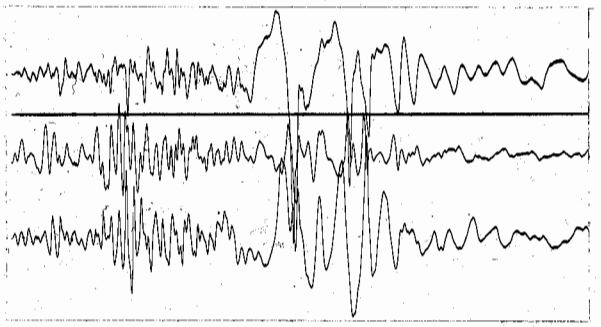
CDMG
STRONG-MOTION RECORDS
FROM THE
MORGAN HILL, CALIFORNIA EARTHQUAKE
OF
24 APRIL 1984



CALIFORNIA DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY

OFFICE OF STRONG MOTION STUDIES
REPORT OSMS 84-7

1984

OSMS Report 84-7
Rev. 1

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MORGAN HILL, CALIFORNIA EARTHQUAKE
OF
24 APRIL 1984

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21 May 1984

California Strong Motion Instrumentation Program
Preliminary Data
(Subject to Revision)

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CONTENTS

Revision 1

The first printing of this report was made on 21 May, four weeks after the Morgan Hill earthquake. The present Revision contains two corrections to the original report. First, the peak acceleration of the third component for the Coyote Lake Dam record is 0.72 g, rather than 0.90 g. Secondly, the plotted location of the Coyote Lake Dam station in Figure 2 has been revised. The revised figure shows the station to be approximately 15 feet northeast of the previously plotted location.

July 17, 1984

CDMG STRONG-MOTION RECORDS FROM THE MORGAN HILL EARTHQUAKE OF 24 APRIL 1984

Introduction

The Morgan Hill earthquake generated an important set of strong-motion records. Nearly fifty records were recovered by CDMG, almost half of which were obtained in extensively instrumented structures. The station at Coyote Lake Dam recorded an unusually high acceleration of approximately 1.3 g. Another noteworthy aspect of the Morgan Hill strong-motion data set is the striking difference between acceleration amplitudes at stations southeast of the earthquake epicenter relative to stations to the northwest. Analysis of the strong-motion data and the earthquake source mechanism may establish that directivity focusing contributed to the highly directional nature of the acceleration levels.

The response of structures ranging from a single-story warehouse to a twelve-story office building was recorded. Roof accelerations in excess of 15% g were recorded in seven structures; four of these had roof accelerations in excess of 25% g. In addition, some structures exhibited significantly different shaking durations compared to nearby structures of similar height. These records, from structures in San Jose, provide rich data for the analysis of structural response and soil-structure interaction during moderate shaking.

Current estimates of the earthquake location and magnitude are:
Hypocenter: 37.317N, 121.680W, 9 km depth. Magnitude: 6.2 ML (BRK)
Origin Time: 21:15:19 GMT (13:15:19 PST), 24 April 1984 (USGS)

Ground Motion Data

Strong-motion records were recovered from twenty-two ground motion stations maintained by CDMG during the Morgan Hill earthquake. These stations are indicated on the location map of Figure 1. The closest station, Halls Valley, was approximately 4 km from the epicenter. The most distant station was Mendota, 130 km southeast of the epicenter. Many stations to the northwest which were closer than Mendota were not triggered, though fully operational. (Nominal trigger threshold level is between 0.5 and 1.0% g, on the vertical.)

The stations are identified in Figure 1 by a three-digit code. Table 1 cross-references this code, the station number, and the station name. Table 2, ordered by station name, provides information on the site conditions and/or structure. For convenience, the station location map in Figure 1 has been partitioned into three areas: 1) San Jose and regions to the south, 2) the San Francisco Peninsula, and 3) east of the San Francisco Bay. In Tables 1 and 2 the area number of each station is indicated, as well as the page number on which the recorded accelerogram appears. Detailed information on each record is given in Table 3, again arranged by area.

The record from the Coyote Lake Dam station (which has also been called San Martin-Coyote Creek) recorded an unusually high horizontal peak acceleration of approximately 1.3 g. Because this record has large-amplitude excursions and trace crossings, a photographic enlargement of the high acceleration section record is included with the record (p. 26).

The Coyote Lake station is a few kilometers directly down the fault from the end of the aftershock distribution which extends from Halls Valley to near Anderson Lake. It should be noted that the

Coyote Lake Dam station is not a good quality free-field or ground-response installation by current standards. Although housed in an especially constructed instrument shelter (Armco), the shelter is located near the southwest abutment of the (earth-filled) dam and near a ridge-like formation extending from the valley wall. The import of these aspects may be expected to be the subject of future investigations. The location of the instrument in relation to the dam structure is shown in Figure 2, which also shows the local topography before and after the dam was constructed (from Buangan and Wahler, 1980).

To verify satisfactory operation of the Coyote Lake accelerograh, the unit was subjected to calibration and instrument-comparison tests after the earthquake. No evidence of improper operating characteristics was found in either static or dynamic tests. To learn the effects of the surroundings of the station on the record, an additional instrument is being installed in a small structure approximately 1500 ft south of the dam so comparative records may be obtained during aftershocks of the Morgan Hill event and other future earthquakes.

It should be noted that a strong motion record was obtained at the Coyote Dam station during the 1979 Coyote Lake earthquake. That record, with peak accelerations near 25% g (Porcella et al., 1979), appears to exhibit no evidence for anomalous site characteristics.

Gilroy Array

The Morgan Hill earthquake generated the second suite of strong motion records from the Gilroy Array, an east-west alignment of stations extending across the Calaveras fault near Gilroy (Figure 1).

This array is a cooperative effort of the CDMG Strong Motion Instrumentation Program (SMIP) and the USGS Seismic Engineering Branch, and is currently instrumented and maintained by SMIP. In addition to the Gilroy array stations #1 through #6, CDMG has added station #7 (sited by R. McJunkin following the 1979 event) and the Gavilan College station. This array, extending from rock on the east across the alluvial Santa Clara Valley to rock on the west, provided significant records in both the 1979 event and this event. In this event, most of the array records have a high acceleration signal on the vertical component early in the record.

Another cooperative array, the APEEL strong-motion array, only recorded low amplitude records and was not triggered in its entirety.

Structural Response Data

More structural response records were recorded from this event than any since the San Fernando earthquake of 1971. In contrast with the three independent accelerographs then located in a building, the instrumentation for this event involves accelerometers distributed throughout a building and centrally recorded. Some records are quite striking. The San Jose data discussed above (Santa Clara Co. Bldg) is an example. The duration of the Santa Clara building requires 4 record sections (approximately 88 secs) in this report (pgs. 51-61) to show most of the motion. Other noteworthy records include the Watsonville Telephone Bldg, the Saratoga College Gym., and the warehouse in Hollister (tilt-up construction).

The structural response records are given in the second part of the records section of this report, grouped by map area number. Within each area, the records are arranged in order of increasing

epicentral distance. The first page of the section includes an index which lists the page number on which each record appears. By convention, the orientation of structural sensors is given by cardinal directions; the relation of these reference directions to actual directions is given on each record.

Other Data

In addition to the strong-motion data recovered by CDMG, interesting records were also recovered from the Morgan Hill earthquake by other agencies such as the USGS. Noteworthy of these are the records obtained at Anderson Lake dam (crest and downstream), between Halls Valley and Coyote Lake, by the USGS. The USGS also obtained interesting data from a recently installed local array in Hollister (Borcherdt, personal communication).

Acknowledgments

CDMG extends its appreciation to the individuals and organizations which have permitted the installation of seismic strong-motion equipment on their property. K. Honda, C. Poland, J. Ragsdale, C. Rojahn and J. Stratta assisted in planning sensor layouts for the structures considered in this report.

Field recovery of accelerograms was performed by W. Williams, S. Rider, E. Luzier, A. Guyer and R. Meneeley. The acclerograms were photographically developed by J. Farros. Report preparation and assembly was done by S. Weaver and P. Young. R. Boylan performed field inspection and assisted with map development. It is through the joint efforts of those involved which made possible the rapid publication of these data.

REFERENCES

Buangan, A.S. and W.A. Wahler (1980) Safety of dams in the greater San Francisco area, p. 173-187 in Studies of the San Andreas Fault Zone in Northern California, R. Strietz and R. Sherburne, eds., Calif. Div. Mines and Geol., Special Report SP-140.

Porcella, R., R.B. Matthiesen, R. McJunkin and J. Ragsdale (1979) Compilation of strong-motion records from the August 6, 1979 Coyote Lake earthquake, CDMG-OSMS Report PR-25, and USGS-SEB Open File Report 79-385. See also: Brady, A.G., P. Mork, V. Perez and L.D. Porter (1979) Processed data from the Gilroy array and Coyote Creek records, Coyote Lake, California earthquake of 6 August 1979, USGS Open File Rept. 81-42, and CDMG OSMS Rept PR-24.

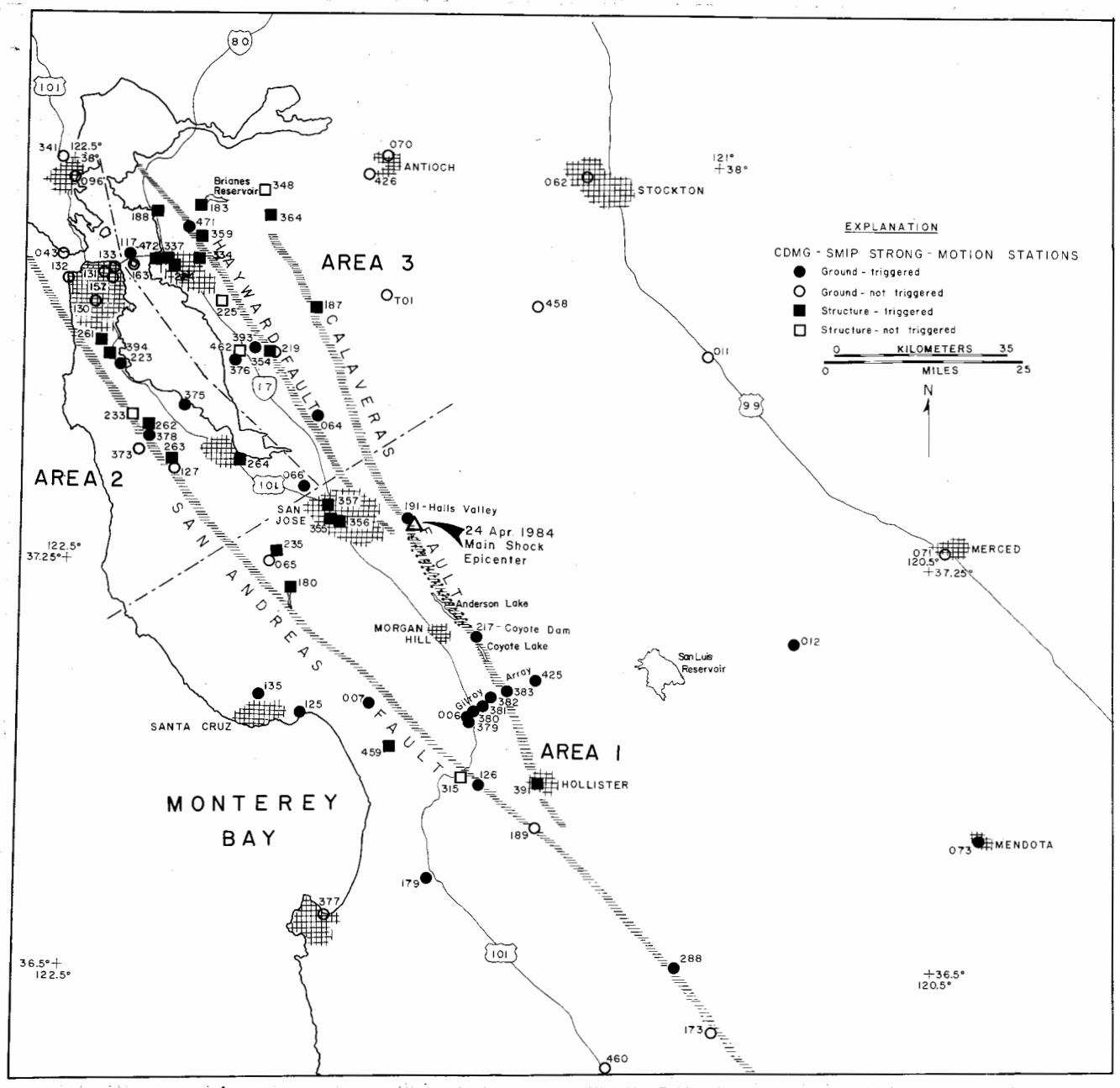


Fig. 1 CDMG strong-motion stations, the Morgan Hill epicenter, and aftershock zone (stipled). Stations are identified by 3-digit code referenced to station names in Table 1. Map areas I, II and III are also shown.

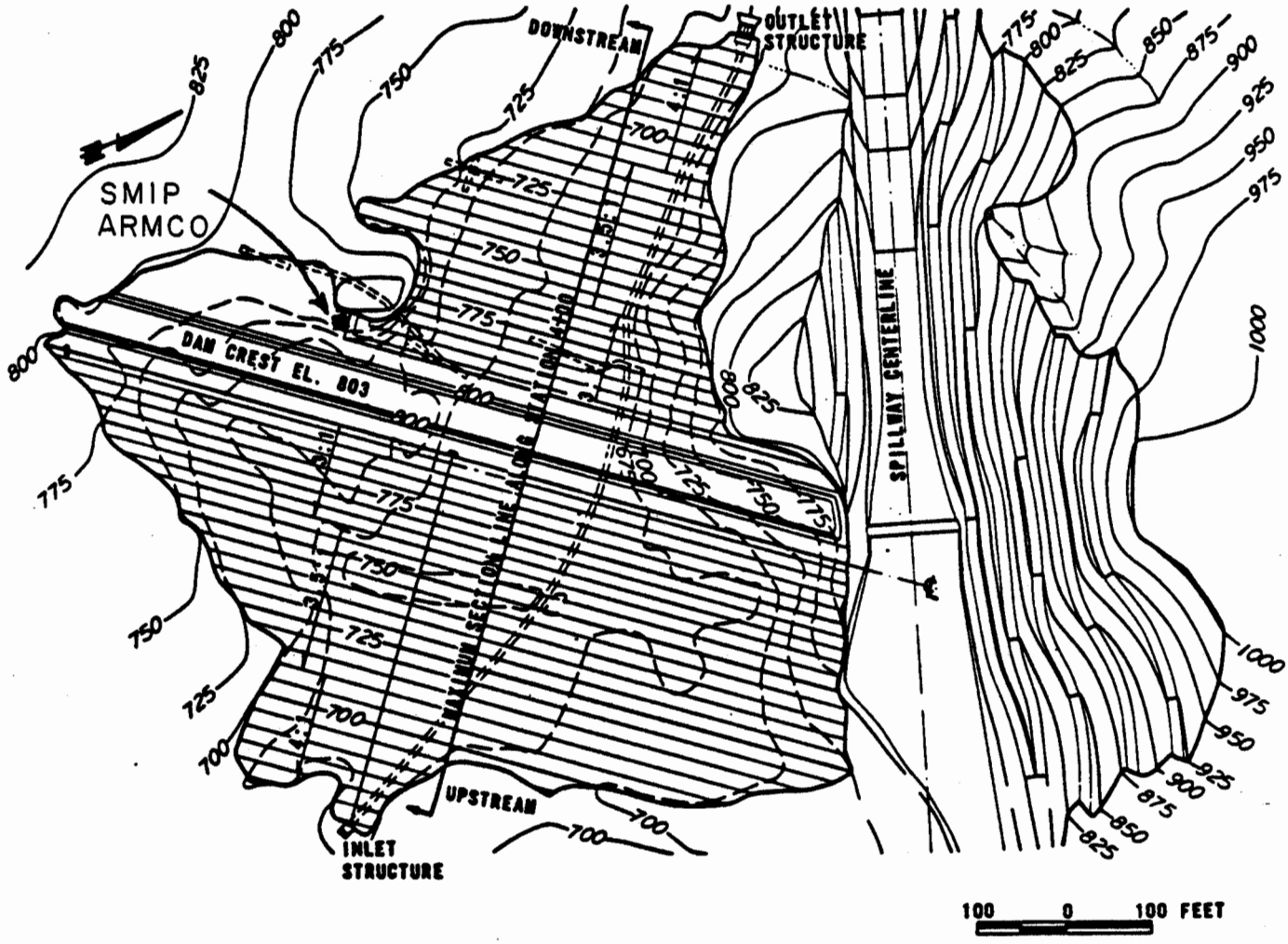


Fig. 2 Topography in the vicinity of the Coyote Lake Dam, based on 1937 as-built drawings (from Buangan and Wahler, 1980). The approximate location of the strong-motion instrument shelter (Armco type) installed by CDMG in 1975 is also shown.

TABLE 1

Station-Code Reference Table

Code	CDMG Number	Station Name	Map Area	Record on Page
006	47006	Gilroy - Gavilan College	1	30
007	57007	Corralitos	1	31
011	57011	Modesto	1	--
012	56012	Los Banos	1	33
043	58043	Point Bonita	2	--
062	57062	Stockton	3	--
064	57064	Fremont - Mission San Jose	3	37
065	58065	Saratoga	1	--
066	57066	Agnews	2	35
070	67070	Antioch	3	--
071	56071	Merced	1	--
073	56073	Mendota	1	34
096	58096	San Rafael - Water Plant	2	--
117	58117	Treasure Island	3	39
125	47125	Capitola	1	31
126	47126	San Juan Bautista - Fire Station	1	32
127	58127	Woodside	2	--
130	58130	San Francisco - Diamond Heights	2	--
131	58131	San Francisco - Pacific Heights	2	--
132	58132	San Francisco - Cliff House	2	--
133	58133	San Francisco - Telegraph Hill	2	--
135	58135	Santa Cruz	1	32
151	58151	San Francisco - Rincon Hill	2	--
163	58163	Yerba Buena Island	3	--
173	46173	Bitterwater Valley	1	--
179	47179	Salinas	1	33
180	57180	Lexington Dam	1	66
183	58183	Briones Dam	3	100
187	57187	San Ramon - Eastman Kodak Bldg.	3	91
188	58188	El Cerrito - Capwell Dept. Store	3	101
189	47189	Sago South	1	--
191	57191	Halls Valley	1	25
217	57217	Coyote Lake Dam (San Martin-Coyote Cr.)	1	25
219	58219	APEEL # 3E	3	--
223	58223	San Francisco - Intl. Airport	2	36
224	58224	Oakland - Title & Trust Bldg.	3	92
225	58225	Oakland - Calrus Bldg.	3	--
233	58233	Lower Crystal Springs Dam	2	--

TABLE 1 (Continued)

Code	CDMG Number	Station Name	Map Area	Record on Page
235	58235	Saratoga - West Valley Comm. College	1	63
261	58261	So. San Francisco - Kaiser Med Center	2	85
262	58262	Belmont - Envirotech Systems	2	77
263	58263	Redwood City - Canada Campus Bldg.	2	76
264	58264	Palo Alto - 1900 Embarcadero	2	75
288	47288	San Benito	1	34
315	47315	San Juan Bautista - 101/156 Overpass	1	--
334	58334	Piedmont Jr. High School	3	96
337	58337	Oakland - Oak Center Towers	3	93
338	58338	Piedmont Jr. High School - FF	3	--
341	68341	San Rafael - Fireman Fund Bldg.	2	--
348	58348	Pleasant Hill - Citizen Savings Bldg.	3	--
354	58354	Hayward - CSUH Admin Bldg.	3	89
355	57355	San Jose - Great Western Bldg.	1	47
356	57356	San Jose - Town Park Towers	1	43
357	57357	San Jose - Santa Clara Co. Bldg.	1	51
359	58359	Oakland - Caldecott Tunnel	3	97
364	58364	Walnut Creek - Fidelity Savings Bldg.	3	98
373	58373	APEEL #10	2	--
375	58375	APEEL # 1	2	35
376	58376	APEEL # 1E	3	37
377	47377	Monterey - City Hall	1	--
378	58378	APEEL # 7	2	36
379	47379	Gilroy #1	1	29
380	47380	Gilroy #2	1	29
381	47381	Gilroy #3	1	28
382	57382	Gilroy #4	1	28
383	57383	Gilroy #6	1	27
391	47391	Hollister - Glorietta Warehouse	1	71
393	58393	APEEL # 2E	1	38
394	58394	San Bruno - U.S. Postal Svcs. Bldg.	2	79
425	57425	Gilroy #7 - Mantelli Ranch	1	27
426	57426	Antioch - Contra Loma Park	3	--
458	57458	Tracy A	3	--
459	47459	Watsonville - Telephone Bldg.	1	67
460	47460	Greenfield A	1	--
462	58462	Hayward - Southlands Office Bldg.	3	--
471	58471	Berkeley - LBL	3	38
472	58472	Oakland - 14th Street Wharf	3	95
T01	57T01	Livermore - Fagundes Ranch	3	--

TABLE 2

CDMG Strong Motion Stations - Morgan Hill Earthquake

Station Name	N.Lat.	W.Long.	Sta. No.	Code	Site Geology	Map Area	Record Page*
Agnews Agnews State Hospital	37.239	121.95	57066	066	Alluvium	1	35
Antioch 510 G Street	38.015	121.81	67070	070	Alluvium	3	NT
Antioch Contra Loma Park	37.972	121.82	57426	426	Alluvium	3	NT
APEEL # 1 Redwood City, Radio Twr	37.55	122.23	58375	375	Alluv,210M; serpentine	2	35
APEEL # 1E Hayward, Eden Way	37.623	122.13	58376	376	Clay, more than 100m	3	37
APEEL # 2E Hayward,	37.657	122.08	58393	393	Alluvium	3	38
APEEL # 3E Hayward, CSUH Campus	37.657	122.06	58219	219	Franciscan greenstone	3	NT
APEEL # 7 Crystal Springs	37.49	122.31	58378	378	Sandstone	2	36
APEEL #10 Crystal Springs,	37.465	122.34	58373	373	Sandstone	2	NT
Belmont Envirotech Bldg	37.512	122.30	58262	262		2	77
Berkeley Lawrence Berkeley Lab (LBL)	37.876	122.24	58471	471		3	38
Bitterwater Valley	36.395	120.98	46173	173	Alluvium	1	NT
Briones Dam	37.914	122.20	58183	183	Sandstone	3	100
Capitola Capitola Ave. Fire Station	36.974	121.95	47125	125	Alluvium	1	31
Corralitos Eureka Canyon Rd.	37.046	121.80	57007	007	Landslide deposits	1	31
Coyote Lake Dam (San Martin-Coyote Creek)	37.12	121.54	57217	217	Franciscan formation	1	25
El Cerrito Capwell Store, El Cerrito Plaza	37.899	122.29	58188	188		3	101

TABLE 2 (Continued)

Station Name	N.Lat.	W.Long.	Sta. No.	Code	Site Geology	Map Area	Record Page*
Fremont Mission San Jose	37.580	121.91	57064	064	Alluvium	3	37
Gilroy #1 Gavilan Coll., Water Tank	36.973	121.57	47379	379	Rock	1	29
Gilroy #2 Hwy 101 Motel	36.982	121.55	47380	380	Alluvium	1	29
Gilroy #3 Sewage Plant	36.987	121.53	47381	381	Alluvium	1	28
Gilroy #4 San Ysidro School	37.005	121.52	57382	382	Alluvium	1	28
Gilroy #6 San Ysidro	37.026	121.48	57383	383	Rock	1	27
Gilroy #7 Mantelli Ranch, Jamison Rd.	37.033	121.43	57425	425	Rock	1	27
Gilroy Gavilan Coll., Phys. Sci. Bldg.	36.973	121.56	47006	006	Terrace	1	30
Greenfield A	36.321	121.24	47460	460	Alluvium	1	NT
Halls Valley Grant Ranch Park	37.338	121.74	57191	191	Alluvium	1	25
Hayward Southlands Office Bldg.	37.635	122.10	58462	462		3	NT#
Hayward CSUH Admin Bldg.	37.655	122.05	58354	354		3	89
Hollister Glorietta Warehouse	36.851	121.39	47391	391		1	71
Lexington Dam	37.202	121.94	57180	180		1	66
Livermore Fagundes Ranch	37.753	121.77	57T01	T01		3	NT
Los Banos	37.106	120.82	56012	012	Alluvium	1	33
Lower Crystal Springs Dam	37.529	122.36	58233	233	Franciscan formation	2	NT
Mendota	36.755	120.38	56073	073		1	34
Merced	37.289	120.45	56071	071	Alluvium	1	NT

TABLE 2 (Continued)

Station Name	N.Lat.	W.Long.	Sta. No.	Code	Site Geology	Map Area	Record Page*
Modesto	37.666	121.03	57011	011	Alluvium	1	NT
Monterey City Hall, 570 Pacific	36.597	121.89	47377	377	Granite	1	NT
Oakland 14th Street Wharf	37.816	122.31	58472	472		3	95
Oakland Caldecott Tunnel, Hwy 24	37.857	122.21	58359	359		3	97
Oakland Calrus Bldg., 10850 MacArthur	37.742	122.14	58225	225		3	NT#
Oakland Oak Center Tower, 1515 Market St.	37.809	122.27	58337	337		3	93
Oakland Title & Trust Bldg., 1700 Webster	37.806	122.26	58224	224		3	92
Palo Alto 1900 Embarcadero	37.453	122.11	58264	264		2	75
Piedmont Jr. High School Classroom Bldg., 740 Magnolia	37.823	122.23	58334	334		3	96
Pleasant Hill Citizens S & L Bldg, 2255 Contra Costa	37.946	122.06	58348	348	Alluvium,2m; sandstone	3	NT
Point Bonita Coast Guard Sta.	37.82	122.52	58043	043	Franciscan	2	NT
Redwood City Canada Coll., Bldg. 13, 4200 Farm Hill	37.45	122.27	58263	263		2	76
SAGO - South	36.753	121.39	47189	189	Granite	1	NT#
Salinas	36.671	121.64	47179	179	Alluvium	1	33
San Benito	36.519	121.08	47288	288		1	34
San Bruno U.S. Postal Svcs. Bldg.	37.627	122.42	58394	394		2	79
San Francisco Cliff House, 1090 Pt. Lobos	37.78	122.51	58132	132	Franciscan	2	NT
San Francisco Diamond Heights, 80 Digby St.	37.74	122.43	58130	130	Franciscan	2	NT

TABLE 2 (Continued)

Station Name	N.Lat.	W.Long.	Sta. No.	Code	Site Geology	Map Area	Record Page*
San Francisco International Airport	37.622	122.39	58223	223	Deep Alluvium	2	36
San Francisco Pacific Heights, 2150 California	37.79	122.43	58131	131	Franciscan	2	NT
San Francisco Rincon Hill, Fremont & Harrison	37.79	122.39	58151	151	Franciscan	2	NT
San Francisco Telegraph Hill, 1814 Stockton	37.80	122.41	58133	133	Franciscan	2	NT
San Jose Great Western Bldg., 111 N. Market	37.338	121.89	57355	355	Alluvium	1	47
San Jose Sant Clara County Bldg., 70 Hedding	37.353	121.90	57357	357	Alluvium	1	51
San Jose Town Park Towers, 60 Third St.	37.338	121.88	57356	356	Alluvium	1	43
San Juan Bautista Fire Station, 24 Polk	36.846	121.53	47126	126	Alluvium	1	32
San Juan Bautista Hwy 101/156 Overpass	36.862	121.57	47315	315	Alluvium	1	NT#
San Martin Coyote Creek (see Coyote Lake Dam)	37.12	121.54	57217	217		1	25
San Rafael Fireman Fund Bldg., 1600 Los Gamos	38.196	122.81	68341	341		2	NT
San Rafael Sewage Plant	37.960	122.49	58096	096	Fill, 3m; bay mud,45m	2	NT
San Ramon Eastman Kodak Bldg., 9100 Alcosta	37.729	121.92	57187	187	Alluvium	3	91
Santa Cruz UCSC/Lick Elect. Lab	37.001	122.06	58135	135	Limestone	1	32
Saratoga 14675 Aloha	37.255	122.03	58065	065	Alluvium	1	NT#
Saratoga West Valley Comm. Coll. Gym, 1400 Fruitvale	37.262	122.00	58235	235		1	63
So. San Francisco Kaiser Med Bldg., 1200 El Camino	37.660	122.43	58261	261		2	85
Stockton Univ. of Pacific	37.981	121.31	57062	062	Deep alluvium	3	NT

TABLE 2 (Continued)

Station Name	N.Lat.	W.Long.	Sta. No.	Code	Site Geology	Map Area	Record Page*
Tracy A Sewage Plant	37.766	121.42	57458	458	Alluvium	3	NT
Treasure Island Naval Base Fire Station	37.83	122.37	58117	117	Fill	3	39
Walnut Creek Fidelity S & L Bldg., 1990 N. Califonia	37.907	122.06	58364	364		3	98
Watsonville Telephone Bldg.	36.909	121.75	47459	459		1	67
Woodside	37.429	122.25	58127	127		2	NT
Yerba Buena Island USCG Foghorn Bldg.	37.81	122.36	58163	163	Franciscan	3	NT

Footnote: NT - Instrument not triggered, though operational.
NT# - Instrument not triggered, probable instrument malfunction.

TABLE 3 - Strong Motion Data

Station No.	Station Name	Structure Type, Size	Epicenter Dist.*	Trigger Time#	Max. Acceleration Comp.	Grnd. (g)	Struct. (g)	Pg.
		---- MAP AREA I ----						
57191	Halls Valley	Inst.	4	15:21.9	240	0.31		25
	Grant Park	Shltr.	[4]		Up	0.11		
	Old Ranch Hqtrs.	(Armco)			150	0.13		
57217	Coyote Lake Dam	Inst.	25	15:24.4	285	1.29		25,
	south abutment	Shltr.	[5?]		Up	0.40		26
	(San Martin - Coyote Creek)	(Armco)			195	0.72		
57356	San Jose	10-story	19	-----	60	0.06	0.14	43
	Town Park Tower	office bldg.	[19]		Up	0.05	--	
	60 Third St.	(13 sensors)			150	0.06	0.22	
57355	San Jose	10-story	19	-----	240	0.06	0.22	47
	Great Western	office bldg.	[19]		Up	0.04	--	
	Bldg., 111 N. Market St.	(13 sensors)			330	0.06	0.18	
57357	San Jose	13-story	20	-----	67	0.04	0.18	51
	Santa Clara	office bldg.	[20]		Up	0.02	--	
	County Bldg.	(22 sensors)			337	0.03	0.17	
	70 W. Hedding							
	-- Gilroy Array Stations, East to West ---							
57425	Gilroy #7	1-story	38	15:26.4	90	0.11		27
	Mantelli Ranch	bldg.	[17?]		Up	0.46		
	Jamison Rd.				360	0.19		
57383	Gilroy #6	1-story	37	15:26.5	90	0.34		27
	San Ysidro	bldg.	[16?]		Up	0.43		
	Microwave Site				360	0.23		
57382	Gilroy #4	1-story	37	15:26.4	360	0.37		24
	San Ysidro School	bldg.	[16?]		Up	0.40		
					270	0.23		

TABLE 3 - Strong Motion Data (Cont.)

