ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT U-CHANNEL

NODE	L/VECTR	X-DISPL. IN.	Y-DISPL. IN.	ROTATION RAD.
31	1	0.00000	-0.01209	-0.00013
	2	0.00000	-0.00177	0.00000
	3	0.00000	-0.00527	0.00001
	4	0.00000	0.02494	0.00002
	5	0.00000	-0.03560	-0.00001
	6	0.00000	0.00550	-0.00011
	7	0.00000	-0.07588	-0.00018
	8	0.00000	0.00759	-0.00009
32	1	0.00000	-0.01376	-0.00016
	2	0.00000	-0.00169	0.00001
	3	0.00000	-0.00501	0.00004
	4	0.00000	0.02525	0.00003
	5	0.00000	-0.03582	-0.00003
	6	0.00000	0.00427	-0.00009
	7	0.00000	-0.07842	-0.00025
	8	0.00000	0.00648	-0.00009
33	1	0.00000	-0.01581	-0.00019
	2	0.00000	-0.00149	0.00002
	3	0.00000	-0.00442	0.00007
	4	0.00000	0.02564	0.00004
	5	0.00000	-0.03631	-0.00006
	6	0.00000	0.00338	-0.00005
	7	0.00000	-0.08191	-0.00034
	8	0.00000	0.00541	-0.00008
34	1	0.00000	-0.01825	-0.00022
	2	0.00000	-0.00115	0.00004
	3	0.00000	-0.00342	0.00011
	4	0.00000	0.02612	0.00004
	5	0.00000	-0.03714	-0.00009
	6	0.00000	0.00295	-0.00001
	7	0.00000	-0.08650	-0.00044
	8	0.00000	0.00445	-0.00007
35	1	0.00000	-0.02111	-0.00026
	2	0.00000	-0.00065	0.00005
	3	0.00000	-0.00194	0.00015
	4	0.00000	0.02668	0.00005
	5	0.00000	-0.03838	-0.00012
	6	0.00000	0.00313	0.00005
	7	0.00000	-0.09231	-0.00054
	8	0.00000	0.00364	-0.00006
36	1	0.00000	-0.02439	-0.00029
	2	0.00000	0.00003	0.00007
	3	0.00000	0.00010	0.00020
	4	0.00000	0.02734	0.00006
	5	0.00000	-0.04008	-0.00016
	6	0.00000	0.00405	0.00012
	7	0.00000	-0.09945	-0.00066

8	0.00000	0.00870	-0.00009

ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT U-CHANNEL

NODE	L/VECTR	X-DISPL. IN.	Y-DISPL. IN.	ROTATION RAD.
25	1	0.00000	-0.00757	-0.00002
	2	0.00000	-0.00119	-0.00001
	3	0.00000	-0.00352	-0.00003
	4	0.00000	0.02423	0.00000
	5	0.00000	-0.03706	0.00002
	6	0.00000	0.01417	-0.00009
	7	0.00000	-0.07248	0.00001
	8	0.00000	0.01314	-0.00005
26	1	0.00000	-0.00787	-0.00003
	2	0.00000	-0.00132	-0.00001
	3	0.00000	-0.00391	-0.00003
	4	0.00000	0.02426	0.00000
	5	0.00000	-0.03674	0.00003
	6	0.00000	0.01300	-0.00011
	7	0.00000	-0.07231	0.00001
	8	0.00000	0.01249	-0.00006
27	1	0.00000	-0.00829	-0.00004
	2	0.00000	-0.00146	-0.00001
	3	0.00000	-0.00433	-0.00003
	4	0.00000	0.02431	0.00001
	5	0.00000	-0.03639	0.00003
	6	0.00000	0.01162	-0.00012
	7	0.00000	-0.07227	-0.00001
	8	0.00000	0.01169	-0.00007
28	1	0.00000	-0.00889	-0.00006
	2	0.00000	-0.00159	-0.00001
	3	0.00000	-0.00473	-0.00003
	4	0.00000	0.02440	0.00001
	5	0.00000	-0.03605	0.00003
	6	0.00000	0.01010	-0.00013
	7	0.00000	-0.07248	-0.00003
	8	0.00000	0.01078	-0.00008
29	1	0.00000	-0.00969	-0.00008
	2	0.00000	-0.00170	-0.00001
	3	0.00000	-0.00506	-0.00002
	4	0.00000	0.02452	0.00001
	5	0.00000	-0.03577	0.00002
	6	0.00000	0.00852	-0.00013
	7	0.00000	-0.07306	-0.00007
	8	0.00000	0.00977	-0.00009
30	1	0.00000	-0.01074	-0.00010
	2	0.00000	-0.00177	0.00000
	3	0.00000	-0.00526	-0.00001
	4	0.00000	0.02470	0.00002
	5	0.00000	-0.03561	0.00001
	6	0.00000	0.00695	-0.00012
	7	0.00000	-0.07414	-0.00012

8	0.00000	0.01363	-0.00003

ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT U-CHANNEL

NODE	L/VECTR	X-DISPL. IN.	Y-DISPL. IN.	ROTATION RAD.
19	1	0.00000	-0.00758	0.00002
	2	0.00000	-0.00119	0.00001
	3	0.00000	-0.00352	0.00003
	4	0.00000	0.02423	0.00000
	5	0.00000	-0.03706	-0.00002
	6	0.00000	0.01416	0.00009
	7	0.00000	-0.07247	-0.00001
	8	0.00000	0.01313	0.00005
20	1	0.00000	-0.00739	0.00001
	2	0.00000	-0.00108	0.00001
	3	0.00000	-0.00321	0.00002
	4	0.00000	0.02422	0.00000
	5	0.00000	-0.03732	-0.00002
	6	0.00000	0.01505	0.00006
	7	0.00000	-0.07267	-0.00001
	8	0.00000	0.01362	0.00003
21	1	0.00000	-0.00728	0.00001
	2	0.00000	-0.00101	0.00000
	3	0.00000	-0.00300	0.00001
	4	0.00000	0.02421	0.00000
	5	0.00000	-0.03749	-0.00001
	6	0.00000	0.01563	0.00003
	7	0.00000	-0.07283	-0.00001
	8	0.00000	0.01393	0.00002
22	1	0.00000	-0.00724	0.00000
	2	0.00000	-0.00098	0.00000
	3	0.00000	-0.00292	0.00000
	4	0.00000	0.02421	0.00000
	5	0.00000	-0.03756	0.00000
	6	0.00000	0.01584	0.00000
	7	0.00000	-0.07289	0.00000
	8	0.00000	0.01404	0.00000
23	1	0.00000	-0.00728	-0.00001
	2	0.00000	-0.00101	0.00000
	3	0.00000	-0.00300	-0.00001
	4	0.00000	0.02421	0.00000
	5	0.00000	-0.03750	0.00001
	6	0.00000	0.01564	-0.00003
	7	0.00000	-0.07283	0.00001
	8	0.00000	0.01394	-0.00002
24	1	0.00000	-0.00739	-0.00001
	2	0.00000	-0.00108	-0.00001
	3	0.00000	-0.00321	-0.00002
	4	0.00000	0.02422	0.00000
	5	0.00000	-0.03732	0.00002
	6	0.00000	0.01506	-0.00006
	7	0.00000	-0.07267	0.00001

8	0.00000	0.01248	0.00006

ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT U-CHANNEL

NODE	L/VECTR	X-DISPL.	Y-DISPL.	ROTATION
13	1	0.00000	-0.01208	0.00013
	2	0.00000	-0.00177	0.00000
	3	0.00000	-0.00527	-0.00001
	4	0.00000	0.02494	-0.00002
	5	0.00000	-0.03560	0.00001
	6	0.00000	0.00550	0.00011
	7	0.00000	-0.07587	0.00018
	8	0.00000	0.00759	0.00009
14	1	0.00000	-0.01074	0.00010
	2	0.00000	-0.00177	0.00000
	3	0.00000	-0.00526	0.00001
	4	0.00000	0.02470	-0.00002
	5	0.00000	-0.03560	-0.00001
	6	0.00000	0.00695	0.00012
	7	0.00000	-0.07413	0.00012
	8	0.00000	0.00870	0.00009
15	1	0.00000	-0.00969	0.00008
	2	0.00000	-0.00170	0.00001
	3	0.00000	-0.00506	0.00002
	4	0.00000	0.02452	-0.00001
	5	0.00000	-0.03577	-0.00002
	6	0.00000	0.00852	0.00013
	7	0.00000	-0.07305	0.00007
	8	0.00000	0.00977	0.00009
16	1	0.00000	-0.00889	0.00006
	2	0.00000	-0.00159	0.00001
	3	0.00000	-0.00473	0.00003
	4	0.00000	0.02440	-0.00001
	5	0.00000	-0.03605	-0.00003
	6	0.00000	0.01010	0.00013
	7	0.00000	-0.07248	0.00003
	8	0.00000	0.01078	0.00008
17	1	0.00000	-0.00829	0.00004
	2	0.00000	-0.00146	0.00001
	3	0.00000	-0.00433	0.00003
	4	0.00000	0.02431	-0.00001
	5	0.00000	-0.03638	-0.00003
	6	0.00000	0.01162	0.00012
	7	0.00000	-0.07227	0.00001
	8	0.00000	0.01169	0.00007
18	1	0.00000	-0.00787	0.00003
	2	0.00000	-0.00132	0.00001
	3	0.00000	-0.00391	0.00003
	4	0.00000	0.02426	0.00000
	5	0.00000	-0.03673	-0.00003
	6	0.00000	0.01299	0.00011
	7	0.00000	-0.07231	-0.00001

8	0.00000	0.00648	0.00009

ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT U-CHANNEL

NODE	L/VECTR	X-DISPL. IN.	Y-DISPL. IN.	ROTATION RAD.
7	1	0.00000	-0.02809	0.00033
	2	0.00000	0.00093	-0.00008
	3	0.00000	0.00275	-0.00025
	4	0.00000	0.02809	-0.00007
	5	0.00000	-0.04230	0.00021
	6	0.00000	0.00585	-0.00020
	7	0.00000	-0.10800	0.00078
	8	0.00000	0.00275	0.00001
8	1	0.00000	-0.02439	0.00029
	2	0.00000	0.00003	-0.00007
	3	0.00000	0.00010	-0.00020
	4	0.00000	0.02734	-0.00006
	5	0.00000	-0.04008	0.00016
	6	0.00000	0.00405	-0.00012
	7	0.00000	-0.09944	0.00066
	8	0.00000	0.00305	0.00004
9	1	0.00000	-0.02110	0.00026
	2	0.00000	-0.00065	-0.00005
	3	0.00000	-0.00194	-0.00015
	4	0.00000	0.02668	-0.00005
	5	0.00000	-0.03838	0.00012
	6	0.00000	0.00313	-0.00005
	7	0.00000	-0.09230	0.00054
	8	0.00000	0.00364	0.00006
10	1	0.00000	-0.01824	0.00022
	2	0.00000	-0.00115	-0.00004
	3	0.00000	-0.00342	-0.00011
	4	0.00000	0.02612	-0.00004
	5	0.00000	-0.03714	0.00009
	6	0.00000	0.00295	0.00001
	7	0.00000	-0.08649	0.00044
	8	0.00000	0.00445	0.00007
11	1	0.00000	-0.01580	0.00019
	2	0.00000	-0.00149	-0.00002
	3	0.00000	-0.00442	-0.00007
	4	0.00000	0.02564	-0.00004
	5	0.00000	-0.03631	0.00006
	6	0.00000	0.00338	0.00005
	7	0.00000	-0.08190	0.00034
	8	0.00000	0.00541	0.00008
12	1	0.00000	-0.01376	0.00016
	2	0.00000	-0.00169	-0.00001
	3	0.00000	-0.00501	-0.00004
	4	0.00000	0.02525	-0.00003
	5	0.00000	-0.03581	0.00003
	6	0.00000	0.00427	0.00009
	7	0.00000	-0.07841	0.00025

	6	0.00000	0.01272	-0.00040
	7	0.00000	-0.12955	0.00102
	8	0.00000	0.00334	-0.00007
6	1	0.00000	-0.03219	0.00036
	2	0.00000	0.00205	-0.00010
	3	0.00000	0.00608	-0.00031
	4	0.00000	0.02893	-0.00007
	5	0.00000	-0.04508	0.00026
	6	0.00000	0.00870	-0.00029
	7	0.00000	-0.11804	0.00090
	8	0.00000	0.00282	-0.00003

GUADALUPE CHANNEL STRUCTURE
NODE DISPLACEMENT UNDER AASHTO LOADING
ANALYSIS BY EDGAR O. MORENO

NODE	L/VECTOR	X-DISPL. IN.	Y-DISPL. IN.	ROTATION RAD.
1	1	-0.04088	-0.04899	0.00042
	2	0.02634	0.00795	-0.00030
	3	0.07219	0.02361	-0.00078
	4	0.00846	0.03238	-0.00009
	5	-0.06042	-0.05973	0.00065
	6	0.11410	0.02864	-0.00127
	7	-0.15526	-0.16463	0.00164
	8	0.03977	0.00700	-0.00045
2	1	0.00000	-0.04886	0.00042
	2	0.00001	0.00795	-0.00018
	3	0.00003	0.02361	-0.00053
	4	0.00000	0.03238	-0.00009
	5	-0.00002	-0.05973	0.00044
	6	0.00005	0.02881	-0.00070
	7	-0.00004	-0.16446	0.00129
	8	0.00003	0.00713	-0.00020
3	1	0.00000	-0.04634	0.00041
	2	0.00000	0.00691	-0.00017
	3	0.00000	0.02053	-0.00050
	4	0.00000	0.03185	-0.00009
	5	0.00000	-0.05715	0.00042
	6	0.00000	0.02484	-0.00063
	7	0.00000	-0.15683	0.00124
	8	0.00000	0.00604	-0.00017
4	1	0.00000	-0.04139	0.00040
	2	0.00000	0.00503	-0.00015
	3	0.00000	0.01495	-0.00043
	4	0.00000	0.03083	-0.00008
	5	0.00000	-0.05249	0.00036
	6	0.00000	0.01806	-0.00051
	7	0.00000	-0.14251	0.00114
	8	0.00000	0.00438	-0.00012
5	1	0.00000	-0.03665	0.00038
	2	0.00000	0.00341	-0.00012
	3	0.00000	0.01013	-0.00037
	4	0.00000	0.02985	-0.00008
	5	0.00000	-0.04847	0.00031

GUADALUPE CHANNEL STRUCTURE

MEMBER	35	LEFT CORD	33.50	RIGHT CORD	.5593
MEMBER	36	LEFT CORD	34.50	RIGHT CORD	.5703
MEMBER	37	LEFT CORD	35.50	RIGHT CORD	.5812
MEMBER	38	LEFT CORD	36.50	RIGHT CORD	.5922
MEMBER	39	LEFT CORD	37.50	RIGHT CORD	.6032
MEMBER	40	LEFT CORD	38.50	RIGHT CORD	.6141
MEMBER	41	LEFT CORD	39.50	RIGHT CORD	.6251
MEMBER	42	LEFT CORD	40	RIGHT CORD	.6250
MEMBER	43	LEFT CORD	40	RIGHT CORD	8.8333

