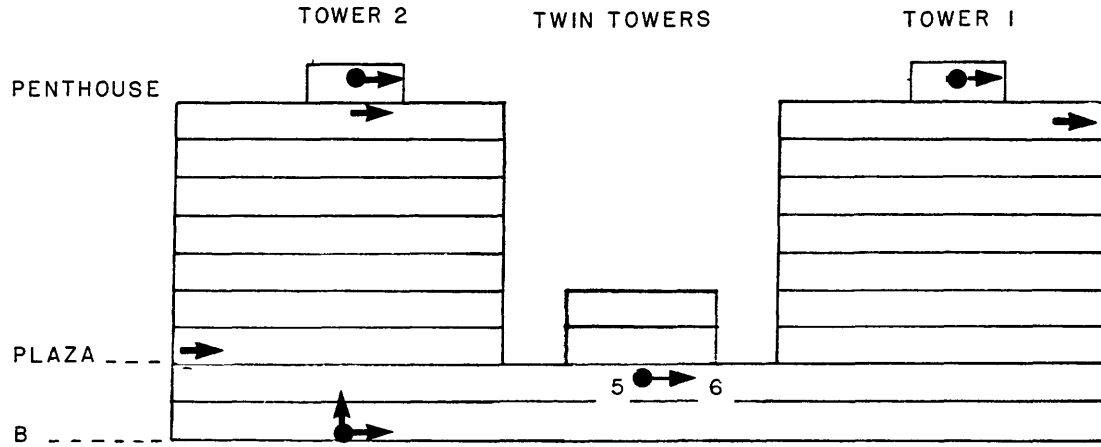




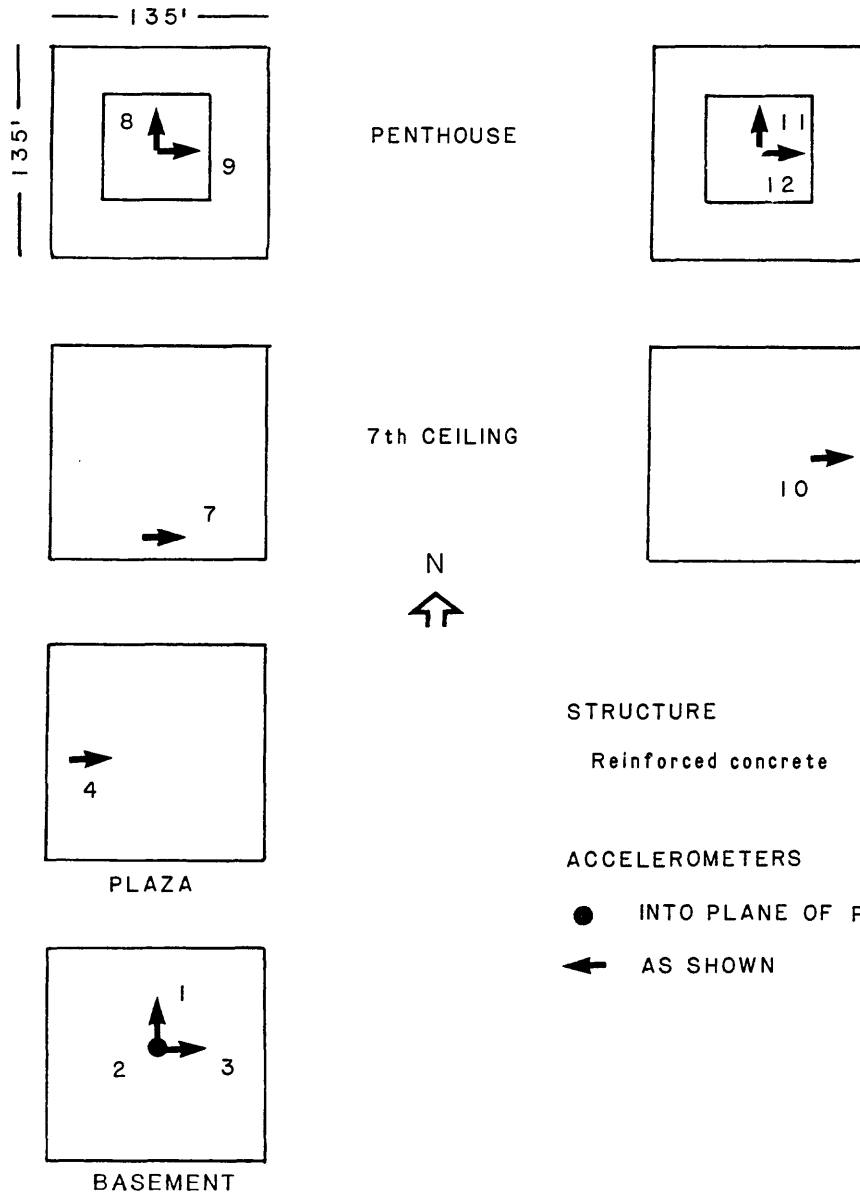
Newport Beach, 840 Newport Center Drive - Structural Array