Station No.	Station Name	Structure Type, Size	Epicenter Dist.*	Trigger Time#	Comp.	Max. Acceleration Grnd. (g)	Max. Acceleration Struct. (g)	Pg.
47381	Gilroy #3 Gilroy Sewage Plant	1-story bldg.	39 [18?]	15:26.5	90 Up 360	0.20 0.40 0.20		28
47380	Gilroy #2 Hwy 101/Bolsa Rd Motel (formerly 'Mission Trails')	1-story bldg.	39 [18?]	15:26.4	90 Up 360	0.22 0.61 0.16		29
47379	Gilroy #1 Gavilan College, Water Tank	Instr. Shltr. (T Hut)	39 [20?]	15:26.5	320 Up 230	0.10 0.10 0.08		29
47006	Gilroy Gavilan College Phys. Sci Bldg.	1-story bldg.	39 [20?]	-----	67 Up 337	0.12 0.12 0.10		30
58235	Saratoga West Valley Coll. 1400 Fruitvale	1-story gymnasium (11 sensors)	30	-----	270 Up 360	0.04 0.03 0.10	0.20 -- 0.42	63
57180	Lexington Dam (near Los Gatos)	Earth dam (9 sensors)	27	15:28.1	90 Up 360	0.02 0.01 0.02	0.03 0.03 0.04	66
57007	Corralitos Eureka Canyon Rd.	1-story bldg.	32	-----	315 Up 225	0.12 0.07 0.09		31
47125	Capitola Fire Station Capitola Ave.	1-story bldg.	45	-----	132 Up 42	0.15 0.05 0.10		31
47459	Watsonville Telephone Bldg. 340 Rodriguez St.	4-story Office Bldg. (13 chns)	46	15:28.0	48 Up 138	0.06 0.09 0.11	0.15 -- 0.33	67

TABLE 3 - Strong Motion Data (Cont.)

Station No.	Station Name	Structure Type, Size	Epicenter Dist.*	Trigger Time#	Comp.	Max. Acceleration Grnd. (g)	Struct. (g)	Pg.
58135	Santa Cruz UCSC/Lick Obs. Elect. Lab.	1-story bldg.	49	-----	50 Up 320	0.04 0.04 0.07		32
47126	San Juan Bautista Fire Station	1-story bldg.	54	-----	303 Up 213	0.03 0.06 0.04		32
47391	Hollister Glorietta 'K' Warehouse, 711 Sally St.	1-story Warehouse (13 sensors)	57	-----	65 Up 335	0.11 0.31 0.06	0.25 -- 0.11	71
47179	Salinas John & Work St.	1-story bldg.	72	-----	256 Up 166	0.04 0.06 0.03		33
56012	Los Banos	1-story bldg.	79	15:37.1	180 Up 90	0.06 0.01 0.06		33
47288	San Benito	Instr. Shltr. (Armco)	103	15:39.8	314 Up 224	0.03 0.01 0.02		34
46073	Mendota Fire Station	1-story bldg.	131	-----	90 Up 360	0.03 0.01 0.03		34
	---- MAP AREA II ------							
57006	Agnews Agnews State Hospital	1-story bldg.	26	-----	330 Up 240	0.04 0.03 0.04		35
58264	Palo Alto 1900 Embarcadero	2-story office bldg. (7 sensors)	41	-----	37 Up 127	0.03 0.02 0.03	0.07 -- 0.11	75

TABLE 3 - Strong Motion Data (Cont.)

Station No.	Station Name	Structure Type,Size	Epicenter Dist.*	Trigger Time#	Max. Acceleration Comp.	Grnd. (g)	Struct. (g)	Pg.
58263	Redwood City Canada College, Bldg. 13	3-story office bldg. (6 sensors)	54	-----	217 Up 307	0.01 0.01 0.01	0.03 -- 0.03	76
58375	Redwood City APEEL # 1 (Radio Station)	Instr. shltr. (Armco)	55	15:32.2	40 Up 310	0.05 0.02 0.06		35
58262	Belmont Envirotech Bldg.	2-story office bldg. (7 sensors)	60	-----	76 Up 346	0.02 0.01 0.02	0.03 -- 0.04	77
58378	Upper Crystal Springs Reservoir APEEL #7 Plugas Water Temple	Instr. shltr. (Armco)	61	15:40.8	227 Up 137	0.03 0.02 0.03		36
58223	San Francisco International Airport	1-story bldg.	72	-----	50 Up 320	0.05 0.02 0.05		36
58394	San Bruno Postal Services Building, 850 Cherry Ave.	9-story office bldg. (16 sensors)	74	-----	65 Up 335	0.03 0.02 0.02	0.05 -- 0.11	79
58261	So. San Francisco Kaiser Medical Center, 1200 El Camino Real	4-story bldg. (11 sensors)	77	-----	41 Up 311	0.03 0.02 0.03	0.11 -- 0.26	85
	---- MAP AREA III ----							
57064	Fremont Mission San Jose	1-story bldg.	36	-----	75 Up 345	0.03 0.02 0.02		37

TABLE 3 - Strong Motion Data (Cont.)

Station No.	Station Name	Structure Type,Size	Epicenter Dist.*	Trigger Time#	Max. Acceleration Comp.	Grnd. (g)	Struct. (g)	Pg.
58354	Hayward CSUH Admin. Bldg.	13-story office bldg. (16 sensors)	50	-----	35 Up 305	0.02 0.01 0.01	0.05 -- 0.06	89
58376	Hayward APEEL #1E Pt. Eden Way	Instr. shltr. (Armco)	52	15:37.4	90 Up 360	0.03 0.02 0.04		37
58393	Hayward APEEL #2E Muir School	1-story bldg.	52	-----	90 Up 360	0.03 0.02 0.03		38
57187	San Ramon Kodak Bldg.	1-story warehouse (9 sensors)	51	-----	55 Up 325	0.02 0.02 0.03	0.04 -- 0.07	91
58224	Oakland Title & Trust	2-story office bldg. (10 sensors)	75	-----	206 Up 296	0.02 0.02 0.02	0.03 -- 0.05	92
58337	Oakland Oak Center Towers	11-story bldg. (21 sensors)	76	-----	17 Up 107	0.02 0.02 0.02	0.06 -- 0.05	93
58472	Oakland 14th St. Wharf	Shipping Wharf (12 sensors)	79	15:35.8	35 Up 125	0.03 0.02 0.02	0.03 0.02 0.04	95
58334	Piedmont Piedmont Jr. High School	3-story classroom bldg. (11 sensors)	74	-----	45 Up 315	0.01 0.01 0.01	0.03 -- 0.03	96
58359	Oakland Caldecott Tunnel Hwy 24	Tunnel (19 sensors)	76	-----	(All chans or less)		0.01	97

TABLE 3 - Strong Motion Data (Cont.)

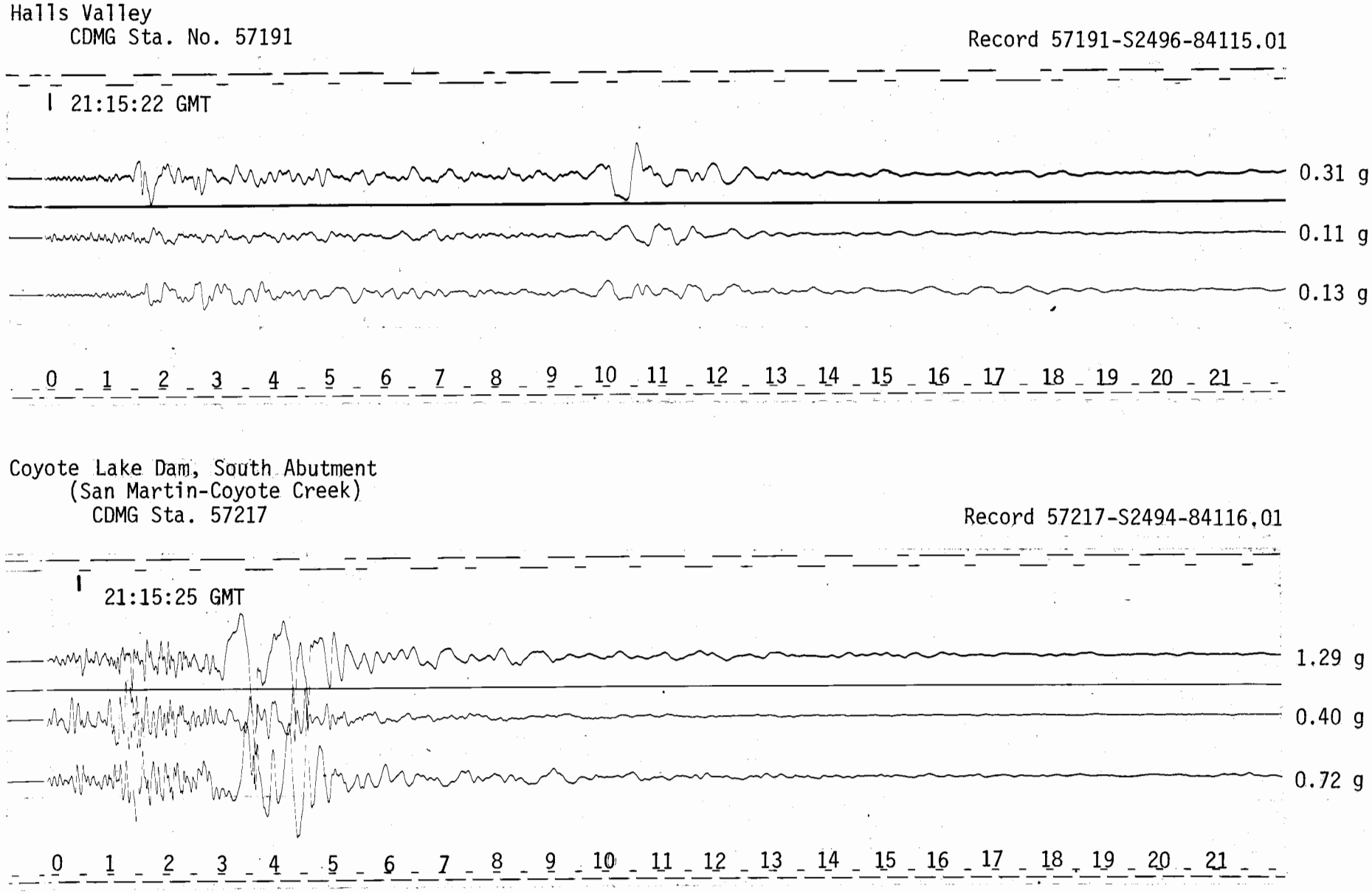
Station No.	Name	Structure Type,Size	Epicenter Dist.*	Trigger Time#	Comp.	Max. Acceleration Grnd. (g)	Struct. (g)	Pg.
58364	Walnut Creek Fidelity S & L	10-story office bldg. (16 sensors)	74	-----	77 Up 167	0.01 0.01 0.01	0.07 -- 0.05	98
58471	Berkeley Lawrence Berkeley Lab. (LBL)	Instr. shltr. (T Hut)	80	15:41.4	90 Up 360	<0.01 <0.01 <0.01		38
58117	Treasure Island Naval Base Fire Station	1-story bldg.	83	15:37.5	90 Up 360	0.03 0.02 0.03		39
58183	Briones Dam	Earth dam (9 sensors)	84	15:43.5	Horiz: 0.02 Vert: 0.01			100
58188	El Cerrito Capwell Dept Store El Cerrito Plaza	2-story commercial bldg. (6 sensors)	85	-----	67 Up 337	0.01 0.01 0.01	0.02 -- 0.02	101

Footnotes:

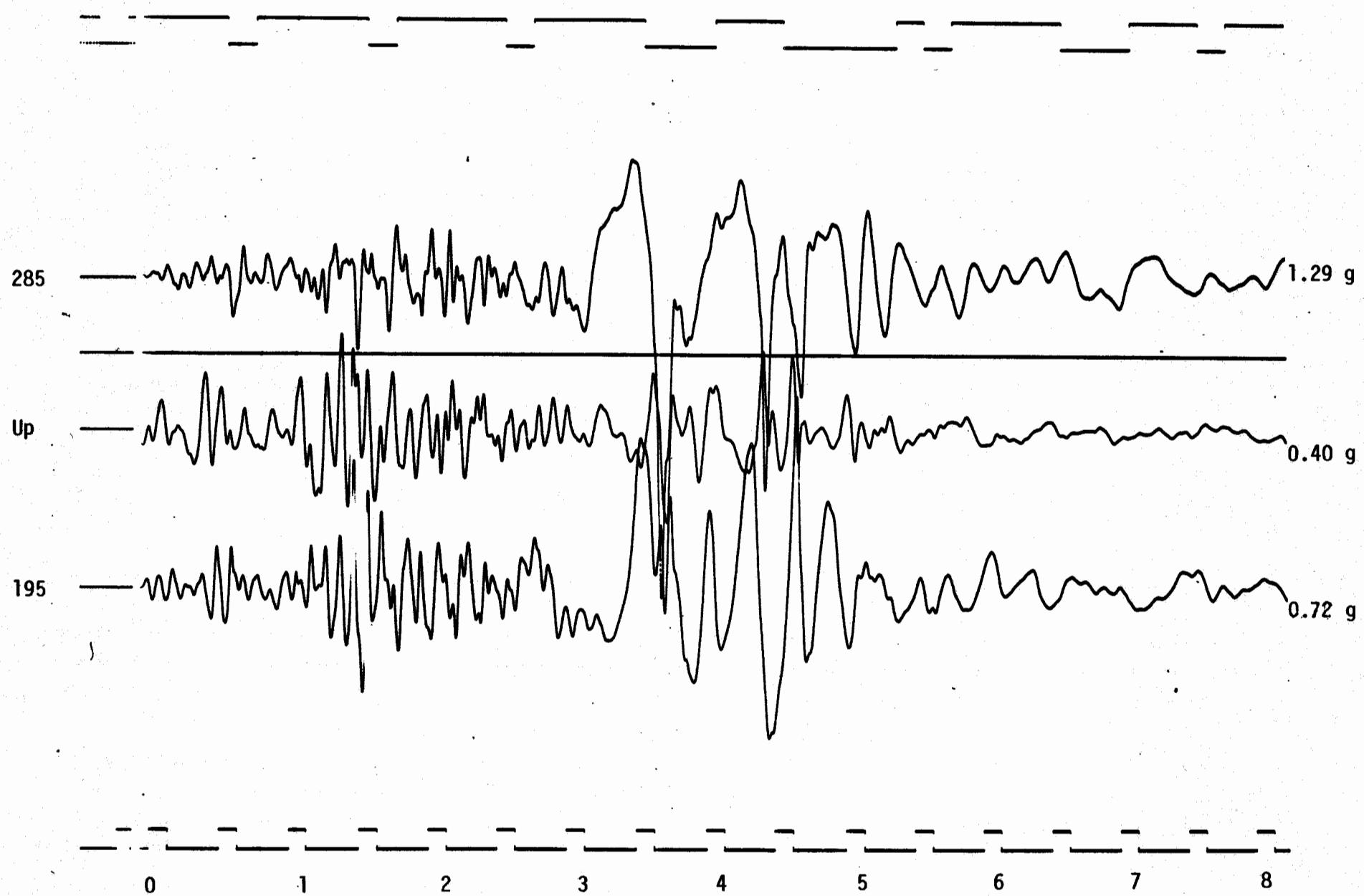
* - Distance given (in km) relative to the presently estimated epicentral location (USGS, Cockerham) of 37.317N, 121.680W. Bracketed number is distance to the nearest point on the fault inferred from the aftershock distribution.

\# - Accelerograph trigger time from WWVB reciever, when present, in minutes and seconds after 21:00 GMT on 24 April 1984.

INDEX TO GROUND-MOTION RECORDS

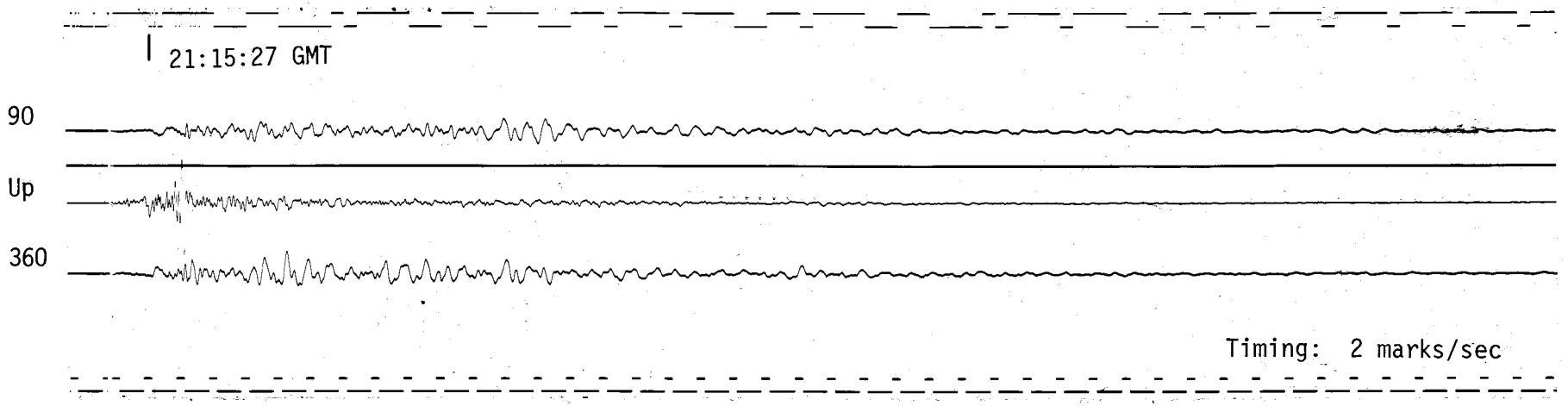

Halls Valley
CDMG Sta. No. 57191
Record 57191-S2496-84115.01
21:15:22 GMT
240
0.31 g
Up
0.11 g
150
0.13 g
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
Coyote Lake Dam, South Abutment
(San Martin-Coyote Creek)
CDMG Sta. 57217
Record 57217-S2494-84116.01
21:15:25 GMT
285
1.29 g
Up
0.40 g
195
0.72 g
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Coyote Dam, Left Abutment (enlargement)
(San Martin - Coyote Creek)
CDMG St. No. 57217



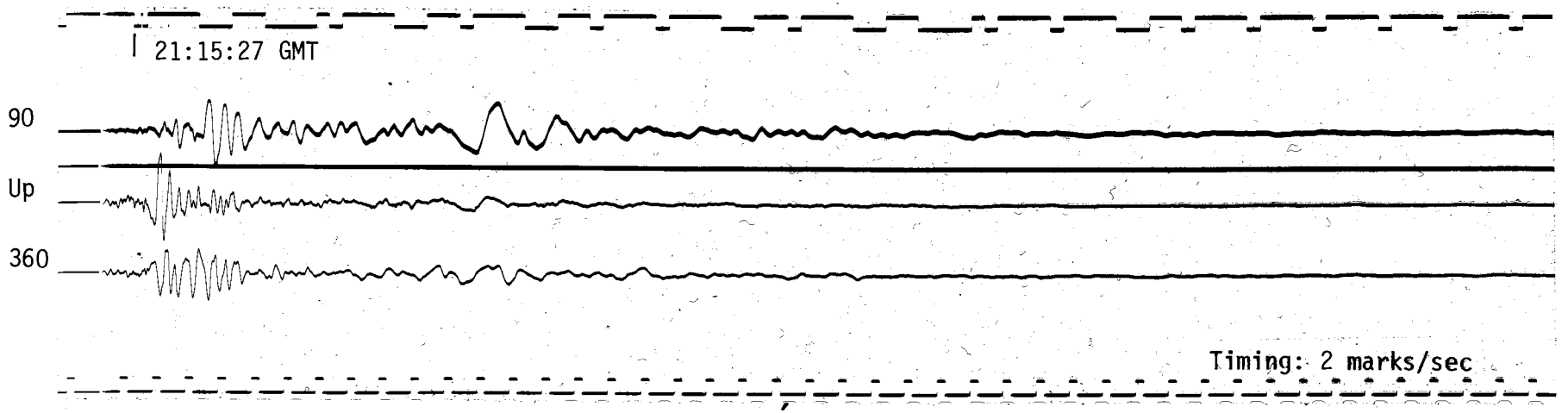
Gilroy #7 - Mantelli Ranch, Jamison Road
CDMG Sta. 57425

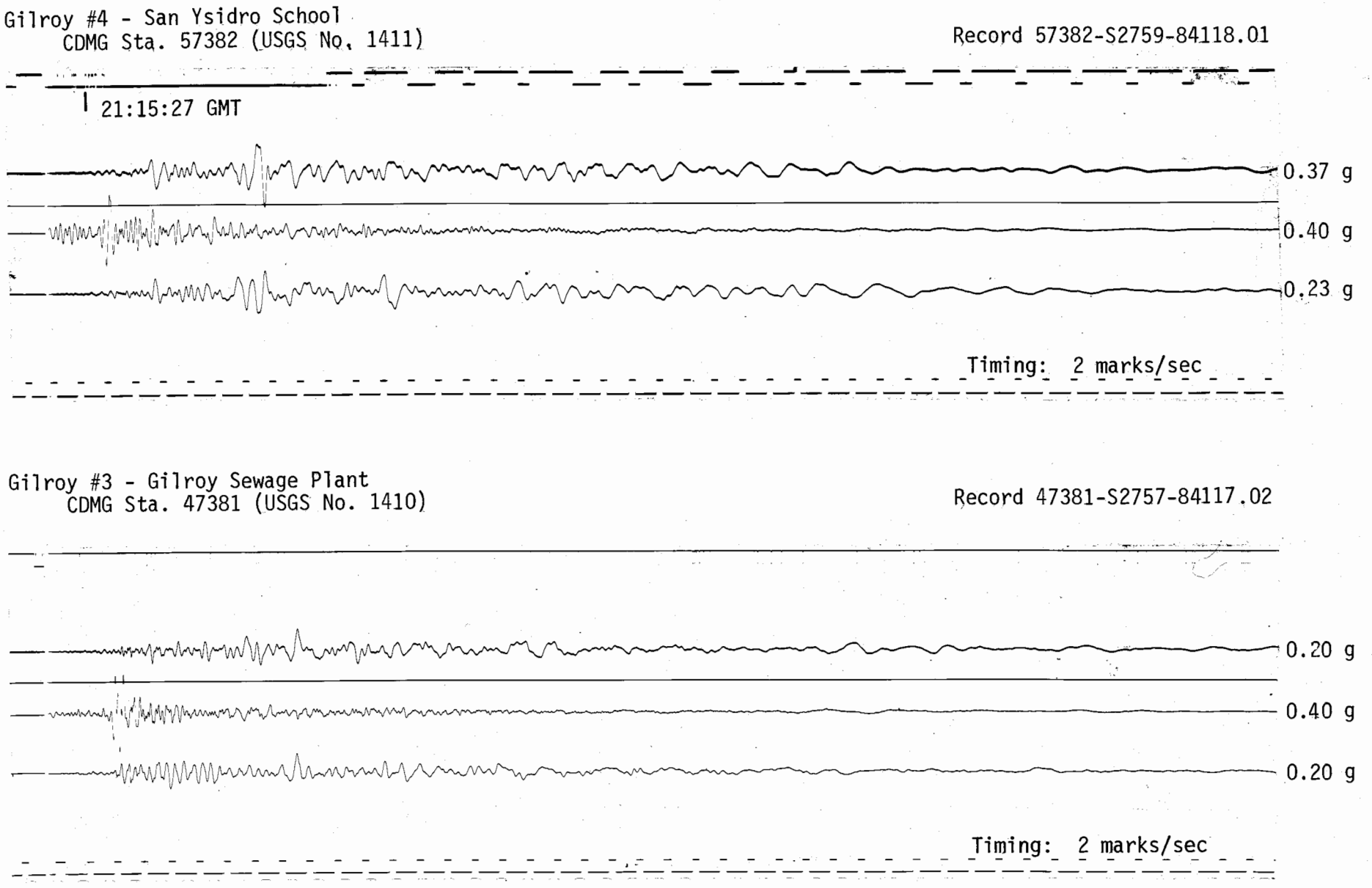
Record 57425-S2762-84118.01

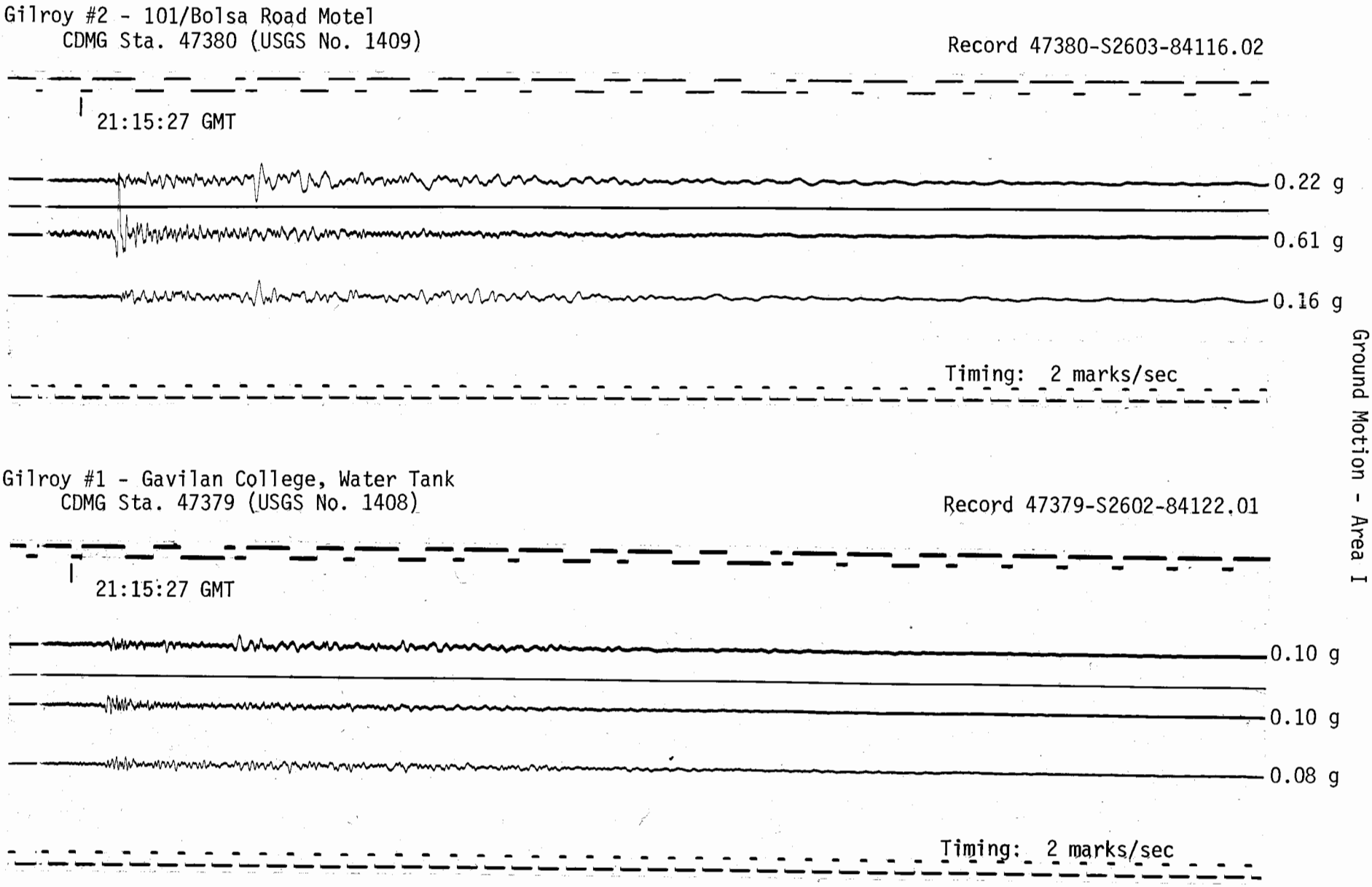


Gilroy #6 - San Ysidro Microwave Site
CDMG Sta. 57383 (USGS No. 1413)

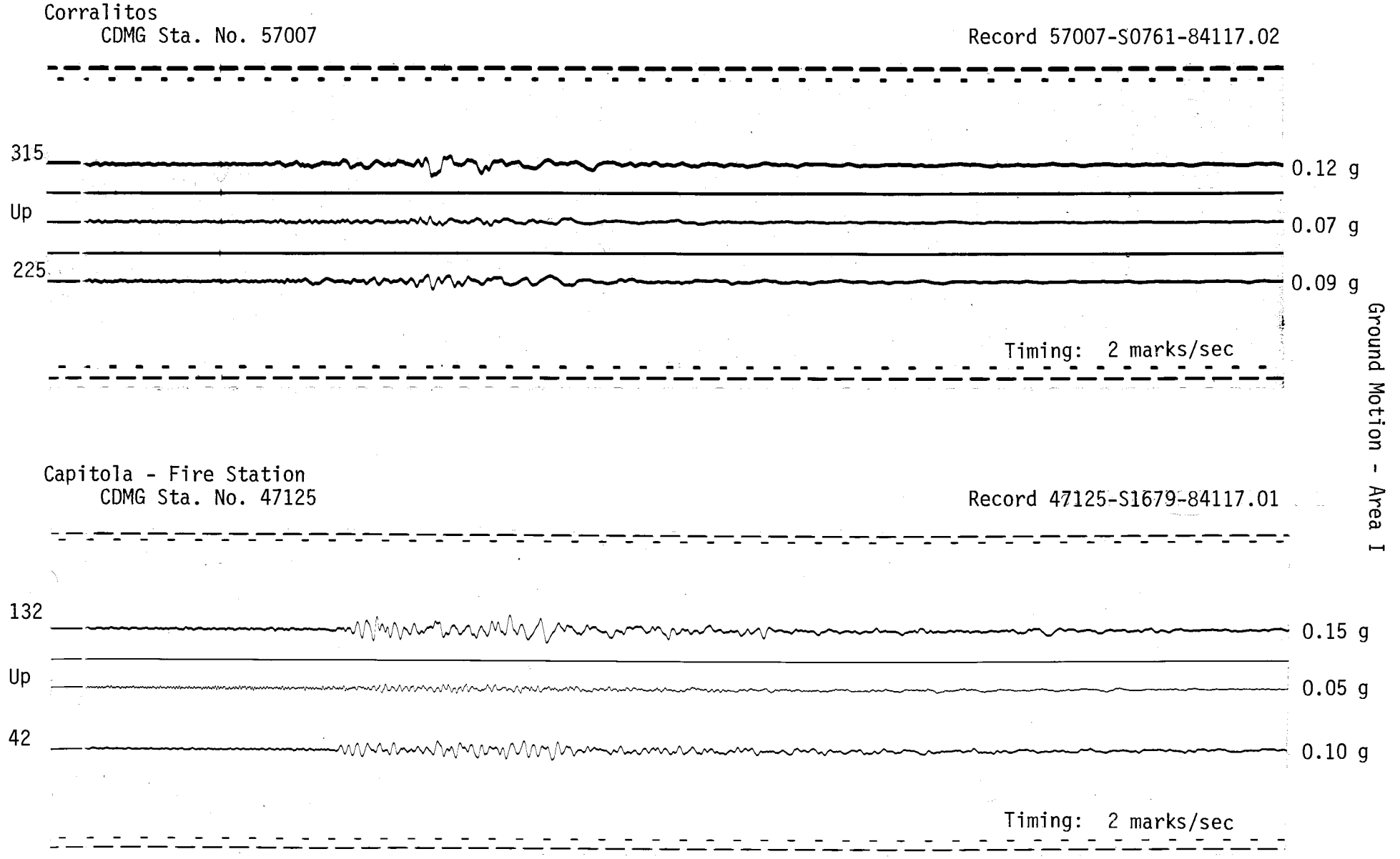
Record 57383-S2606-84118.01




Gilroy #4 - San Ysidro School
CDMG Sta. 57382 (USGS No. 1411)
Record 57382-S2759-84118.01
21:15:27 GMT
360
0.37 g
Up
0.40 g
270
0.23 g
Timing: 2 marks/sec
Gilroy #3 - Gilroy Sewage Plant
CDMG Sta. 47381 (USGS No. 1410)
Record 47381-S2757-84117.02
90
0.20 g
Up
0.40 g
360
0.20 g
Timing: 2 marks/sec