MEMBER	1	DEPTH	1	M.INERTIA	.1250
MEMBER	2	DEPTH	1.2500	M.INERTIA	.2441
MEMBER	3	DEPTH	1.2500	M.INERTIA	.2441
MEMBER	4	DEPTH	1.2281	M.INERTIA	.2315
MEMBER	5	DEPTH	1.2061	M.INERTIA	.2193
MEMBER	6	DEPTH	1.1842	M.INERTIA	.2076
MEMBER	7	DEPTH	1.1623	M.INERTIA	.1963
MEMBER	8	DEPTH	1.1403	M.INERTIA	.1853
MEMBER	9	DEPTH	1.1184	M.INERTIA	.1749
MEMBER	10	DEPTH	1.0964	M.INERTIA	.1648
MEMBER	11	DEPTH	1.0745	M.INERTIA	.1551
MEMBER	12	DEPTH	1.0526	M.INERTIA	.1458
MEMBER	13	DEPTH	1.0306	M.INERTIA	.1368
MEMBER	14	DEPTH	1.0087	M.INERTIA	.1283
MEMBER	15	DEPTH	.9868	M.INERTIA	.1201
MEMBER	16	DEPTH	.9648	M.INERTIA	.1123
MEMBER	17	DEPTH	.9429	M.INERTIA	.1048
MEMBER	18	DEPTH	.9210	M.INERTIA	.0976
MEMBER	19	DEPTH	.8990	M.INERTIA	.0908
MEMBER	20	DEPTH	.8771	M.INERTIA	.0843
MEMBER	21	DEPTH	.8551	M.INERTIA	.0782
MEMBER	22	DEPTH	.8332	M.INERTIA	.0723
MEMBER	23	DEPTH	.8773	M.INERTIA	.0844
MEMBER	24	DEPTH	.8993	M.INERTIA	.0909
MEMBER	25	DEPTH	.9212	M.INERTIA	.0977
MEMBER	26	DEPTH	.9431	M.INERTIA	.1049
MEMBER	27	DEPTH	.9651	M.INERTIA	.1124
MEMBER	28	DEPTH	.9870	M.INERTIA	.1202
MEMBER	29	DEPTH	1.0089	M.INERTIA	.1284
MEMBER	30	DEPTH	1.0309	M.INERTIA	.1369
MEMBER	31	DEPTH	1.0528	M.INERTIA	.1459
MEMBER	32	DEPTH	1.0747	M.INERTIA	.1552
MEMBER	33	DEPTH	1.0967	M.INERTIA	.1649
MEMBER	34	DEPTH	1.1186	M.INERTIA	.1750
MEMBER	35	DEPTH	1.1406	M.INERTIA	.1855
MEMBER	36	DEPTH	1.1625	M.INERTIA	.1964
MEMBER	37	DEPTH	1.1844	M.INERTIA	.2077
MEMBER	38	DEPTH	1.2064	M.INERTIA	.2195
MEMBER	39	DEPTH	1.2283	M.INERTIA	.2316
MEMBER	40	DEPTH	1.2502	M.INERTIA	.2443
MEMBER	41	DEPTH	1.2500	M.INERTIA	.2441
MEMBER	42	DEPTH	1	M.INERTIA	.1250

ON THE STRUCTURAL DESIGN OF THE
GUADALUPE ROAD CHANNEL (Part II)
BY EDGAR O. MORENO

As stated in the design drawings,the Guadalupe Road Channel is as a U-shaped rigid frame concrete structure, and a non-linear system, and as it is recommended for this type of structure, a finite element model of the structure has been used in order to assure the most reliable results. The following is a complete description of the model's geometry which reflects the changes suggested by Mr.hanumaiah.

MODEL DESCRIPTION
==========

MEMBER	1	LEFT CORD	1.0000	RIGHT CORD	8.8333
MEMBER	2	LEFT CORD	1.0000	RIGHT CORD	.6250
MEMBER	3	LEFT CORD	1.5000	RIGHT CORD	.6250
MEMBER	4	LEFT CORD	2.50	RIGHT CORD	.6140
MEMBER	5	LEFT CORD	3.50	RIGHT CORD	.6031
MEMBER	6	LEFT CORD	4.50	RIGHT CORD	.5921
MEMBER	7	LEFT CORD	5.50	RIGHT CORD	.5811
MEMBER	8	LEFT CORD	6.50	RIGHT CORD	.5702
MEMBER	9	LEFT CORD	7.50	RIGHT CORD	.5592
MEMBER	10	LEFT CORD	8.50	RIGHT CORD	.5482
MEMBER	11	LEFT CORD	9.50	RIGHT CORD	.5373
MEMBER	12	LEFT CORD	10.50	RIGHT CORD	.5263
MEMBER	13	LEFT CORD	11.50	RIGHT CORD	.5153
MEMBER	14	LEFT CORD	12.50	RIGHT CORD	.5044
MEMBER	15	LEFT CORD	13.50	RIGHT CORD	.4934
MEMBER	16	LEFT CORD	14.50	RIGHT CORD	.4824
MEMBER	17	LEFT CORD	15.50	RIGHT CORD	.4714
MEMBER	18	LEFT CORD	16.50	RIGHT CORD	.4605
MEMBER	19	LEFT CORD	17.50	RIGHT CORD	.4495
MEMBER	20	LEFT CORD	18.50	RIGHT CORD	.4385
MEMBER	21	LEFT CORD	19.50	RIGHT CORD	.4276
MEMBER	22	LEFT CORD	20.50	RIGHT CORD	.4166
MEMBER	23	LEFT CORD	21.50	RIGHT CORD	.4277
MEMBER	24	LEFT CORD	22.50	RIGHT CORD	.4387
MEMBER	25	LEFT CORD	23.50	RIGHT CORD	.4496
MEMBER	26	LEFT CORD	24.50	RIGHT CORD	.4606
MEMBER	27	LEFT CORD	25.50	RIGHT CORD	.4716
MEMBER	28	LEFT CORD	26.50	RIGHT CORD	.4825
MEMBER	29	LEFT CORD	27.50	RIGHT CORD	.4935
MEMBER	30	LEFT CORD	28.50	RIGHT CORD	.5045
MEMBER	31	LEFT CORD	29.50	RIGHT CORD	.5154
MEMBER	32	LEFT CORD	30.50	RIGHT CORD	.5264
MEMBER	33	LEFT CORD	31.50	RIGHT CORD	.5374
MEMBER	34	LEFT CORD	32.50	RIGHT CORD	.5483

1 TOP SLAB OUTSIDE FACE STEEL (ff) MUST EXTEND COMPLETELY ACROSS THE TOP SLAB. THE SIDEWALL OUTSIDE FACE STEEL (hh) MUST BE BENT AT THE CORNER AND EXTENDED ACROSS THE OUTSIDE FACE OF THE TOP SLAB SUFFICIENTLY TO MEET AASHTO REQUIREMENTS FOR TENSION LAPS.

2 BOTTOM SLAB OUTSIDE FACE STEEL (ff) MUST EXTEND COMPLETELY ACROSS THE BOTTOM SLAB. THE SIDEWALL OUTSIDE FACE STEEL (hh) MUST BE BENT AT THE CORNER AND EXTENDED ACROSS THE OUTSIDE FACE OF THE BOTTOM SLAB SUFFICIENTLY TO MEET AASHTO REQUIREMENTS FOR TENSION LAPS.

3 ASMIN = 0.002 x GROSS SECTION AREA

4 THERE MAY BE NEGATIVE MOMENT FROM THE OUTSIDE CORNER OF THE BOX TO 38. INCHES ACROSS THE TOP SLAB.

5 THERE MAY BE NEGATIVE MOMENT FROM THE OUTSIDE CORNER OF THE BOX TO 47. INCHES ACROSS THE RIGHT WALL .

6 DETAIL A OF SHEET 20 DO NOT COMPLY WITH REQUIREMENTS

7 DETAILS ON BAR LAYOUT ON SHEET 25 DO NOT COMPLY WITH THE FUNDAMENTAL ASSUMPTIONS OF FLEXURE ANALYSIS.

8 DETAILS OF BAR LAYOUT ON SHEET 26 DO NOT COMPLY WITH SPLICE AND LAP REQUIREMENTS.

THRUST FACTOR (FN)	.826	.826	.986	.986
DIAGONAL TENSION STRENGTH, (KIPS/FT)	8.689	8.689	9.911	9.729
ULTIMATE SHEAR/ ALLOWABLE SHEAR	.298	.298	.672	.685
NEW STEEL AREA DUE TO DIAGONAL TENSION NN(SQ.IN./FT)	.000	.000	.000	.000

SASAMAN BOX CULVERT DESIGN SUMMARY

R E I N F O R C I N G S T E E L

LOCATION	AREA IN©2	STIR.?	REBAR	SPACING
TRANSVERSE				
SIDE WALL - OUTSIDE FACE (hh)	.264	NO	#5	6.
TOP SLAB - INSIDE FACE (ee,dd)	.293	NO	#5,#6	12.
BOTTOM SLAB - INSIDE FACE (ee,dd)	.299	NO	#5,#6	12.
SIDE WALL - INSIDE FACE (aa)	.264	NO	#5	12.
TOP SLAB - OUTSIDE FACE (ff)	.252	NO	#6	12.
BOTTOM SLAB - OUTSIDE FACE (ff)	.300	NO	#6	12.
DISTRIBUTION				
TOP SLAB - INSIDE FACE (gg)	.252		#4	12.
TOP SLAB - OUTSIDE FACE	.252		#4	12.

DESIGN NOTES:

19	6.7	9.3	.72	7.19	NO

S H E A R D E S I G N PER AASHTO 17.4.6.4.5.

DESIGN SECTION	12	13	14	15
M/(V*PHI*D)	1.465	1.182	3.122	6.213
ULTIMATE SHEAR (KIPS/FT)	6.523	6.523	1.905	1.905
ULTIMATE THRUST (KIPS/FT)	.498	.508	3.446	3.446
STEEL RATIO	.002605	.001690	.001498	.002532
DEPTH TO STEEL (IN.)	8.063	14.063	14.688	8.688
DISTANCE FROM A-END, (IN.)	18.353	18.353	63.866	63.866
THRUST FACTOR (FN)	.988	.989	.847	.822
DIAGONAL TENSION STRENGTH, (KIPS/FT)	11.155	18.958	12.406	8.733
ULTIMATE SHEAR/ ALLOWABLE SHEAR	.585	.344	.154	.218
NEW STEEL AREA DUE TO DIAGONAL TENSION (SQ.IN./FT)	.000	.000	.000	.000

DESIGN SECTION	16	17	18	19
M/(V*PHI*D)	4.708	4.708	1.635	1.635
ULTIMATE SHEAR (KIPS/FT)	2.590	2.590	6.664	6.664
ULTIMATE THRUST (KIPS/FT)	4.122	4.122	.643	.643
STEEL RATIO	.002532	.002532	.003303	.002922
DEPTH TO STEEL (IN.)	8.688	8.688	7.188	7.188
DISTANCE FROM A-END, (IN.)	12.634	12.634	119.391	119.391

21	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00
23	.00	8.73	-.68	-121.55	.00	-1.09

	AT	d	Mu	Au	As Req.	As Min.	As	GOVERN BY
1	TOP-NEG	8.06	.0	.6	.000	.252	.252	MIN STL
2	TOP-NEG	8.06	71.3	.5	.161	.252	.252	MIN STL
3	TOP-NEG	14.06	103.1	.5	.131	.252	.252	MIN STL
4	SIDE-NEG	14.69	119.5	3.4	.115	.264	.264	MIN STL
5	SIDE-NEG	8.69	115.8	3.4	.213	.264	.264	MIN STL
6	SIDE-NEG	8.69	108.3	3.7	.194	.264	.264	MIN STL
7	SIDE-NEG	8.69	108.3	4.1	.189	.264	.264	MIN STL
8	SIDE-NEG	8.69	108.3	4.1	.189	.264	.264	MIN STL
9	BOTTOM-NEG	7.19	77.2	.6	.195	.252	.252	MIN STL
10	BOTTOM-NEG	7.19	77.2	.6	.195	.252	.252	MIN STL
11	BOTTOM-NEG	7.19	.0	1.1	.000	.252	.252	MIN STL
1	TOP-POS	9.13	141.9	.3	.293	.252	.293	FLEXURE
6	SIDE-POS	9.25	13.8	1.5	.011	.264	.264	MIN STL
11	BOTTOM-POS	8.13	127.4	.0	.299	.252	.299	FLEXURE

S H E A R D E S I G N Vc=2*PHI*SQR(F'c)bd PER AASHTO 8.16.6.2.1

LOCATION	ULTIMATE SHEAR (K/FT)	ALLOWABLE SHEAR (K/FT)	DIAGONAL TENSION INDEX	DEPTH TO STEEL (IN.)	STIRRUPS REQD?
12	6.5	10.4	.63	8.06	NO
13	6.5	10.4	.63	8.06	NO
14	1.9	11.2	.17	8.69	NO
15	1.9	11.2	.17	8.69	NO
16	2.6	11.2	.23	8.69	NO
17	2.6	11.2	.23	8.69	NO
18	6.7	9.3	.72	7.19	NO

B O T T O M S L A B A N A L Y S I S

LOAD VECTOR	AXIAL FORCE KIPS	SHEAR FORCE KIPS	MOMENT KIP-FT
1	.19912	1.68047	25.63714
2	-.02664	.98250	13.64813
3	1.05024	.00000	3.62780
4	-.76464	-.15719	-6.02638
5	.00000	.00000	.00000
6	.00000	.00000	.00000
7	.00000	.00000	.00000
8	.72906	.00000	4.24112
9	.00000	.00000	.00000
10	.30025	.00000	1.28490
11	-.00589	.10809	2.89311
12	-.10390	.77062	15.41657
13	-.13905	.92760	16.69066
14	-.19197	1.17958	17.79578
15	-.21767	1.39295	19.03067
16	-.22623	1.60000	20.51225
17	-.21767	1.80705	22.15438
18	-.19197	2.02042	23.87086
19	-.13905	2.27240	25.77464
20	-.10390	2.42938	26.06535
21	-.00589	1.49191	7.53281

E S I G N F O R C E S

AT	+ MOMENT	+ SHEAR	TENTION	- MOMENT	- SHEAR	COMPRESSION
1	141.95	2.01	-.27	.00	-2.01	-.59
2	.00	7.10	-.03	-71.26	.00	-.50
3	.00	7.30	-1.52	-103.10	.00	-.51
4	.00	.02	-1.47	-119.52	-3.07	-3.45
5	.00	.06	-1.47	-115.80	-2.52	-3.45
6	13.77	.23	-1.47	-108.32	-.46	-3.67
7	.00	3.11	-1.47	-108.28	-.30	-4.12
8	.00	3.11	-1.47	-108.28	-.30	-4.12
9	.00	.00	-1.09	-77.25	-7.73	-.64
10	.00	.00	-1.09	-77.25	-7.73	-.64
11	127.37	.70	-.05	.00	-.70	-1.12
12	19.90	6.52	-.41	-40.01	.00	-.59
13	19.90	6.52	-.41	-40.01	.00	-.59
14	.00	.11	-1.47	-113.13	-1.90	-3.22
15	.00	.11	-1.47	-113.13	-1.90	-3.22
16	.00	2.59	-1.47	-104.68	-.28	-3.22
17	.00	2.59	-1.47	-104.68	-.28	-3.22
18	.00	.00	-.63	-42.40	-6.66	-.68
19	.00	.00	-.63	-42.40	-6.66	-.68
20	.00	7.49	-.37	-135.86	.00	-.59