NEWPORT BEACH
800 NEWPORT CENTER DRIVE
STRONG-MOTION INSTRUMENTATION



SOUTH ELEVATION



STRUCTURE

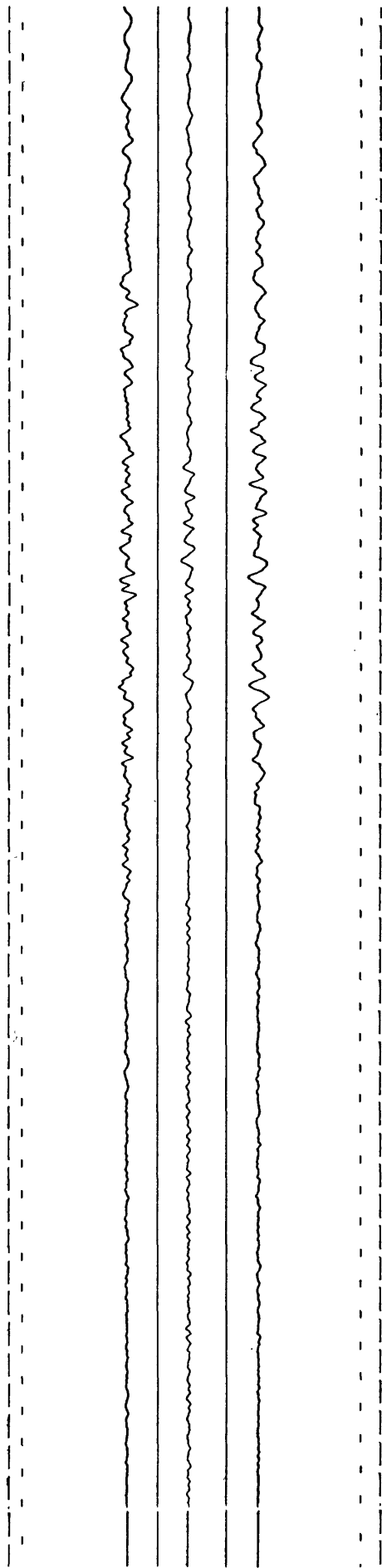
Reinforced concrete

ACCELEROMETERS

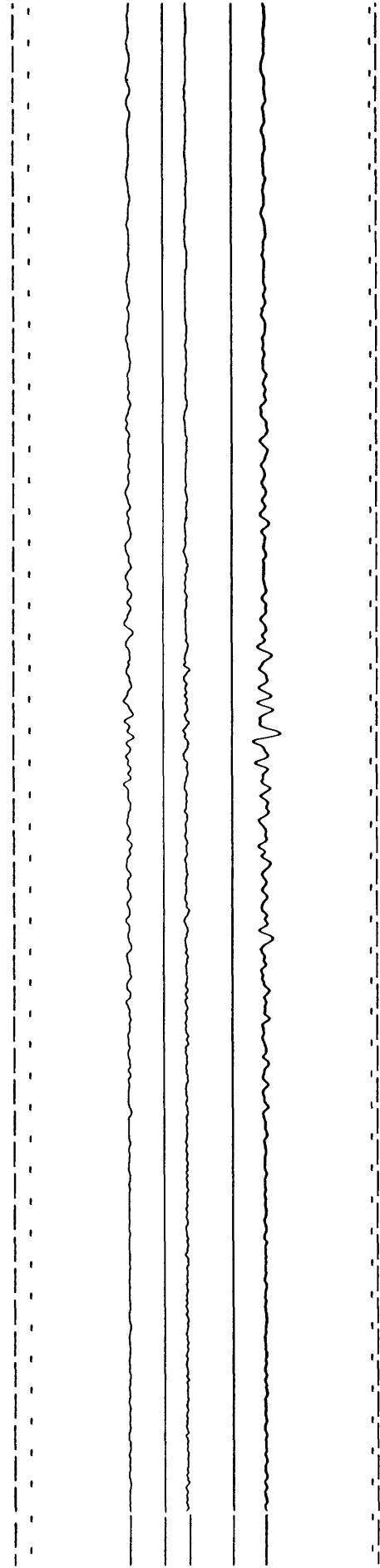
● INTO PLANE OF PLAN/ELEVATION

← AS SHOWN

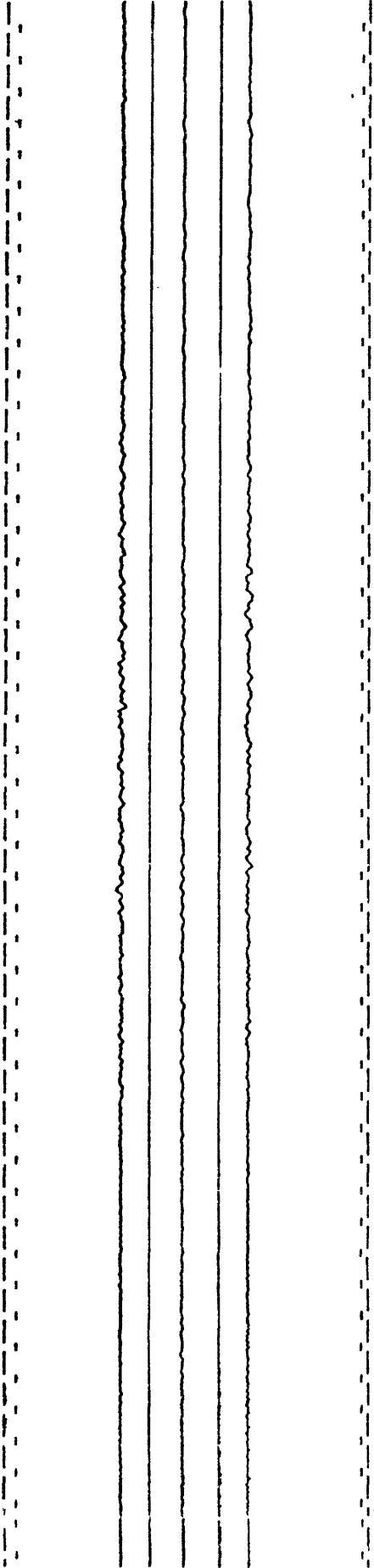
Prado Dam - Crest (AE)



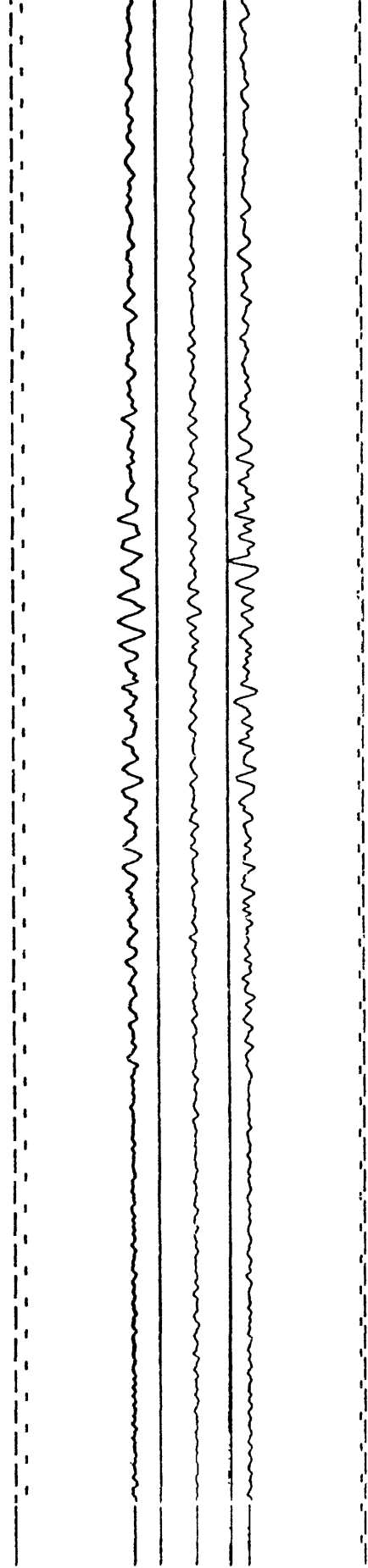
Prado Dam - Left Abutment (AE)



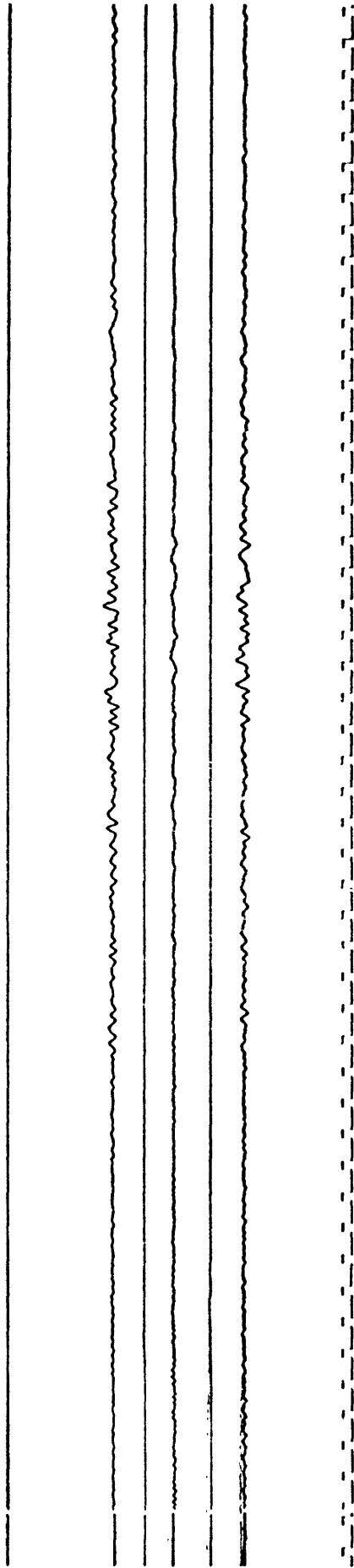
San Joaquin Reservoir - Left Abutment (MWD)