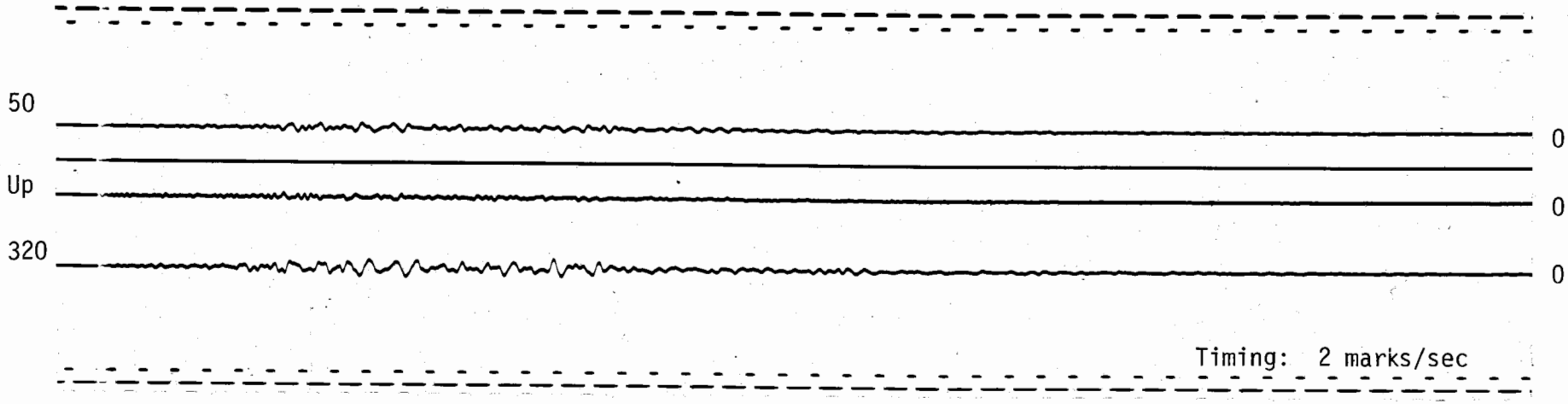

Gilroy #2 - 101/Bolsa Road Motel
CDMG Sta. 47380 (USGS No. 1409)
Record 47380-S2603-84116.02
21:15:27 GMT
90
Up
360
0.22 g
0.61 g
0.16 g
Timing: 2 marks/sec
Gilroy #1 - Gavilan College, Water Tank
CDMG Sta. 47379 (USGS No. 1408)
Record 47379-S2602-84122.01
21:15:27 GMT
320
Up
230
0.10 g
0.10 g
0.08 g
Timing: 2 marks/sec

Gilroy - Gavilan College, Phys. Sci. Bldg.
CDMG Sta. 47006
Record 47006-S1685-84117.01
67
0.12 g
Up
0.12 g
337
0.10 g
Timing: 2 marks/sec


Corralitos
CDMG Sta. No. 57007
Record 57007-S0761-84117.02
315
0.12 g
Up
0.07 g
225
0.09 g
Timing: 2 marks/sec
Capitola - Fire Station
CDMG Sta. No. 47125
Record 47125-S1679-84117.01
132
0.15 g
Up
0.05 g
42
0.10 g
Timing: 2 marks/sec

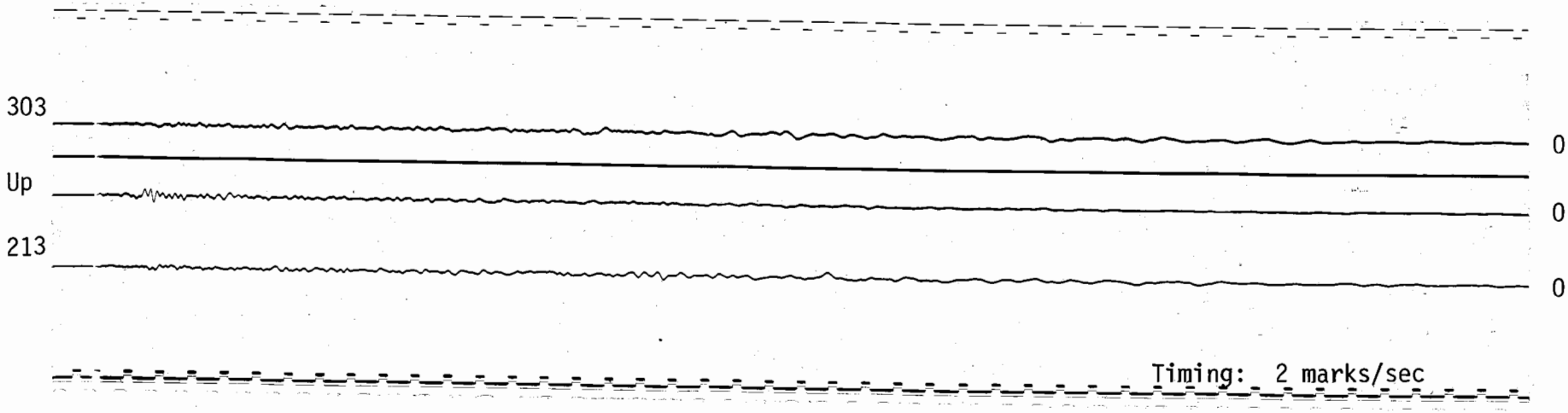
Santa Cruz - UCSC/Lick Electronics Lab
CDMG Sta. No. 58135

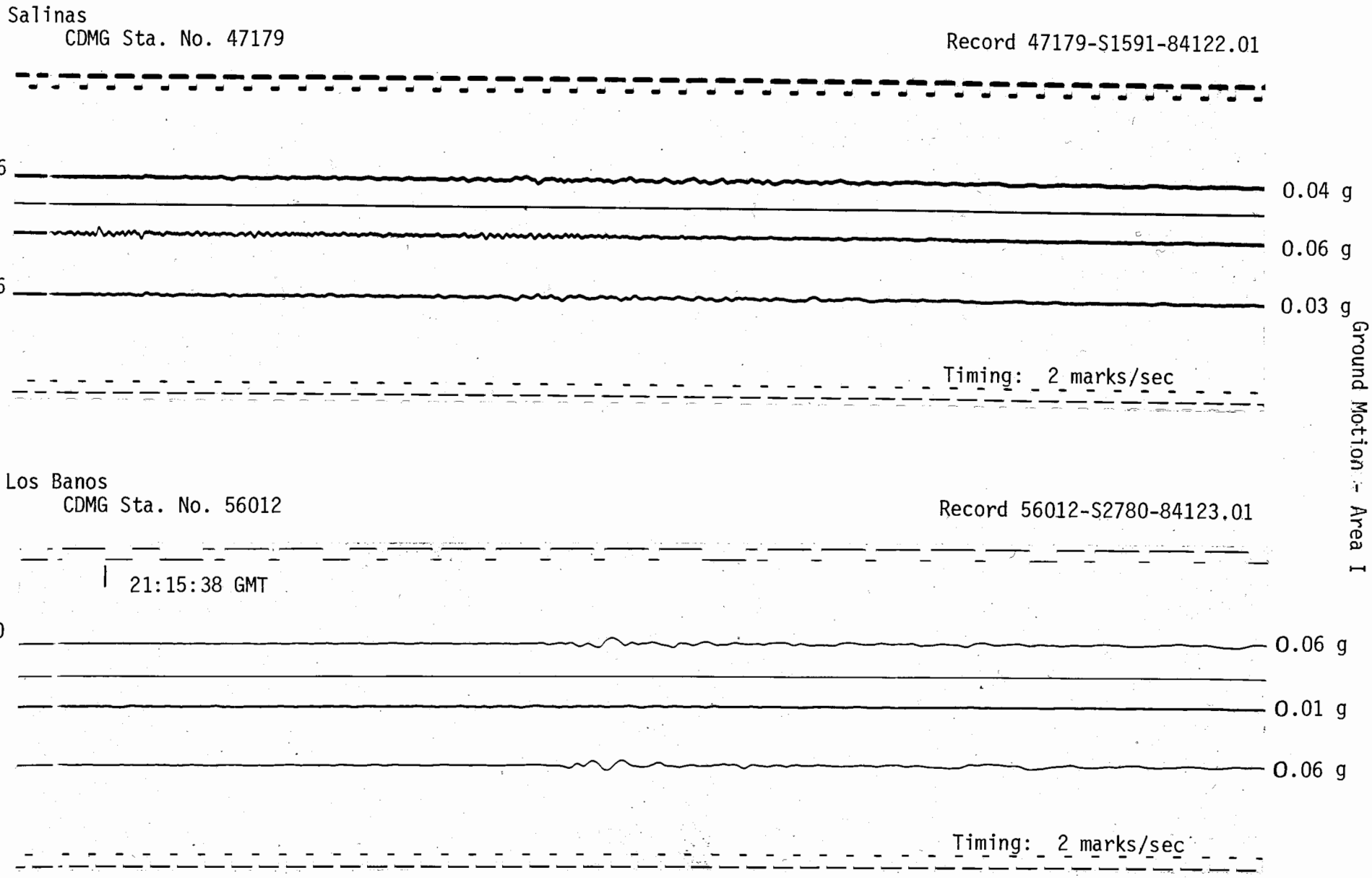
Record 58135-S1682-84117.01

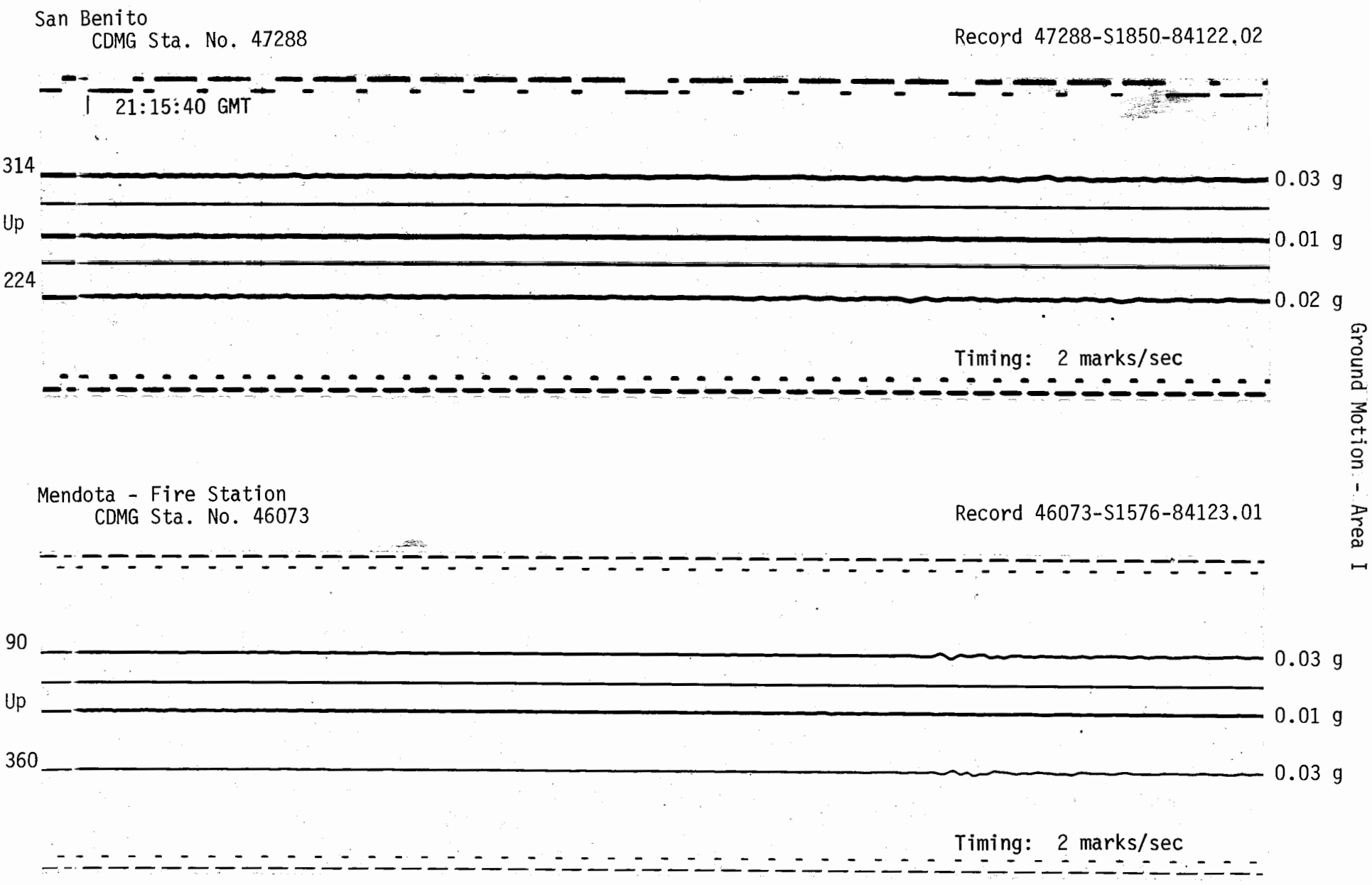


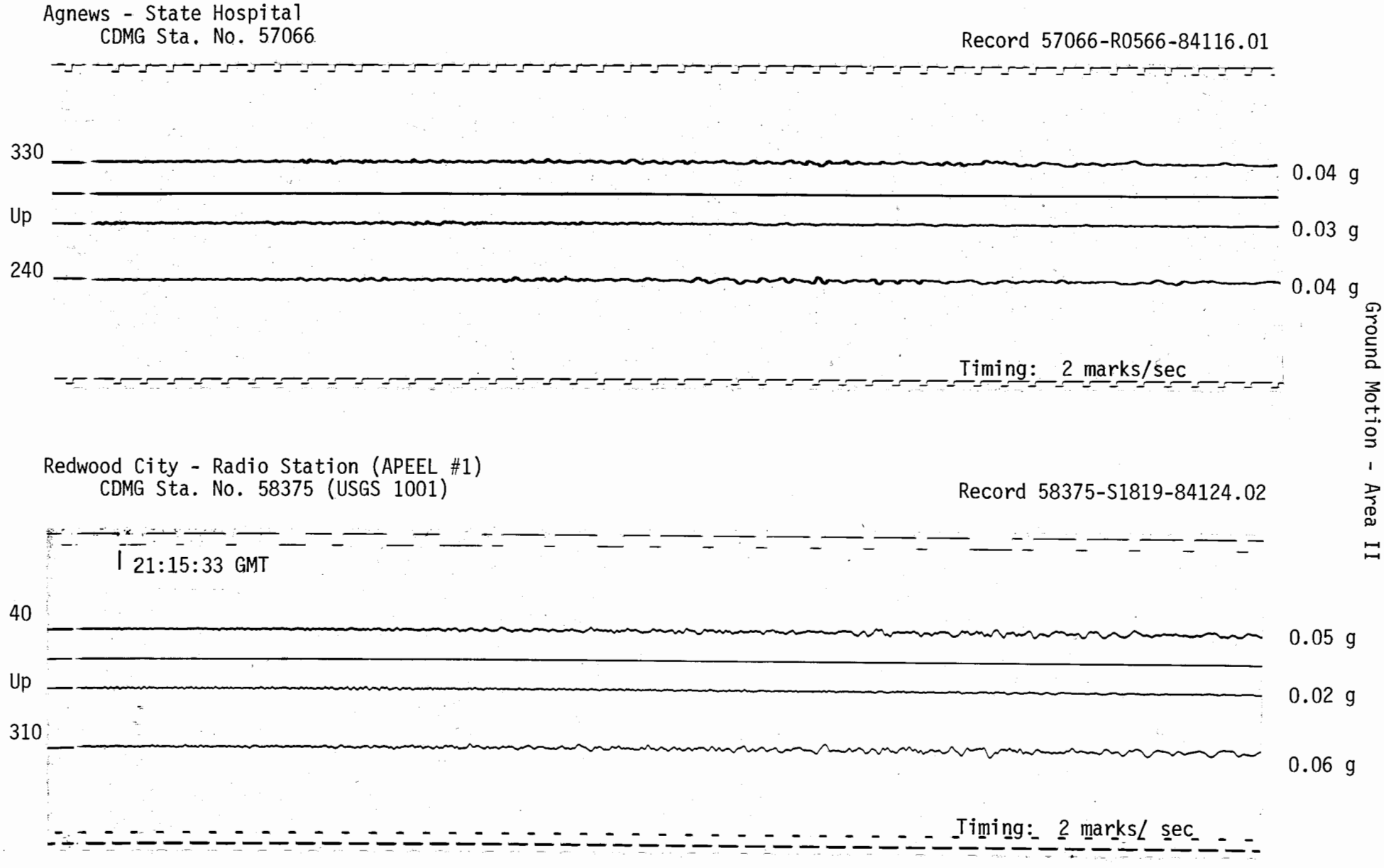
San Juan Bautista - Fire Station
CDMG Sta. No. 47126

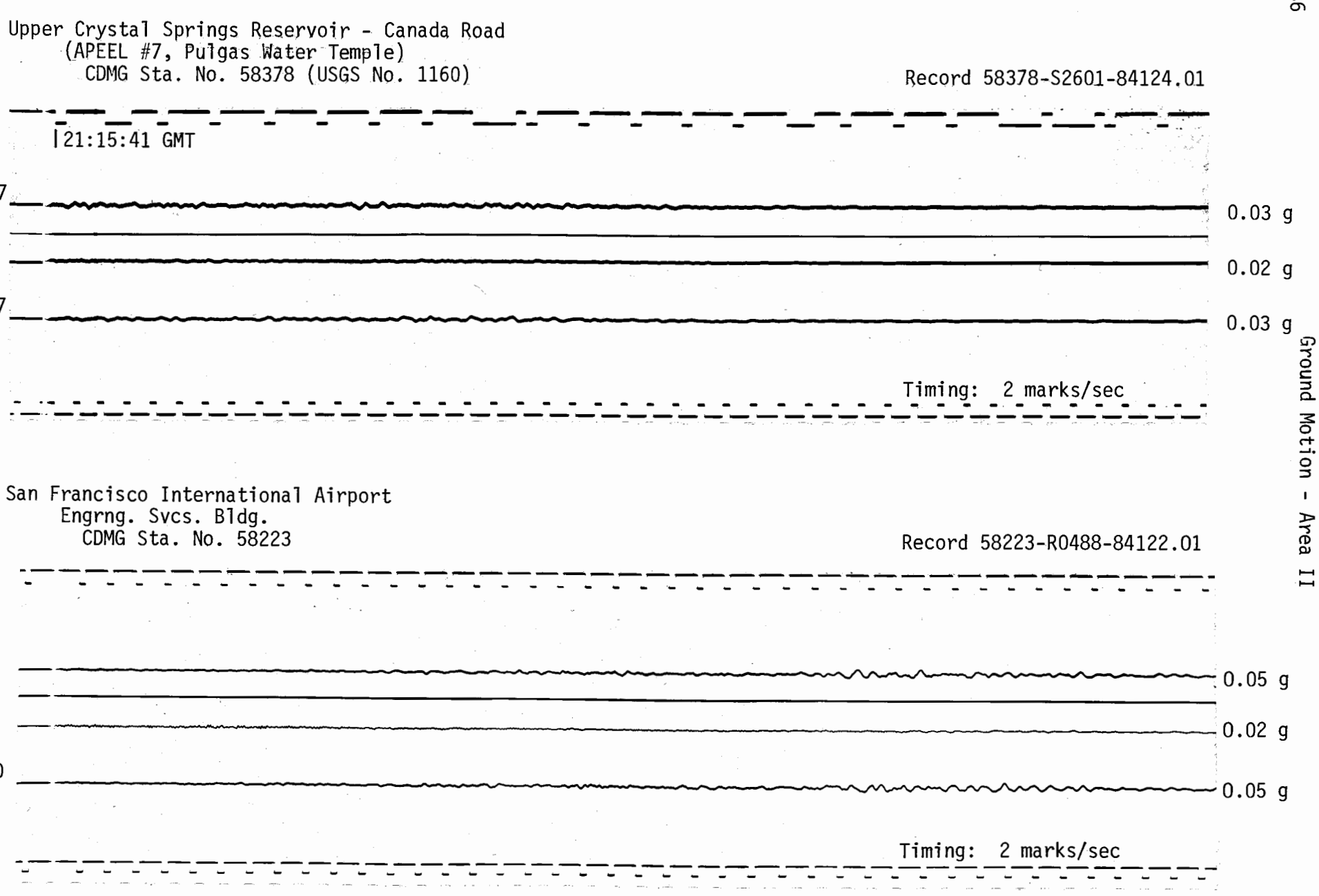
Record 47126-S1678-84117.01

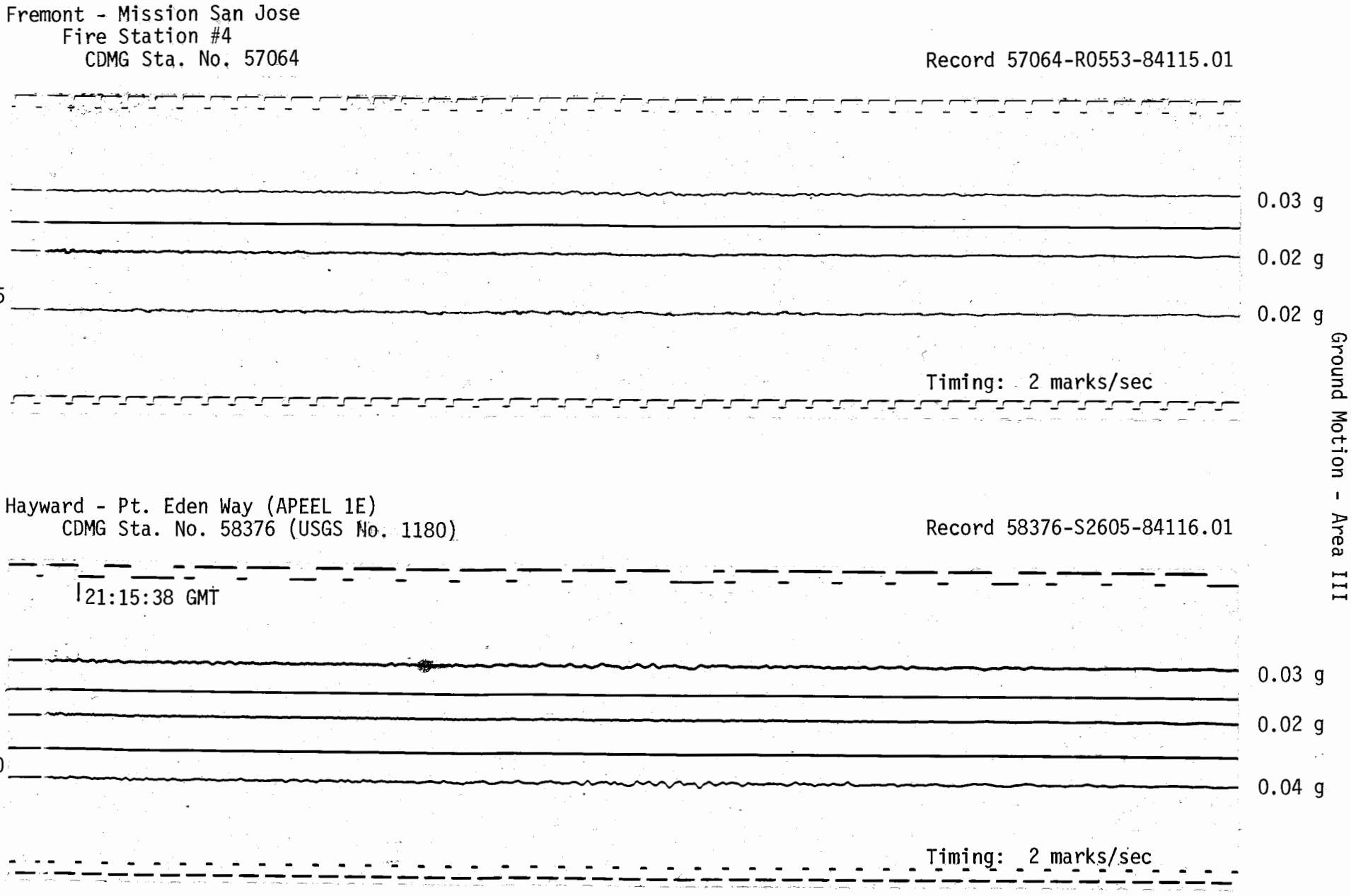


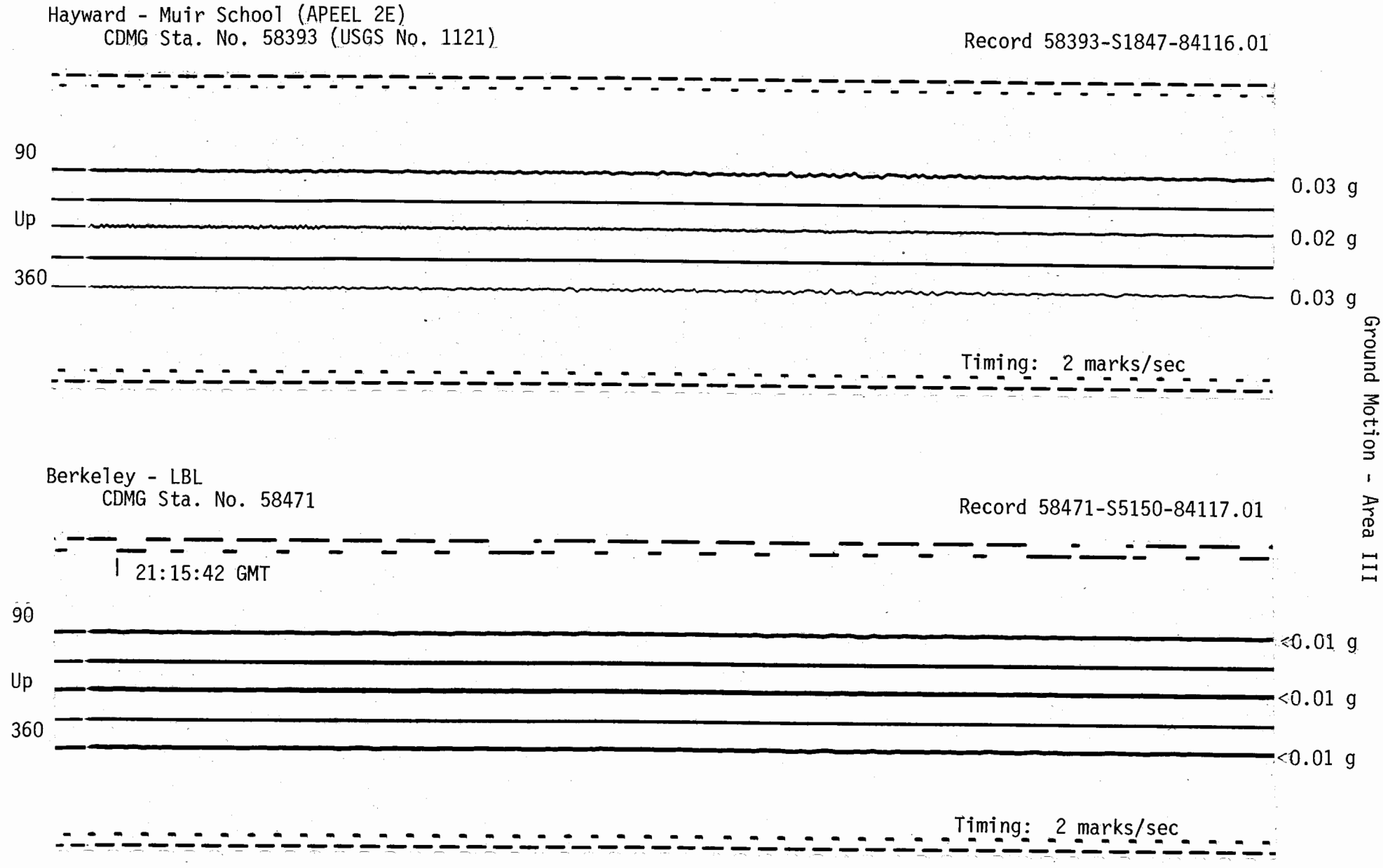

Salinas
CDMG Sta. No. 47179
Record 47179-S1591-84122.01
256
Up
166
0.04 g
0.06 g
0.03 g
Timing: 2 marks/sec
Los Banos
CDMG Sta. No. 56012
Record 56012-S2780-84123.01
21:15:38 GMT
180
Up
90
0.06 g
0.01 g
0.06 g
Timing: 2 marks/sec

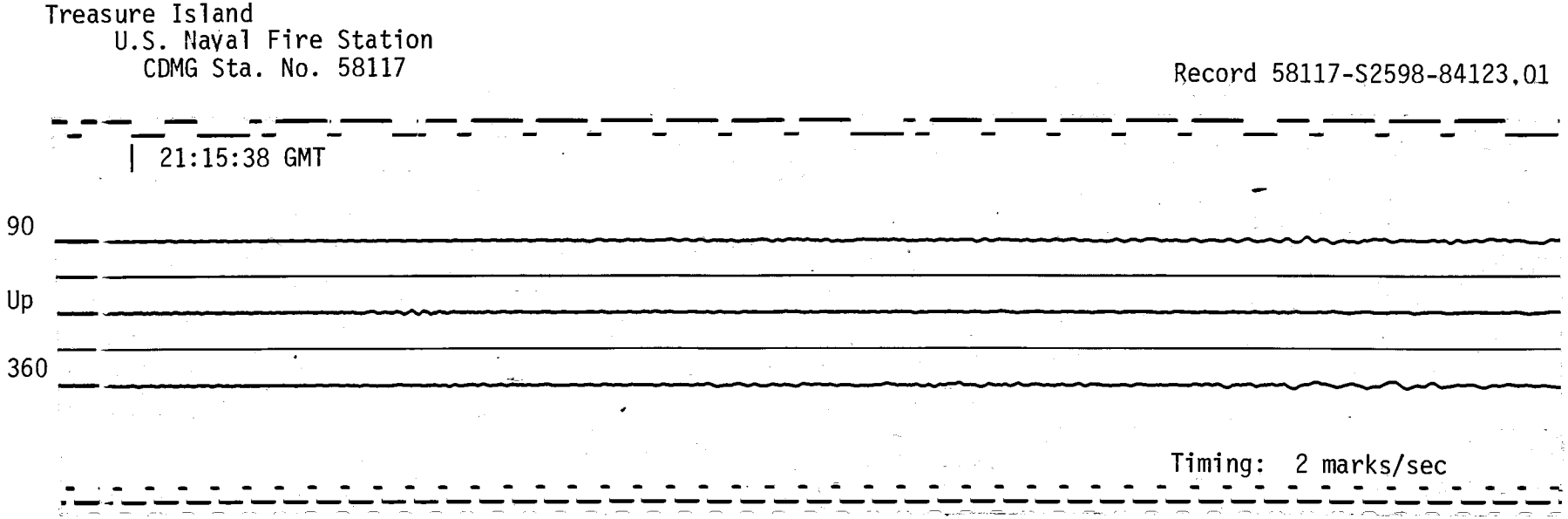

San Benito
CDMG Sta. No. 47288
Record 47288-S1850-84122.02
21:15:40 GMT
314
0.03 g
Up
0.01 g
224
0.02 g
Timing: 2 marks/sec
Mendota - Fire Station
CDMG Sta. No. 46073
Record 46073-S1576-84123.01
90
0.03 g
Up
0.01 g
360
0.03 g
Timing: 2 marks/sec


Agnews - State Hospital
CDMG Sta. No. 57066
Record 57066-R0566-84116.01
330
Up
240
0.04 g
0.03 g
0.04 g
Timing: 2 marks/sec
Redwood City - Radio Station (APEEL #1)
CDMG Sta. No. 58375 (USGS 1001)
Record 58375-S1819-84124.02
21:15:33 GMT
40
Up
310
0.05 g
0.02 g
0.06 g
Timing: 2 marks/ sec


Upper Crystal Springs Reservoir - Canada Road
(APEEL #7, Pulgas Water Temple)
CDMG Sta. No. 58378 (USGS No. 1160)
Record 58378-S2601-84124.01
21:15:41 GMT
227
0.03 g
Up
0.02 g
137
0.03 g
Timing: 2 marks/sec
San Francisco International Airport
Engrng. Svcs. Bldg.
CDMG Sta. No. 58223
Record 58223-R0488-84122.01
50
0.05 g
Up
0.02 g
320
0.05 g
Timing: 2 marks/sec


Fremont - Mission San Jose
Fire Station #4
CDMG Sta. No. 57064
Record 57064-R0553-84115.01
75
Up
345
0.03 g
0.02 g
0.02 g
Timing: 2 marks/sec
Hayward - Pt. Eden Way (APEEL 1E)
CDMG Sta. No. 58376 (USGS No. 1180)
Record 58376-S2605-84116.01
21:15:38 GMT
90
Up
360
0.03 g
0.02 g
0.04 g
Timing: 2 marks/sec