T O P S L A B A N A L Y S I S

LOAD VECTOR	AXIAL FORCE KIPS	SHEAR FORCE KIPS	MOMENT KIP-FT
1	-.19912	.71641	9.21000
2	.02664	.98250	15.84617
3	.57435	.00000	3.73809
4	-.35856	.00000	-2.75404
5	.00000	.00000	.00000
6	.00000	.00000	.00000
7	.00000	.00000	.00000
8	1.37251	-.00000	5.24650
9	.00000	.00000	.00000
10	.30425	.00000	1.45001
11	.00589	1.49846	8.01894
12	.10390	2.43170	34.63738
13	.13905	2.27319	37.24604
14	.19197	2.02158	39.70871
15	.21767	1.81145	40.11182
16	.22623	1.60000	39.17624
17	.21767	1.38855	36.98811
18	.19197	1.17842	33.63363
19	.13905	.92681	28.16204
20	.10390	.76830	23.98861
21	.00589	.10154	3.37924

E X T E R I O R W A L L A N A L Y S I S

LOAD VECTOR	AXIAL FORCE KIPS	SHEAR FORCE KIPS	MOMENT KIP-FT
1	1.19844	-.19912	9.21000
2	1.06500	.02664	15.84616
3	.00000	.54876	3.73813
4	-.00000	-.35856	-2.75422
5	.00000	.00000	.00000
6	.00000	.00000	.00000
7	.00000	.00000	.00000
8	.00000	1.16834	5.24670
9	.00000	.00000	.00000
10	.00000	.27013	1.45005
11	.10154	.00589	3.37924
12	.76830	.10390	23.98862
13	.92681	.13905	28.16205
14	1.17842	.19197	33.63363
15	1.38855	.21767	36.98810
16	1.60000	.22623	39.17623
17	1.81145	.21767	40.11180
18	2.02158	.19197	39.70869
19	2.27319	.13905	37.24600
20	2.43170	.10390	34.63739
21	1.89085	.00589	8.01893

19	-.1653E-02	-.3705E-03	.2427E-03
20	-.1535E-02	-.3964E-03	.2311E-03
21	-.4355E-04	-.3082E-03	.5367E-04

3

1	.0000E+00	.0000E+00	-.1629E-03
2	.0000E+00	.0000E+00	-.1150E-03
3	.0000E+00	.0000E+00	.5353E-04
4	.0000E+00	.0000E+00	-.3423E-04
5	.0000E+00	.0000E+00	.0000E+00
6	.0000E+00	.0000E+00	.0000E+00
7	.0000E+00	.0000E+00	.0000E+00
8	.0000E+00	.0000E+00	.6258E-04
9	.0000E+00	.0000E+00	.0000E+00
10	.0000E+00	.0000E+00	.1896E-04
11	.0000E+00	.0000E+00	-.2494E-04
12	.0000E+00	.0000E+00	-.1639E-03
13	.0000E+00	.0000E+00	-.1830E-03
14	.0000E+00	.0000E+00	-.1988E-03
15	.0000E+00	.0000E+00	-.2073E-03
16	.0000E+00	.0000E+00	-.2126E-03
17	.0000E+00	.0000E+00	-.2155E-03
18	.0000E+00	.0000E+00	-.2170E-03
19	.0000E+00	.0000E+00	-.2166E-03
20	.0000E+00	.0000E+00	-.2127E-03
21	.0000E+00	.0000E+00	-.6109E-04

4

1	.5399E-04	.0000E+00	.1629E-03
2	-.7224E-05	.0000E+00	.1150E-03
3	.2848E-03	.0000E+00	-.5353E-04
4	-.2073E-03	.0000E+00	.3423E-04
5	.0000E+00	.0000E+00	.0000E+00
6	.0000E+00	.0000E+00	.0000E+00
7	.0000E+00	.0000E+00	.0000E+00
8	.1977E-03	.0000E+00	-.6258E-04
9	.0000E+00	.0000E+00	.0000E+00
10	.8141E-04	.0000E+00	-.1896E-04
11	-.1598E-05	.0000E+00	.6109E-04
12	-.2817E-04	.0000E+00	.2127E-03
13	-.3770E-04	.0000E+00	.2166E-03
14	-.5205E-04	.0000E+00	.2170E-03
15	-.5902E-04	.0000E+00	.2155E-03
16	-.6134E-04	.0000E+00	.2126E-03
17	-.5902E-04	.0000E+00	.2073E-03
18	-.5205E-04	.0000E+00	.1988E-03
19	-.3770E-04	.0000E+00	.1830E-03
20	-.2817E-04	.0000E+00	.1639E-03
21	-.1598E-05	.0000E+00	.2494E-04

A FOUR LANE ROAD WITH A TRUCK IN EACH LANE (LOW PROBABILITY =BETA FACTOR OF 1 AASHTO 3.22) GOVERNS SERVICE LIVE LOADS

THE REVIEW ANALYSIS HAS BEEN CARRY OUT BY THE STIFFNESS METHOD WHICH IS THE MOST ACCURATE AND APPROPRIATE FOR THIS TYPE OF STRUCTURE.
THE MULTIPLICATION OF THE INVERTED GLOBAL STIFFNESS MATRIX BY THE AASHTO LOAD VECTORS GIVE THE FOLLOWING DISPLACEMENTS:

NODE #	LOAD VECTOR	HORIZONTAL DISP. IN.	VERTICAL DISP. IN	ANGULAR ROT. RAD.
1	1	.3251E-07	-.1954E-03	-.1050E-03
	2	.3921E-08	-.1736E-03	-.1018E-03
	3	.2201E-03	.4553E-10	.4899E-04
	4	-.1522E-03	-.2199E-09	-.3609E-04
	5	.0000E+00	.0000E+00	.0000E+00
	6	.0000E+00	.0000E+00	.0000E+00
	7	.0000E+00	.0000E+00	.0000E+00
	8	.2848E-03	.2425E-09	.6876E-04
	9	.0000E+00	.0000E+00	.0000E+00
	10	.8191E-04	.4386E-10	.1900E-04
	11	.4196E-04	-.3082E-03	-.5367E-04
	12	.1507E-02	-.3964E-03	-.2311E-03
	13	.1616E-02	-.3705E-03	-.2427E-03
	14	.1257E-02	-.3295E-03	-.2437E-03
	15	.6946E-03	-.2953E-03	-.2342E-03
	16	-.1999E-07	-.2608E-03	-.2176E-03
	17	-.6946E-03	-.2263E-03	-.1961E-03
	18	-.1257E-02	-.1921E-03	-.1720E-03
	19	-.1616E-02	-.1511E-03	-.1418E-03
	20	-.1507E-02	-.1252E-03	-.1223E-03
	21	-.4196E-04	-.1655E-04	-.2116E-04
2	1	.5402E-04	-.1954E-03	.1050E-03
	2	-.7220E-05	-.1736E-03	.1018E-03
	3	.6436E-04	-.4638E-10	-.4899E-04
	4	-.5498E-04	.2192E-09	.3610E-04
	5	.0000E+00	.0000E+00	.0000E+00
	6	.0000E+00	.0000E+00	.0000E+00
	7	.0000E+00	.0000E+00	.0000E+00
	8	-.8734E-04	-.2456E-09	-.6876E-04
	9	.0000E+00	.0000E+00	.0000E+00
	10	-.5873E-06	-.4411E-10	-.1900E-04
	11	.4036E-04	-.1655E-04	.2116E-04
	12	.1479E-02	-.1252E-03	.1223E-03
	13	.1578E-02	-.1511E-03	.1418E-03
	14	.1205E-02	-.1921E-03	.1720E-03
	15	.6356E-03	-.2263E-03	.1961E-03
	16	-.6136E-04	-.2608E-03	.2176E-03
	17	-.7537E-03	-.2953E-03	.2342E-03
	18	-.1309E-02	-.3295E-03	.2437E-03

SOSSAMAN BOX CULVERT MODIFIED DESIGN STRUCTURAL REVIEW
& GUADALUPE ROAD CHANNEL MODIFIED DESIGN STRUCTURAL REVIEW
BY
EDGAR O. MORENO

1- FOR THE TYPICAL SOSSAMAN ROAD BOX CULVERT BARREL:

F I E L D D A T A

HEIGHT OF FILL OVER CULVERT,FT	1.500
SOIL UNIT WEIGHT, PCF	120.000
LATERAL SOIL PRESSURE COEFFICIENT	.325

D E S I G N C R I T E R I A AASHTO

DEAD LOAD FACTOR - MOMENT AND SHEAR	1.300
DEAD LOAD FACTOR - THRUST	.650
LIVE LOAD FACTOR - MOMENT AND SHEAR	2.170
LIVE LOAD FACTOR - THRUST	1.090
STRENGTH REDUCTION FACTOR-FLEXURE	.900
STRENGTH REDUCTION FACTOR-DIAGONAL TENSION	.850
LIVE LOAD TYPE	HS-20
DIRECTION OF TRAFFIC	TRANSVERSE
VERTICAL SURCHARGE PRESSURE, PSF	.0
LATERAL SURCHARGE PRESSURE, PSF	78.0

M A T E R I A L P R O P E R T I E S

REINFORCING YIELD STRENGTH, KSI	60.000
CONCRETE - COMPRESSIVE STRENGTH, KSI	4.000

B A R R E L G E O M E T R Y

TOP SLAB THICKNESS, INCHES				10.500
SIDE WALL THICKNESS, INCHES				11.000
BOTTOM SLAB THICKNESS, INCHES				10.500
HORIZONTAL HAUNCH DIMENSION, INCHES	TOP	6.000	BOTTOM	.000
VERTICAL HAUNCH DIMENSION, INCHES	TOP	6.000	BOTTOM	.000

C O N C R E T E C O V E R O V E R S T E E L

TOP SLAB - OUTSIDE FACE	2.000
SIDE WALL - OUTSIDE FACE	2.000
BOTTOM SLAB - OUTSIDE FACE	3.000
TOP SLAB - INSIDE FACE	1.000
SIDE WALL - INSIDE FACE	1.500
BOTTOM SLAB - INSIDE FACE	2.000

A N A L Y S I S - G O V E R N I N G - C O N D I T I O N

A SINGLE LANE WITH A FULLY OVERLOADED TRUCK GOVERNS ULTIMATE LIVE LOADS

8	0.00000	0.00305	-0.00004

MESSAGE SCAN FOR EDGAR MORENO

To Hanumaiah, Kumar V
CC Wainwright, Chuck
CC Young, Linda S.
CC Moreno, Edgar O.

From: Edgar Moreno
Postmark: Jan 07,93 4:32 PM Delivered: Jan 07,93 4:33 PM
Status: Certified Previously read
Subject: GUADALUPE CHANNEL

Comments:
STRUCTURAL EXCAVATION
CALCULATED AREAS FYI.

-------========X========-------

STRUCTURAL EXCAVATION ESTIMATE
CROSS SECTINAL AREAS
BY EDGAR O. MORENO

STATION 47+00	AREA =	0.0	SQF.
STATION 48+00	AREA =	192.26	SQF.
STATION 49+00	AREA =	280.48	SQF.
STATION 50+00	AREA =	245.42	SQF.
STATION 51+00	AREA =	273.79	SQF.
STATION 51+51	AREA =	266.38	SQF.
STATION 52+00	AREA =	74.78	SQF.

MESSAGE SCAN FOR EDGAR MORENO

T Hanumaiah, Kumar V
CC Wainwright, Chuck
CC Moreno, Edgar O.
CC Young, Linda S.

From: Edgar Moreno
Postmark: Jan 11,93 9:06 AM Delivered: Jan 11,93 9:06 AM
Status: Certified Previously read
Subject: GUADALUPE CHANNEL

Comments:
STRUCTURAL BACKFILL, CALCULATED AREAS
FYI. WORK UPDATE.

-------========X========-------

STRUCTURAL BACKFILL ESTIMATE
CROSS SECTINAL AREAS
BY EDGAR O. MORENO

STATION 47+00	AREA =	0.00	SQF.
STATION 48+00	AREA =	97.16	SQF.
STATION 49+00	AREA =	87.29	SQF.
STATION 50+00	AREA =	96.00	SQF.
STATION 51+00	AREA =	92.16	SQF.
STATION 51+51	AREA =	74.78	SQF.
STATION 52+00	AREA =	74.78	SQF.

MESSAGE SCAN FOR EDGAR MORENO

T Hanumaiah, Kumar V
CC Wainwright, Chuck
CC Moreno, Edgar O.
CC Young, Linda S.

From: Edgar Moreno
Postmark: Jan 11,93 2:42 PM Delivered: Jan 11,93 2:43 PM
Status: Certified Previously read
Subject: GUADALUPE CHANNEL

Comments:
FILL CONSTRUCTION ESTIMATE.
CALCULATED AREAS & WORK UPDATE
FYI.

-------========X========-------

FILL CONSTRUCTION ESTIMATE
CROSS SECTINAL AREAS
BY EDGAR O. MORENO

STATION 47+00	AREA =	0.00 SQF.
STATION 48+00	AREA =	174.25 SQF.
STATION 49+00	AREA =	238.29 SQF.
STATION 50+00	AREA =	275.92 SQF.
STATION 51+00	AREA =	173.20 SQF.
STATION 51+51	AREA =	0.00 SQF.
STATION 52+00	AREA =	0.00 SQF.
STATION 52+78	AREA =	830.52 SQF.

MESSAGE SCAN FOR EDGAR MORENO

T Raleigh, Edward A.
CC Wainwright, Chuck
CC Moreno, Edgar O.
CC Hanumaiah, Kumar V

From: Edgar Moreno
Postmark: Jan 26,93 12:34 PM Delivered: Jan 26,93 12:34 PM
Status: Certified Previously read
Subject: FCD 92-35

Comments:
Per Your Request See Attached File.

----------=========X=========----------

THEORY AND CALCS BY EDGAR O. MORENO.