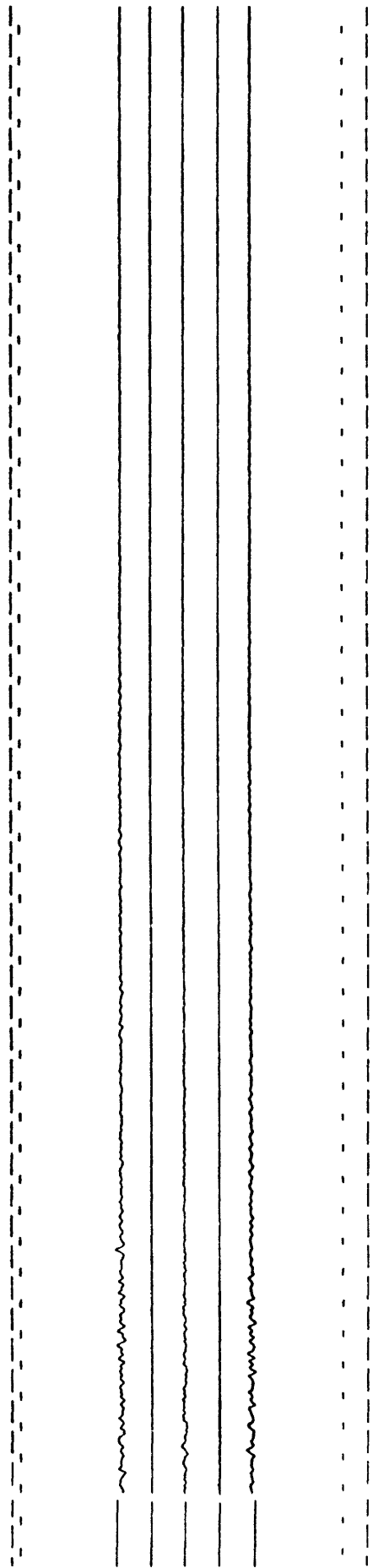
San Joaquin Reservoir - Crest (MWD)



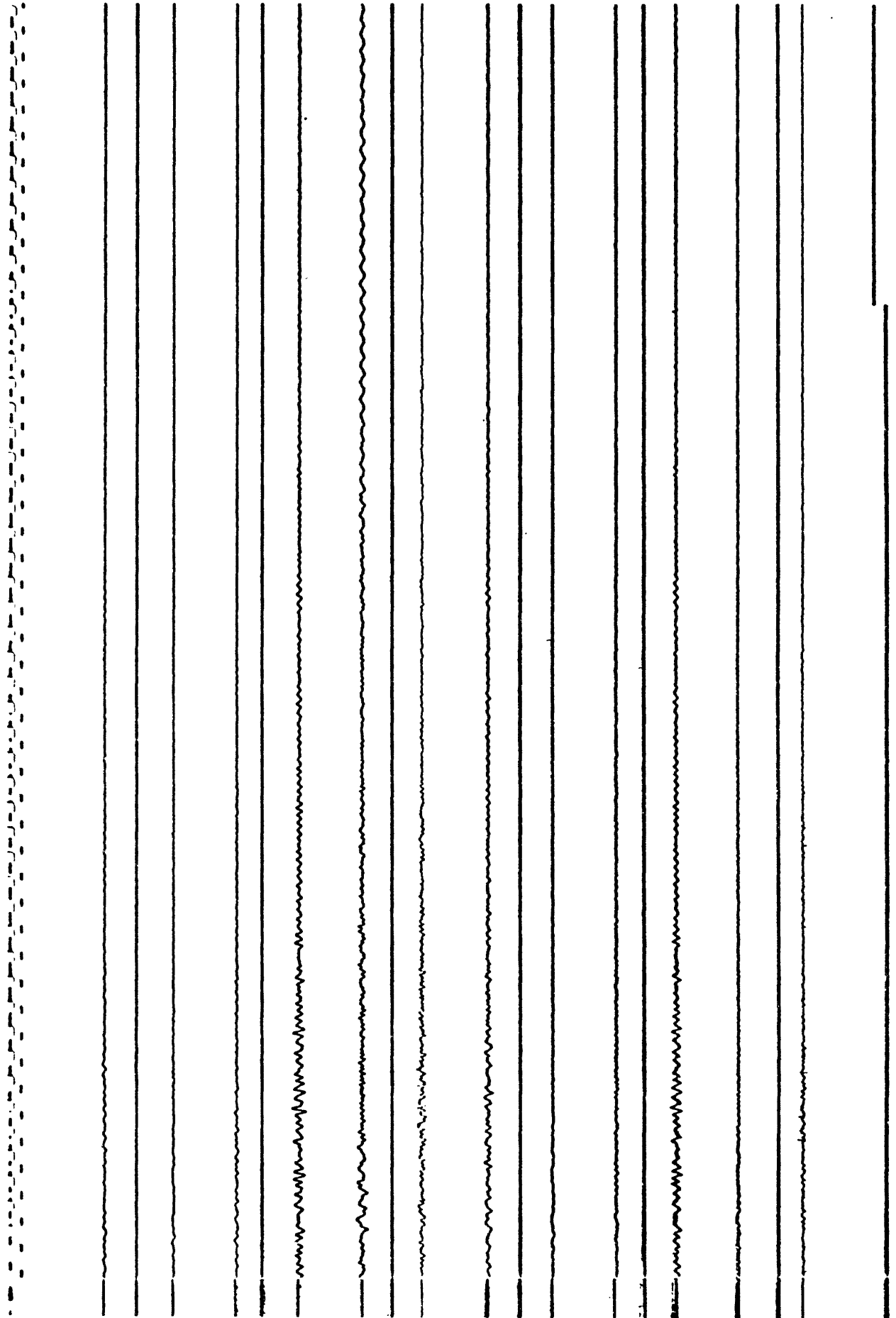
Lytle Creek - Ground (USGS)

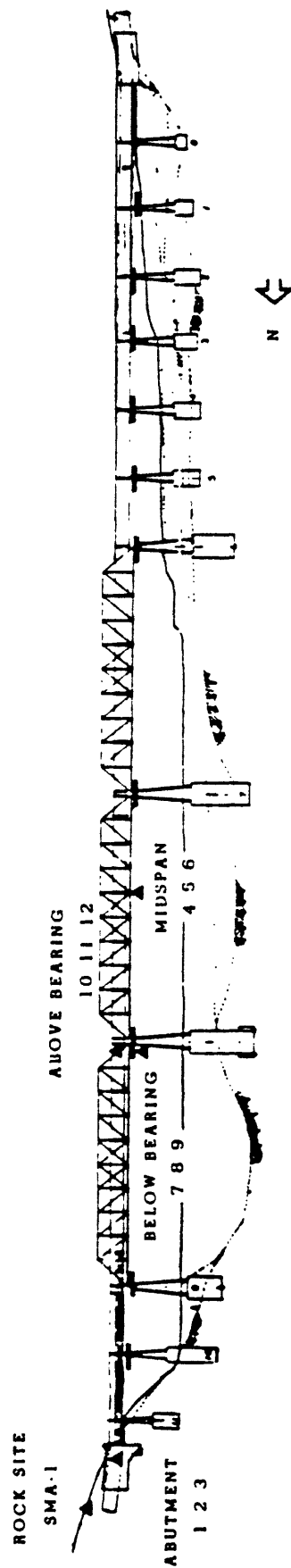


Riverside, Santa Ana River Bridge - Abutment (MWD)