Hayward - Muir School (APEEL 2E)
CDMG Sta. No. 58393 (USGS No. 1121)
Record 58393-S1847-84116.01
90
Up
360
0.03 g
0.02 g
0.03 g
Timing: 2 marks/sec
Berkeley - LBL
CDMG Sta. No. 58471
Record 58471-S5150-84117.01
21:15:42 GMT
90
Up
360
<0.01 g
<0.01 g
<0.01 g
Timing: 2 marks/sec


Treasure Island
U.S. Naval Fire Station
CDMG Sta. No. 58117
Record 58117-S2598-84123.01
21:15:38 GMT
90
Up
360
0.03 g
0.02 g
0.03 g
Timing: 2 marks/sec

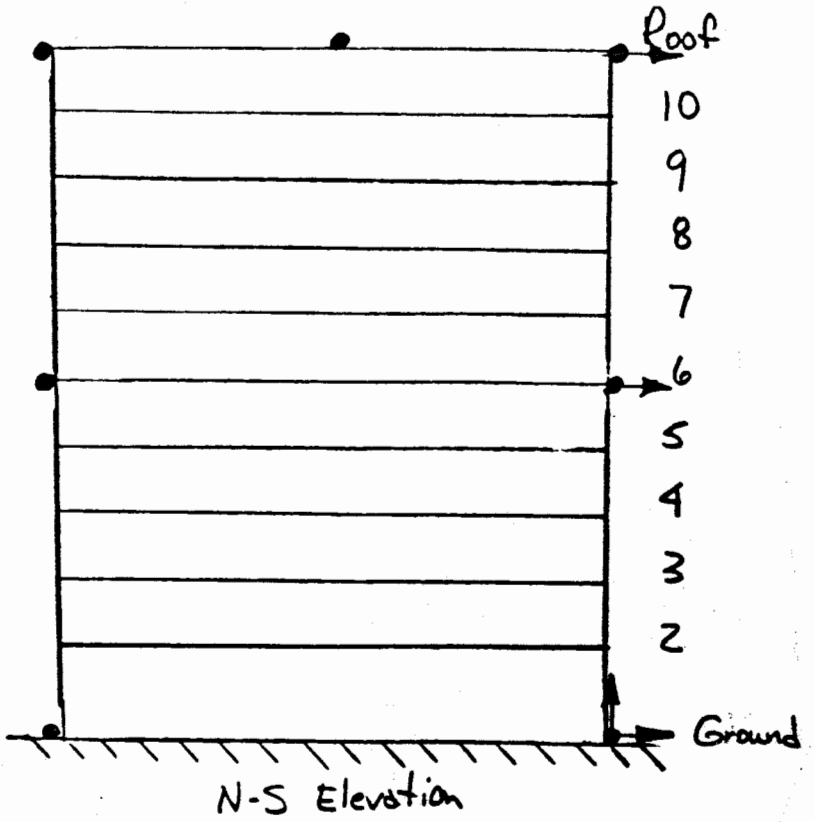
INDEX TO STRUCTURAL-RESPONSE RECORDS

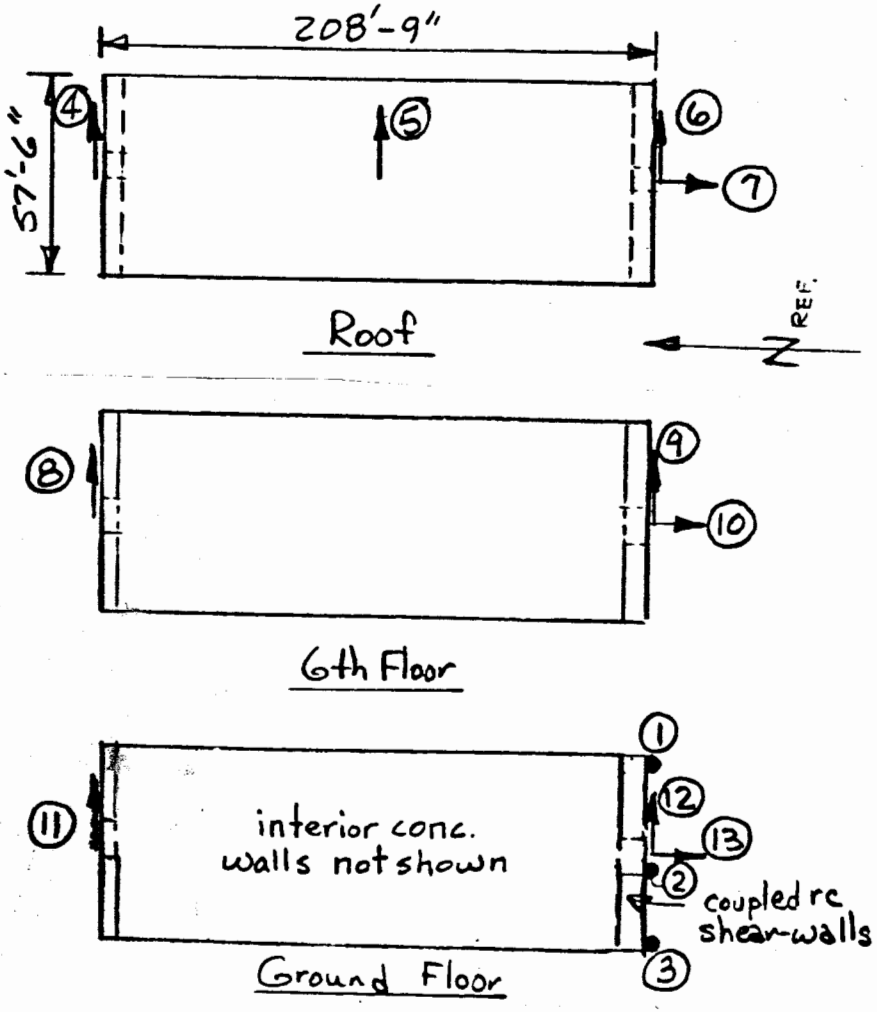
San Jose - Town Park Towers

Address: 60 Third Street
San Jose, California
No. Stories above
/below ground: 10 / 0
Plan Shape: Rectangular
Base Dimensions: 209' x 58'
Typ. Floor Dimensions: Same
Design Date: 1971
Construction Date: 1971-72

Vertical Load Carrying System:
One-way post-tensioned flat slabs on rc (reinforced-concrete) bearing walls.
Lateral Force Resisting System:
RC shear walls at regular intervals in transverse direction; rc shear walls along interior corridors in longitudinal direction (stepped at 6th floor).
Foundation Type:
Precast-prestressed concrete piles under all walls.

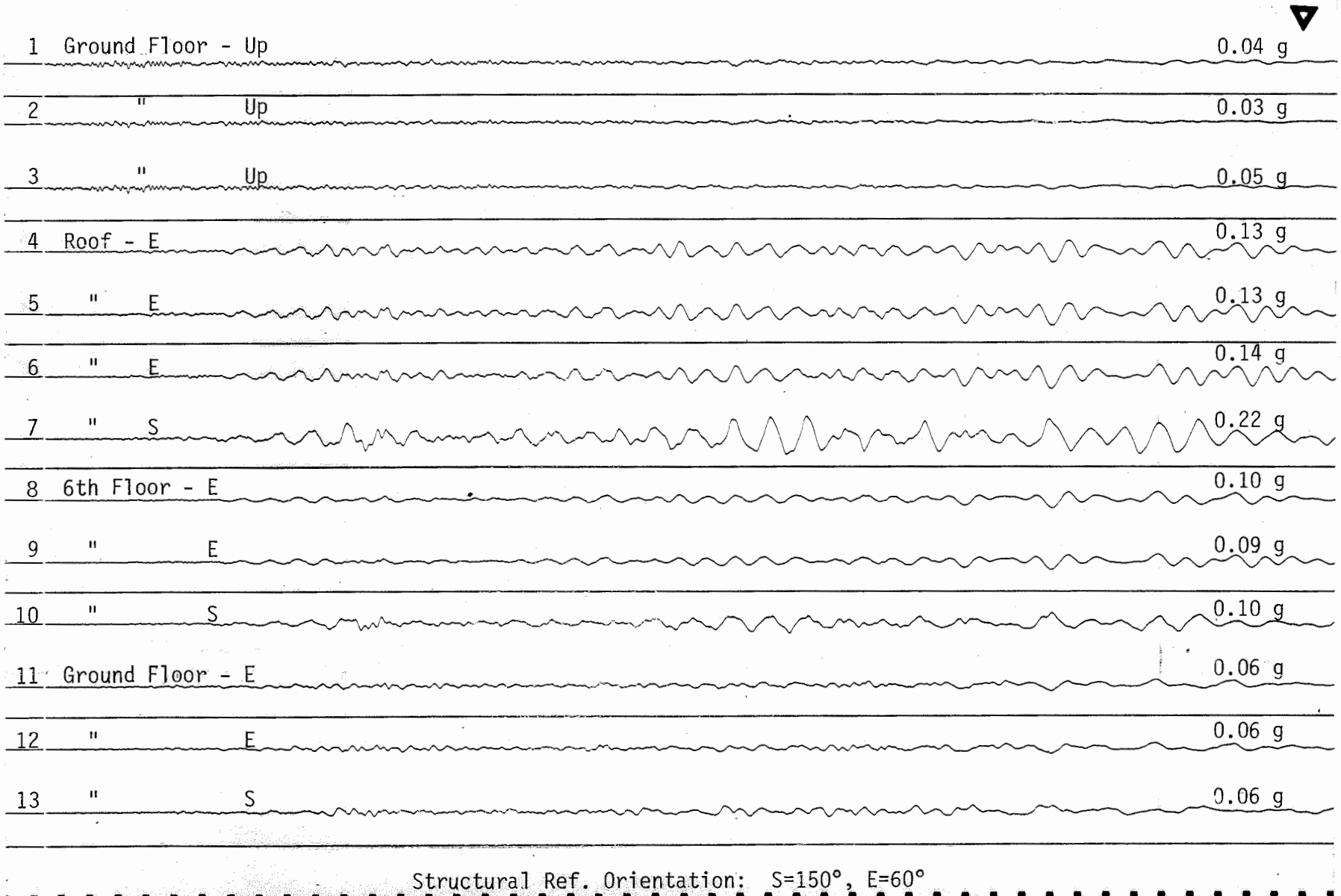
San Jose
Town Park Towers
CDMG Sta. No. 57356



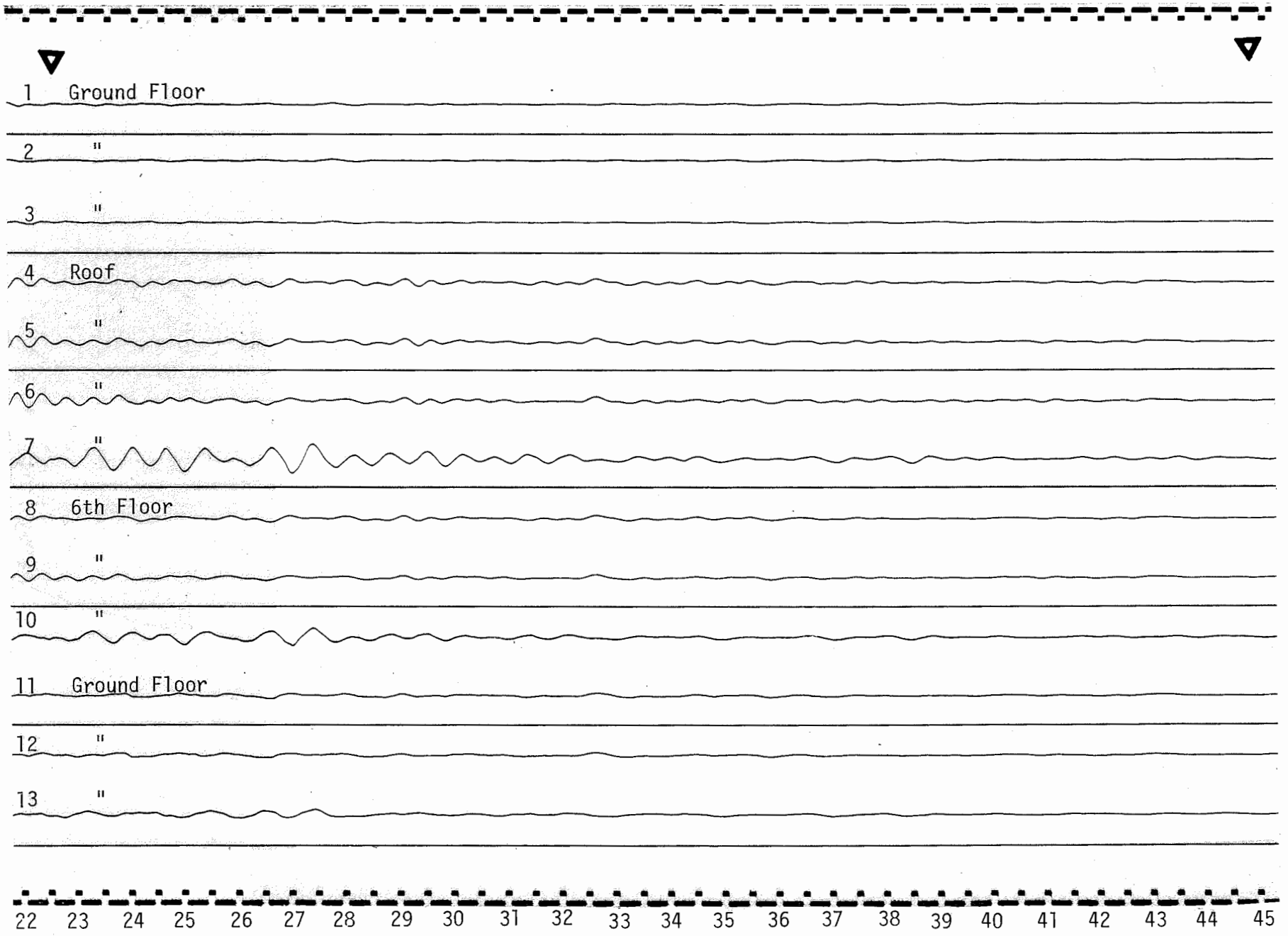


San Jose
Town Park Towers
CDMG Sta. No. 57356

Record 57356-C0189-84115.01



San Jose
Town Park Towers (22-45 secs)
CDMG Sta. No. 57356



San Jose - Great Western S & L

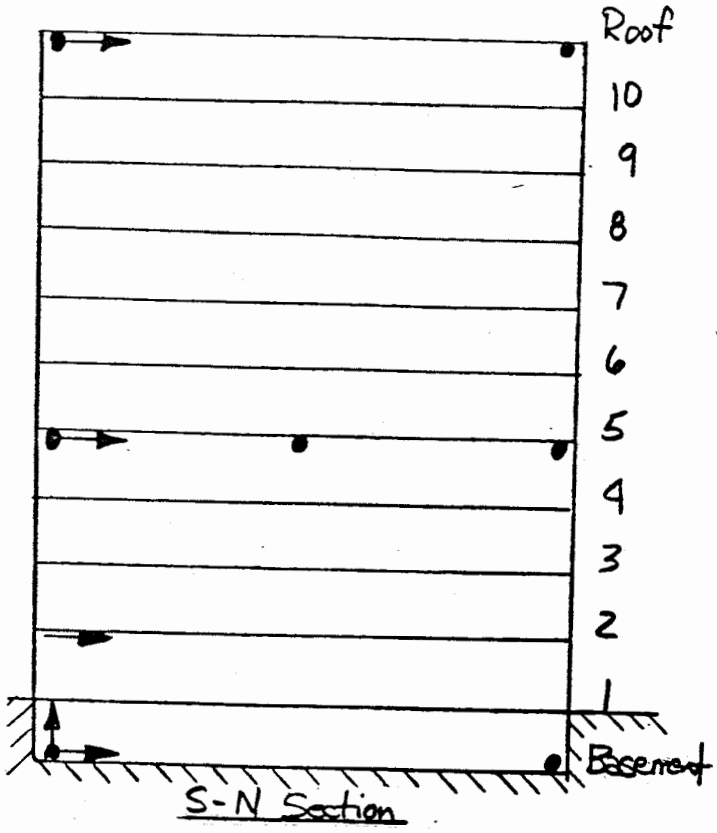
Address: 111 N. Market St.
San Jose, California
No. Stories above /below ground: 10 / 1
Plan Shape: Rectangular
Base Dimensions: 82' x 190'
Typ. Floor Dimensions: Same
Design Date: 1964
Construction Date: 1967

Vertical Load Carrying System:
RC (reinforced-concrete) floor slabs supported by rc pan joists supported by rc frame.
Lateral Force Resisting System:
End rc shear walls in transverse direction; moment-resistant rc frame in longitudinal direction.
Foundation Type: rc mat foundation.

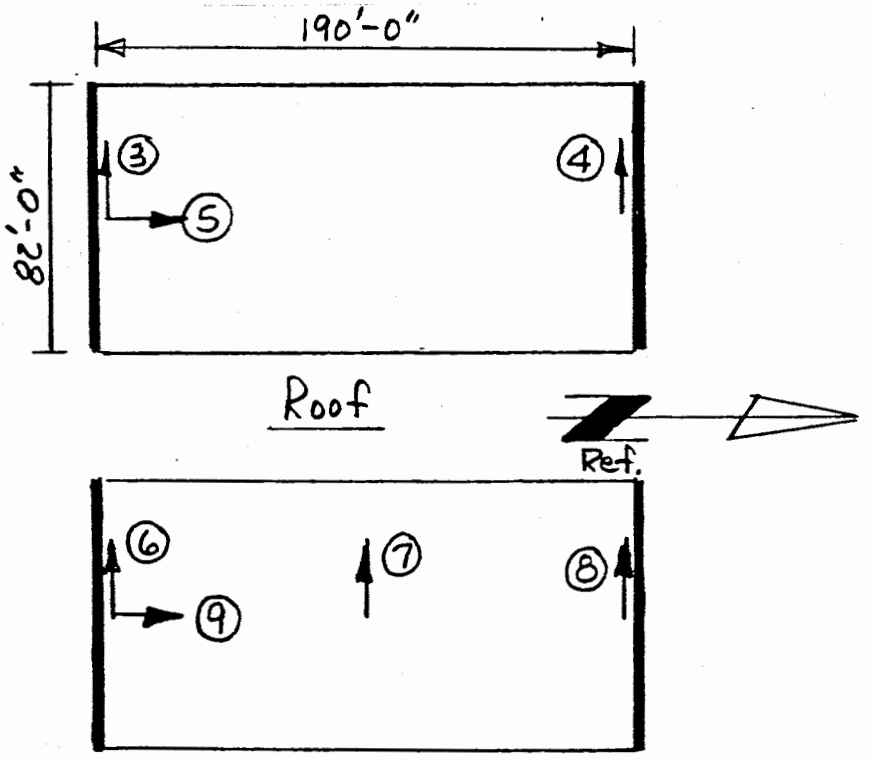
Remarks: Designed for ductility using concepts developed by Blume, Newmark and Corning. Building was included in ATC-2 project; designed to force levels larger than code.

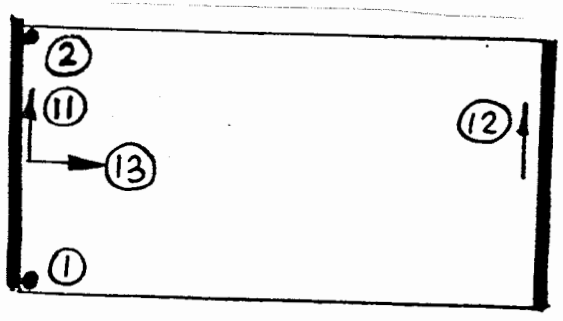
SENSOR LAYOUT

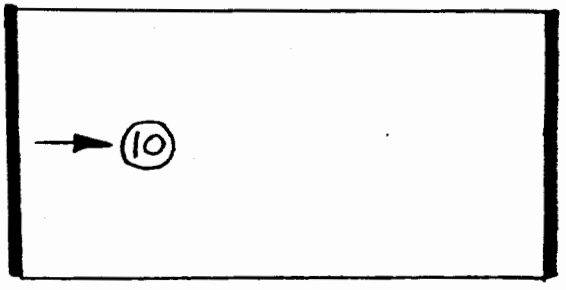
San Jose
Great Western S.& L. Bldg.
CDMG St. No. 57355



S-N Section

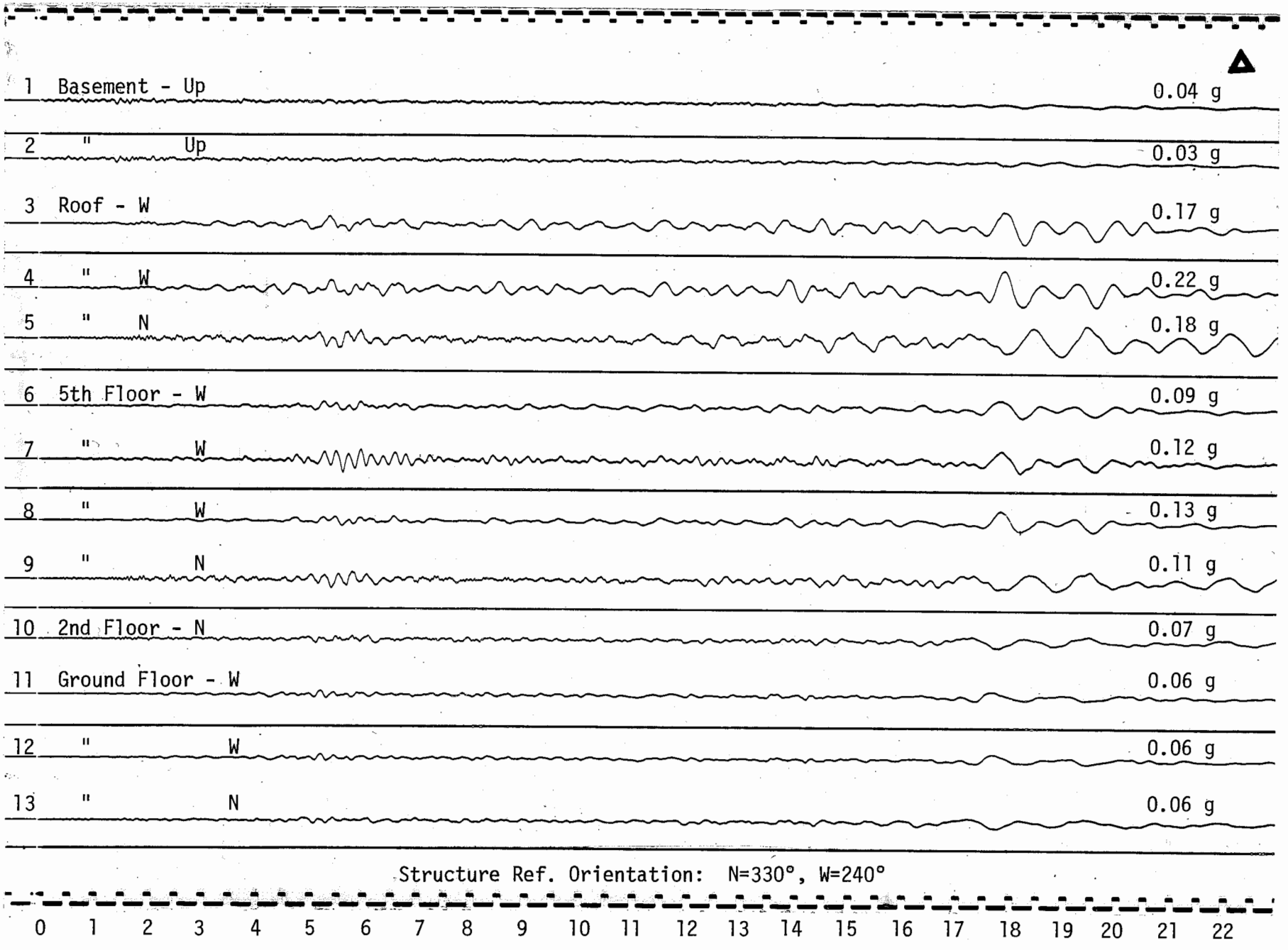




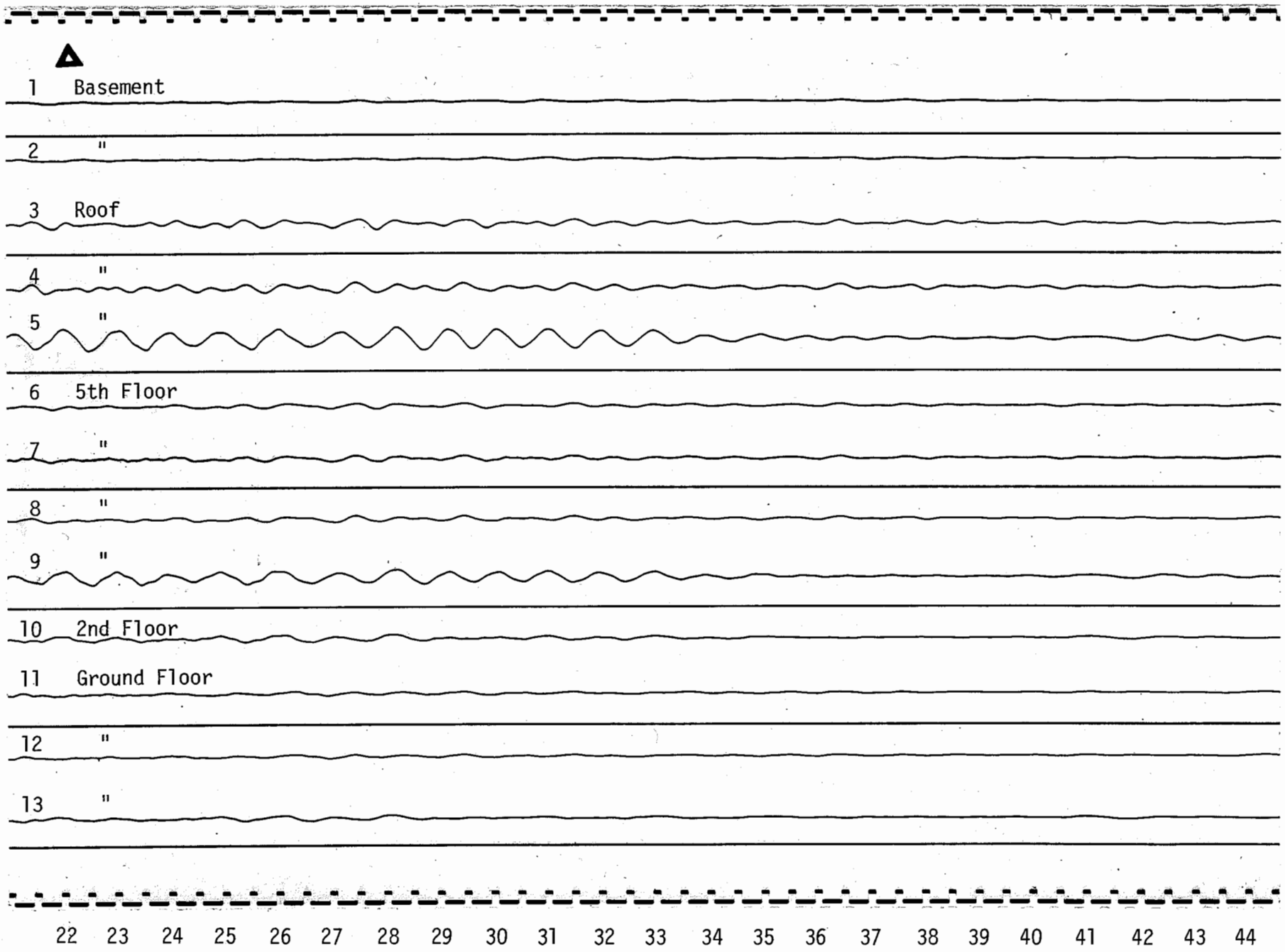


San Jose
Great Western S.& L. Bldg.
CDMG Sta. No. 57355

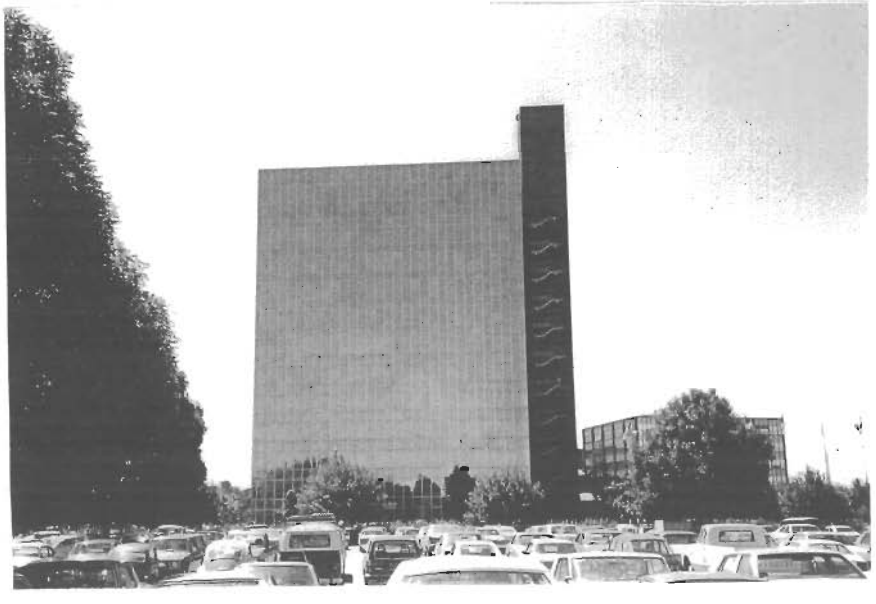
Record 57355-C0112-84116.01



San Jose
Great Western S. & L. Bldg. (22-44 secs)
CDMG Sta. No. 57355

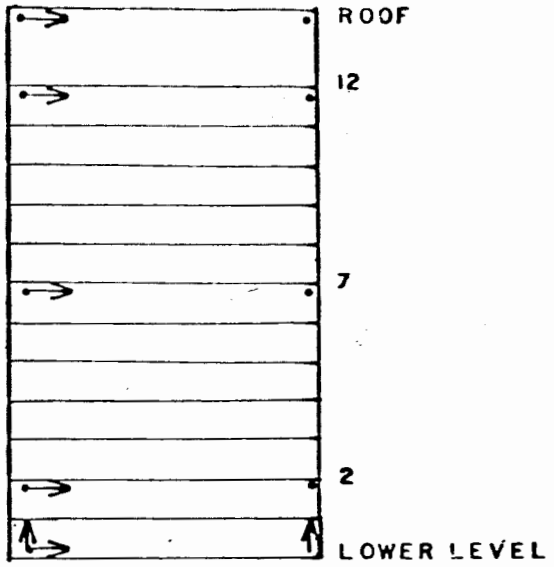


San Jose - Santa Clara County Office Bldg.