COSSAMAN Rd. Sta S->N	Dist (ft)	STR. EXCAVATION Area (SqFt)	Volume (Cu.Yds)	FILL CONSTRUCTION Area (SqFt)	Volume (Cu.Yds)
1+00		8.0		11.5	
	20		17.1		5.3
1+20		38.1		2.9	
	20		59.4		7.7
1+40		76.2		3.4	
	20		96.8		11.4
1+60		24.8		6.7	
	20		121.3		15.8
1+80		41.3		5.1	
	20		153.1		23.3
2+00		44.5		15.3	
	20		183.1		39.5
2+20		36.5		28.4	
	20		203.2		65.8
2+40		17.6		42.7	
	20		213.9		106.3
2+60		11.4		66.6	
	20		220.1		168.2
2+80		5.1		100.4	
	20		226.2		246.7
3+00		11.4		111.5	
	20		230.7		344.3
3+20		1.0		152.1	
	20		231.1		467.1
3+40		0.0		179.5	
	20		231.1		604.9
3+60		0.0		192.5	
	20		231.4		748.4
3+80		0.8		194.8	
	20		234.2		894.7
4+00		6.6		200.2	
	20		246.0		1040.7
4+20		25.4		194.2	
	20		259.0		1196.3
4+40		9.7		225.9	
	20		266.5		1371.8
4+60		10.3		248.0	
	20		271.9		1573.5
4+80		4.4		296.4	
	20		273.5		1880.9
5+00		0.0		533.6	
	20		274.1		2189.8
5+20		1.4		300.5	
	20		274.6		2502.8
5+40		0.0		544.7	

GUADALUPE Rd. Sta W->E	Dist (ft)	STR. EXCAVATION Area (SqFt)	STR. EXCAVATION Volume (Cu.Yds)	FILL CONSTRUCTION Area (SqFt)	FILL CONSTRUCTION Volume (Cu.Yds)
47+00		0.0		0.0	
	100		356.1		322.8
48+00		192.3		174.3	
	100		1231.6		1086.9
49+00		280.5		238.3	
	100		2205.5		2039.1
50+00		245.4		275.9	
	100		3166.9		2870.8
51+00		273.8		173.2	
	51		3677.1		3034.4
51+51		266.4		0.0	
	49		3986.7		3034.4
52+00		74.8		0.0	

GUADALUPE Rd. Sta W->E	Dist (ft)	STR. BACKFILL Area (SqFt)	STR. BACKFILL Volume (Cu.Yds)
47+00		0.0	
	100		180.0
48+00		97.2	
	100		521.7
49+00		87.3	
	100		861.2
50+00		96.0	
	100		1209.7
51+00		92.2	
	51		1367.4
51+51		74.8	
	49		1503.1
52+00		74.8	
	30		1586.2
52+30		74.8	

GUADALUPE Rd. Sta W->E	Dist (ft)	CONCRETE CLASS AA Area (SqFt)	Volume (Cu.Yds)	STR. W/Ft (Lbs)	STEEL Weight (Lbs)
47+00		68.7		360.0	
	32		97.4		11520.0
47+32		95.7		415.0	
	13		143.5		16915.0
47+45		95.7/103.3		404.0	
	80		449.6		49235.0
48+25		103.3/86.2		344.0	
	30		545.4		59555.0
48+55		86.2/68.7		316.0	
	164		963.0		111379.0
50+19		68.7		337.0	
	51		1112.7		128566.0
50+70		89.8		365.0	
	24		1192.5		137326.0
50+94		89.8/138.2		840.0	
	57		1484.3		185206.0
51+51		138.2/27.4		140.0	
	79		1564.4		196266.0
52+30		27.4			

SOSSAMAN Rd. Sta N->S	Dist (ft)	CONCRETE CLASS AA Area (SqFt)	Volume (Cu.Yds)	STR. W/Ft (Lbs)	STEEL Weight (Lbs)
5+63		140.0		836.0	
	45		234.0		37620.0
5+78		140./105.		836./627.	
	19		307.0		49533.0
5+94		105./90.0		627./400.	
	19		370.5		57133.0
6+12		90.0/47.0		400./100	
	30		423.0		60133.0
6+37		47.0			

SOSSAMAN Rd. Sta N->S	Dist (ft)	CONCRETE CLASS B V/Ft (Cu.Yds)	Volume (Cu.Yds)	STR. W/Ft (Lbs)	STEEL Weight (Lbs)
6+12		2.15		133.1	
	90		194.0		11980.0
7+02					

ON THE STRUCTURAL DESIGN OF THE
GUADALUPE ROAD CHANNEL
BY EDGAR O. MORENO

The Guadalupe Road Channel is as a U-shaped rigid frame concrete structure. As it is recommended for this type of structure and as a non-linear system, a finite element model of the structure was created and the appropriate element size and level of detail was taken to assure the most accurate results.

The following is a complete description of the model's geometry which reflects the changes proposed by Kumar hanumaiah, and analyzed for review, a complete set of results of the global matrix multiplication and AASHTO load vectors is attached.

MEMBER	1	LEFT CORD	1.0000	RIGHT CORD	8.8333
MEMBER	2	LEFT CORD	1.0000	RIGHT CORD	.6250
MEMBER	3	LEFT CORD	1.5000	RIGHT CORD	.6250
MEMBER	4	LEFT CORD	2.50	RIGHT CORD	.6140
MEMBER	5	LEFT CORD	3.50	RIGHT CORD	.6031
MEMBER	6	LEFT CORD	4.50	RIGHT CORD	.5921
MEMBER	7	LEFT CORD	5.50	RIGHT CORD	.5811
MEMBER	8	LEFT CORD	6.50	RIGHT CORD	.5702
MEMBER	9	LEFT CORD	7.50	RIGHT CORD	.5592
MEMBER	10	LEFT CORD	8.50	RIGHT CORD	.5482
MEMBER	11	LEFT CORD	9.50	RIGHT CORD	.5373
MEMBER	12	LEFT CORD	10.50	RIGHT CORD	.5263
MEMBER	13	LEFT CORD	11.50	RIGHT CORD	.5153
MEMBER	14	LEFT CORD	12.50	RIGHT CORD	.5044
MEMBER	15	LEFT CORD	13.50	RIGHT CORD	.4934
MEMBER	16	LEFT CORD	14.50	RIGHT CORD	.4824
MEMBER	17	LEFT CORD	15.50	RIGHT CORD	.4714
MEMBER	18	LEFT CORD	16.50	RIGHT CORD	.4605
MEMBER	19	LEFT CORD	17.50	RIGHT CORD	.4495
MEMBER	20	LEFT CORD	18.50	RIGHT CORD	.4385
MEMBER	21	LEFT CORD	19.50	RIGHT CORD	.4276
MEMBER	22	LEFT CORD	20.50	RIGHT CORD	.4166
MEMBER	23	LEFT CORD	21.50	RIGHT CORD	.4277
MEMBER	24	LEFT CORD	22.50	RIGHT CORD	.4387
MEMBER	25	LEFT CORD	23.50	RIGHT CORD	.4496
MEMBER	26	LEFT CORD	24.50	RIGHT CORD	.4606
MEMBER	27	LEFT CORD	25.50	RIGHT CORD	.4716
MEMBER	28	LEFT CORD	26.50	RIGHT CORD	.4825
MEMBER	29	LEFT CORD	27.50	RIGHT CORD	.4935
MEMBER	30	LEFT CORD	28.50	RIGHT CORD	.5045
MEMBER	31	LEFT CORD	29.50	RIGHT CORD	.5154
MEMBER	32	LEFT CORD	30.50	RIGHT CORD	.5264
MEMBER	33	LEFT CORD	31.50	RIGHT CORD	.5374
MEMBER	34	LEFT CORD	32.50	RIGHT CORD	.5483
MEMBER	35	LEFT CORD	33.50	RIGHT CORD	.5593
MEMBER	36	LEFT CORD	34.50	RIGHT CORD	.5703
MEMBER	37	LEFT CORD	35.50	RIGHT CORD	.5812

MEMBER	38	LEFT CORD	36.50	RIGHT CORD	.5922
MEMBER	39	LEFT CORD	37.50	RIGHT CORD	.6032
MEMBER	40	LEFT CORD	38.50	RIGHT CORD	.6141
MEMBER	41	LEFT CORD	39.50	RIGHT CORD	.6251
MEMBER	42	LEFT CORD	40	RIGHT CORD	.6250
MEMBER	43	LEFT CORD	40	RIGHT CORD	8.8333

MEMBER	1	DEPTH	1	M.INERTIA	.1250
MEMBER	2	DEPTH	1.2500	M.INERTIA	.2441
MEMBER	3	DEPTH	1.2500	M.INERTIA	.2441
MEMBER	4	DEPTH	1.2281	M.INERTIA	.2315
MEMBER	5	DEPTH	1.2061	M.INERTIA	.2193
MEMBER	6	DEPTH	1.1842	M.INERTIA	.2076
MEMBER	7	DEPTH	1.1623	M.INERTIA	.1963
MEMBER	8	DEPTH	1.1403	M.INERTIA	.1853
MEMBER	9	DEPTH	1.1184	M.INERTIA	.1749
MEMBER	10	DEPTH	1.0964	M.INERTIA	.1648
MEMBER	11	DEPTH	1.0745	M.INERTIA	.1551
MEMBER	12	DEPTH	1.0526	M.INERTIA	.1458
MEMBER	13	DEPTH	1.0306	M.INERTIA	.1368
MEMBER	14	DEPTH	1.0087	M.INERTIA	.1283
MEMBER	15	DEPTH	.9868	M.INERTIA	.1201
MEMBER	16	DEPTH	.9648	M.INERTIA	.1123
MEMBER	17	DEPTH	.9429	M.INERTIA	.1048
MEMBER	18	DEPTH	.9210	M.INERTIA	.0976
MEMBER	19	DEPTH	.8990	M.INERTIA	.0908
MEMBER	20	DEPTH	.8771	M.INERTIA	.0843
MEMBER	21	DEPTH	.8551	M.INERTIA	.0782
MEMBER	22	DEPTH	.8332	M.INERTIA	.0723
MEMBER	23	DEPTH	.8773	M.INERTIA	.0844
MEMBER	24	DEPTH	.8993	M.INERTIA	.0909
MEMBER	25	DEPTH	.9212	M.INERTIA	.0977
MEMBER	26	DEPTH	.9431	M.INERTIA	.1049
MEMBER	27	DEPTH	.9651	M.INERTIA	.1124
MEMBER	28	DEPTH	.9870	M.INERTIA	.1202
MEMBER	29	DEPTH	1.0089	M.INERTIA	.1284
MEMBER	30	DEPTH	1.0309	M.INERTIA	.1369
MEMBER	31	DEPTH	1.0528	M.INERTIA	.1459
MEMBER	32	DEPTH	1.0747	M.INERTIA	.1552
MEMBER	33	DEPTH	1.0967	M.INERTIA	.1649
MEMBER	34	DEPTH	1.1186	M.INERTIA	.1750
MEMBER	35	DEPTH	1.1406	M.INERTIA	.1855
MEMBER	36	DEPTH	1.1625	M.INERTIA	.1964
MEMBER	37	DEPTH	1.1844	M.INERTIA	.2077
MEMBER	38	DEPTH	1.2064	M.INERTIA	.2195
MEMBER	39	DEPTH	1.2283	M.INERTIA	.2316
MEMBER	40	DEPTH	1.2502	M.INERTIA	.2443
MEMBER	41	DEPTH	1.2500	M.INERTIA	.2441
MEMBER	42	DEPTH	1	M.INERTIA	.1250

GUADALUPE CHANNEL STRUCTURE
NODE DISPLACEMENT UNDER AASHTO LOADING
ANALYSIS BY EDGAR O. MORENO

NODE NUMBER	LOADING CASE	DISP-X IN.	DISP-Y IN.	ROTATION RAD.
1	1	-0.04088	-0.04899	0.00042
	2	0.02634	0.00795	-0.00030
	3	0.07219	0.02361	-0.00078
	4	0.00846	0.03238	-0.00009
	5	-0.06042	-0.05973	0.00065
	6	0.11410	0.02864	-0.00127
	7	-0.15526	-0.16463	0.00164
2	1	0.00000	-0.04886	0.00042
	2	0.00001	0.00795	-0.00018
	3	0.00003	0.02361	-0.00053
	4	0.00000	0.03238	-0.00009
	5	-0.00002	-0.05973	0.00044
	6	0.00005	0.02881	-0.00070
	7	-0.00004	-0.16446	0.00129
3	1	0.00000	-0.04634	0.00041
	2	0.00000	0.00691	-0.00017
	3	0.00000	0.02053	-0.00050
	4	0.00000	0.03185	-0.00009
	5	0.00000	-0.05715	0.00042
	6	0.00000	0.02484	-0.00063
	7	0.00000	-0.15683	0.00124
4	1	0.00000	-0.04139	0.00040
	2	0.00000	0.00503	-0.00015
	3	0.00000	0.01495	-0.00043
	4	0.00000	0.03083	-0.00008
	5	0.00000	-0.05249	0.00036
	6	0.00000	0.01806	-0.00051
	7	0.00000	-0.14251	0.00114
5	1	0.00000	-0.03665	0.00038
	2	0.00000	0.00341	-0.00012
	3	0.00000	0.01013	-0.00037
	4	0.00000	0.02985	-0.00008
	5	0.00000	-0.04847	0.00031
	6	0.00000	0.01272	-0.00040
	7	0.00000	-0.12955	0.00102
6	1	0.00000	-0.03219	0.00036
	2	0.00000	0.00205	-0.00010
	3	0.00000	0.00608	-0.00031
	4	0.00000	0.02893	-0.00007
	5	0.00000	-0.04508	0.00026
	6	0.00000	0.00870	-0.00029
	7	0.00000	-0.11804	0.00090
7	1	0.00000	-0.02809	0.00033
	2	0.00000	0.00093	-0.00008
	3	0.00000	0.00275	-0.00025
	4	0.00000	0.02809	-0.00007
	5	0.00000	-0.04230	0.00021
	6	0.00000	0.00585	-0.00020

	7	0.00000	-0.10800	0.00078
8	1	0.00000	-0.02439	0.00029
	2	0.00000	0.00003	-0.00007
	3	0.00000	0.00010	-0.00020
	4	0.00000	0.02734	-0.00006
	5	0.00000	-0.04008	0.00016
	6	0.00000	0.00405	-0.00012
	7	0.00000	-0.09944	0.00066
9	1	0.00000	-0.02110	0.00026
	2	0.00000	-0.00065	-0.00005
	3	0.00000	-0.00194	-0.00015
	4	0.00000	0.02668	-0.00005
	5	0.00000	-0.03838	0.00012
	6	0.00000	0.00313	-0.00005
	7	0.00000	-0.09230	0.00054
10	1	0.00000	-0.01824	0.00022
	2	0.00000	-0.00115	-0.00004
	3	0.00000	-0.00342	-0.00011
	4	0.00000	0.02612	-0.00004
	5	0.00000	-0.03714	0.00009
	6	0.00000	0.00295	0.00001
	7	0.00000	-0.08649	0.00044
11	1	0.00000	-0.01580	0.00019
	2	0.00000	-0.00149	-0.00002
	3	0.00000	-0.00442	-0.00007
	4	0.00000	0.02564	-0.00004
	5	0.00000	-0.03631	0.00006
	6	0.00000	0.00338	0.00005
	7	0.00000	-0.08190	0.00034
12	1	0.00000	-0.01376	0.00016
	2	0.00000	-0.00169	-0.00001
	3	0.00000	-0.00501	-0.00004
	4	0.00000	0.02525	-0.00003
	5	0.00000	-0.03581	0.00003
	6	0.00000	0.00427	0.00009
	7	0.00000	-0.07841	0.00025
13	1	0.00000	-0.01208	0.00013
	2	0.00000	-0.00177	0.00000
	3	0.00000	-0.00527	-0.00001
	4	0.00000	0.02494	-0.00002
	5	0.00000	-0.03560	0.00001
	6	0.00000	0.00550	0.00011
	7	0.00000	-0.07587	0.00018
14	1	0.00000	-0.01074	0.00010
	2	0.00000	-0.00177	0.00000
	3	0.00000	-0.00526	0.00001
	4	0.00000	0.02470	-0.00002
	5	0.00000	-0.03560	-0.00001

	6	0.00000	0.00695	0.00012
	7	0.00000	-0.07413	0.00012
15	1	0.00000	-0.00969	0.00008
	2	0.00000	-0.00170	0.00001
	3	0.00000	-0.00506	0.00002
	4	0.00000	0.02452	-0.00001
	5	0.00000	-0.03577	-0.00002
	6	0.00000	0.00852	0.00013
	7	0.00000	-0.07305	0.00007
16	1	0.00000	-0.00889	0.00006
	2	0.00000	-0.00159	0.00001
	3	0.00000	-0.00473	0.00003
	4	0.00000	0.02440	-0.00001
	5	0.00000	-0.03605	-0.00003
	6	0.00000	0.01010	0.00013
	7	0.00000	-0.07248	0.00003
17	1	0.00000	-0.00829	0.00004
	2	0.00000	-0.00146	0.00001
	3	0.00000	-0.00433	0.00003
	4	0.00000	0.02431	-0.00001
	5	0.00000	-0.03638	-0.00003
	6	0.00000	0.01162	0.00012
	7	0.00000	-0.07227	0.00001
18	1	0.00000	-0.00787	0.00003
	2	0.00000	-0.00132	0.00001
	3	0.00000	-0.00391	0.00003
	4	0.00000	0.02426	0.00000
	5	0.00000	-0.03673	-0.00003
	6	0.00000	0.01299	0.00011
	7	0.00000	-0.07231	-0.00001
19	1	0.00000	-0.00758	0.00002
	2	0.00000	-0.00119	0.00001
	3	0.00000	-0.00352	0.00003
	4	0.00000	0.02423	0.00000
	5	0.00000	-0.03706	-0.00002
	6	0.00000	0.01416	0.00009
	7	0.00000	-0.07247	-0.00001
20	1	0.00000	-0.00739	0.00001
	2	0.00000	-0.00108	0.00001
	3	0.00000	-0.00321	0.00002
	4	0.00000	0.02422	0.00000
	5	0.00000	-0.03732	-0.00002
	6	0.00000	0.01505	0.00006
	7	0.00000	-0.07267	-0.00001
21	1	0.00000	-0.00728	0.00001
	2	0.00000	-0.00101	0.00000
	3	0.00000	-0.00300	0.00001
	4	0.00000	0.02421	0.00000