Riverside, Santa Ana River Bridge - Structural Array (MWD)





SANTA ANA RIVER BRIDGE
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

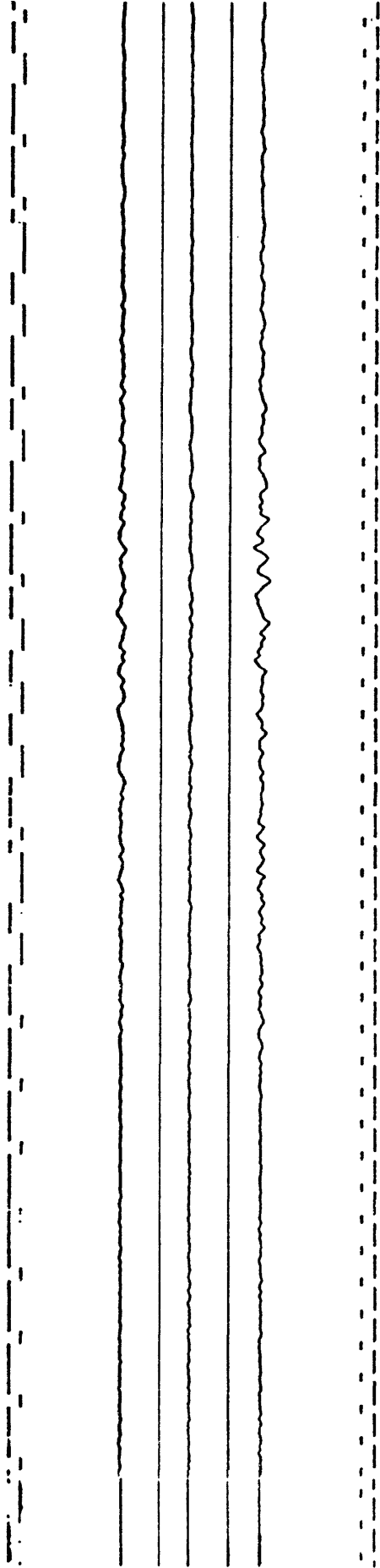
STRONG-MOTION INSTRUMENTATION

STRUCTURE

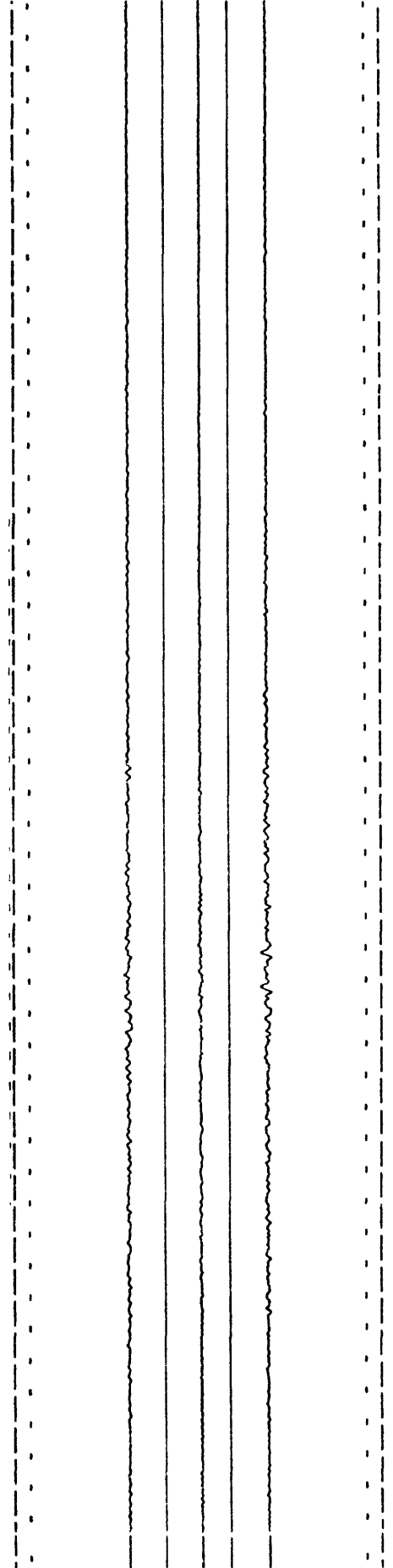
Three 180' long steel trusses
(instrumented section)

▲ TRIAXIAL SENSORS
— ELASTOMERIC BEARINGS

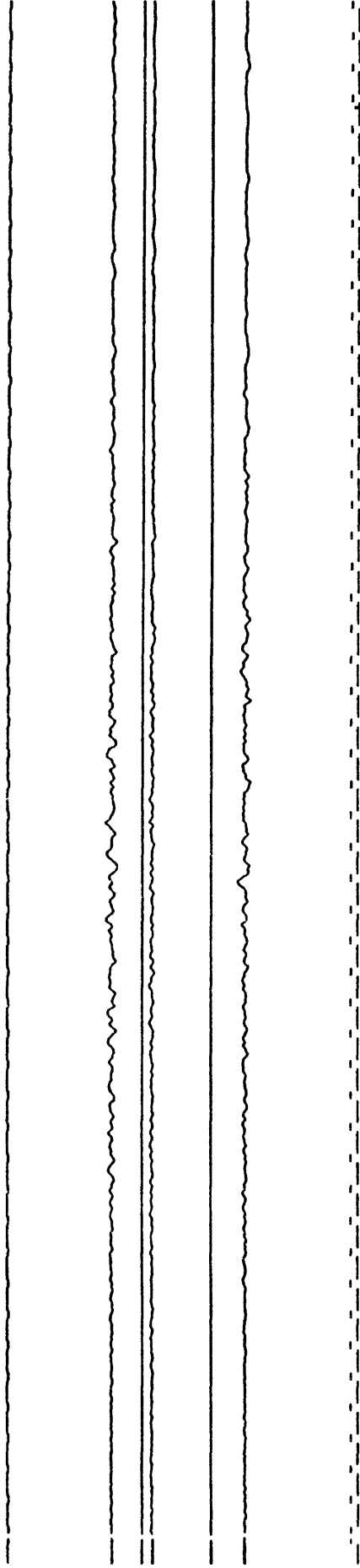
San Bernardino, Devore Water Co - Ground (USGS)