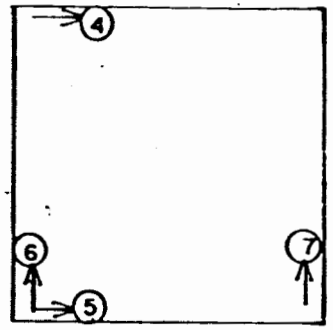


SENSOR LOCATION

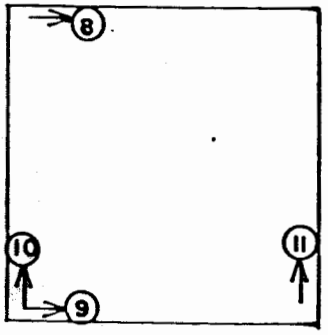
San Jose - Santa Clara Co. Bldg.
CDMG Sta. No. 57357



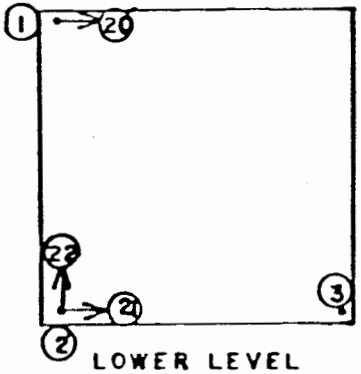
E-W SECTION



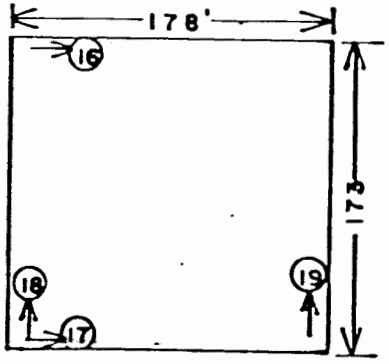
ROOF PLAN



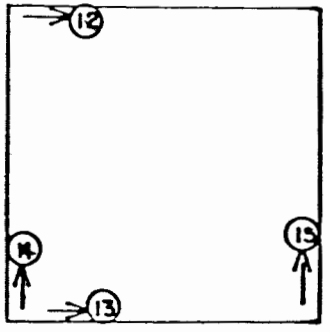
12TH FLOOR



LOWER LEVEL



2 ND FLOOR



7 IH FLOOR

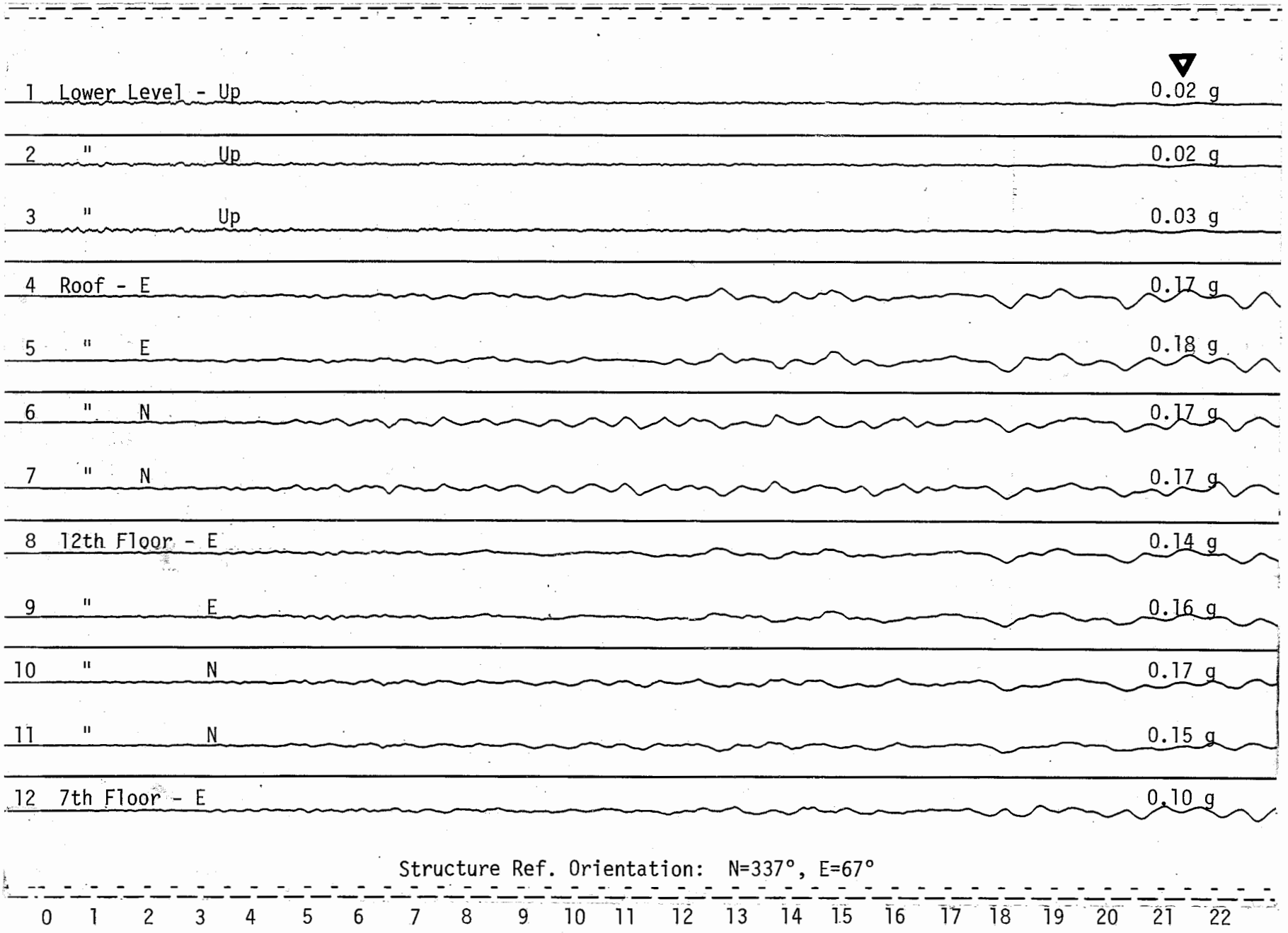
San Jose - Santa Clara County Office Bldg.

Address: 70 West Hedding St.
San Jose, California
No. Stories above
/below ground: 13 / 0
Plan Shape: Rectangular
Base Dimensions: 173' x 178'
Typ. Floor Dimensions: Same
Design Date: 1972
Construction Date: 1975-76

Vertical Load Carrying System:
3 1/2" concrete slab on metal deck; steel columns, beams and joists.
Lateral Force Resisting System:
Moment-resisting steel frames in perimeter walls.
Foundation Type:
Concrete mat foundations.

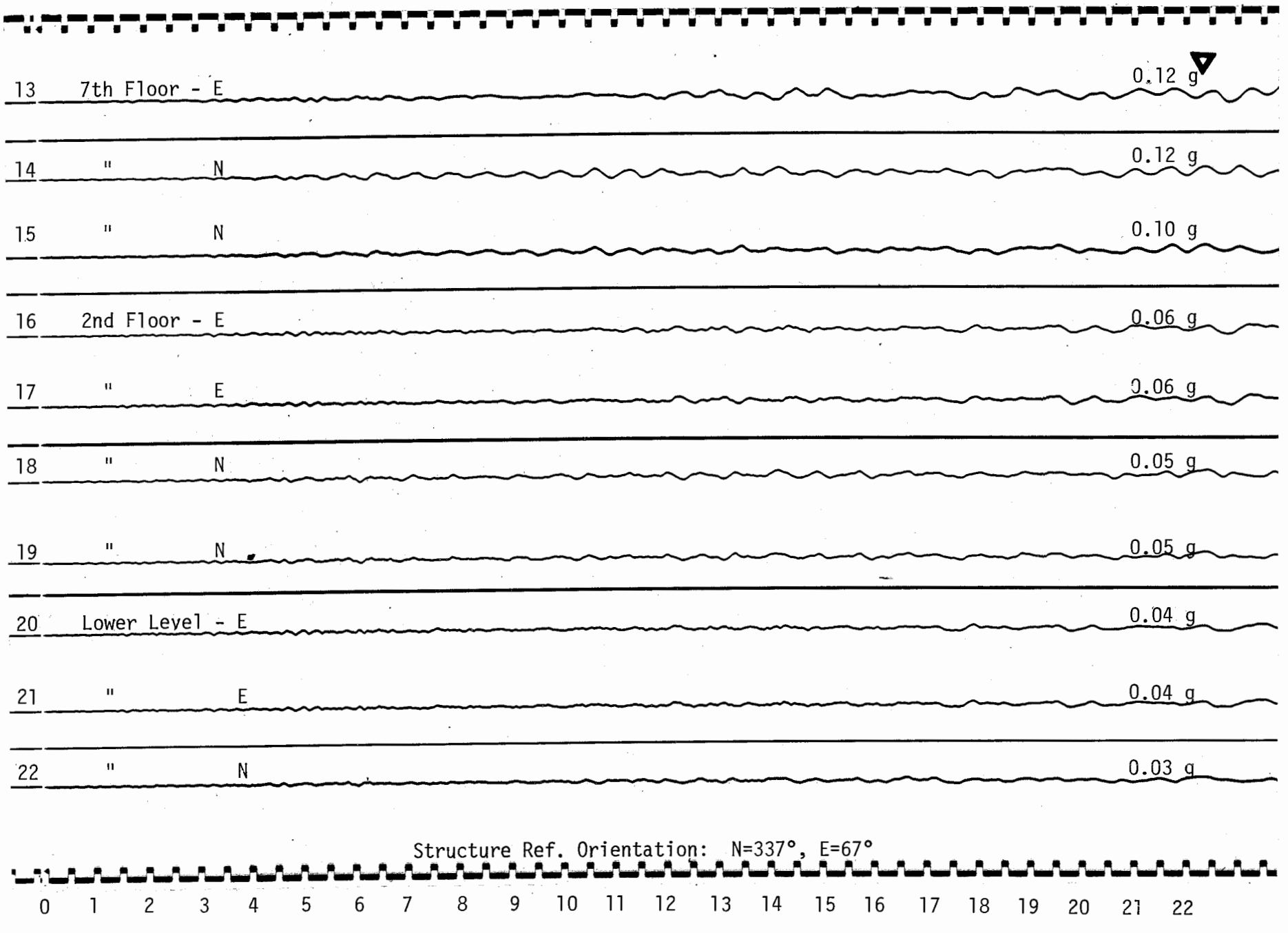
San Jose - Santa Clara Co. Bldg.
CDMG Sta. No. 57357
(Chans 1-12, 0-22 secs)

Record 57357-C0185-84115.01



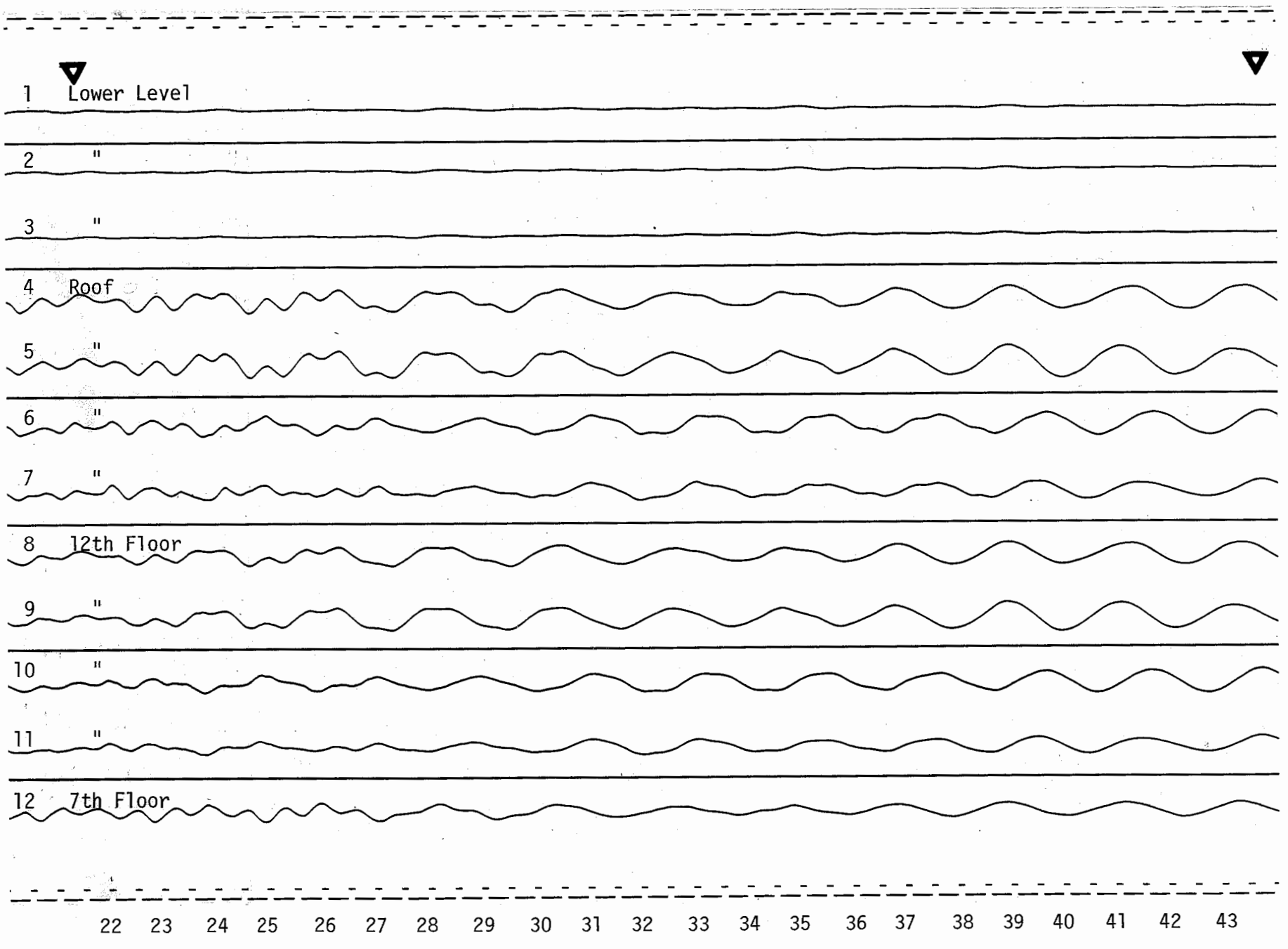
San Jose - Santa Clara Co. Bldg.
(Chns 13-22, 0-22 secs)

Record 57357-C0145-84115.01



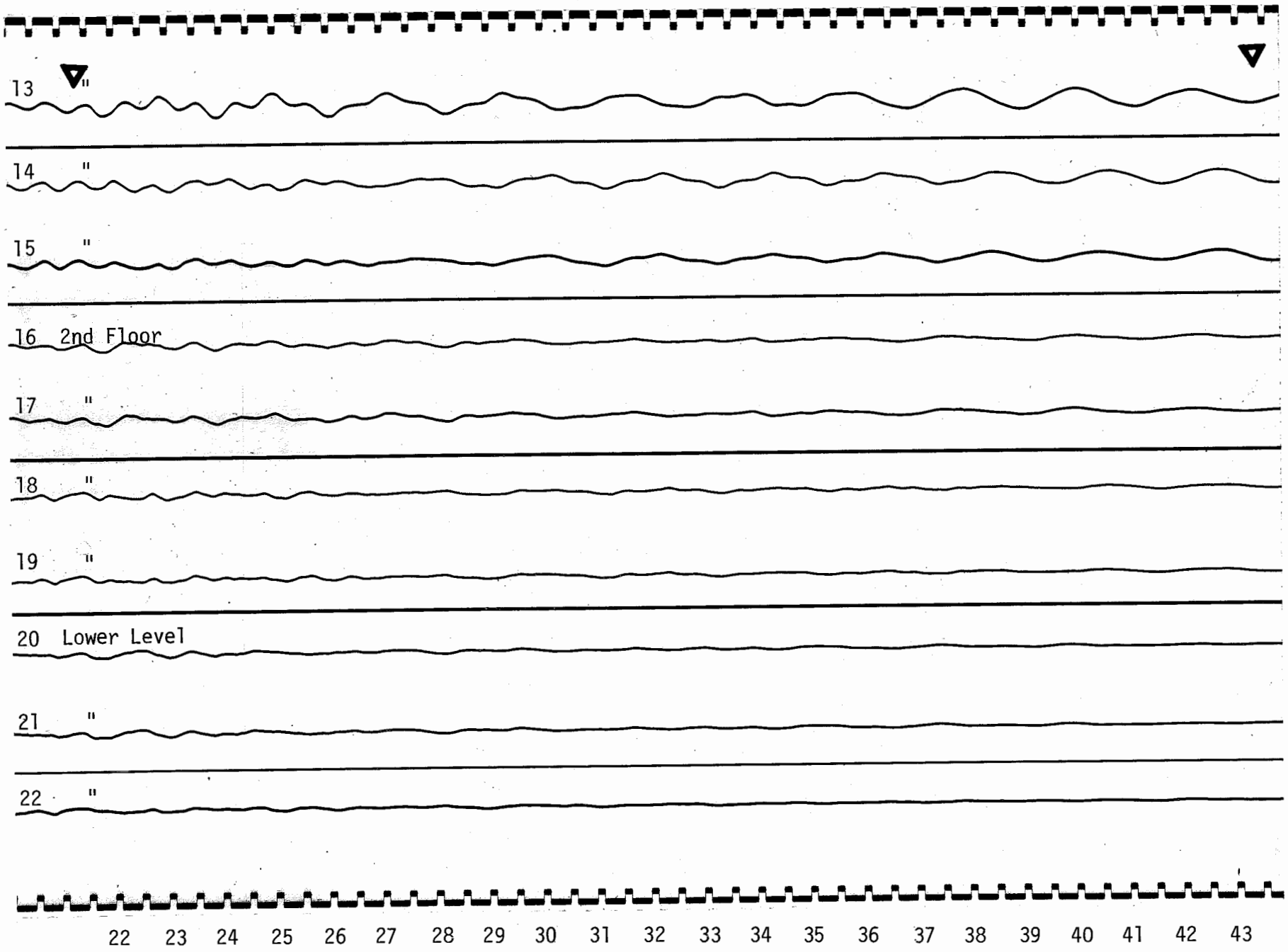
San Jose - Santa Clara Co. Bldg.
(Chns 1-12, 22-43 secs)

Record 57357-C0185-84115.01



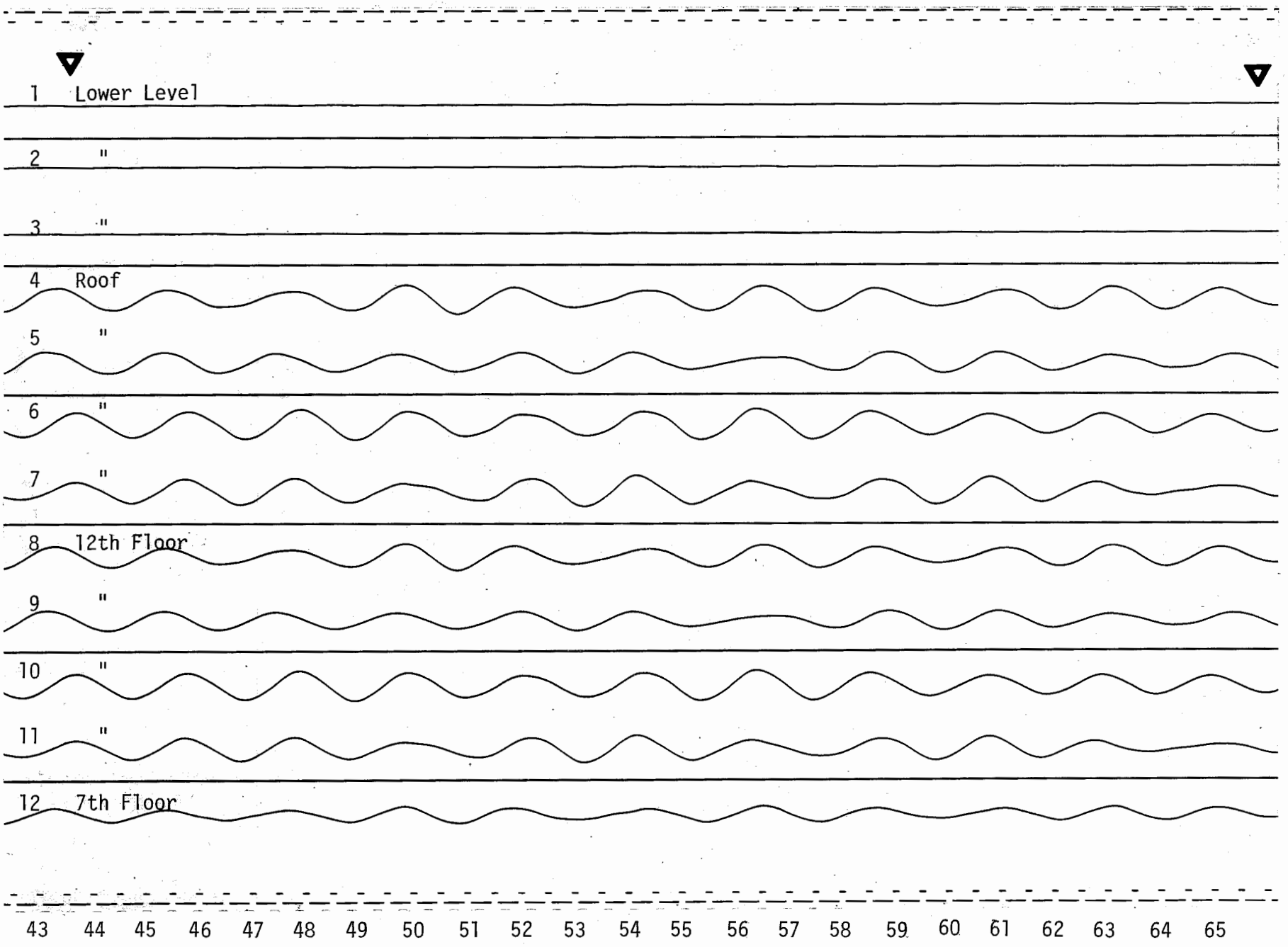
San Jose - Santa Clara Co. Bldg.
(Chns 13-22, 22-43 secs)

Record 57357-C0145-84115.01



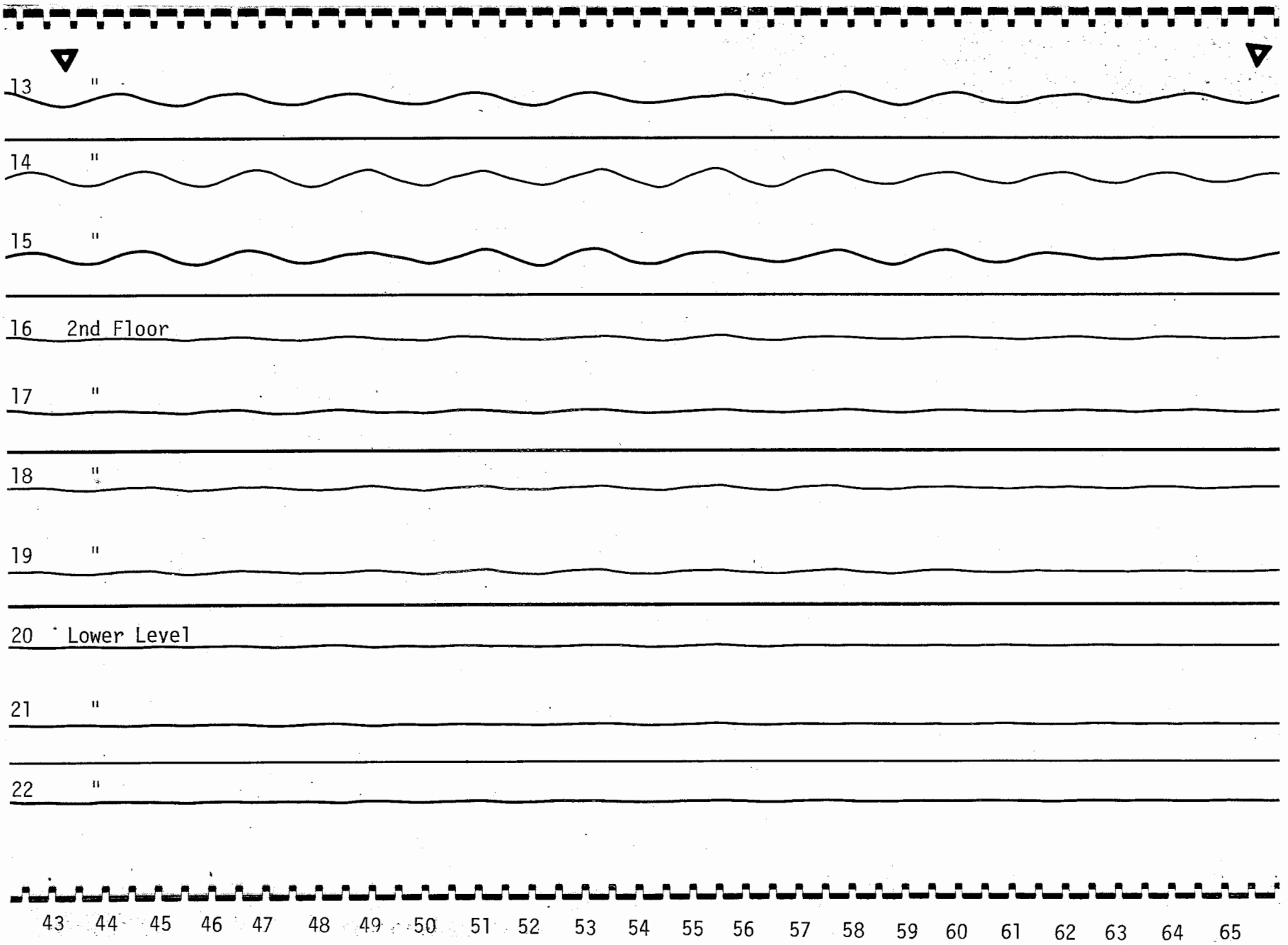
San Jose - Santa Clara Co. Bldg.
(Chns 1-12, 43-65 secs)

Record 57357-C0185-84115.01



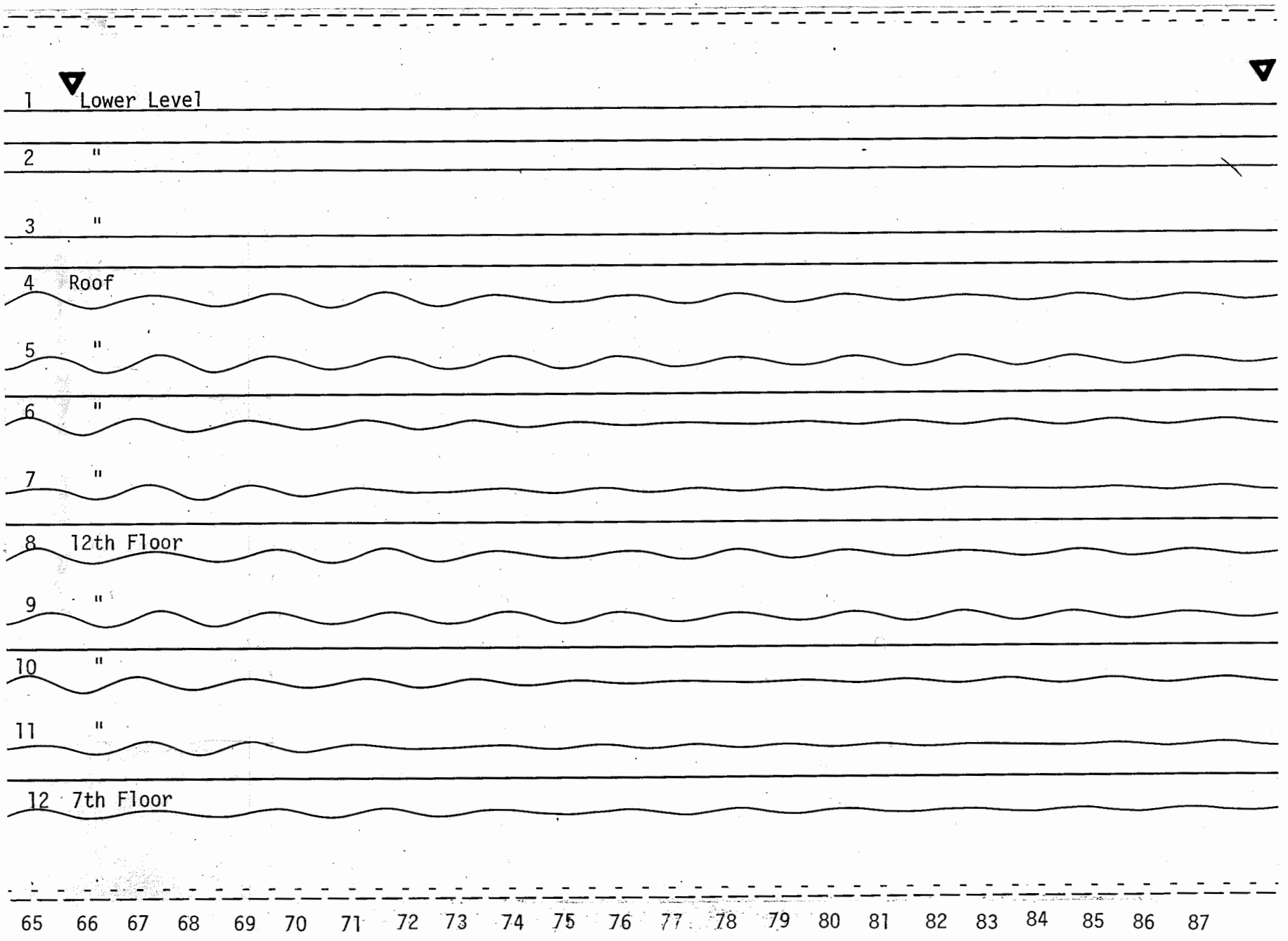
San Jose - Santa Clara Co. Bldg.
(Chns 13-22, 43-65 secs)

Record 57357-C0145-84115.01

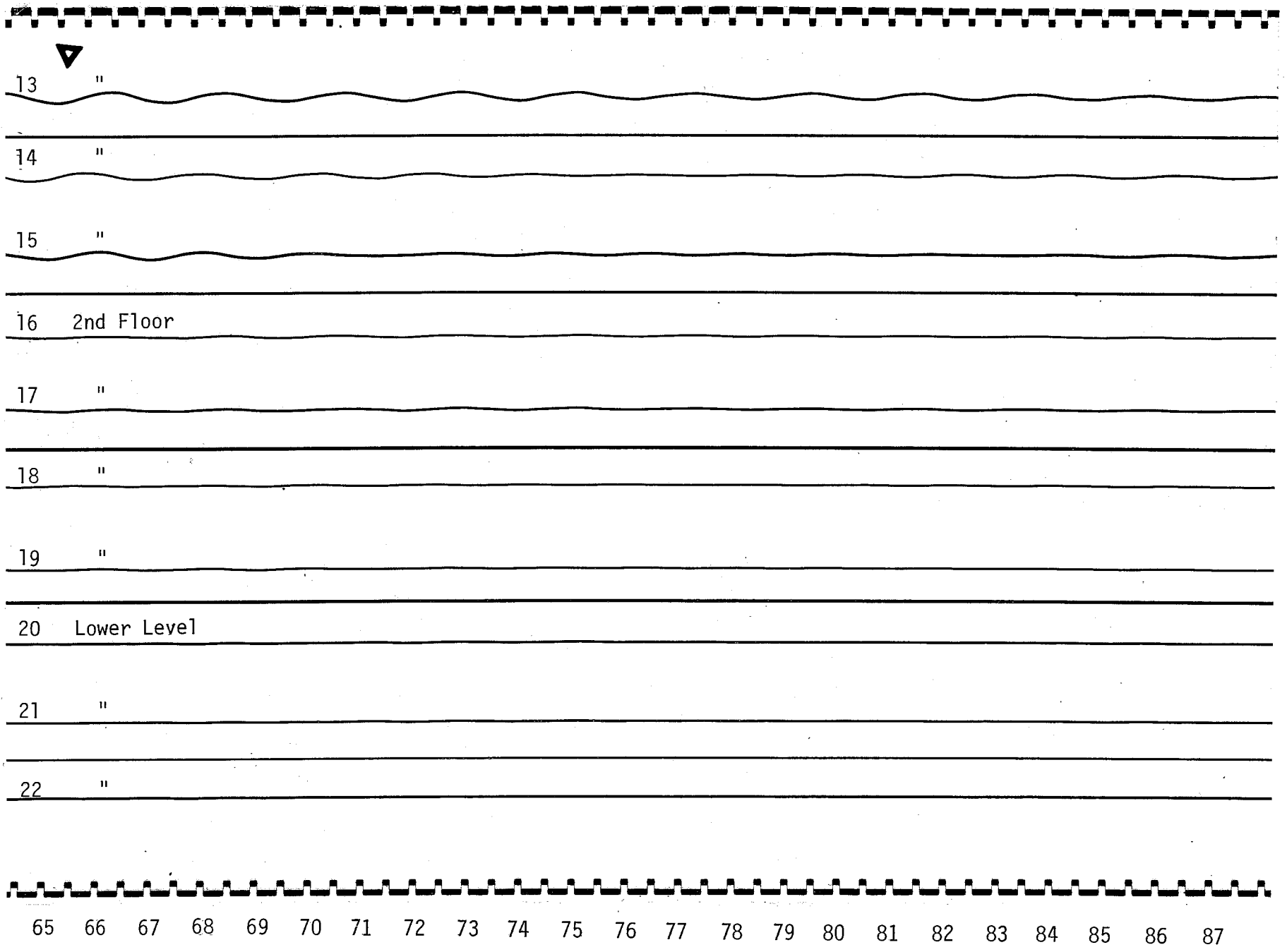


San Jose - Santa Clara Co. Bldg.
(Chns 1-12, 65-87 secs)