	5	0.00000	-0.03749	-0.00001
	6	0.00000	0.01563	0.00003
	7	0.00000	-0.07283	-0.00001
22	1	0.00000	-0.00724	0.00000
	2	0.00000	-0.00098	0.00000
	3	0.00000	-0.00292	0.00000
	4	0.00000	0.02421	0.00000
	5	0.00000	-0.03756	0.00000
	6	0.00000	0.01584	0.00000
	7	0.00000	-0.07289	0.00000
23	1	0.00000	-0.00728	-0.00001
	2	0.00000	-0.00101	0.00000
	3	0.00000	-0.00300	-0.00001
	4	0.00000	0.02421	0.00000
	5	0.00000	-0.03750	0.00001
	6	0.00000	0.01564	-0.00003
	7	0.00000	-0.07283	0.00001
24	1	0.00000	-0.00739	-0.00001
	2	0.00000	-0.00108	-0.00001
	3	0.00000	-0.00321	-0.00002
	4	0.00000	0.02422	0.00000
	5	0.00000	-0.03732	0.00002
	6	0.00000	0.01506	-0.00006
	7	0.00000	-0.07267	0.00001
25	1	0.00000	-0.00757	-0.00002
	2	0.00000	-0.00119	-0.00001
	3	0.00000	-0.00352	-0.00003
	4	0.00000	0.02423	0.00000
	5	0.00000	-0.03706	0.00002
	6	0.00000	0.01417	-0.00009
	7	0.00000	-0.07248	0.00001
26	1	0.00000	-0.00787	-0.00003
	2	0.00000	-0.00132	-0.00001
	3	0.00000	-0.00391	-0.00003
	4	0.00000	0.02426	0.00000
	5	0.00000	-0.03674	0.00003
	6	0.00000	0.01300	-0.00011
	7	0.00000	-0.07231	0.00001
27	1	0.00000	-0.00829	-0.00004
	2	0.00000	-0.00146	-0.00001
	3	0.00000	-0.00433	-0.00003
	4	0.00000	0.02431	0.00001
	5	0.00000	-0.03639	0.00003
	6	0.00000	0.01162	-0.00012
	7	0.00000	-0.07227	-0.00001
28	1	0.00000	-0.00889	-0.00006
	2	0.00000	-0.00159	-0.00001
	3	0.00000	-0.00473	-0.00003

	4	0.00000	0.02440	0.00001
	5	0.00000	-0.03605	0.00003
	6	0.00000	0.01010	-0.00013
	7	0.00000	-0.07248	-0.00003
29	1	0.00000	-0.00969	-0.00008
	2	0.00000	-0.00170	-0.00001
	3	0.00000	-0.00506	-0.00002
	4	0.00000	0.02452	0.00001
	5	0.00000	-0.03577	0.00002
	6	0.00000	0.00852	-0.00013
	7	0.00000	-0.07306	-0.00007
30	1	0.00000	-0.01074	-0.00010
	2	0.00000	-0.00177	0.00000
	3	0.00000	-0.00526	-0.00001
	4	0.00000	0.02470	0.00002
	5	0.00000	-0.03561	0.00001
	6	0.00000	0.00695	-0.00012
	7	0.00000	-0.07414	-0.00012
31	1	0.00000	-0.01209	-0.00013
	2	0.00000	-0.00177	0.00000
	3	0.00000	-0.00527	0.00001
	4	0.00000	0.02494	0.00002
	5	0.00000	-0.03560	-0.00001
	6	0.00000	0.00550	-0.00011
	7	0.00000	-0.07588	-0.00018
32	1	0.00000	-0.01376	-0.00016
	2	0.00000	-0.00169	0.00001
	3	0.00000	-0.00501	0.00004
	4	0.00000	0.02525	0.00003
	5	0.00000	-0.03582	-0.00003
	6	0.00000	0.00427	-0.00009
	7	0.00000	-0.07842	-0.00025
33	1	0.00000	-0.01581	-0.00019
	2	0.00000	-0.00149	0.00002
	3	0.00000	-0.00442	0.00007
	4	0.00000	0.02564	0.00004
	5	0.00000	-0.03631	-0.00006
	6	0.00000	0.00338	-0.00005
	7	0.00000	-0.08191	-0.00034
34	1	0.00000	-0.01825	-0.00022
	2	0.00000	-0.00115	0.00004
	3	0.00000	-0.00342	0.00011
	4	0.00000	0.02612	0.00004
	5	0.00000	-0.03714	-0.00009
	6	0.00000	0.00295	-0.00001
	7	0.00000	-0.08650	-0.00044
35	1	0.00000	-0.02111	-0.00026
	2	0.00000	-0.00065	0.00005

	3	0.00000	-0.00194	0.00015
	4	0.00000	0.02668	0.00005
	5	0.00000	-0.03838	-0.00012
	6	0.00000	0.00313	0.00005
	7	0.00000	-0.09231	-0.00054
36	1	0.00000	-0.02439	-0.00029
	2	0.00000	0.00003	0.00007
	3	0.00000	0.00010	0.00020
	4	0.00000	0.02734	0.00006
	5	0.00000	-0.04008	-0.00016
	6	0.00000	0.00405	0.00012
	7	0.00000	-0.09945	-0.00066
37	1	0.00000	-0.02810	-0.00033
	2	0.00000	0.00093	0.00008
	3	0.00000	0.00275	0.00025
	4	0.00000	0.02809	0.00007
	5	0.00000	-0.04230	-0.00021
	6	0.00000	0.00585	0.00020
	7	0.00000	-0.10801	-0.00078
38	1	0.00000	-0.03220	-0.00036
	2	0.00000	0.00205	0.00010
	3	0.00000	0.00608	0.00031
	4	0.00000	0.02893	0.00007
	5	0.00000	-0.04508	-0.00026
	6	0.00000	0.00869	0.00029
	7	0.00000	-0.11804	-0.00090
39	1	0.00000	-0.03665	-0.00038
	2	0.00000	0.00341	0.00012
	3	0.00000	0.01013	0.00037
	4	0.00000	0.02985	0.00008
	5	0.00000	-0.04846	-0.00031
	6	0.00000	0.01272	0.00039
	7	0.00000	-0.12955	-0.00102
40	1	0.00000	-0.04140	-0.00040
	2	0.00000	0.00503	0.00015
	3	0.00000	0.01494	0.00043
	4	0.00000	0.03083	0.00008
	5	0.00000	-0.05248	-0.00036
	6	0.00000	0.01805	0.00051
	7	0.00000	-0.14251	-0.00114
41	1	0.00000	-0.04634	-0.00041
	2	0.00000	0.00691	0.00017
	3	0.00000	0.02052	0.00050
	4	0.00000	0.03185	0.00009
	5	0.00000	-0.05714	-0.00042
	6	0.00000	0.02483	0.00063
	7	0.00000	-0.15681	-0.00124
42	1	0.00000	-0.04886	-0.00041

ANALYSIS BY EDGAR O. MORENO

	2	-0.00001	0.00795	0.00018
	3	-0.00003	0.02361	0.00053
	4	0.00000	0.03237	0.00009
	5	0.00002	-0.05972	-0.00044
	6	-0.00005	0.02880	0.00070
	7	0.00004	-0.16444	-0.00129
43	1	0.04087	-0.04899	-0.00041
	2	-0.02633	0.00795	0.00030
	3	-0.07216	0.02361	0.00078
	4	-0.00846	0.03237	0.00009
	5	0.06040	-0.05972	-0.00065
	6	-0.11406	0.02862	0.00127
	7	0.15520	-0.16462	-0.00164

BY EDGAR O. MORENO

NODE NUMBER	LOADING CASE	X-REACTION KIPS	Y-REACTION KIPS
3	1	2.55	0.58
	2	-1.56	-0.09
	3	-5.50	-0.26
	4	-0.53	-0.40
	5	4.50	0.71
	6	-8.70	-0.31
	7	10.92	1.96
4	1	-0.17	0.52
	2	0.16	-0.06
	3	0.46	-0.19
	4	0.04	-0.39
	5	-0.39	0.66
	6	0.82	-0.23
	7	-0.87	1.78
5	1	-0.16	0.46
	2	0.13	-0.04
	3	0.40	-0.13
	4	0.04	-0.37
	5	-0.33	0.61
	6	0.68	-0.16
	7	-0.77	1.62
6	1	-0.21	0.40
	2	0.13	-0.03
	3	0.39	-0.08
	4	0.05	-0.36
	5	-0.33	0.56
	6	0.62	-0.11
	7	-0.83	1.48
7	1	-0.24	0.35
	2	0.12	-0.01
	3	0.37	-0.03
	4	0.05	-0.35
	5	-0.31	0.53
	6	0.53	-0.07
	7	-0.83	1.35
8	1	-0.21	0.30
	2	0.10	0.00
	3	0.30	0.00
	4	0.05	-0.34
	5	-0.25	0.50
	6	0.43	-0.05
	7	-0.71	1.24

NODE NUMBER	LOADING CASE	X-REACTION KIPS	Y-REACTION KIPS
9	1	-0.23	0.26
	2	0.09	0.01
	3	0.28	0.02
	4	0.05	-0.33
	5	-0.23	0.48
	6	0.35	-0.04
	7	-0.68	1.15
10	1	-0.23	0.23
	2	0.08	0.01
	3	0.24	0.04
	4	0.05	-0.33
	5	-0.20	0.46
	6	0.27	-0.04
	7	-0.63	1.08
11	1	-0.19	0.20
	2	0.06	0.02
	3	0.19	0.06
	4	0.04	-0.32
	5	-0.16	0.45
	6	0.21	-0.04
	7	-0.51	1.02
12	1	-0.18	0.17
	2	0.05	0.02
	3	0.15	0.06
	4	0.04	-0.32
	5	-0.13	0.45
	6	0.14	-0.05
	7	-0.45	0.98
13	1	-0.16	0.15
	2	0.04	0.02
	3	0.12	0.07
	4	0.03	-0.31
	5	-0.10	0.44
	6	0.08	-0.07
	7	-0.37	0.95
14	1	-0.13	0.13
	2	0.03	0.02
	3	0.08	0.07
	4	0.03	-0.31
	5	-0.07	0.45
	6	0.04	-0.09
	7	-0.28	0.93

NODE NUMBER	LOADING CASE	X-REACTION KIPS	Y-REACTION KIPS
15	1	-0.11	0.12
	2	0.02	0.02
	3	0.05	0.06
	4	0.02	-0.31
	5	-0.04	0.45
	6	-0.01	-0.11
	7	-0.22	0.91
16	1	-0.09	0.11
	2	0.01	0.02
	3	0.03	0.06
	4	0.02	-0.30
	5	-0.02	0.45
	6	-0.04	-0.13
	7	-0.15	0.91
17	1	-0.07	0.10
	2	0.00	0.02
	3	0.00	0.05
	4	0.01	-0.30
	5	0.00	0.45
	6	-0.07	-0.15
	7	-0.10	0.90
18	1	-0.05	0.10
	2	0.00	0.02
	3	-0.01	0.05
	4	0.01	-0.30
	5	0.01	0.46
	6	-0.09	-0.16
	7	-0.05	0.90
19	1	-0.04	0.09
	2	-0.01	0.01
	3	-0.03	0.04
	4	0.01	-0.30
	5	0.02	0.46
	6	-0.11	-0.18
	7	-0.01	0.91
20	1	-0.03	0.09
	2	-0.01	0.01
	3	-0.04	0.04
	4	0.00	-0.30
	5	0.03	0.47
	6	-0.13	-0.19
	7	0.02	0.91

NODE NUMBER	LOADING CASE	X-REACTION KIPS	Y-REACTION KIPS
21	1	-0.03	0.09
	2	-0.02	0.01
	3	-0.05	0.04
	4	0.00	-0.30
	5	0.04	0.47
	6	-0.13	-0.20
	7	0.03	0.91
22	1	0.00	0.09
	2	0.00	0.01
	3	0.00	0.04
	4	0.00	-0.30
	5	0.00	0.47
	6	-0.01	-0.20
	7	0.00	0.91
23	1	0.03	0.09
	2	0.02	0.01
	3	0.05	0.04
	4	0.00	-0.30
	5	-0.04	0.47
	6	0.14	-0.20
	7	-0.04	0.91
24	1	0.03	0.09
	2	0.01	0.01
	3	0.04	0.04

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

PROJECT SOSSAMAN ROAD CHANNEL PAGE 1 OF 48

DETAIL Edgar Q. Moreno COMPUTED Edgar Moreno DATE 11/30/92

& FRACIS CROSBY CHECKED BY _____ DATE _____

TO: Chuck Wainwright
Kumar Hanumaiah (Work Update)

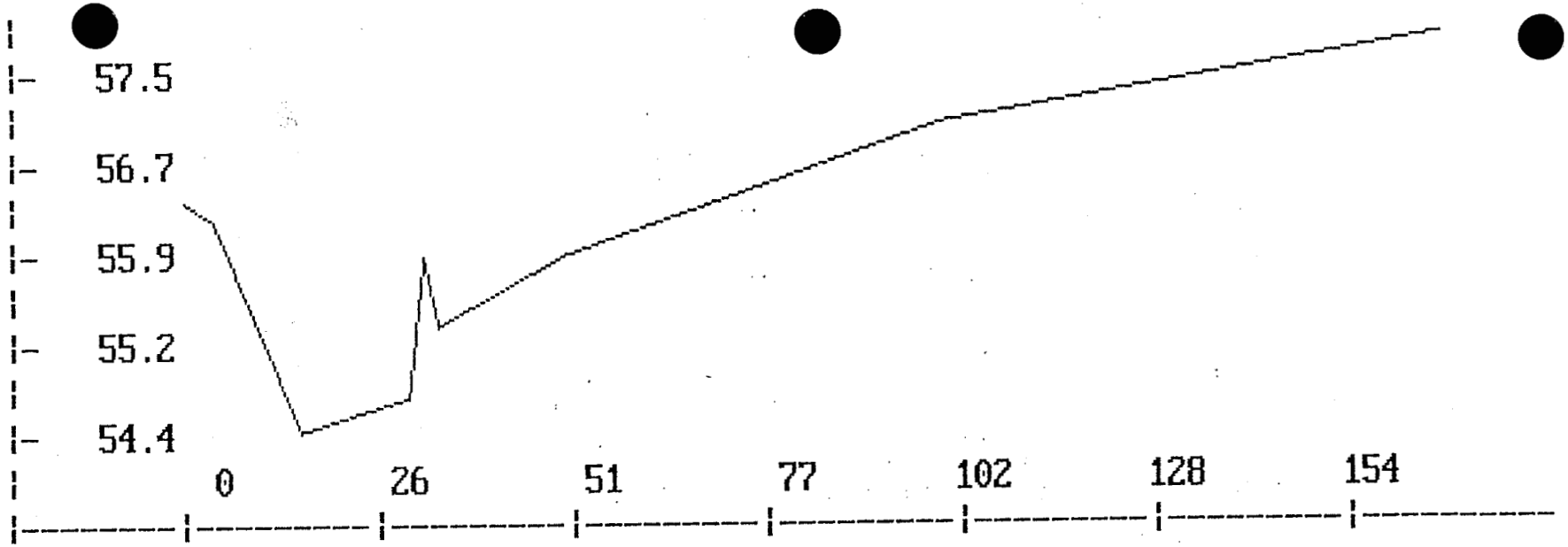
here are the calculations of cut & Fill on sossomon as well as all the cross sections used for the calculations (48 pages)