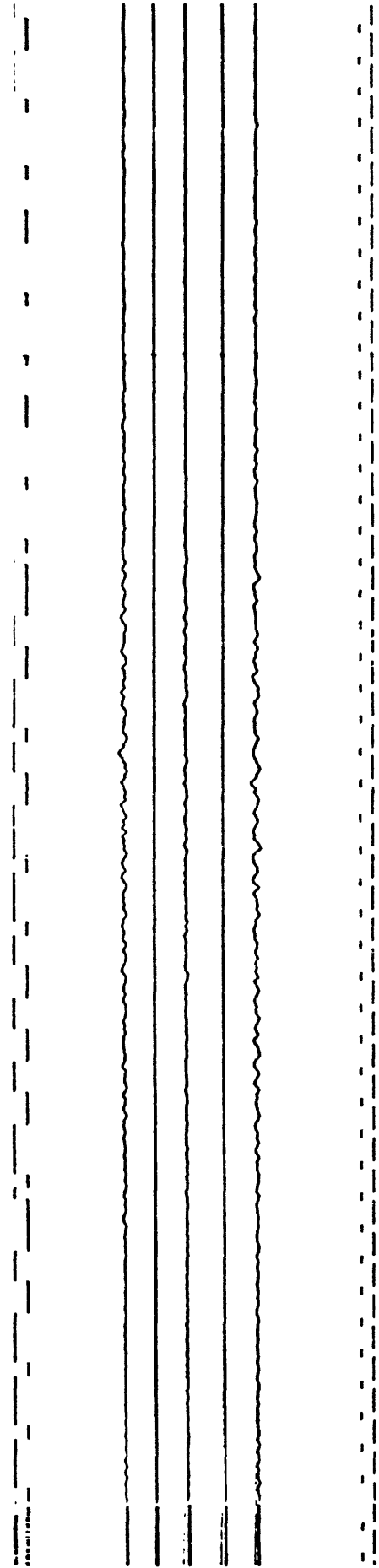
Lake Mathews Dam - Dike Toe (MWD)



San Bernardino, San Bernardino Valley College - Ground (USGS)



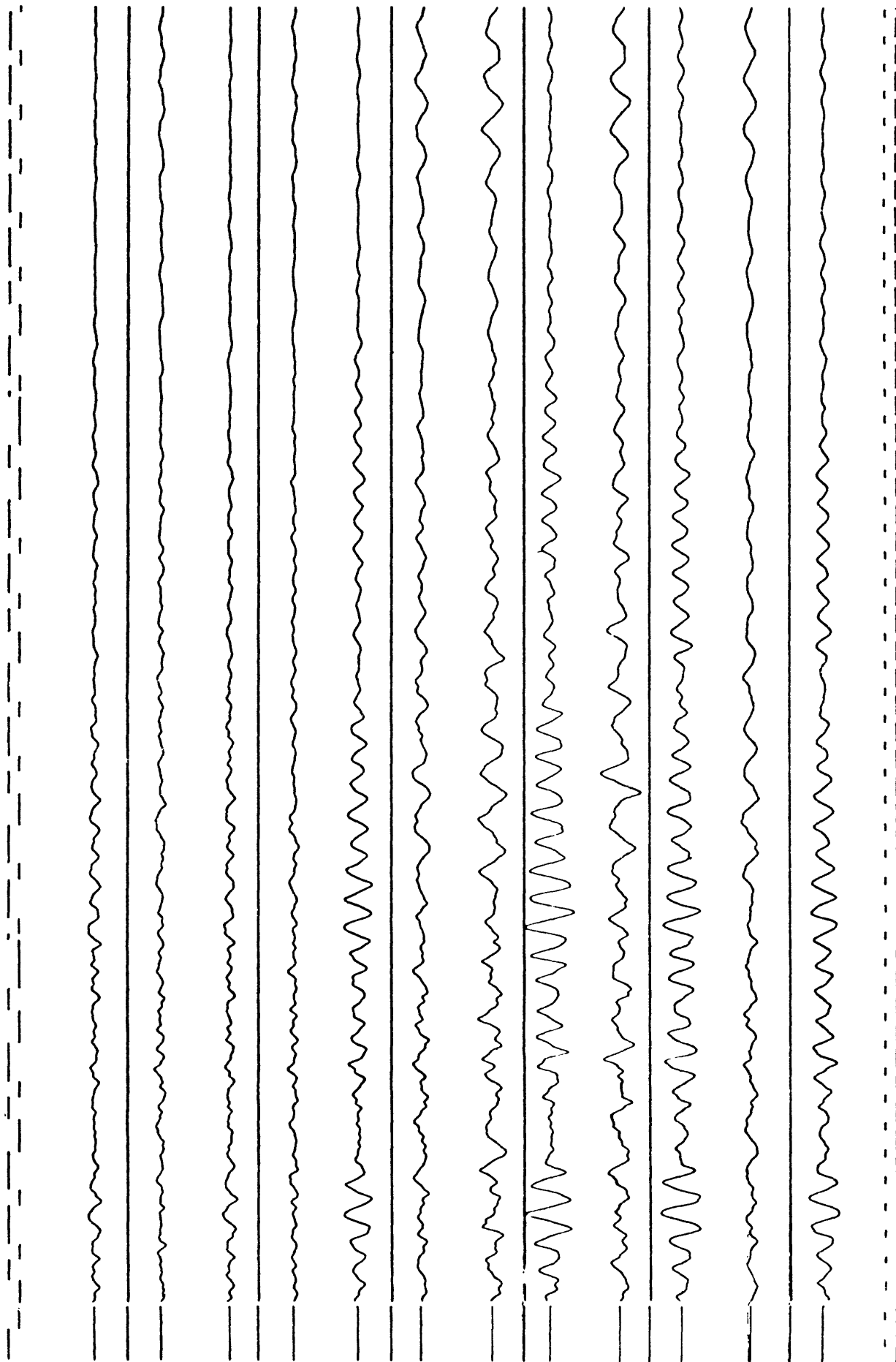
San Bernardino, 5931 North F Street - Ground (USGS)



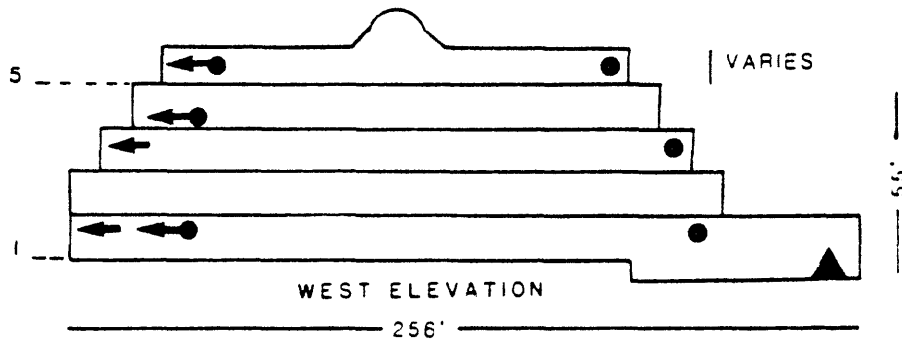
San Bernardino, 385 No. Arrowhead Ave - Ground Floor (USGS)

San Bernardino, 385 No. Arrowhead Ave - East Ground Station (USGS)