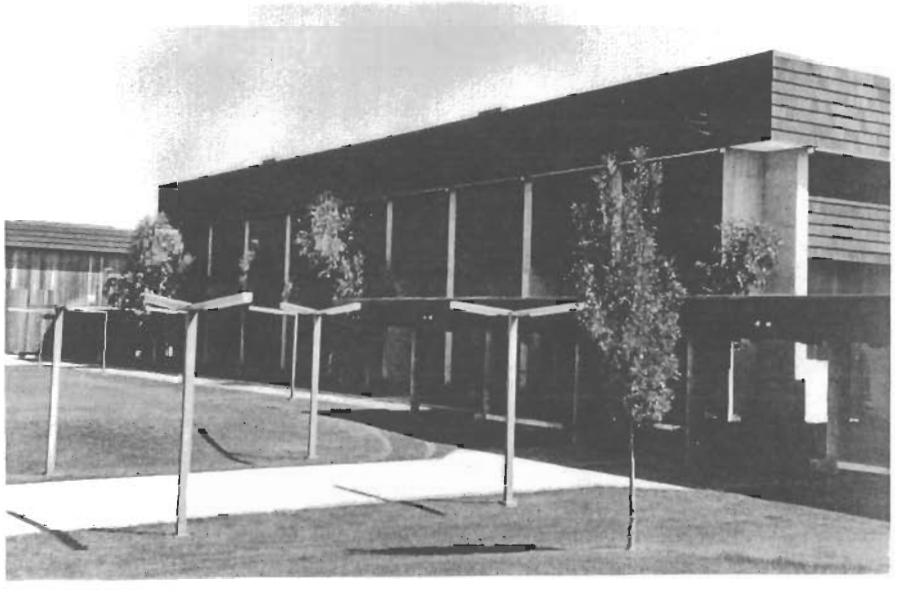
Record 57357-C0185-84115.01



Record 57357-C0145-84115.01



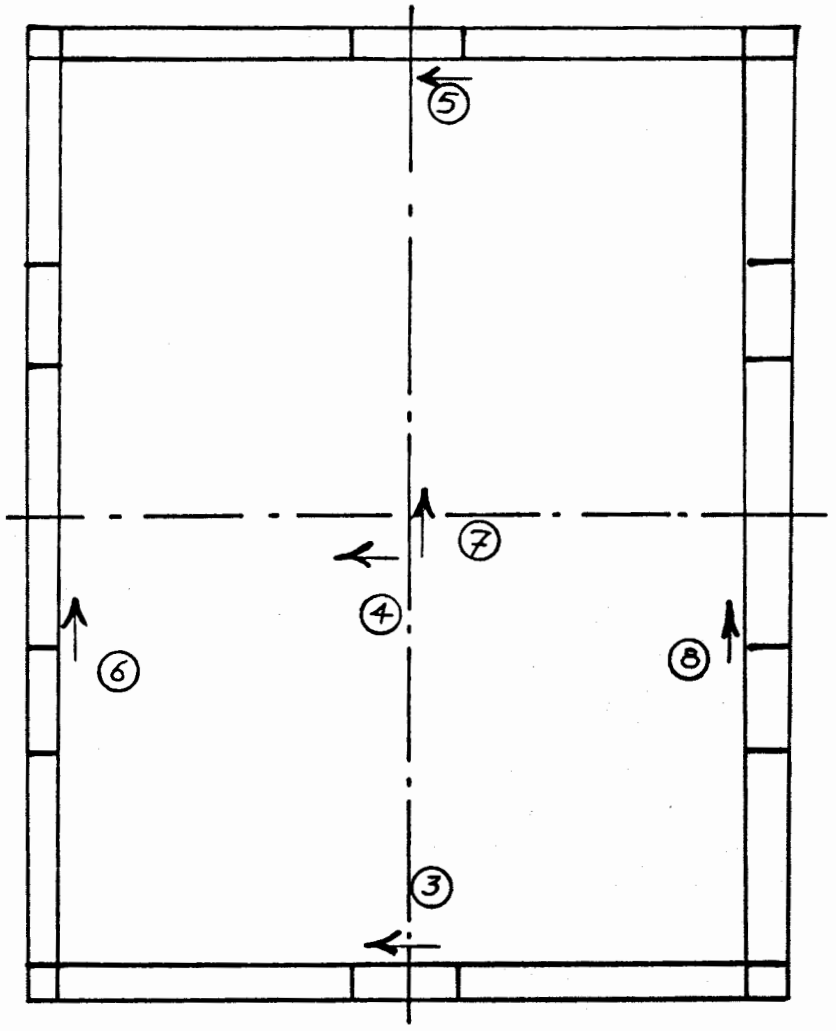
Saratoga - West Valley College Gym



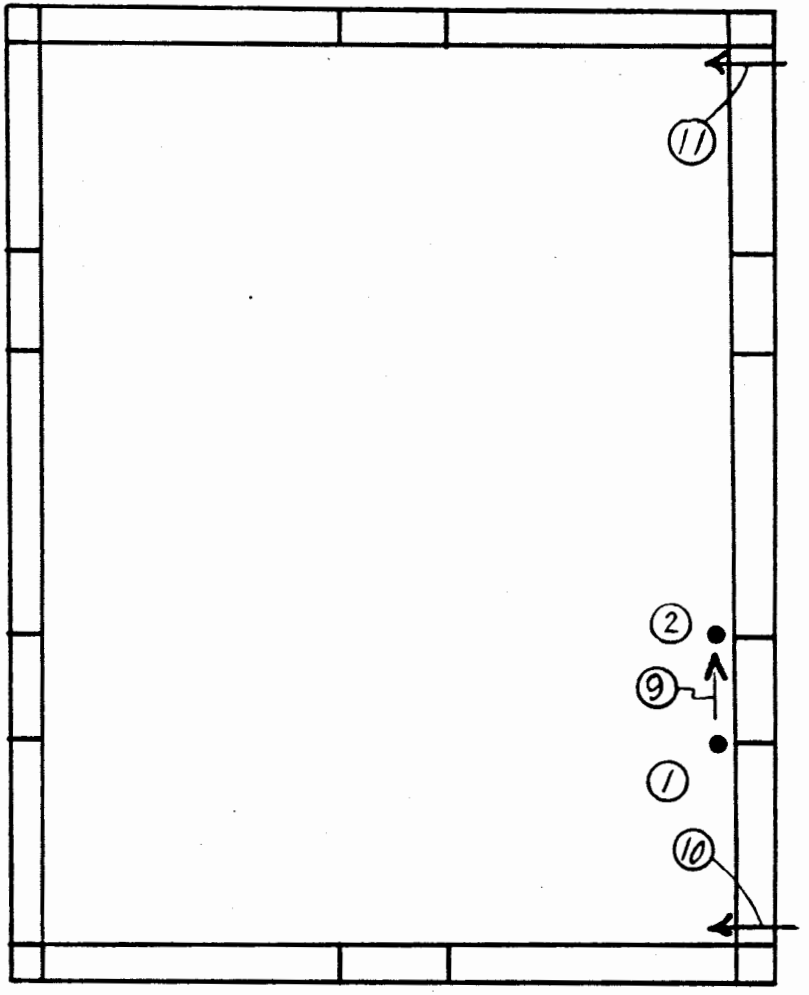
Address: 1400 Fruitvale Ave.
Saratoga, California
No. Stories above
/below ground: 1 / 0
Plan Shape: Rectangular
Base Dimensions: 112' x 148'
Typ. Floor Dimensions: Same
Design Date: 1971
Construction Date:

Vertical Load Carrying System:
3/8" plywood over tongue & groove sheathing; steel trusses on concrete columns.
Lateral Force Resisting System:
Isolated perimeter rc (reinforced concrete) shear walls.
Foundation Type:
Spread footings.

Saratoga
West Valley College Gym
CDMG Sta. No. 58235



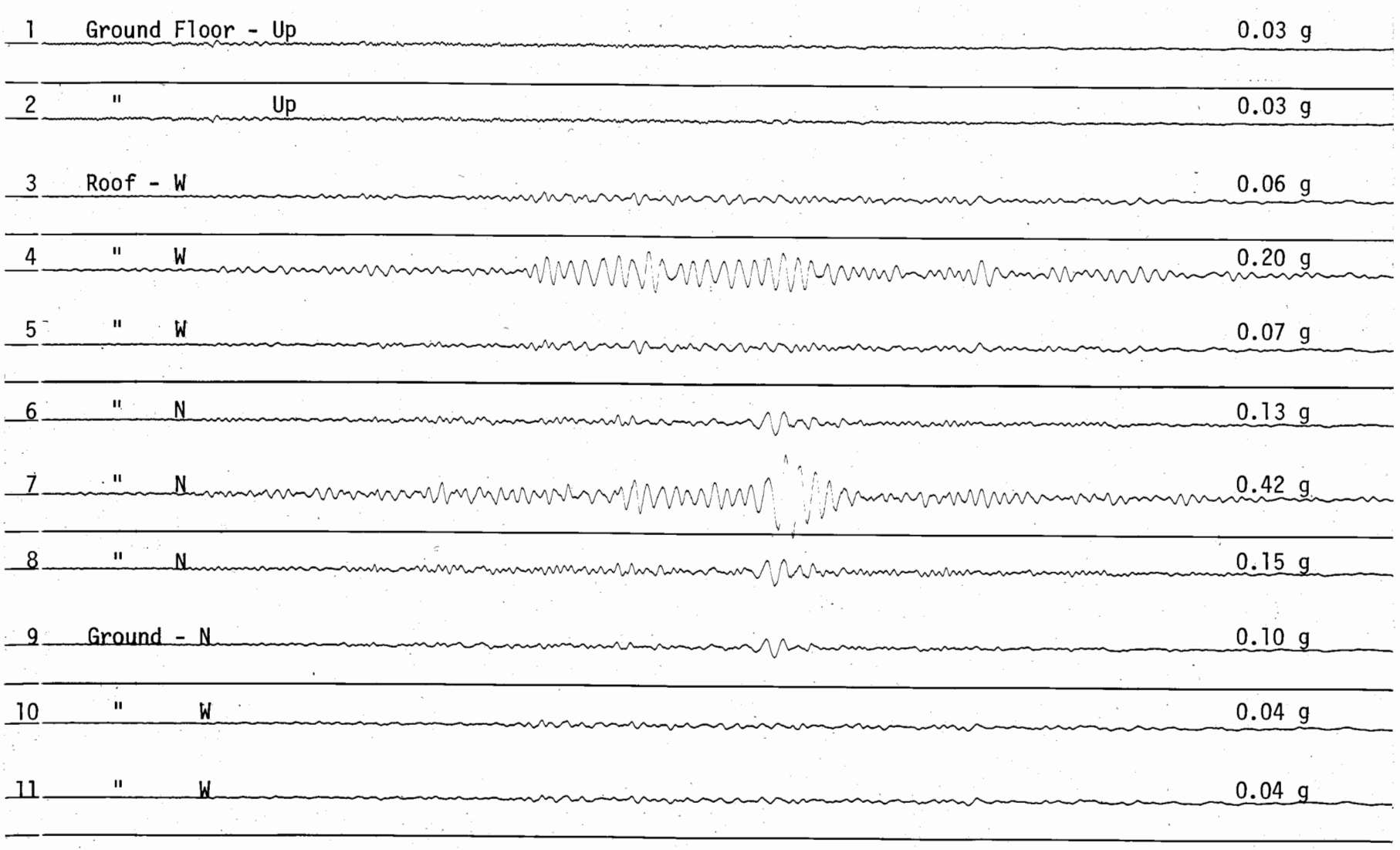
Roof Plan



Ground Floor Plan

Saratoga
West Valley College Gym
CDMG Sta. No. 58235

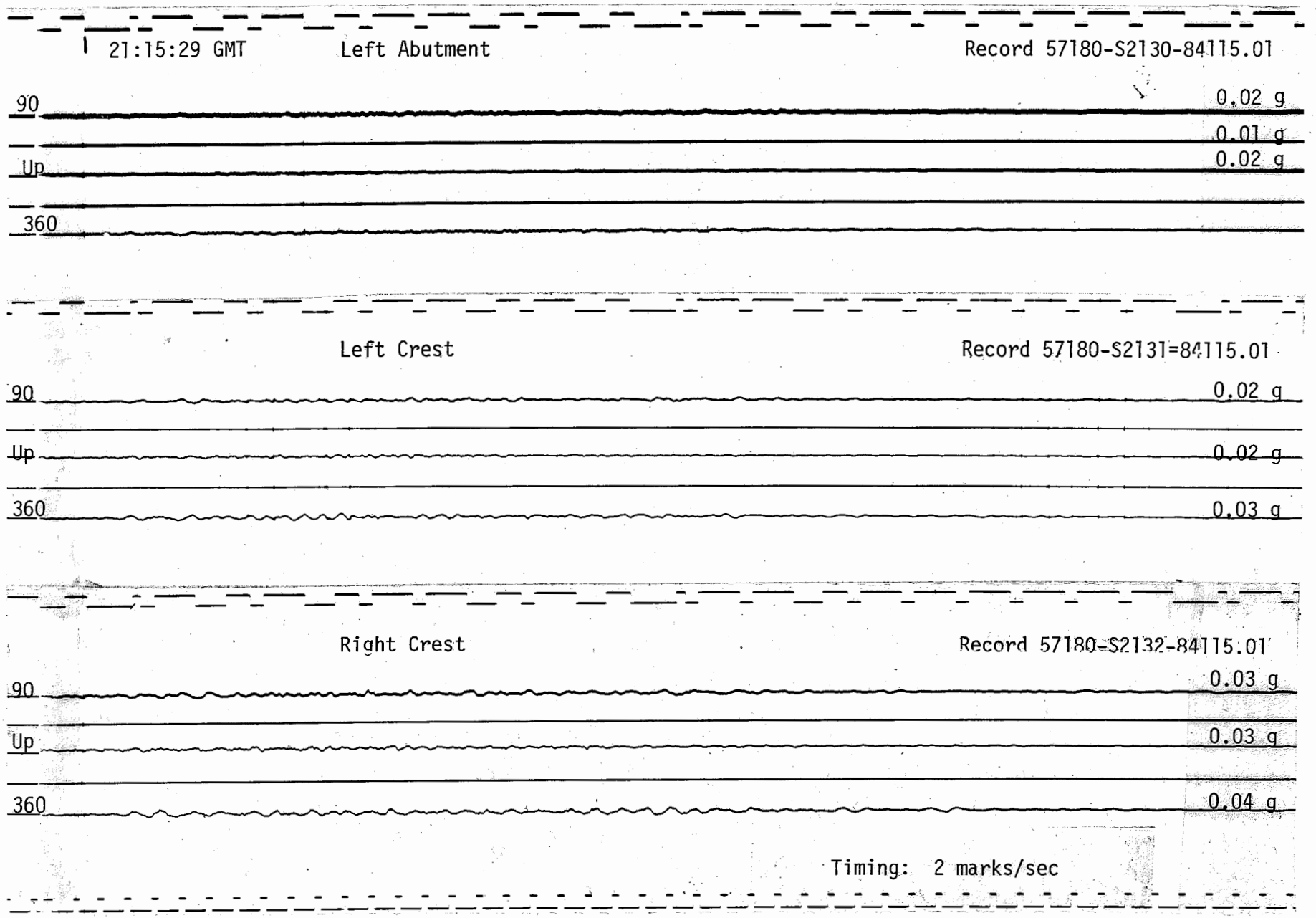
Record 58235-C0184-84117.01



Structure Ref. Orientation: N=360°, W=270°

0 1 2 3 4 5 10 15 20 23

Lexington Dam
CDMG Sta. No. 57180

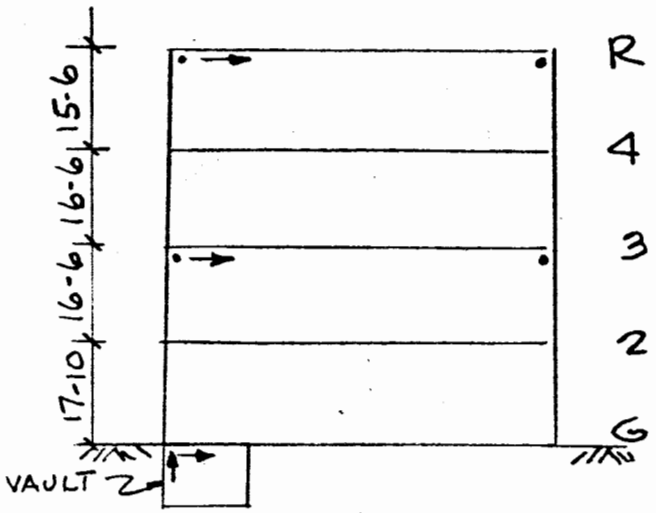


Watsonville - Telephone Bldg.

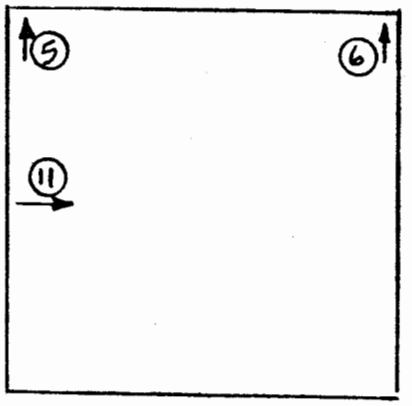
Address: 340 Rodriguez St.
Watsonville, CA
No. Stories above
/below ground: 4 / 0
Plan Shape: Rectangular
Base Dimensions: 71' x 75'
Typ. Floor Dimensions: Same
Design Date: 1948 & 1955
Construction Date: 1948 & 1955
Note: 4th story was added in 1955.

Vertical Load Carrying System:
Steel beams, girders and columns; concrete slab.
Lateral Force Resisting System:
Concrete shear walls.
Foundation Type:
Spread footings.

Watsonville - Telephone Co. Bldg.
CDMG Sta. No. 47459

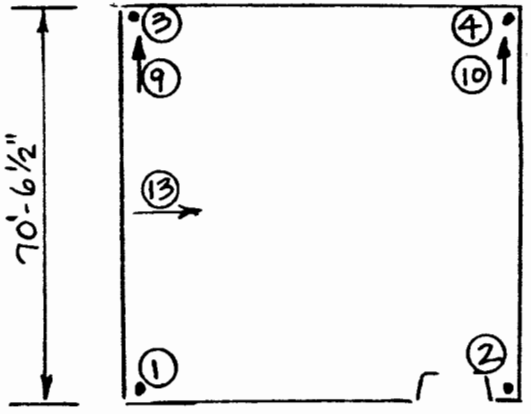


ELEVATION

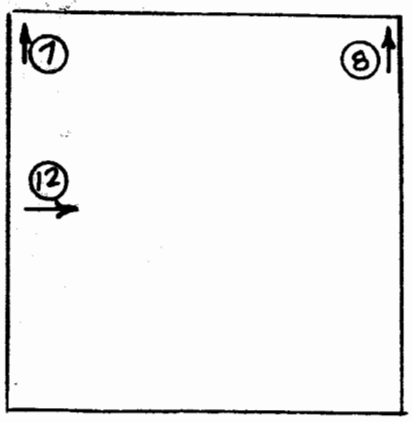


ROOF

74'-7"



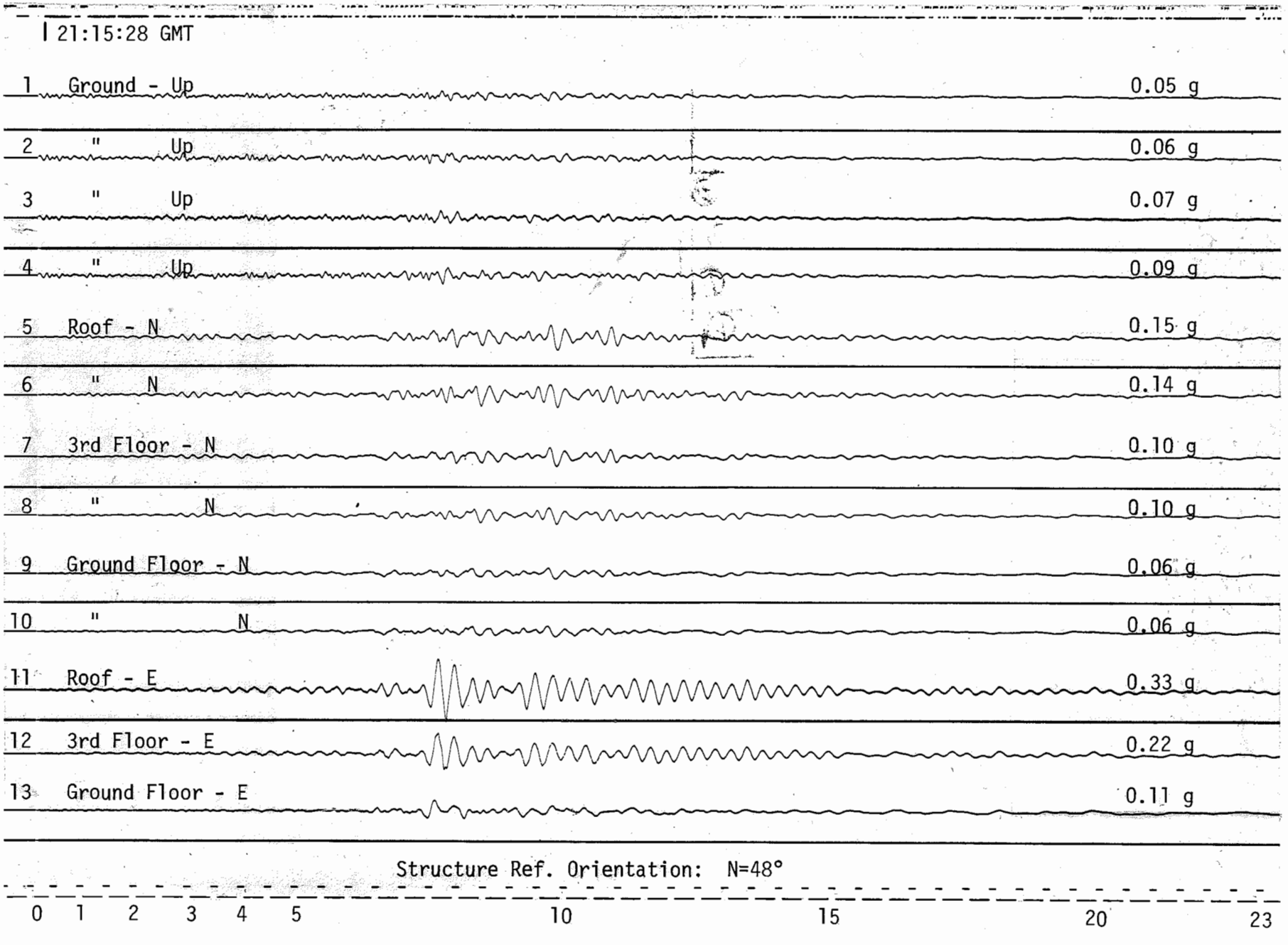
GROUND FLOOR



3RD FLOOR

Watsonville
Telephone Bldg.
CDMG Sta. No. 47459

Record 47459-C0215-84117.01



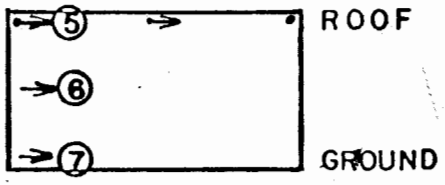
Hollister - Glorietta Warehouse

Address: 711 Sally Street
Hollister, CA
No. Stories above
/below ground: 1 / 0
Plan Shape: Rectangular
Base Dimensions: 100 x 280 ft.
Typ. Floor Dimensions: Same
Design Date: 1979
Construction Date: 1979

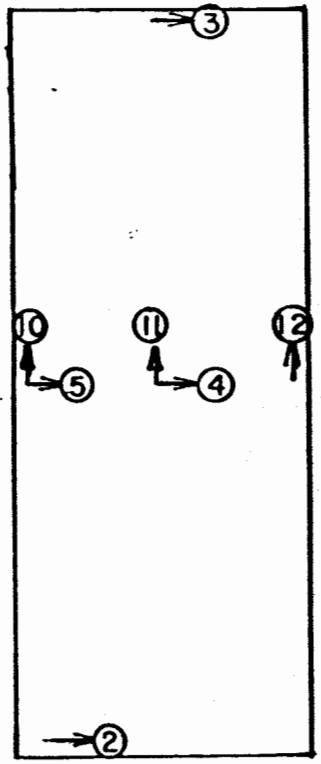
Vertical Load Carrying System:
Glu-lam beams, wood joists, interior steel pipe columns and tilt-up concrete bearing walls.
Lateral Force Resisting System:
Concrete shear walls on perimeter, plywood roof diaphragm.
Foundation Type:
Spread concrete footings.