Edgar Q. Moreno
11/30/92

sossaman

Top Width	Left SS	Right SS	Off-CL (ft)	CL Sta	Dist (ft)	** EXCAVATION ** Area (SqFt)	Volume (Cu.Yds)	** FILL ** Area (SqFt)	Volume (Cu.Yds)
0	74.7:1	1:1	166.0	1+00		8.0		11.5	
					20		17.1		5.3
0	123.2:1	1:1	166.0	1+20		38.1		2.9	
					20		59.4		7.7
0	98.9:1	1:1	166.0	1+40		76.2		3.4	
					20		96.8		11.4
0	104.6:1	1:1	166.0	1+60		24.8		6.7	
					20		121.3		15.8
0	74.4:1	1:1	166.0	1+80		41.3		5.1	
					20		153.1		23.3
0	95.5:1	1:1	166.0	2+00		44.5		15.3	
					20		183.1		39.5
0	102.3:1	1:1	166.0	2+20		36.5		28.4	
					20		203.2		65.8
0	82.9:1	1:1	166.0	2+40		17.6		42.7	
					20		213.9		106.3
0	120.6:1	1:1	166.0	2+60		11.4		66.6	
					20		220.1		168.2
0	133:1	1:1	166.0	2+80		5.1		100.4	
					20		226.2		246.7
0	190:1	1:1	166.0	3+00		11.4		111.5	
					20		230.7		344.3
0	335.7:1	1:1	166.0	3+20		1.0		152.1	
					20		231.1		467.1
0	446.3:1	1:1	166.0	3+40		0.0		179.5	
					20		231.1		604.9
0	663.5:1	1:1	166.0	3+60		0.0		192.5	
					20		231.4		748.4
0	1320:1	1:1	166.0	3+80		0.8		194.8	
					20		234.2		894.7
0	657.5:1	1:1	166.0	4+00		6.6		200.2	
					20		246.0		1040.7

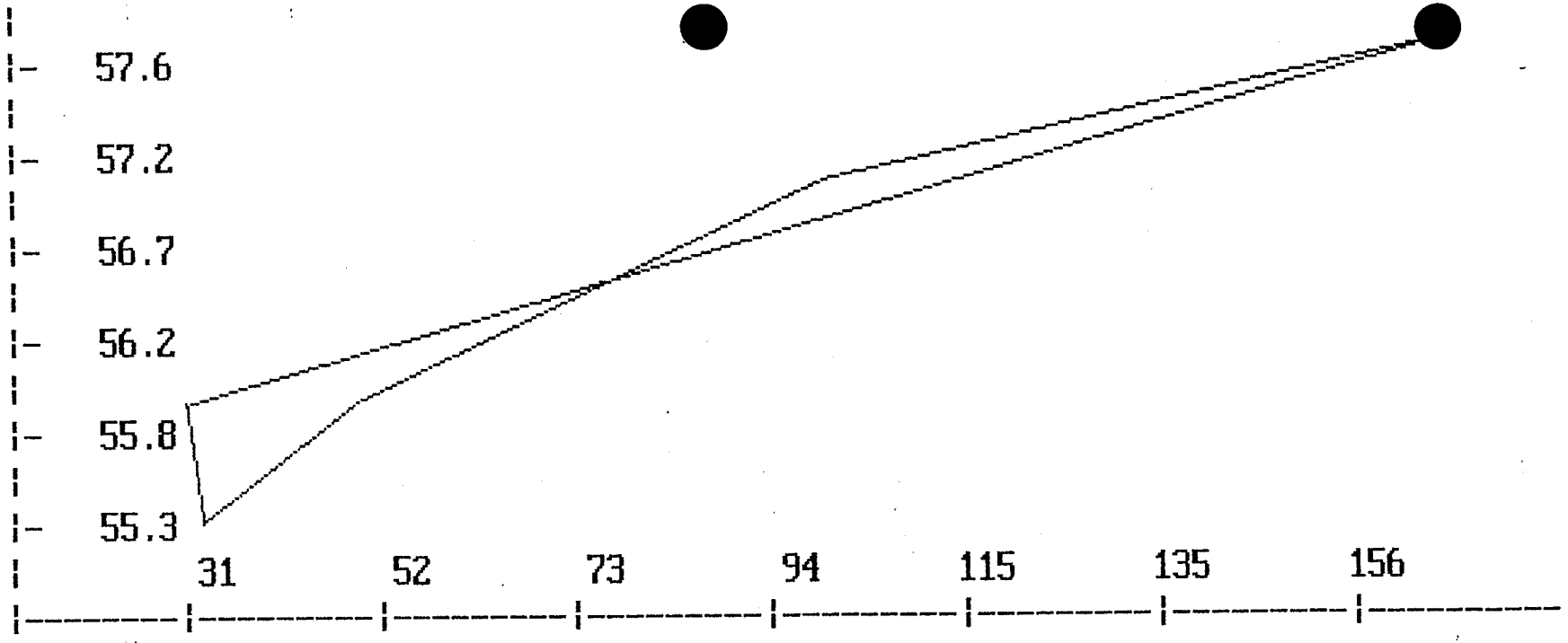
Top Wi	Left SS	Right SS	Off-CL (ft)	CL Sta	Dist (ft)	** EXCAVATION ** Area (SqFt)	Volume (Cu.Yds)	** FILL ** Area (SqFt)	Volume (Cu.Yds)
0	131:1	1:1	166.0	4+20		25.4		194.2	
					20		259.0		1196.3
0	650:1	1:1	166.0	4+40		9.7		225.9	
					20		266.5		1371.8
0	1310:1	1:1	166.0	4+60		10.3		248.0	
					20		271.9		1573.5
0	435:1	1:1	166.0	4+80		4.4		296.4	
					20		273.5		1880.9
0	45.1:1	1:1	166.0	5+00		0.0		533.6	
					20		274.1		2189.8
0	58.9:1	1:1	166.0	5+20		1.4		300.5	
					20		274.6		2502.8
0	496.6:1	1:1	186.0	5+40		0.0		544.7	



Sec # 24 of 24

Centerline Station = 11+00
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1	3.4	56.2	15.2	54.4	29.4	54.7	31.4	55.9
2	33.3	55.3	50.0	55.9	100.0	57.0	166.0	57.7
3		56.4						
4								
5								
6								



Section Number 1 of 24
Centerline Station 1+00

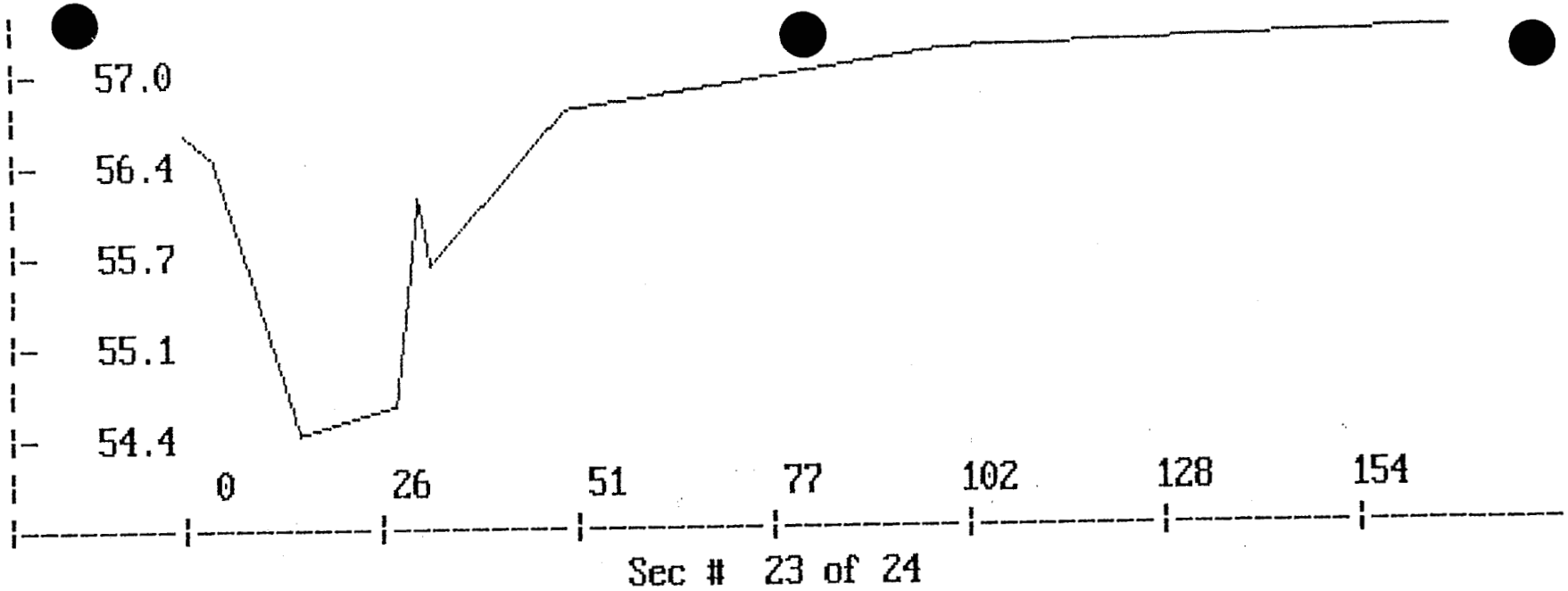
Grade Elevation = 57.70
Excavated Area = 7.98 Sq Ft
Filled Area = 11.47 Sq Ft

Rules - Off ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = 74.8:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

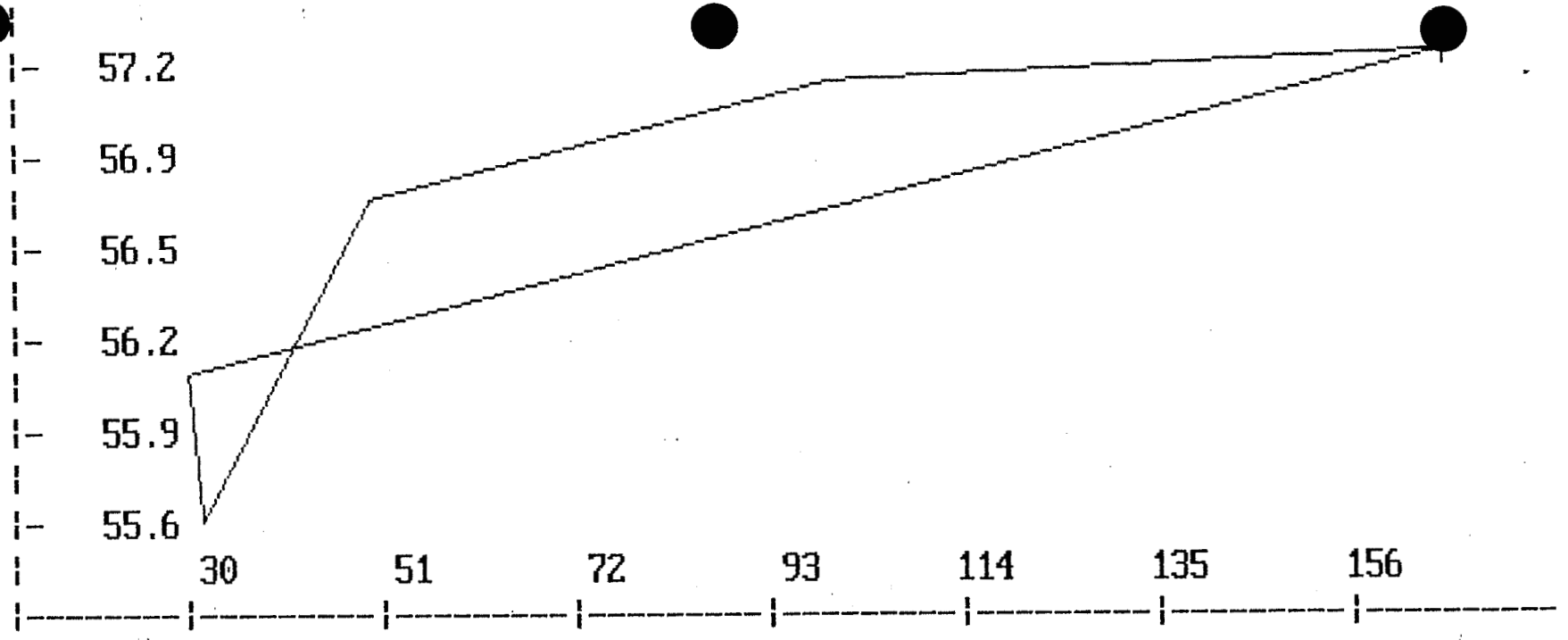
Left	31.4	55.9
Right	166.0	57.7



Sec # 23 of 24

Centerline Station = 11+20
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		56.6	3.4	56.4	15.0	54.4	27.4	54.6
2	30.4	56.1	32.0	55.6	50.0	56.7	100.0	57.1
3	166.0	57.2						
4								
5								
6								



Section Number 2 of 24
Centerline Station 1+20

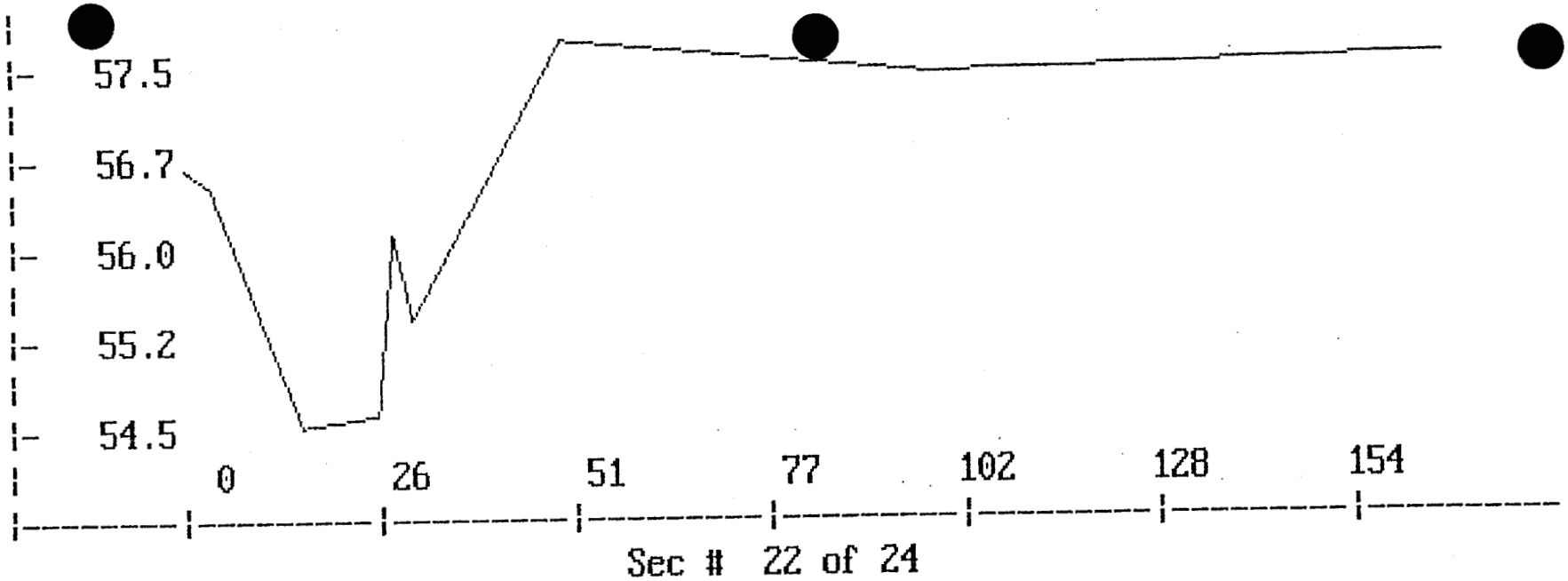
Grade Elevation = 57.20
Excavated Area = 38.11 Sq Ft
Filled Area = 2.89 Sq Ft