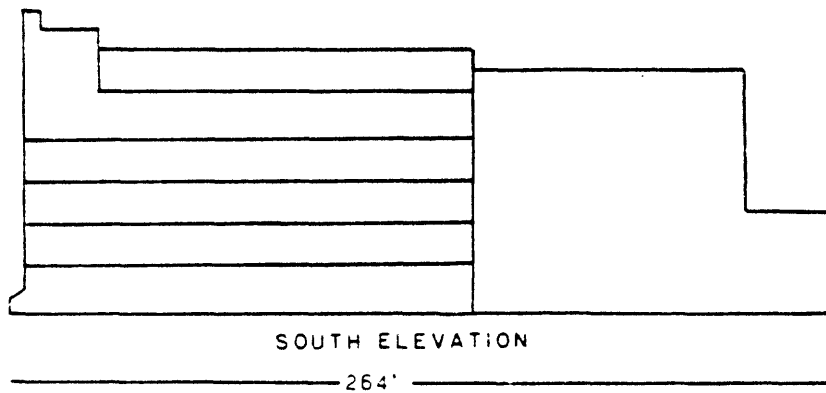
San Bernardino, 385 No. Arrowhead Ave - Structure Array (USGS)



SAN BERNARDINO
COUNTY GOVERNMENT CENTER
385 N. ARROWHEAD AVE.
STRONG-MOTION INSTRUMENTATION

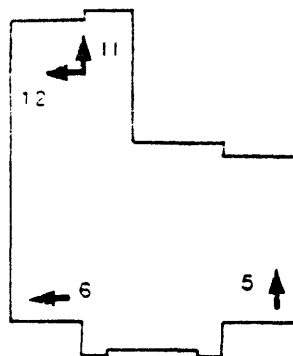


STRUCTURE
Braced steel frame

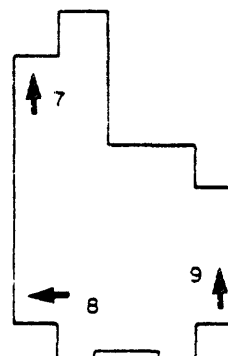


ACCELEROMETER DIRECTION:

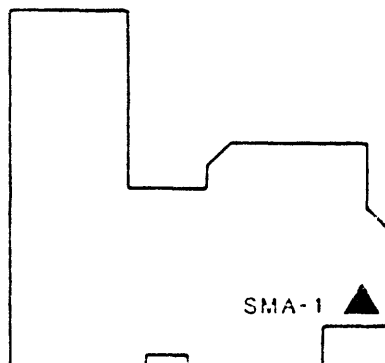
- INTO PLANE OF SECTION PLAN
- ← AS SHOWN