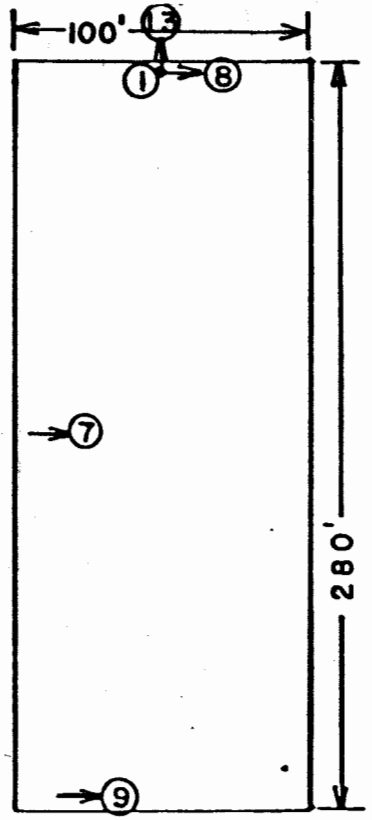
SENSOR LAYOUT

Hollister - Glorietta Warehouse
CDMG Sta. No. 47391



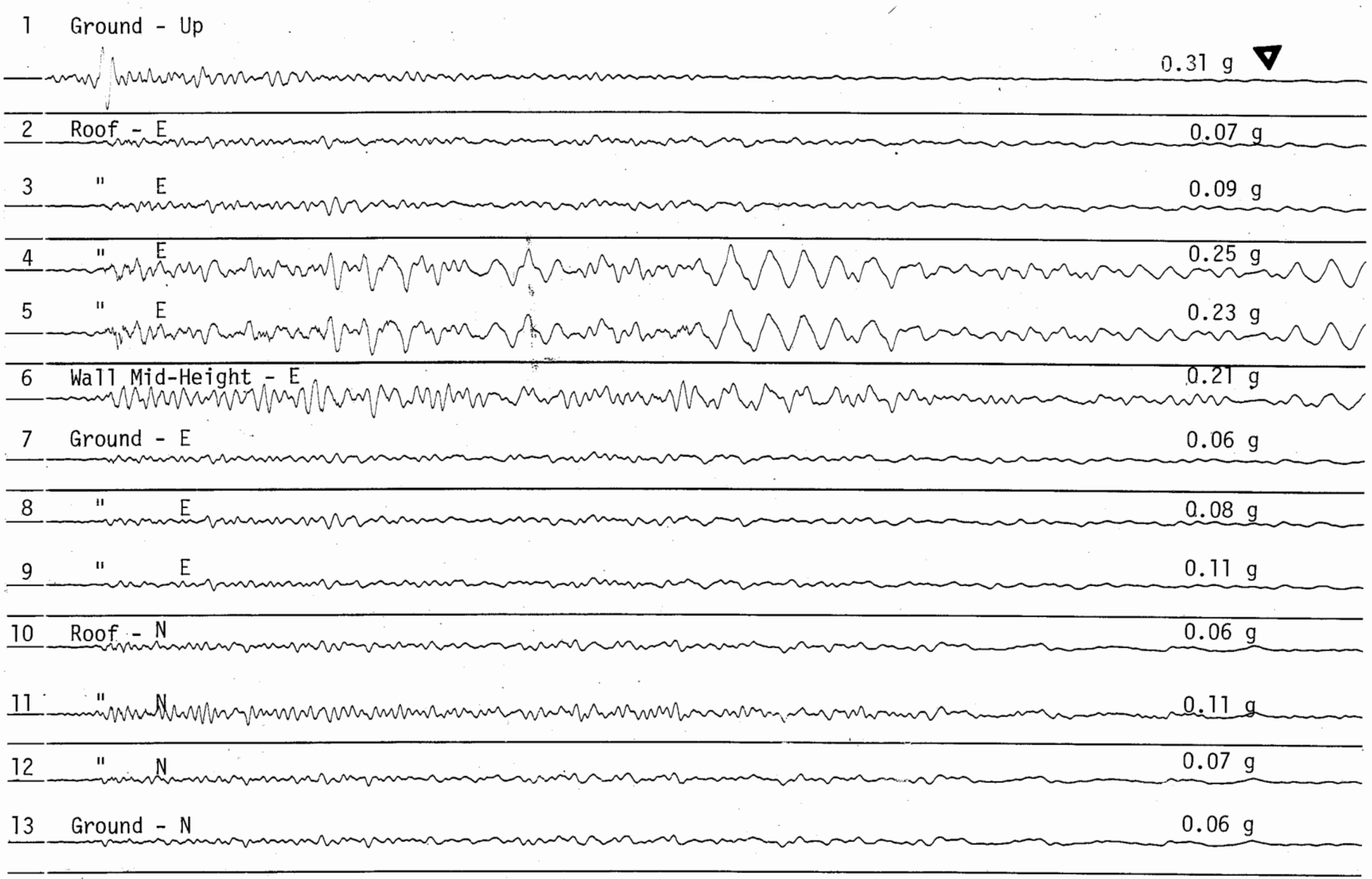
SECTION AT CENTER





Hollister - Glorietta Warehouse
CDMG Sta. No. 47391

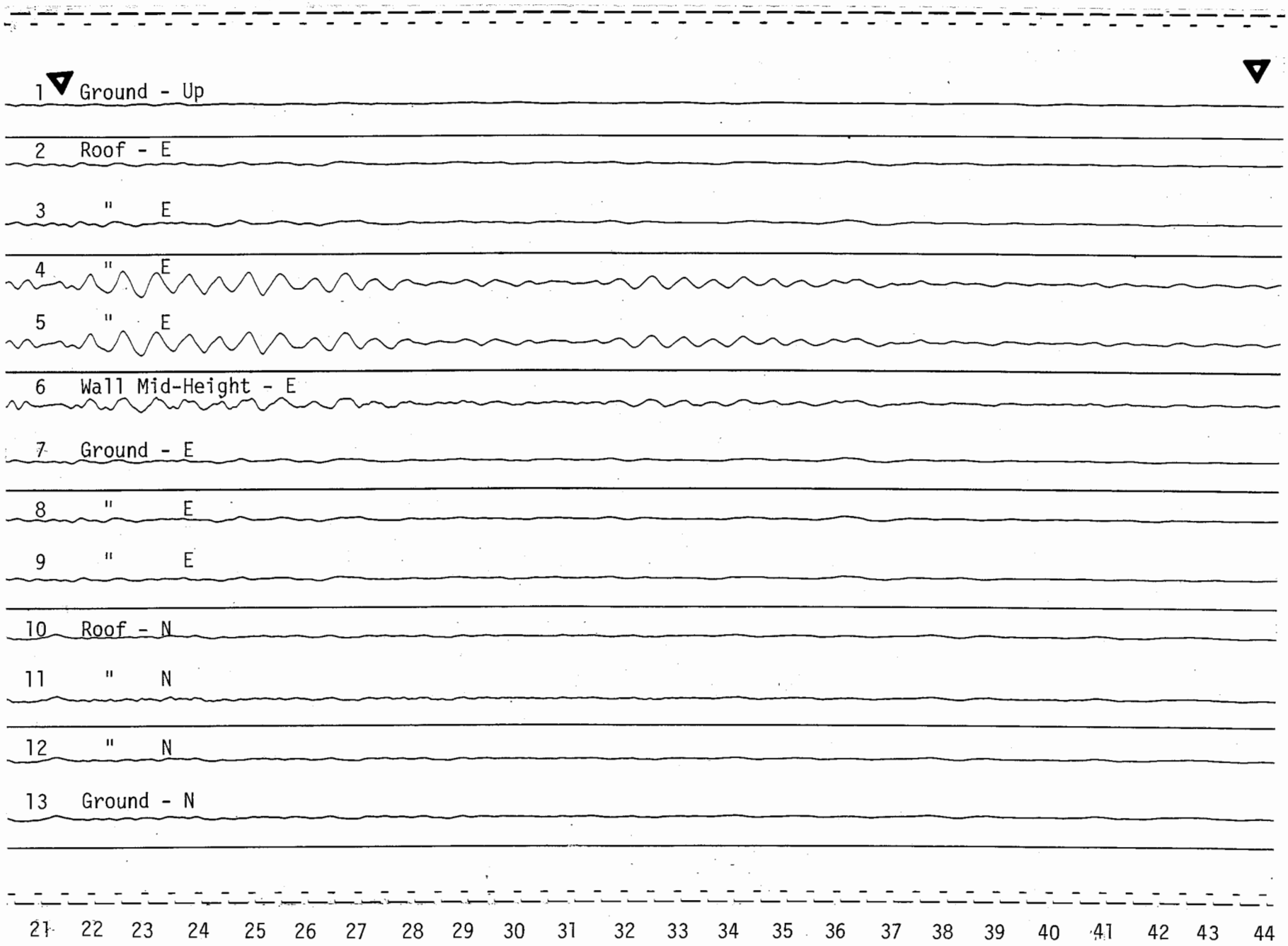
Record 47391-C0182-84118.02



Structure Ref. Orientation: N=335°

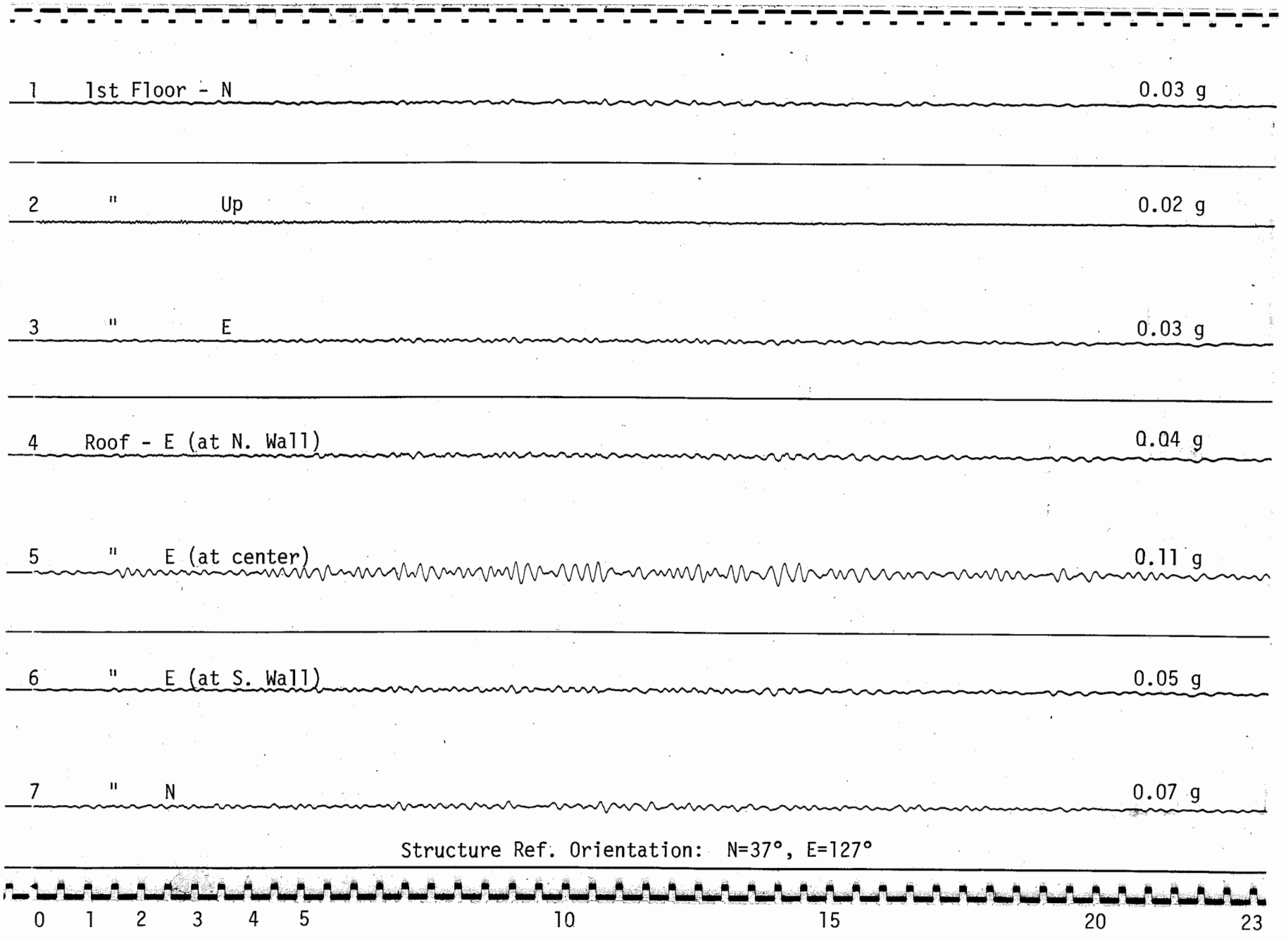
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

Hollister - Glorietta Warehouse (21-44 secs)
CDMG Sta. No. 47391



Palo Alto - 1900 Embarcadero Bldg.
2-story Rectangular (155 x 78 ft) Office Bldg.
CDMG Sta. No. 58264

Record 58264-C0123-84118.02



Canada College - Bldg. 13, Redwood City
3-story, rectangular (170 x 70 ft)
CDMG Sta. No. 58263

Record 58263-C0110-84123.01

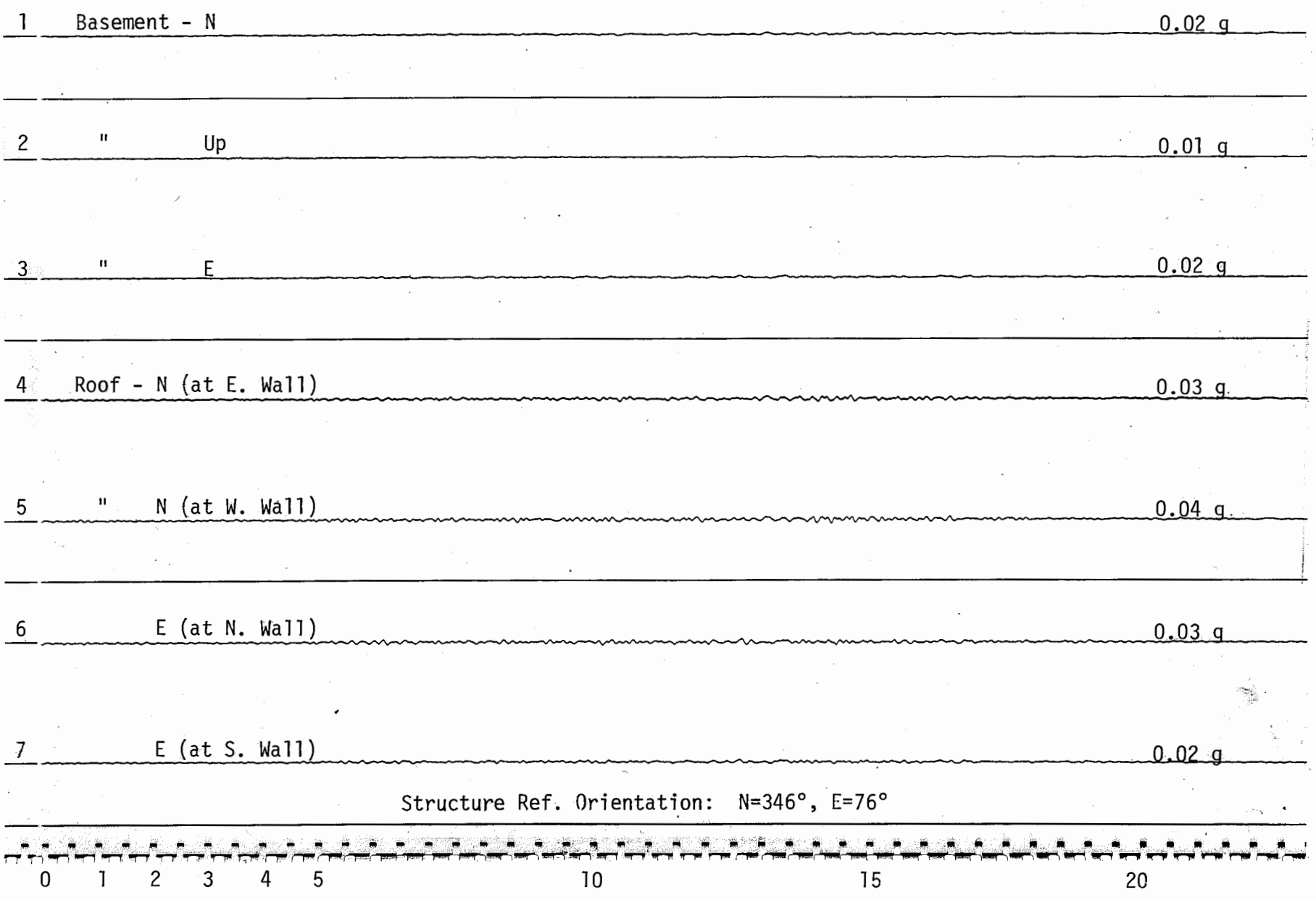
1	Ground Floor - S (at NE corner)	0.01 g
2	" Up "	0.01 g
3	" W "	0.01 g
4	Roof - W (at center)	0.02 g
5	" W (at N. Wall)	0.03 g
6	" S (at center)	0.03 g

Structure Ref. Orientation: S=217°

Timing: 2 marks/sec

Belmont - Envirotech Bldg.
2-story, square (176 x 176 ft) Office Bldg
CDMG Sta. No. 58262

Record 58262-C0122-84124.02



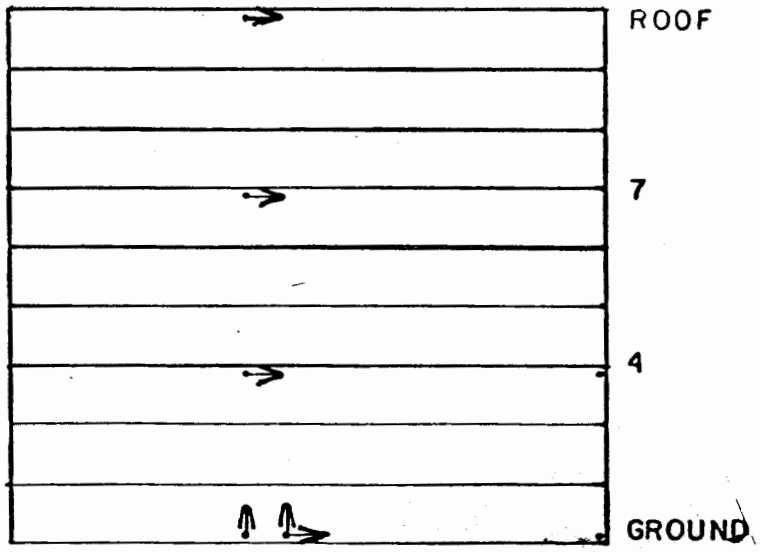
San Bruno - Postal Service Building

Address: 850 Cherry Ave.
San Bruno, CA
No. Stories above
/below ground: 9 / 0
Plan Shape: Rectangular
Base Dimensions: 84 x 192 ft
Typ. Floor Dimensions: Same
Design Date: 1972
Construction Date: 1972

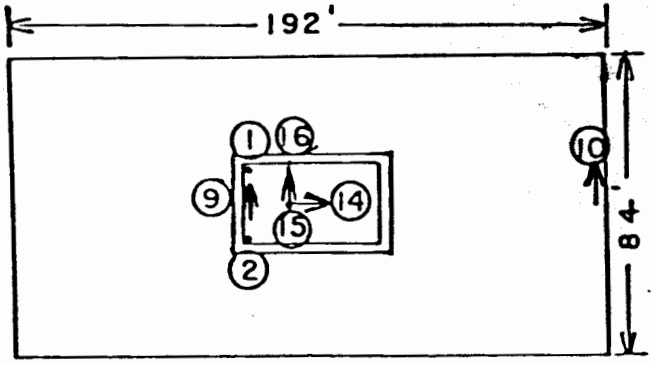
Vertical Load Carrying System:
8 in. and 9 in. post-tensioned light weight concrete flat slabs; reinforced concrete columns.
Lateral Force Resisting System:
Center core reinforced concrete shear walls.
Foundation Type:
Concrete mat foundation.

SENSOR LAYOUT

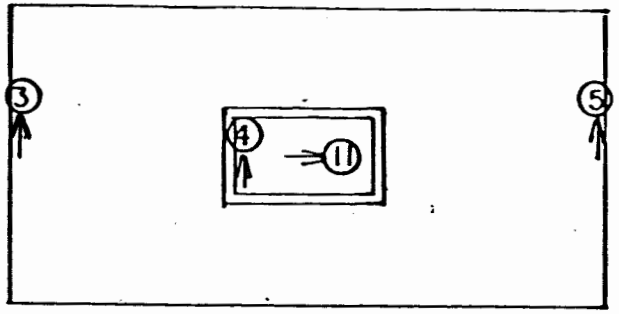
San Bruno - U.S. Postal Service Bldg.
CDMG Sta. No. 58394



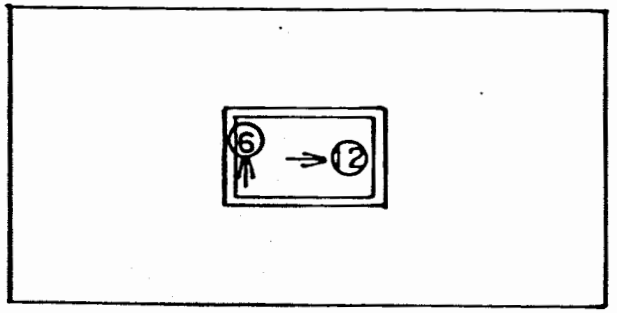
E-W ELEVATION



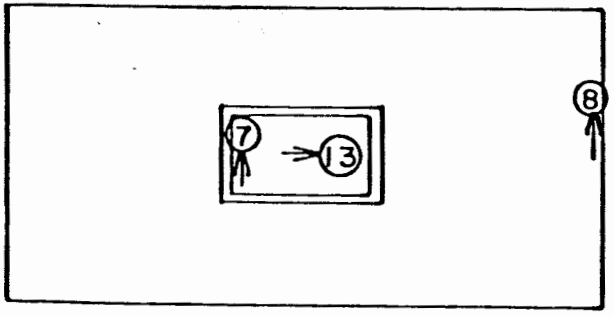
GROUND



ROOF



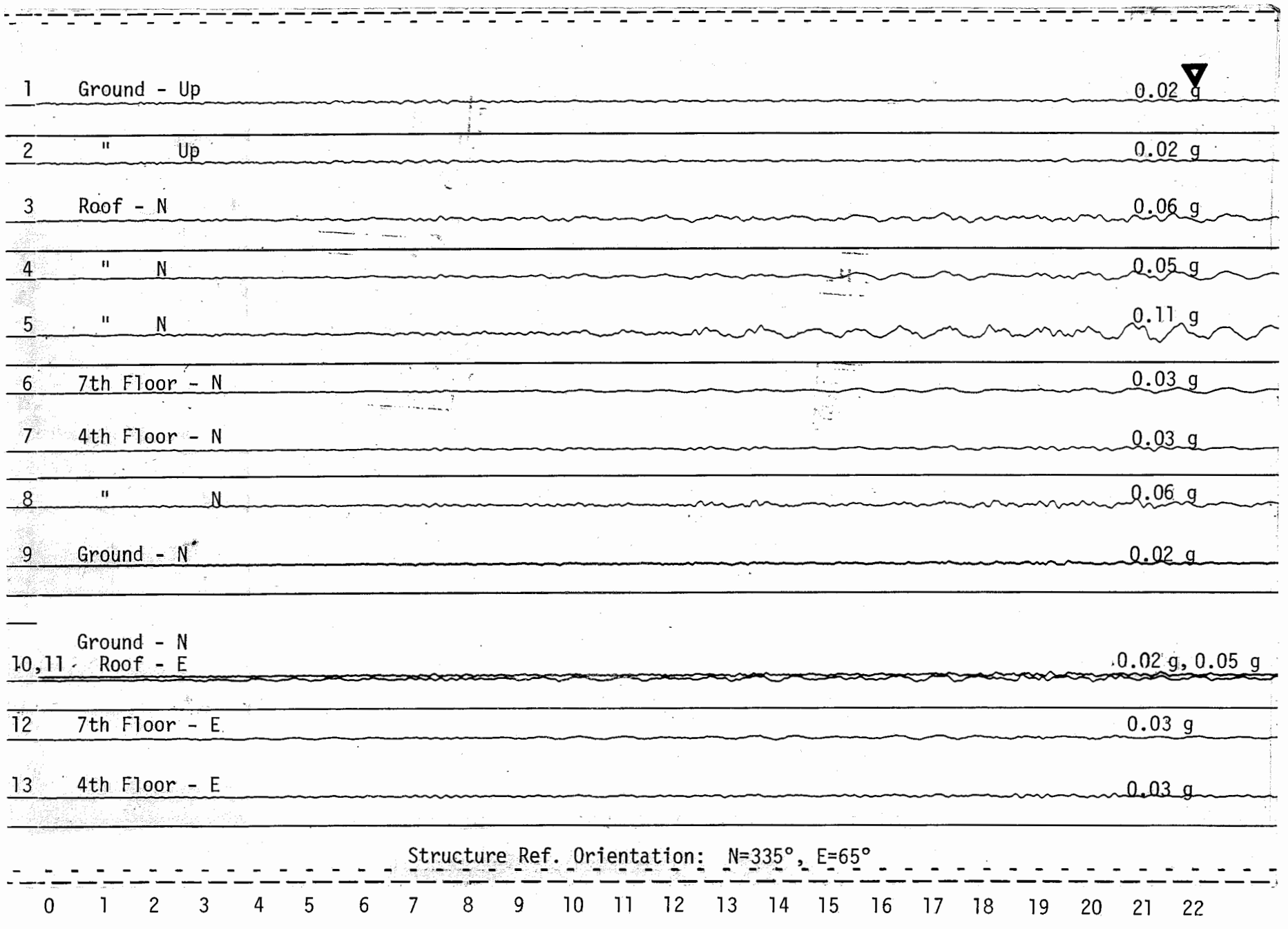
7TH FLOOR



4TH FLOOR

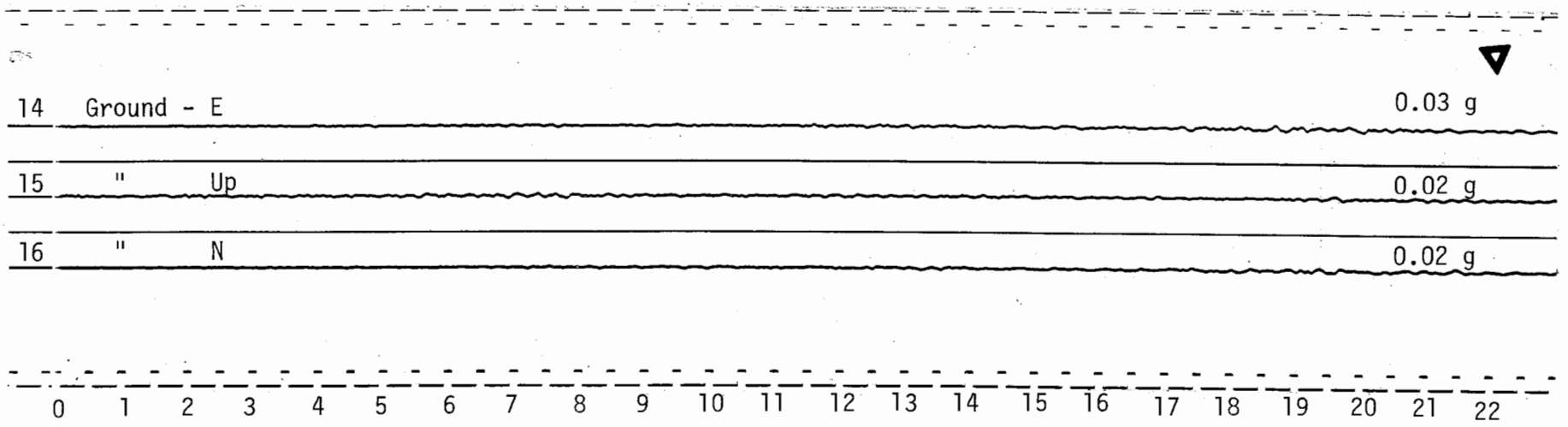
San Bruno - U.S. Postal Service Bldg.
CDMG Sta. No. 58394
(Chns 1-13, 0-22 secs)

Record 58394-C0216-84123.01



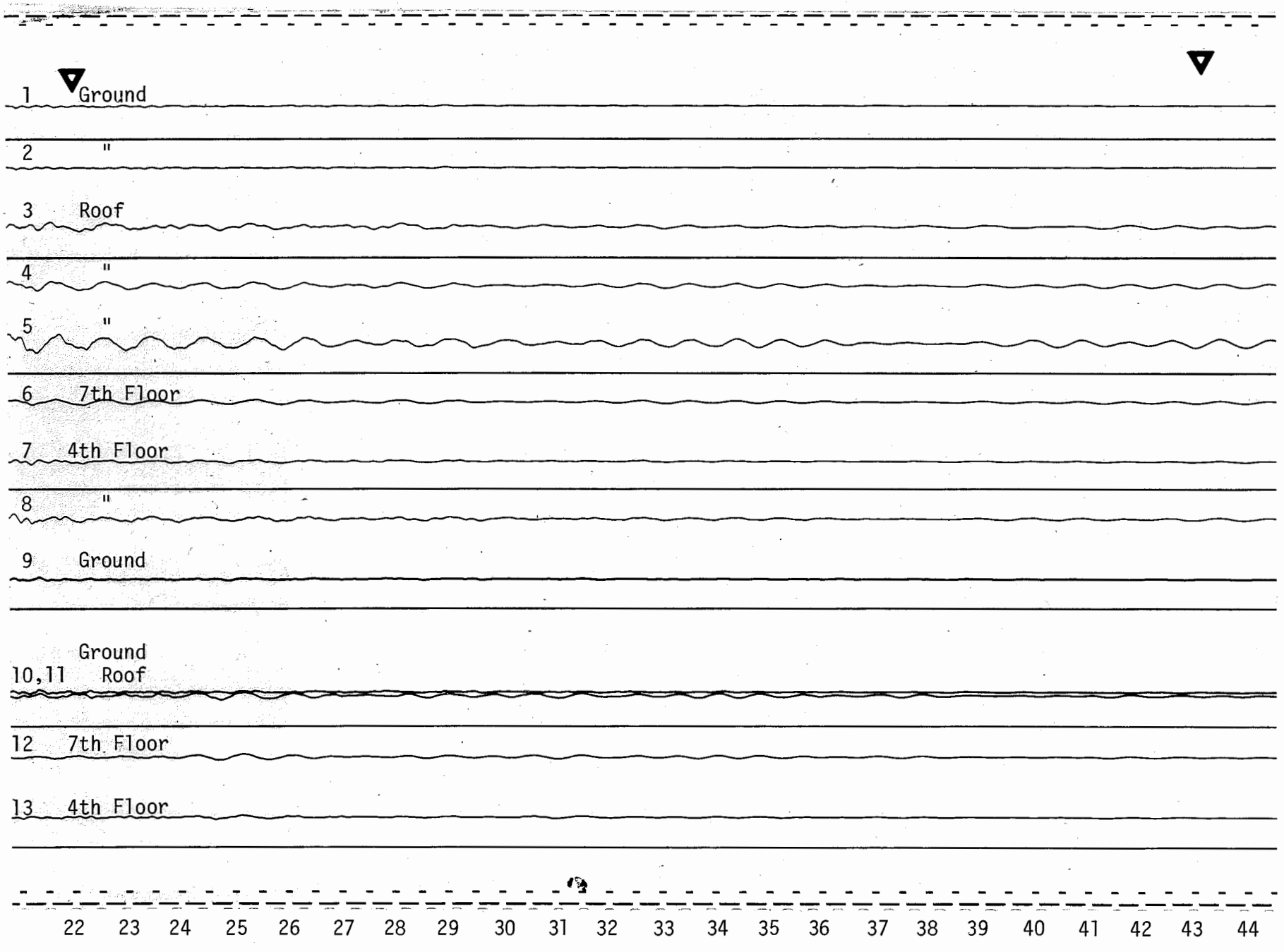
San Bruno - U.S. Postal Service Bldg.
(Chns 14-16, 0-22 secs)

Record 58394-S1220-84123.01



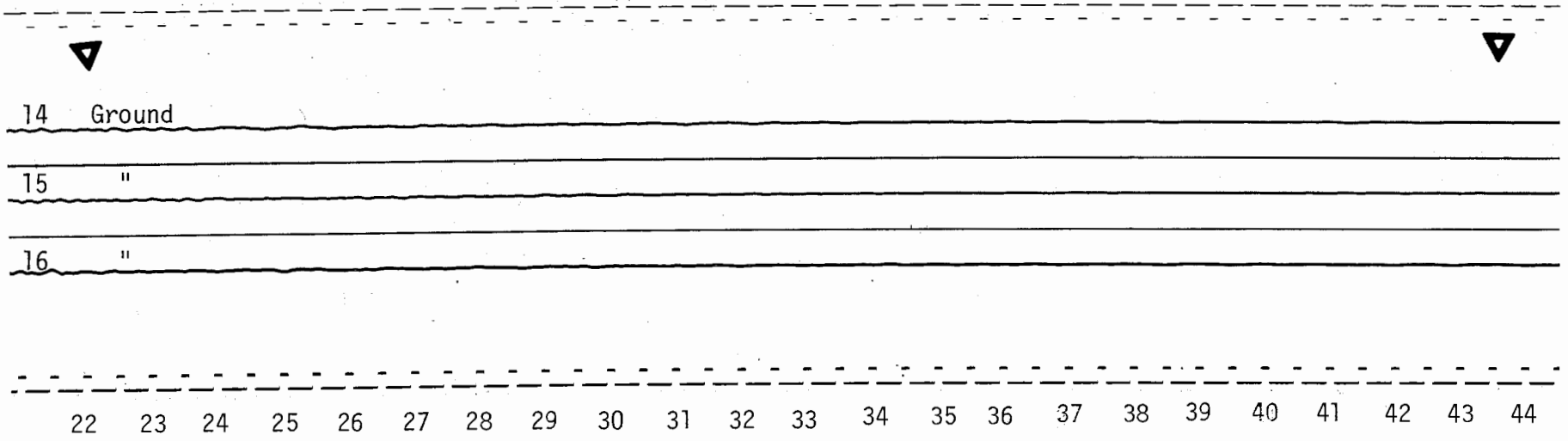
San Bruno - U.S. Postal Service Bldg.
(Chns 1-13, 22-44 secs)

Record 58394-C0216-84123.01



San Bruno - U.S. Postal Service Bldg.
(Chns 14-16, 22-44 secs)

Record 58394-S1220-84123.01

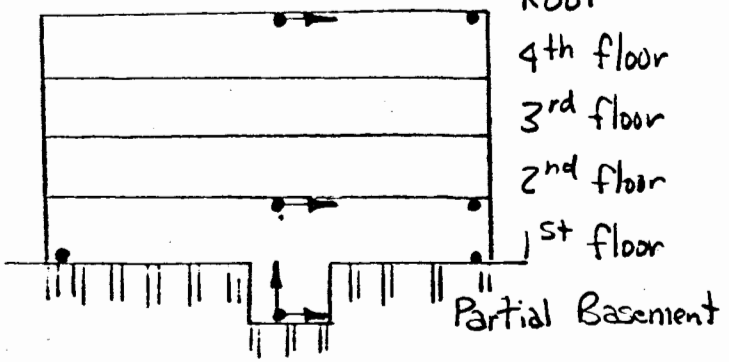


So. San Francisco - Kaiser Medical Bldg.

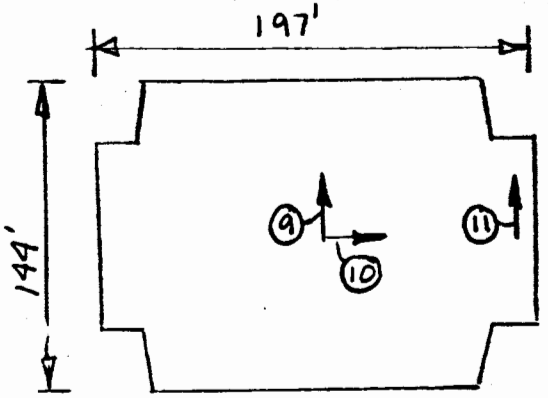
Address: 1200 El Camino Real
South San Francisco, CA
No. Stories above
/below ground: 4 / 0
Plan Shape: Rectangular
Base Dimensions: 144 x 197 ft.
Typ. Floor Dimensions: Same
Design Date: 1972
Construction Date: 1973-75

Vertical Load Carrying System:
3 1/2 in. light weight concrete fill on metal decking; moment-resistant steel frame.
Lateral Force Resisting System:
Moment-resistant steel frame.
Foundation Type:
Pile footings (50 - 70 ft. deep piles); 8 in. reinforced concrete slab on grade.
Remarks: Potentially liquefiable site.

South San Francisco
Kaiser Med. Center
CDMG Sta. No. 58261

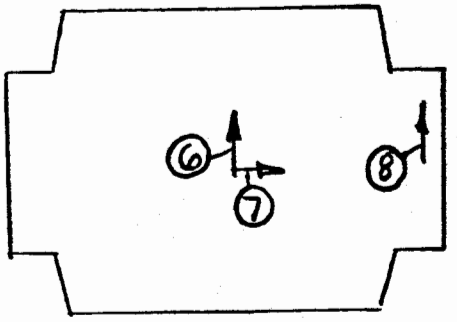


S-N Section

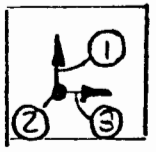


Roof Plan

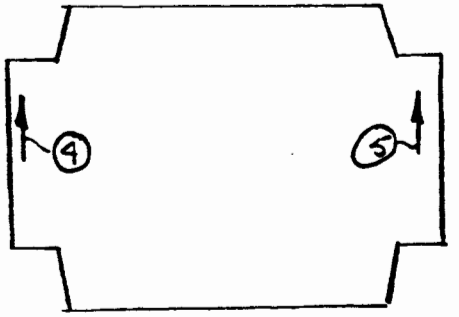
Ref.