Rules - Off ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = %123.3:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

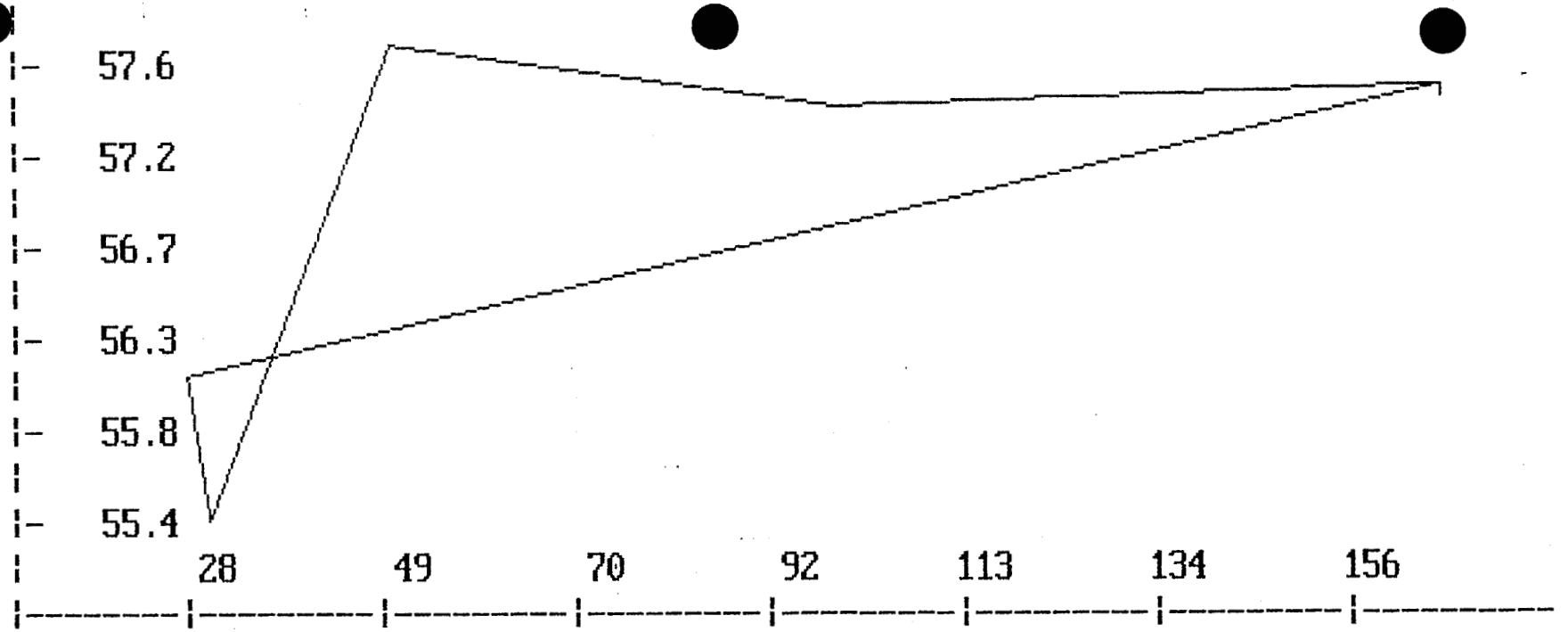
Slope Intercepts

Left	30.4	56.1
Right	166.0	57.2



Centerline Station = 11+40
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		56.7	3.3	56.5	15.6	54.5	25.6	54.6
2	27.5	56.1	30.0	55.4	50.0	57.7	100.0	57.4
3	166.0	57.5						
4								
5								
6								



Section Number 3 of 24
Centerline Station 1+40

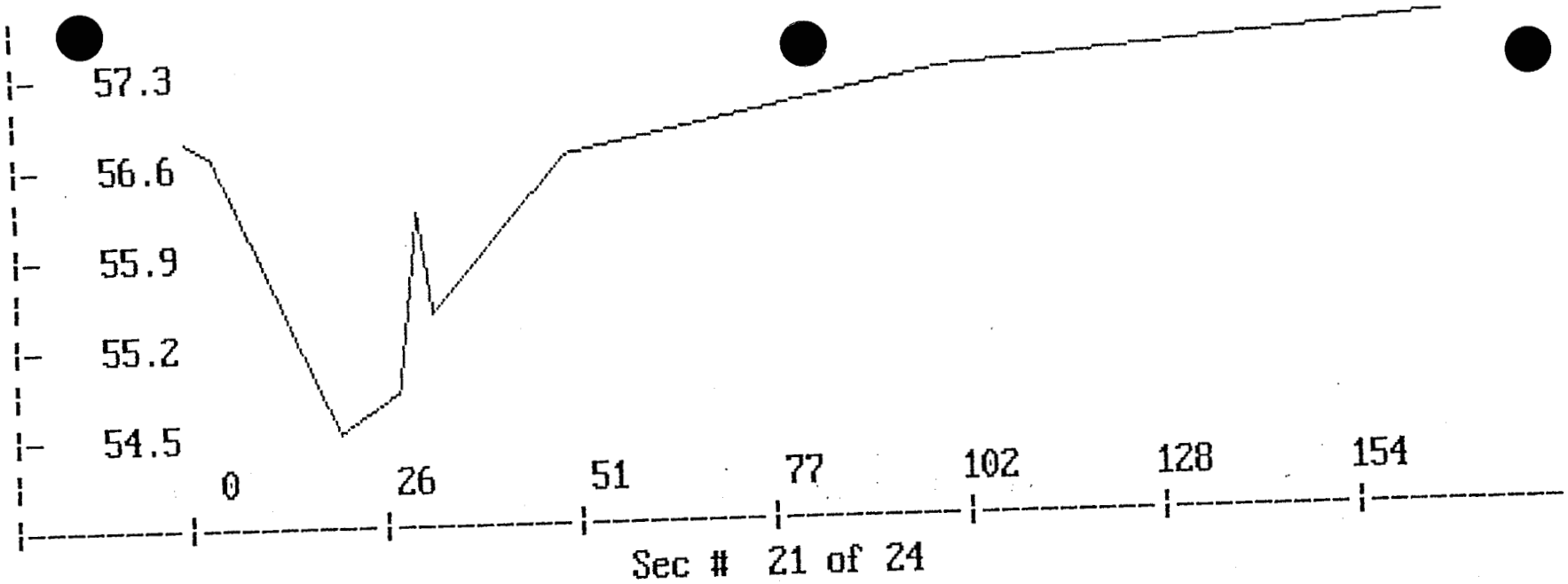
Grade Elevation = 57.50
Excavated Area = 76.19 Sq Ft
Filled Area = 3.41 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = 98.9:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

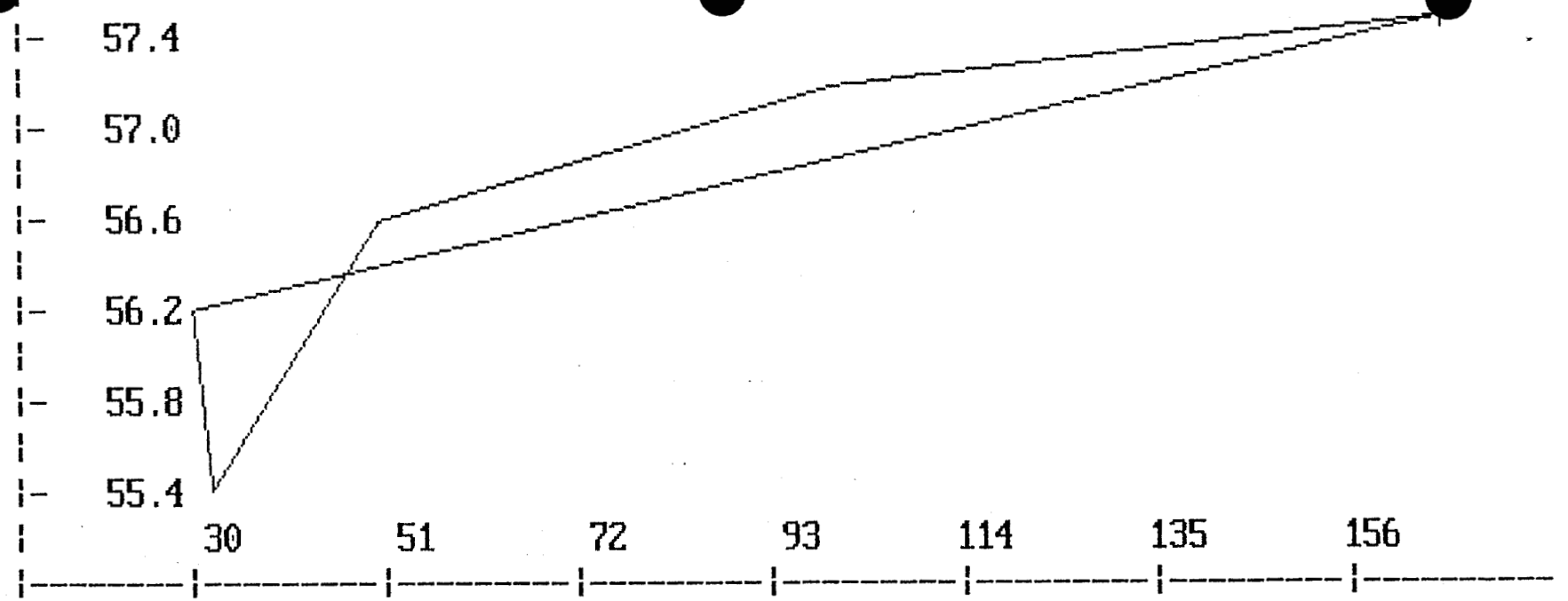
Slope Intercepts

Left	27.5	56.1
Right	166.0	57.5



Centerline Station = 11+60
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		56.8	3.1	56.7	19.8	54.5	27.4	54.8
2	30.0	56.2	32.0	55.4	50.0	56.6	100.0	57.2
3	166.0	57.5						
4								
5								
6								



Section Number 4 of 24
Centerline Station 1+60

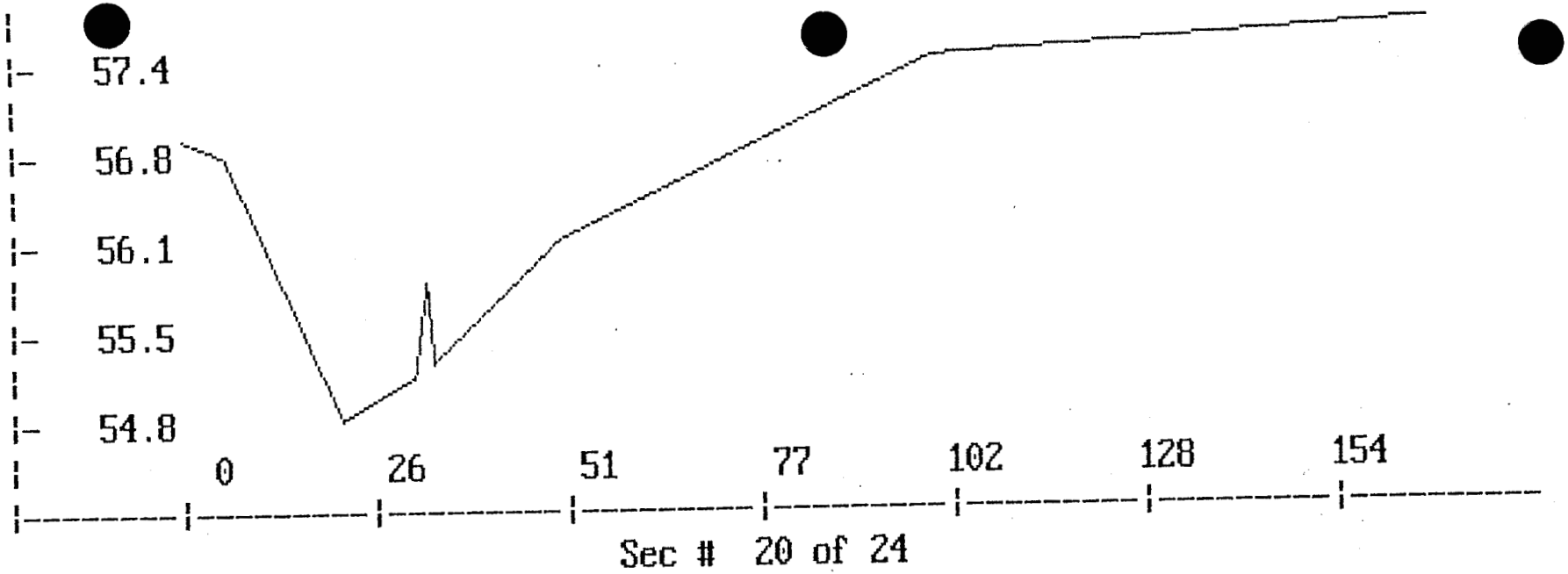
Grade Elevation = 57.50
Excavated Area = 24.79 Sq Ft
Filled Area = 6.69 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = %104.6:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