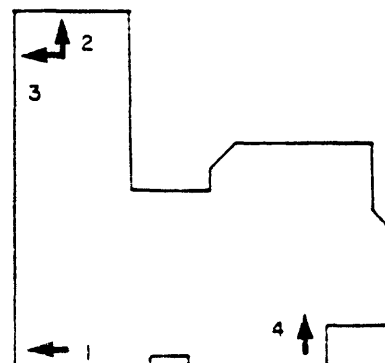
4th FLOOR



5th FLOOR CEILING



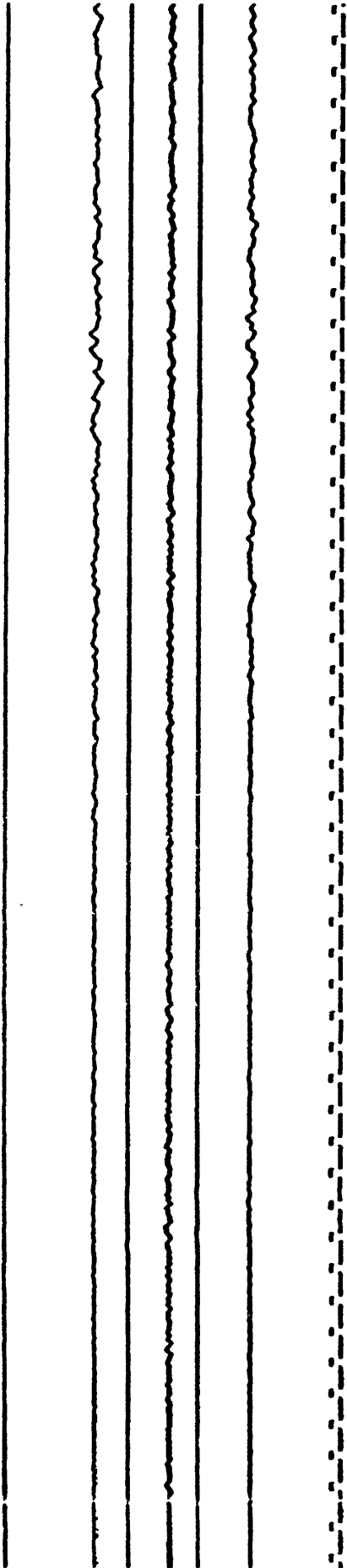
GROUND FLOOR



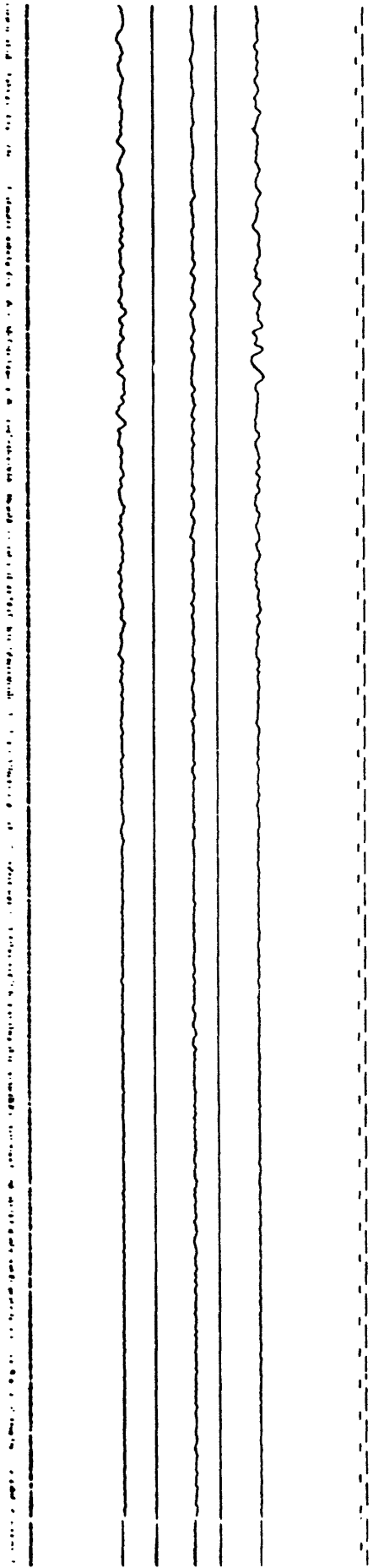
GROUND FLOOR CEILING



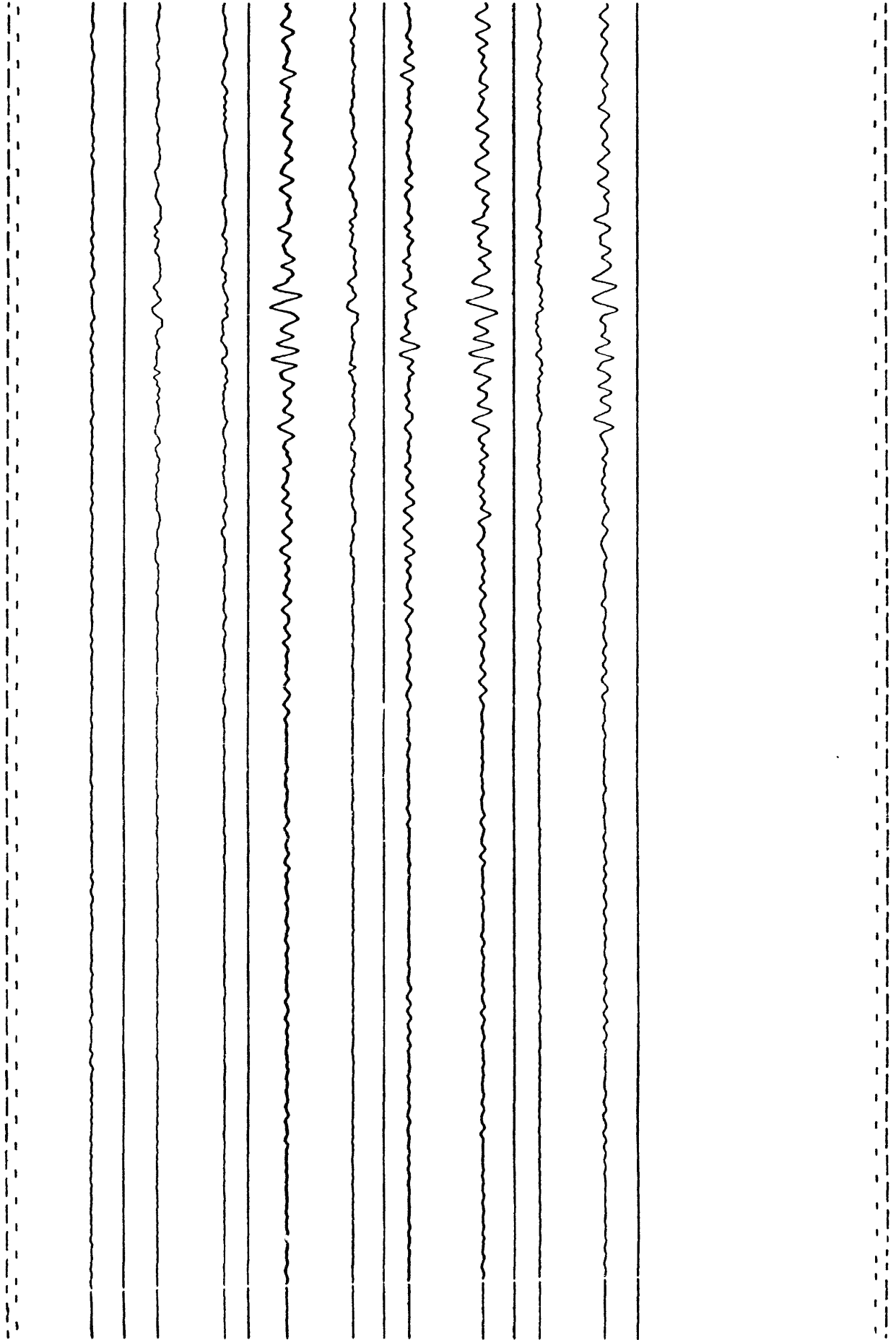
Loma Linda V.A. Hospital - North Ground Site (VA)



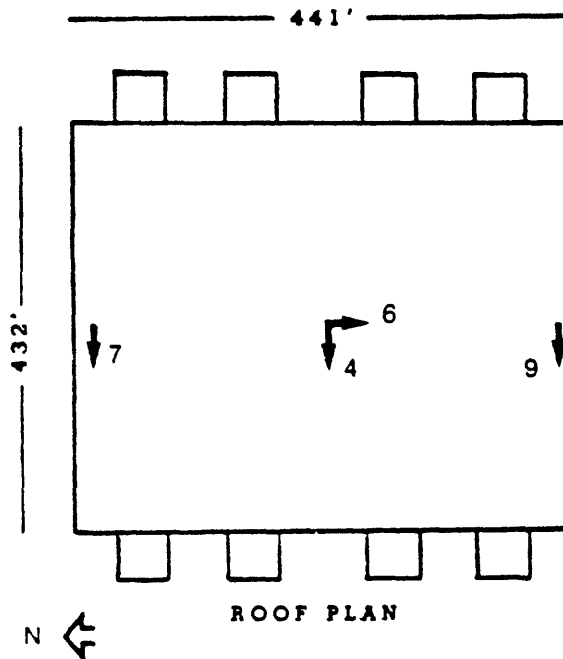
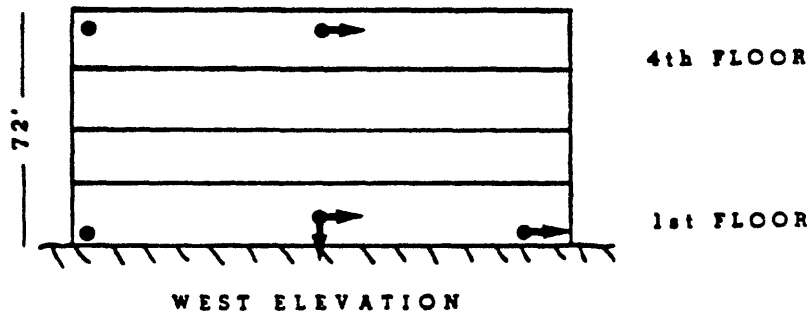
Loma Linda V.A. Hospital - South Ground Site (VA)



Loma Linda V.A. Hospital - Structure Array (VA)