2nd Floor Plan



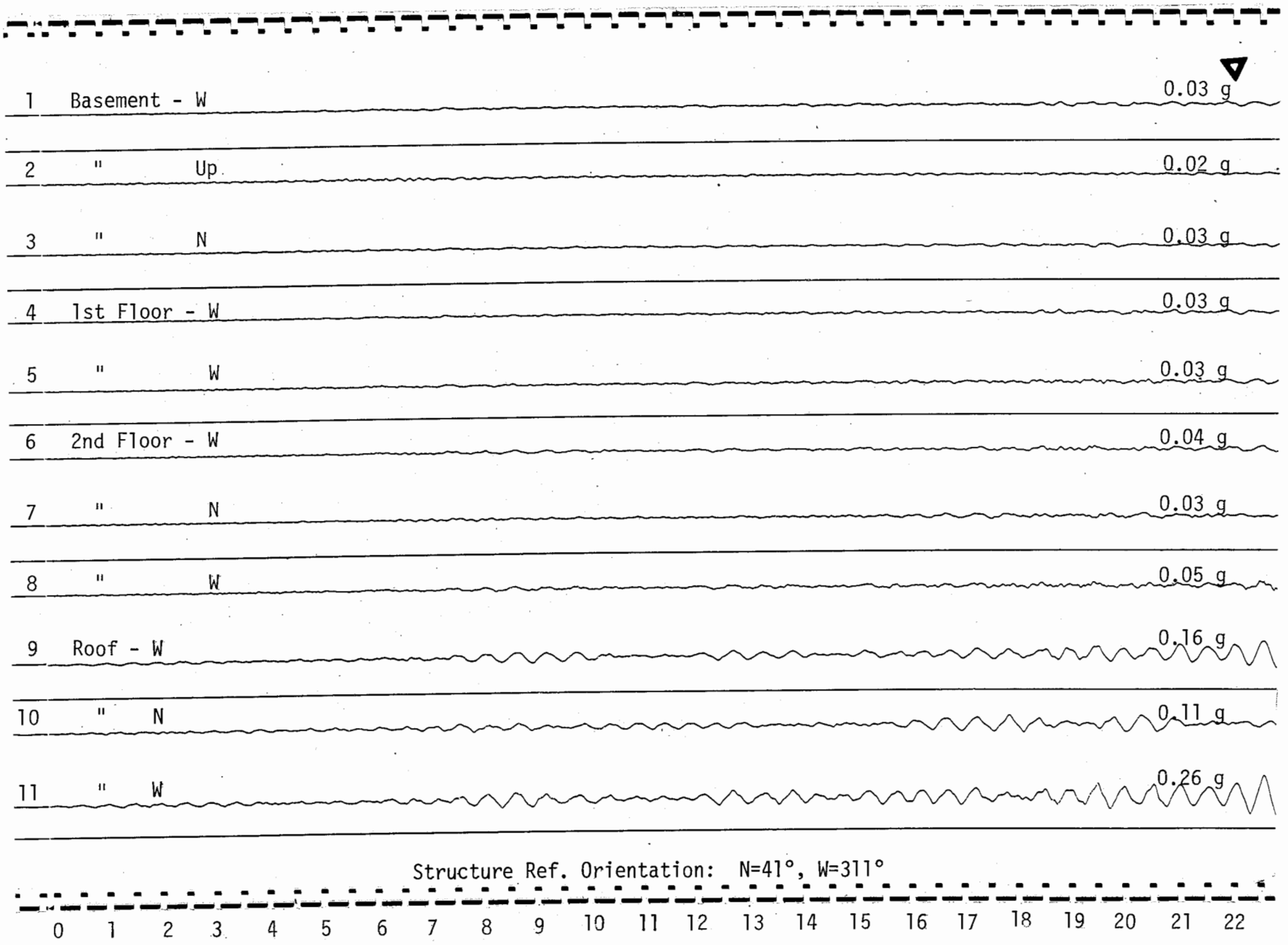
Partial Basement Plan



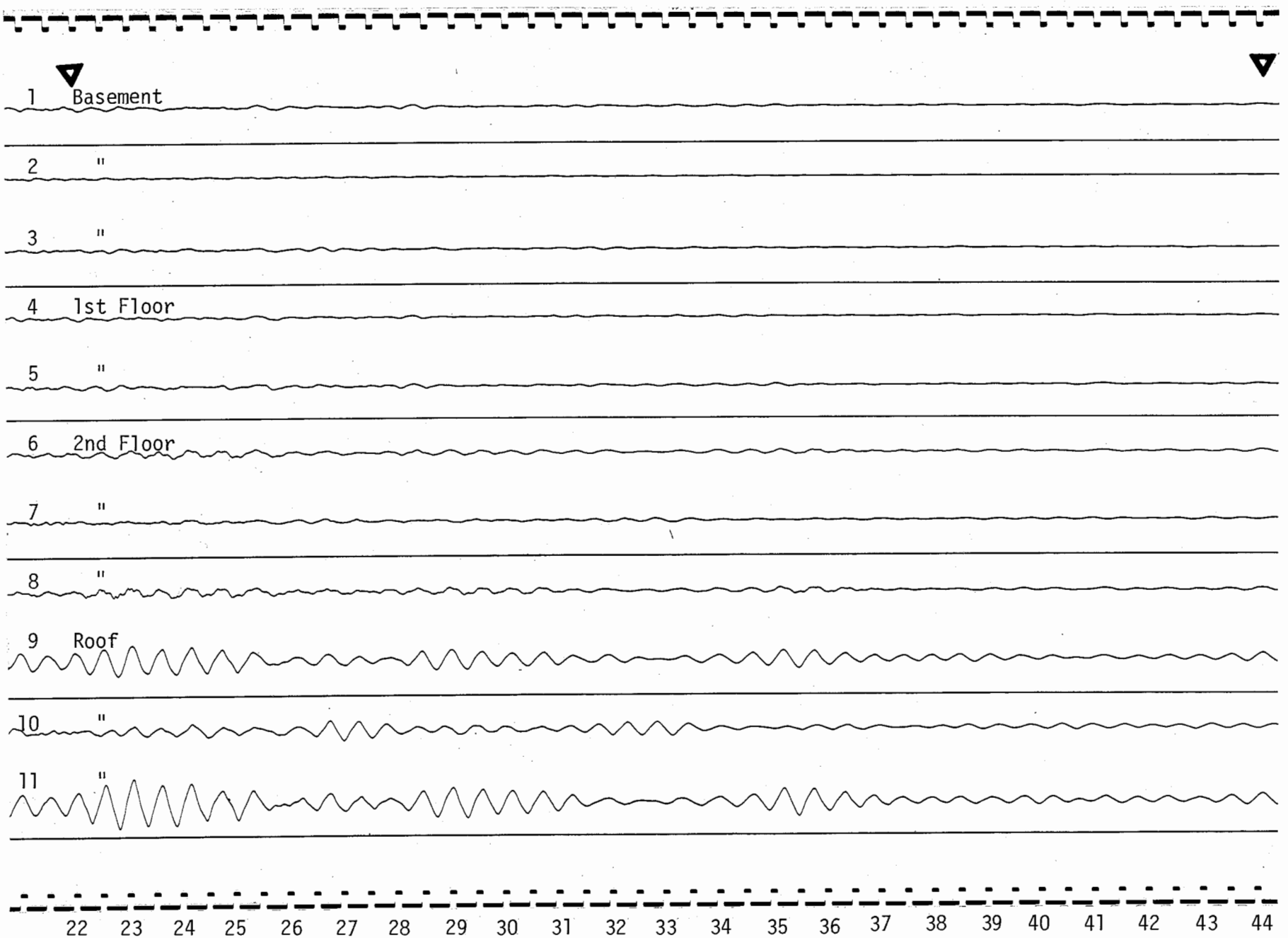
1st Floor Plan

South San Francisco
Kaiser Med. Center
CDMG Sta. No. 58261

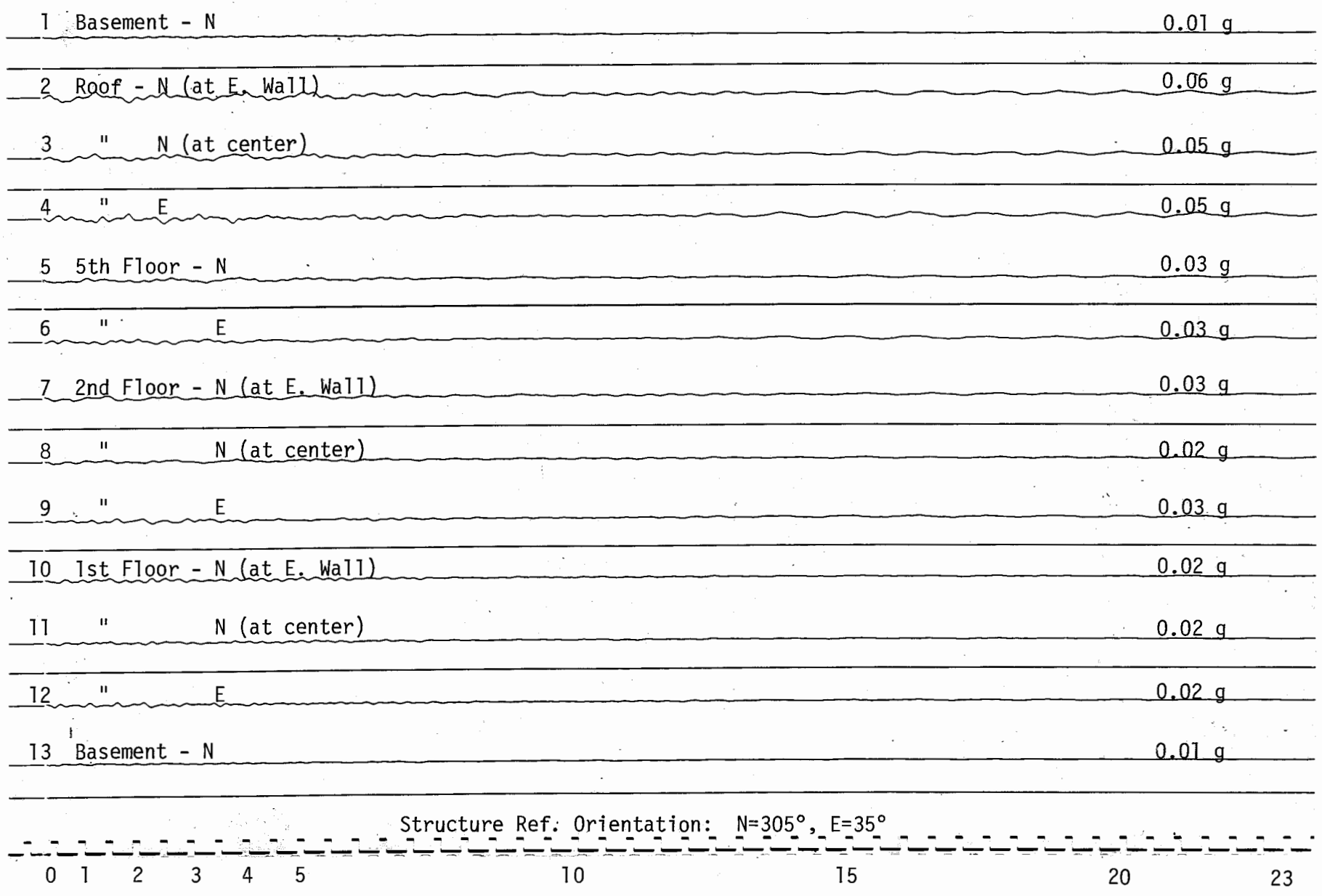
Record 58261-C0150-84123.10



South San Francisco
Kaiser Med. Center (22-44 secs)
CDMG Sta. No. 58261



Record 58354-C0188-84116.01



Hayward - CSUH Admin. Bldg.
(Chns 14-16)

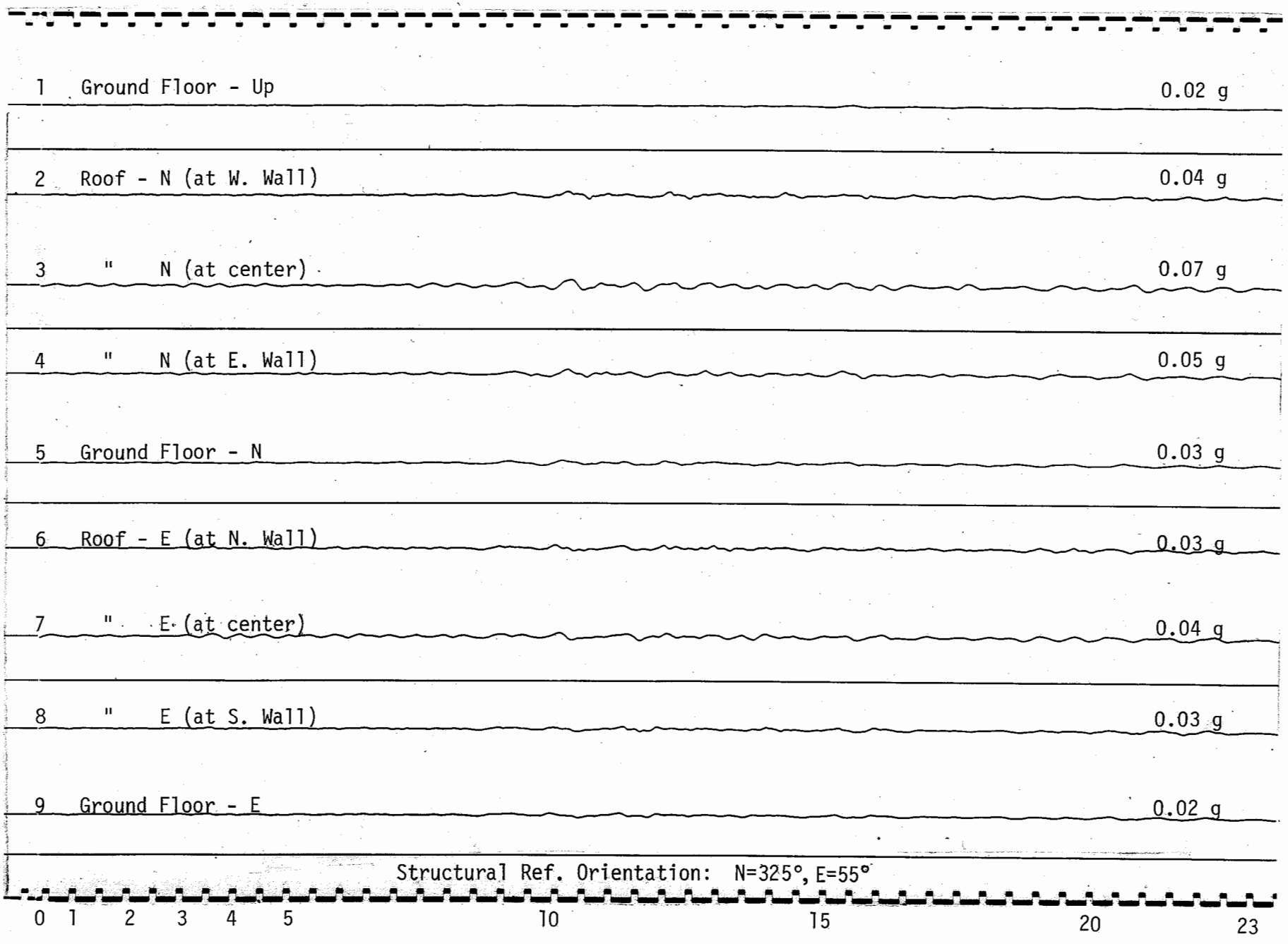
Record 58354-S3489-84116.01

14	Basement	- E	0.02 g
15	"	Up	0.01 g
16	"	N	0.01 g

0 1 2 3 4 5 10 15 20 23

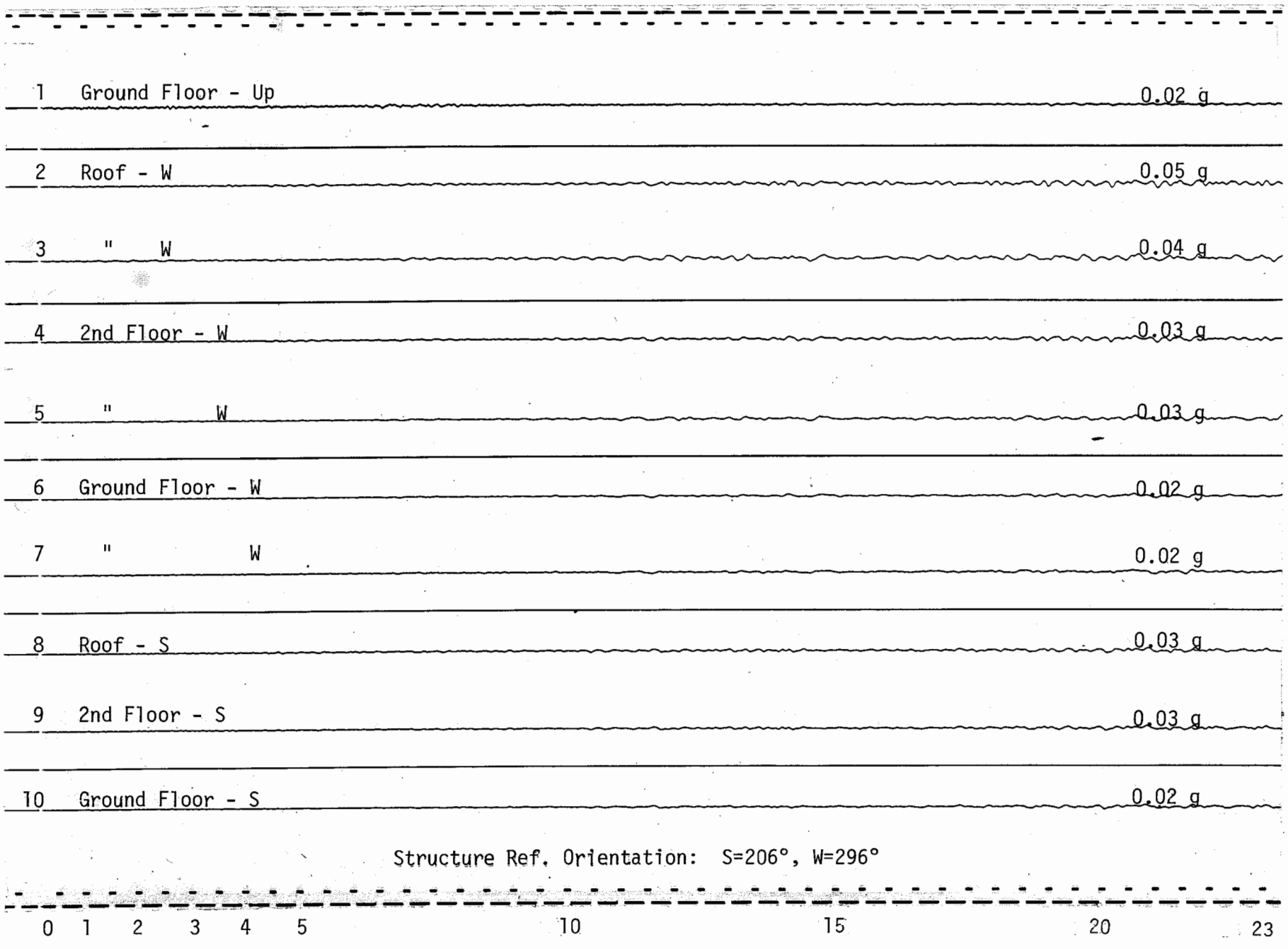
San Ramon - Eastman Kodak Center
1-story, rectangular (384 x 360 ft) Warehouse
CDMG Sta. No. 57187

Record 57187-C0131-84115.01



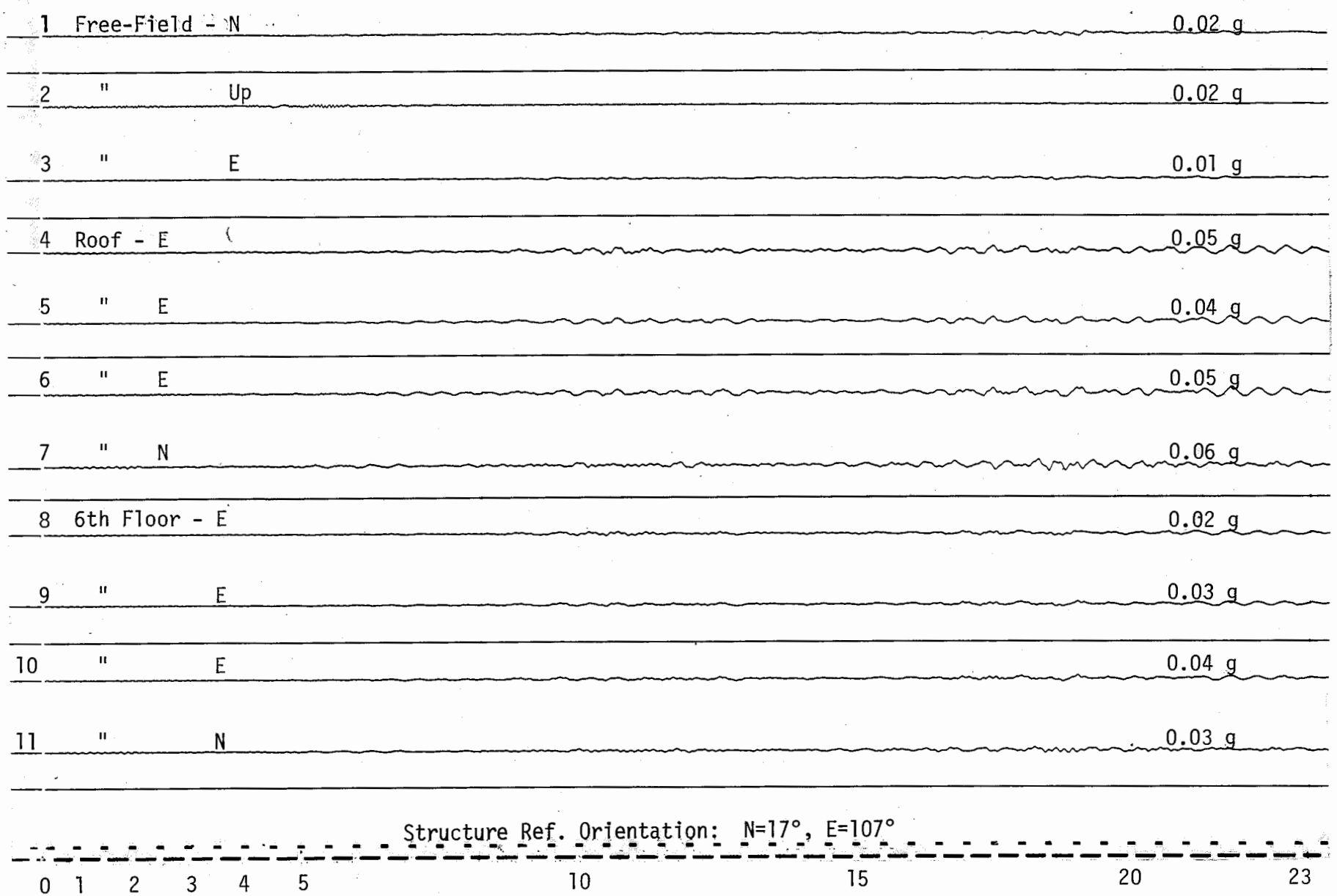
Oakland - Title and Trust Building
2-story, Rectangular (153 x 163 ft) Office Bldg
CDMG Sta. No. 58224

Record 58224-C0120-84122.03



Oakland - Oak Center Towers
11-story, Rectangular (85 x 200 ft)
CDMG Sta. No. 58337

Record 58337-C0173-84122.01



Oakland - Oak Center Towers
(Chns 12-21)

Record 58337-C0174-84122.01

12	2nd Floor	E	0.03 g
13	"	E	0.02 g
14	"	E	0.02 g
15	"	N	0.02 g
16	Ground Floor	E	0.02 g
17	"	E	0.02 g
18	"	N	0.02 g
19	"	Up	0.02 g
20	"	Up	0.02 g
21	"	E	0.02 g

0 1 2 3 4 5 10 15 20 23

Record 58472-C0221-84123.01

21:15:36 GMT

1	South End - W		0.03 g
2	"	Up	0.02 g
3	"	N	0.03 g
4	South Center - W		0.03 g
5	North Center - W		0.04 g
6	South End - W		0.02 g
7	"	N	0.04 g
8	North End - W		0.04 g
9	"	N	0.03 g
10	North Center - W		0.04 g
11	"	Up	0.02 g
12	"	N	0.03 g

Structure Ref. Orientation: N=35°

Timing: 2 marks/sec

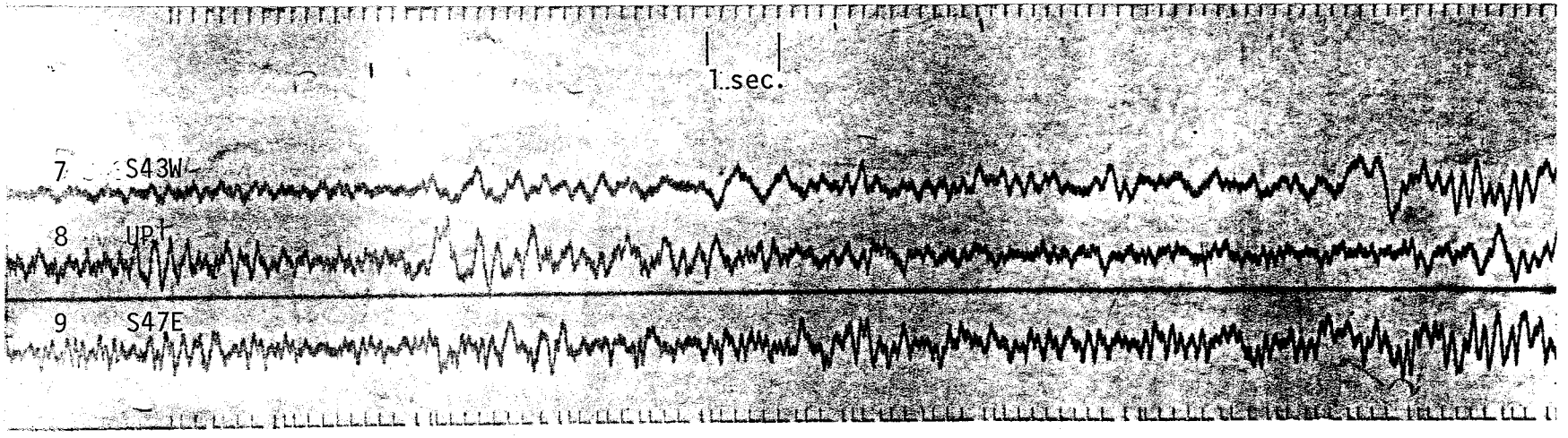
Piedmont - Jr. High School
3-story rectangular (73 x 115 ft) Classroom Bldg.
CDMG Sta. No. 58334

Record 58334-C0163-84122.02

1	Roof - N (at E. Wall)	0.02 g
2	" N (at W. Wall)	0.03 g
3	" E	0.03 g
4	2nd Floor - N (at E. Wall)	0.01 g
5	" N (at W. Wall)	0.02 g
6	" E	0.02 g
7	Ground Floor - N (at E. Wall)	0.01 g
8	" N (at W. Wall)	0.01 g
9	" E	0.01 g
10	" Up (at N. Wall)	0.01 g
11	" Up (at S. Wall)	0.01 g

Structure Ref. Orientation: N=315°, E=45° Timing: 2 marks/sec

Oakland
Caldecott Tunnel - Hwy. 24
CDMG Sta. No. 58359



Playback of digital (DSA-3) records obtained at the west portal of Caldecott Tunnel. Peak acceleration near 0.01 g. (Additional records with very similar peak accelerations were obtained at sites 1000 and 1600 feet into the tunnel. Those records have a high-frequency noise component riding on the signal which should be removable during processing.)

Walnut Creek - Fidelity S.& L. Bldg.
10-story, Rectangular (104 x 148 ft) Office Bldg
CDMG Sta. No. 58364

Record 58364-C0194-84121.04

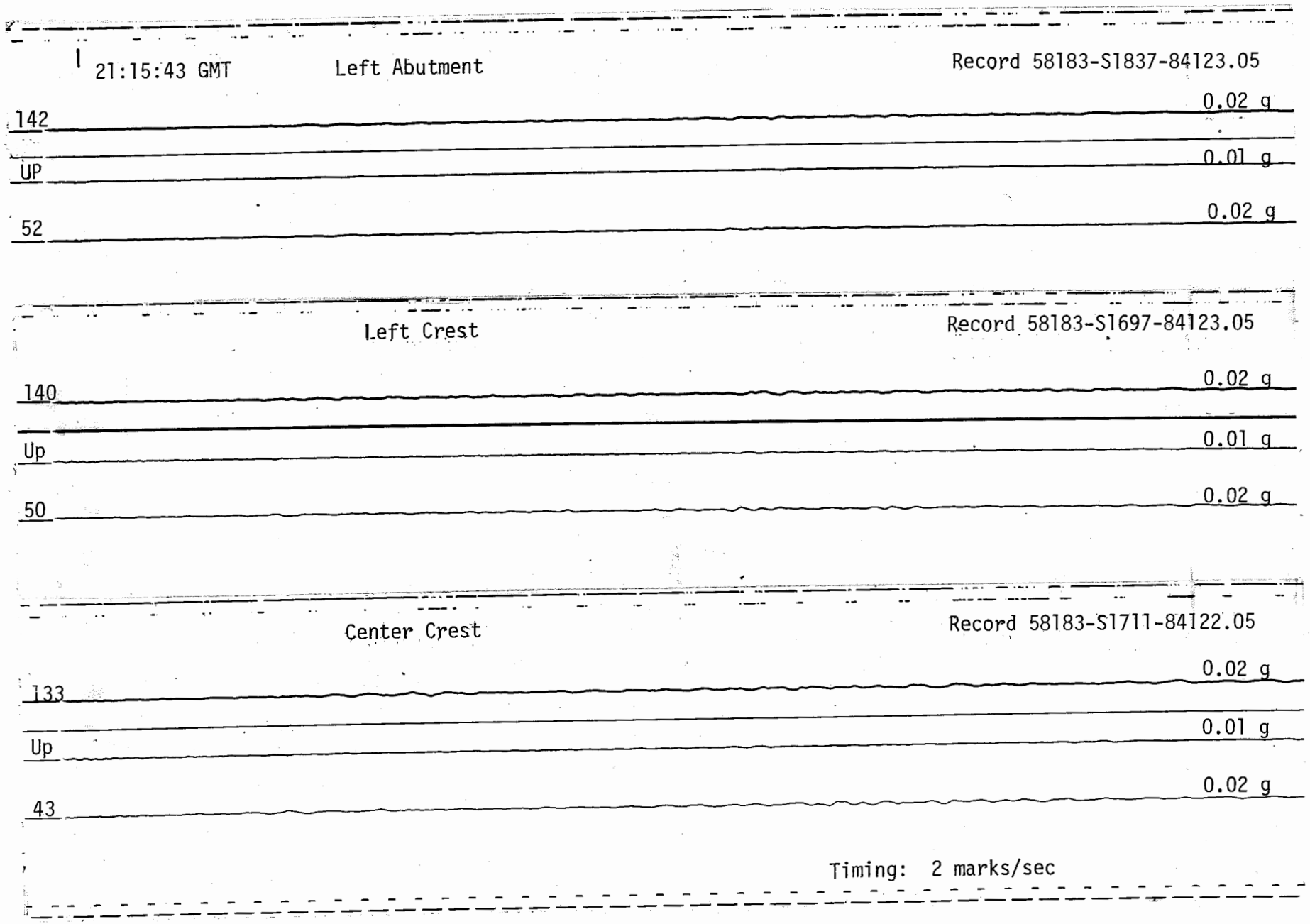
1	Ground Floor - E	0.01 g
2	Roof - E (at N. Wall)	0.07 g
3	" E (at center)	0.06 g
4	" E (at S. Wall)	0.06 g
5	" S	0.05 g
6	8th Floor - E (at N. Wall)	0.04 g
7	" E (at center)	0.04 g
8	" S	0.03 g
9	3rd Floor - E (at N. Wall)	0.02 g
10	" E (at center)	0.02 g
11	" S	0.02 g
12	Ground Floor - Up	0.01 g
13	" Up	0.01 g

Structure Ref. Orientation: S=167°, E=77° Timing: 2 marks/sec

14	Ground Floor - S	0.01 g
15	" Up	0.01 g
16	" E	0.01 g

Timing: 2marks/sec

Briones Dam
CDMG Sta. No. 58183



El Cerrito - Capwells
(2-story reinforced-concrete Department Store)
CDMG Sta. No. 58188

Record 58188-C0106-84122.02

1	1st Floor - N	0.01 g
2	" Up	0.01 g
3	" E	0.01 g
4	Roof - N	0.02 g
5	" E (at N. Wall)	0.02 g
6	" E (at center)	0.02 g

Structure Ref. Orientation: N=337°, E=67° Timing: 2 marks/sec