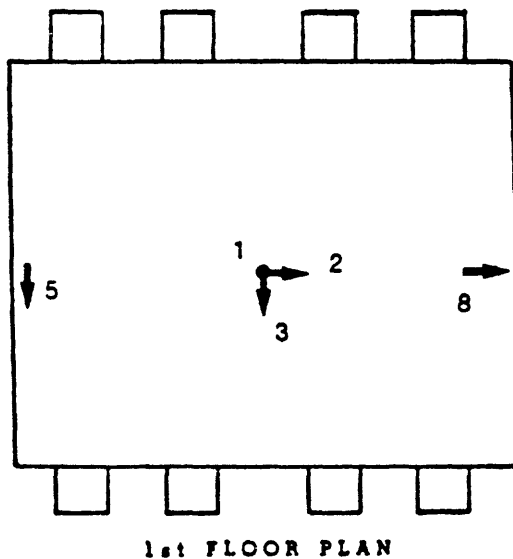


VETERANS ADMINISTRATION HOSPITAL
LOMA LINDA , CALIFORNIA
STRONG-MOTION INSTRUMENTATION



STRUCTURE

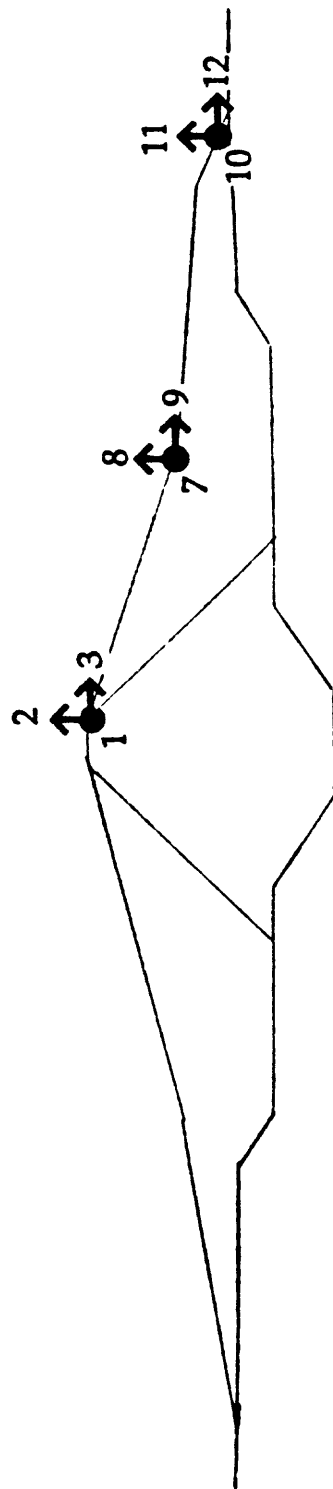
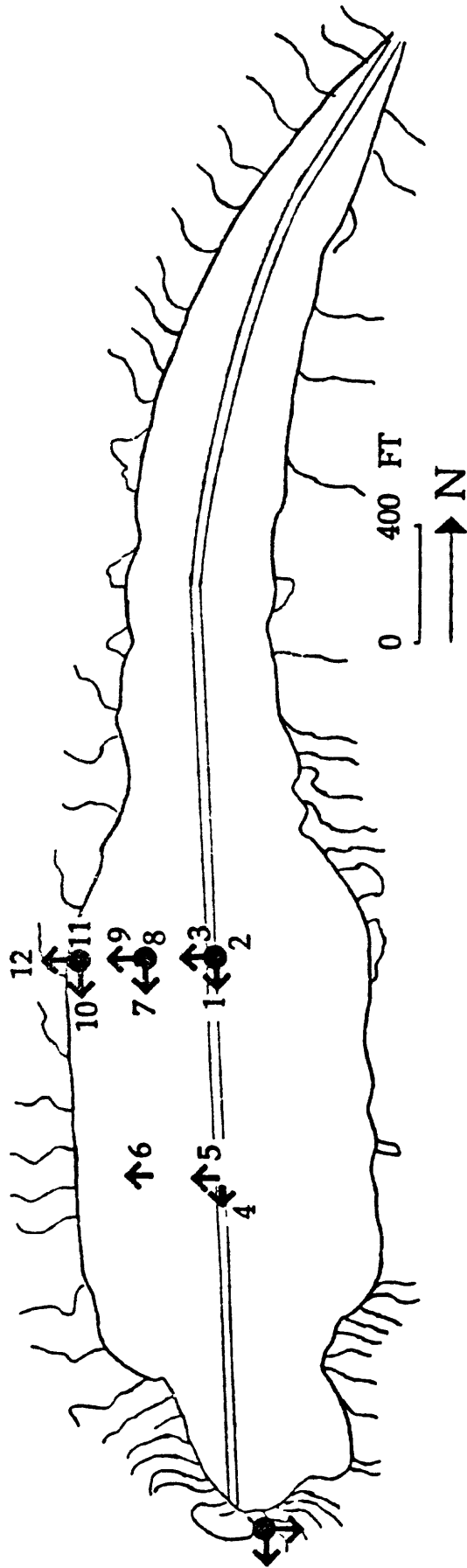
Rectangular
Moment resisting steel frame
Concrete shear walls in
both directions



ACCELEROMETER DIRECTIONS

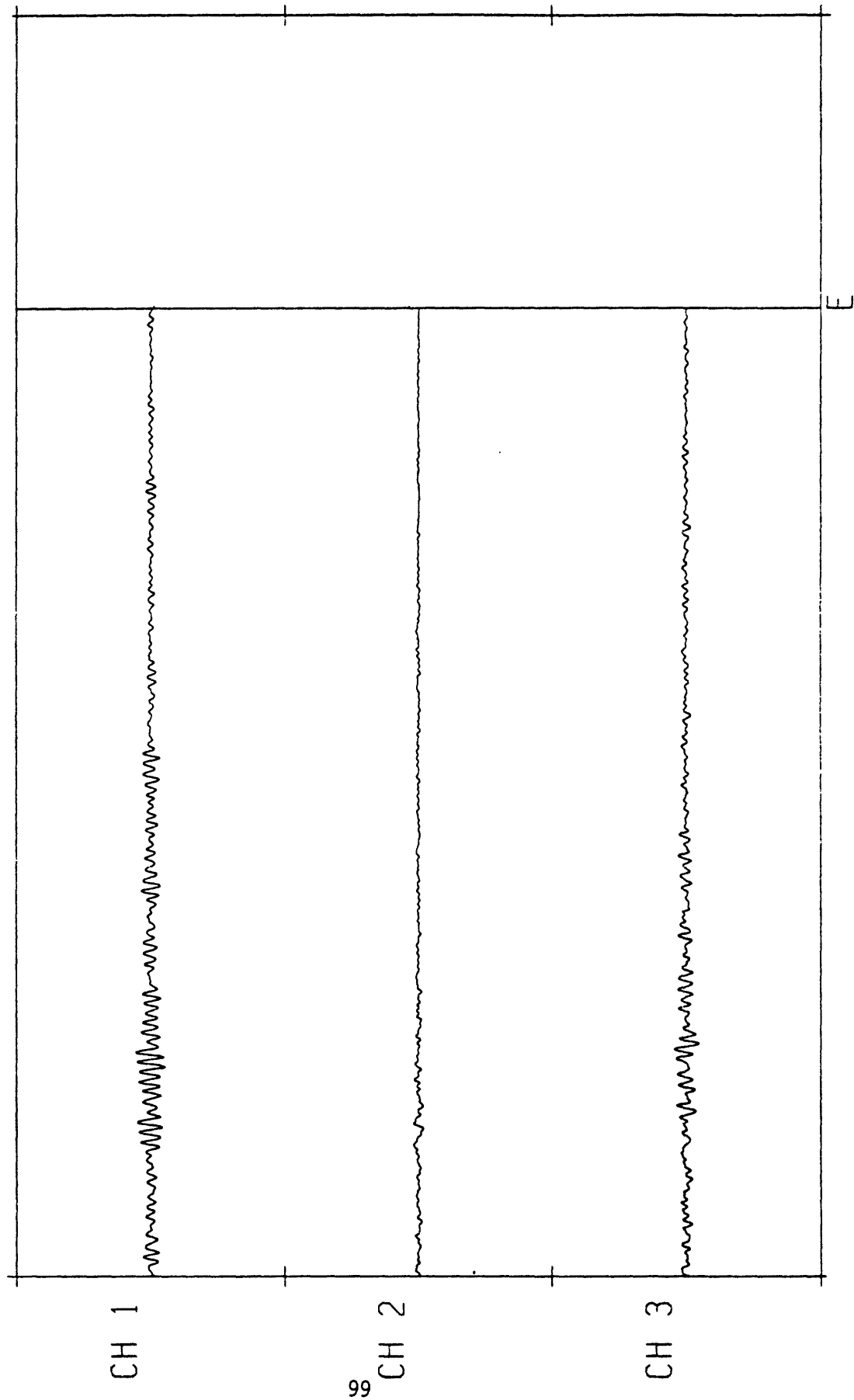
- INTO PLANE OF PLAN/ELEVATION
- ← AS SHOWN

Skinner Dam - Structural Array (MWD)



Skinner Dam

Skinner Dam, Finished Water Reservoir - Crest (MWD)
SSA-2 (Digital)



Skinner Dam - Left Abutment (MWD)