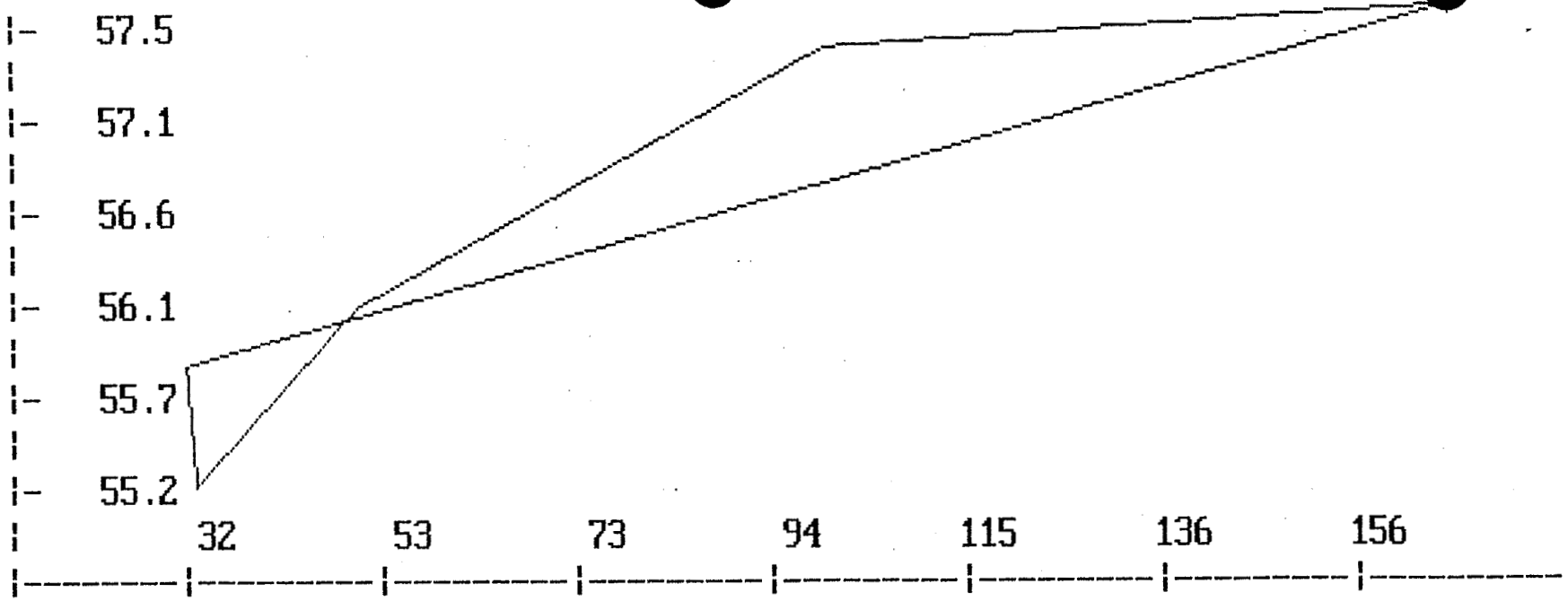
Slope Intercepts

Left	30.0	56.2
Right	166.0	57.5



Centerline Station = 11+80
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		56.9	5.3	56.8	21.0	54.8	30.5	55.1
2	32.0	55.8	33.0	55.2	50.0	56.1	100.0	57.4
3	166.0	57.6						
4								
5								
6								



Section Number 5 of 24
Centerline Station 1+80

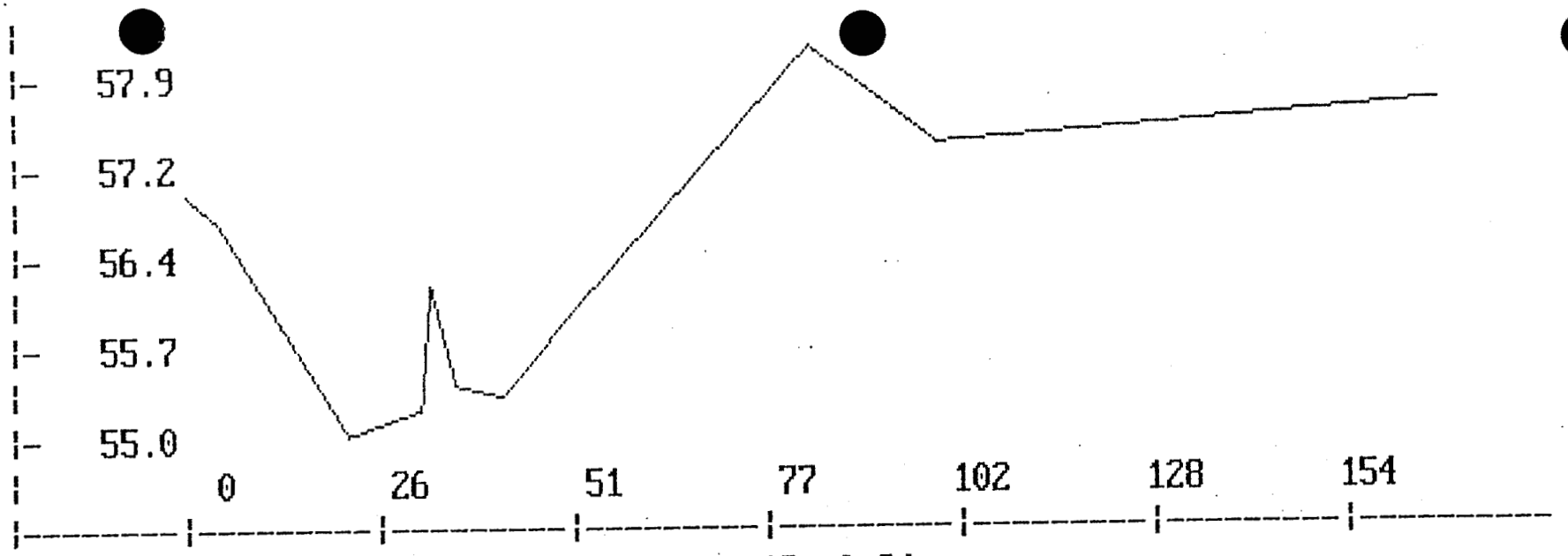
Grade Elevation = 57.60
Excavated Area = 41.32 Sq Ft
Filled Area = 5.07 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = 74.4:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

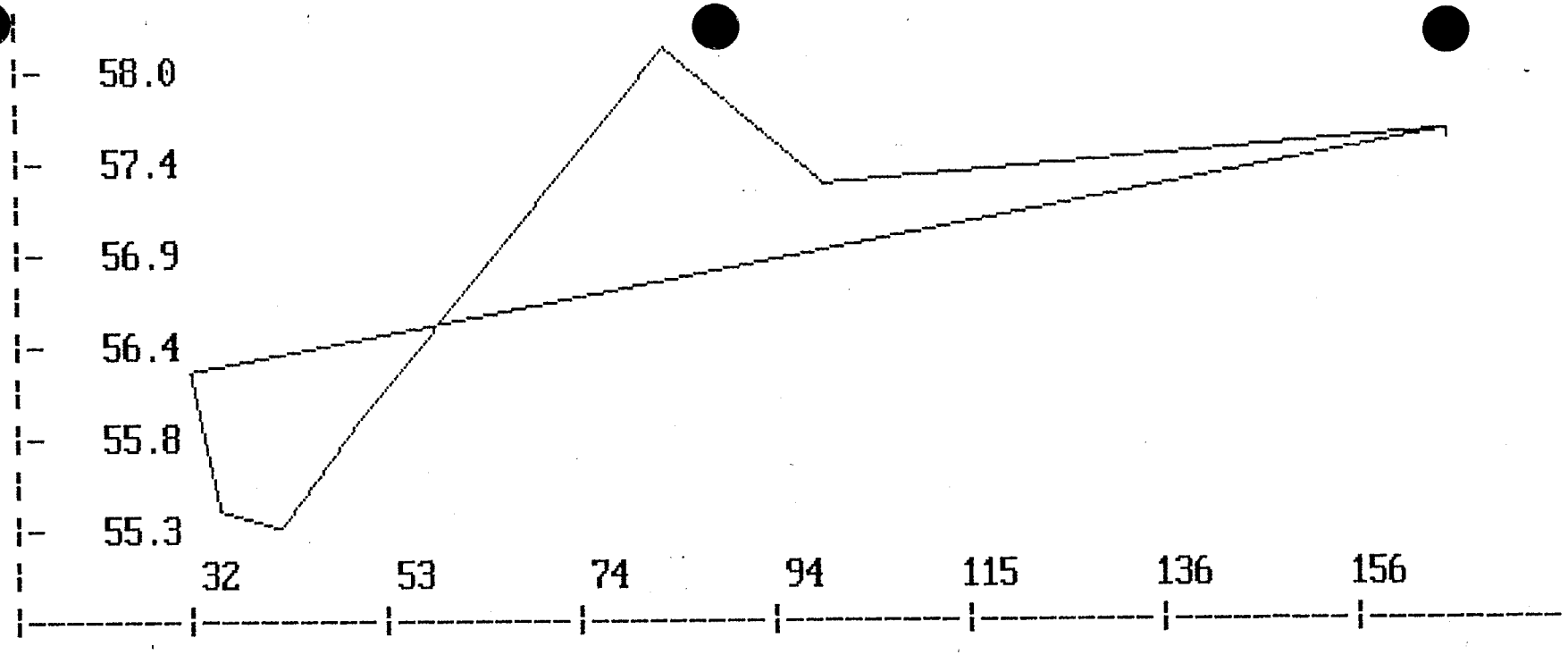
Left	32.0	55.8
Right	166.0	57.6



Sec # 19 of 24

Centerline Station = 20+00
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		57.0	3.9	56.8	21.5	55.0	31.0	55.2
2	32.3	56.2	35.5	55.4	42.0	55.3	50.0	55.9
3	83.0	58.1	100.0	57.3	166.0	57.6		
4								
5								
6								



Section Number 6 of 24
Centerline Station 2+00

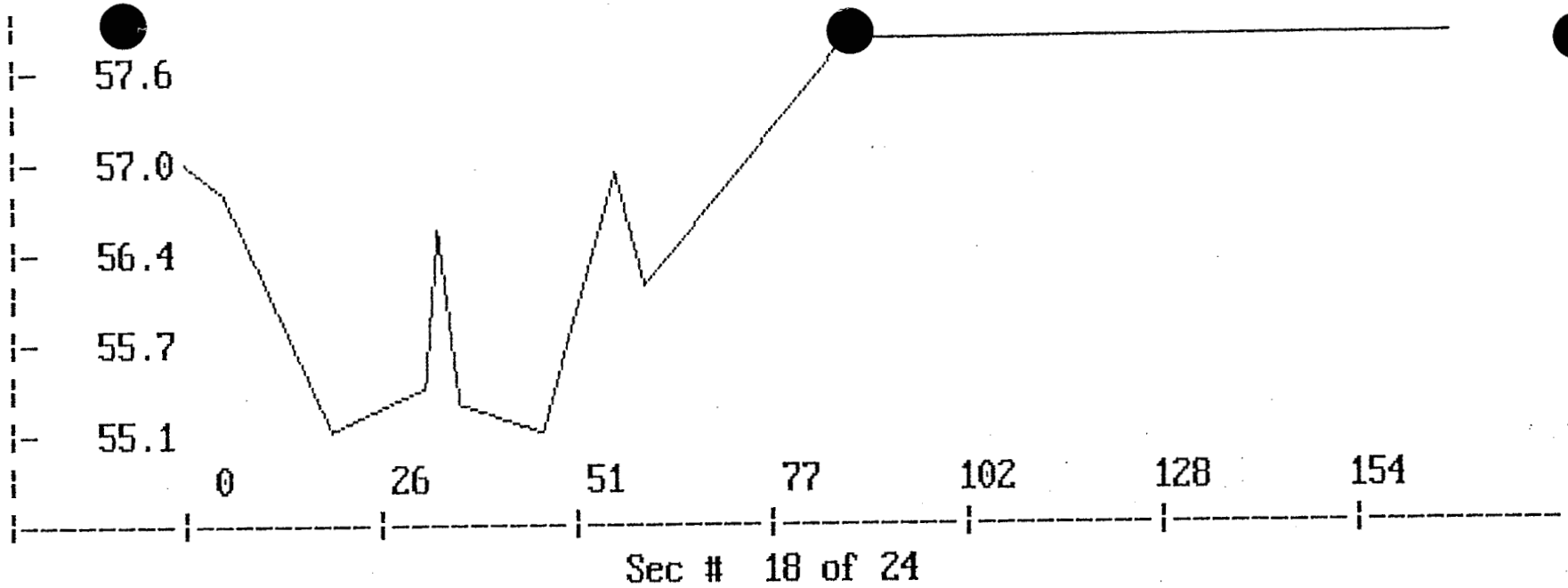
Grade Elevation = 57.60
Excavated Area = 44.54 Sq Ft
Filled Area = 15.34 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = 95.5:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

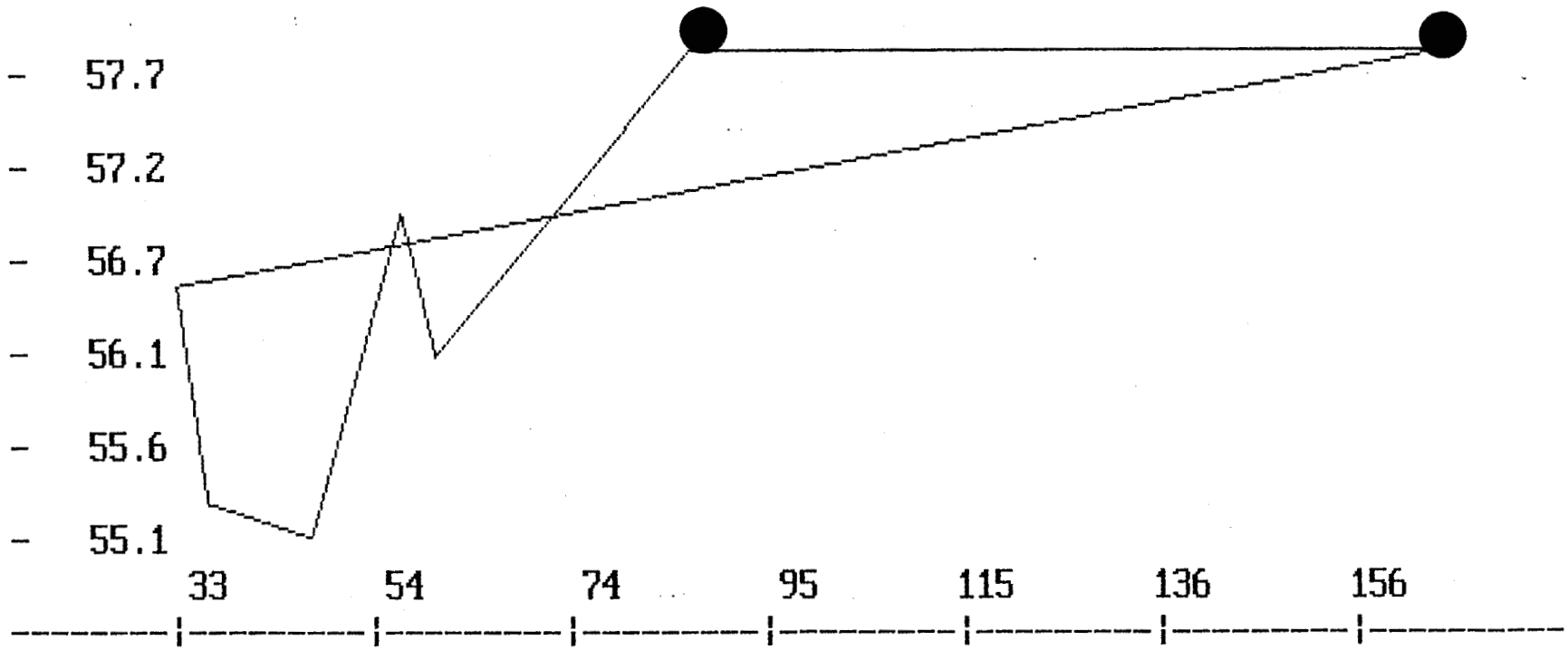
Slope Intercepts

Left	32.3	56.2
Right	166.0	57.6



Centerline Station = 20+20
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		57.0	4.8	56.8	19.3	55.1	31.5	55.4
2	33.0	56.5	36.0	55.3	46.8	55.1	56.3	56.9
3	60.0	56.1	86.6	57.8	100.0	57.8	166.0	57.8
4								
5								
6								



ection Number 7 of 24
enterline Station 2+20

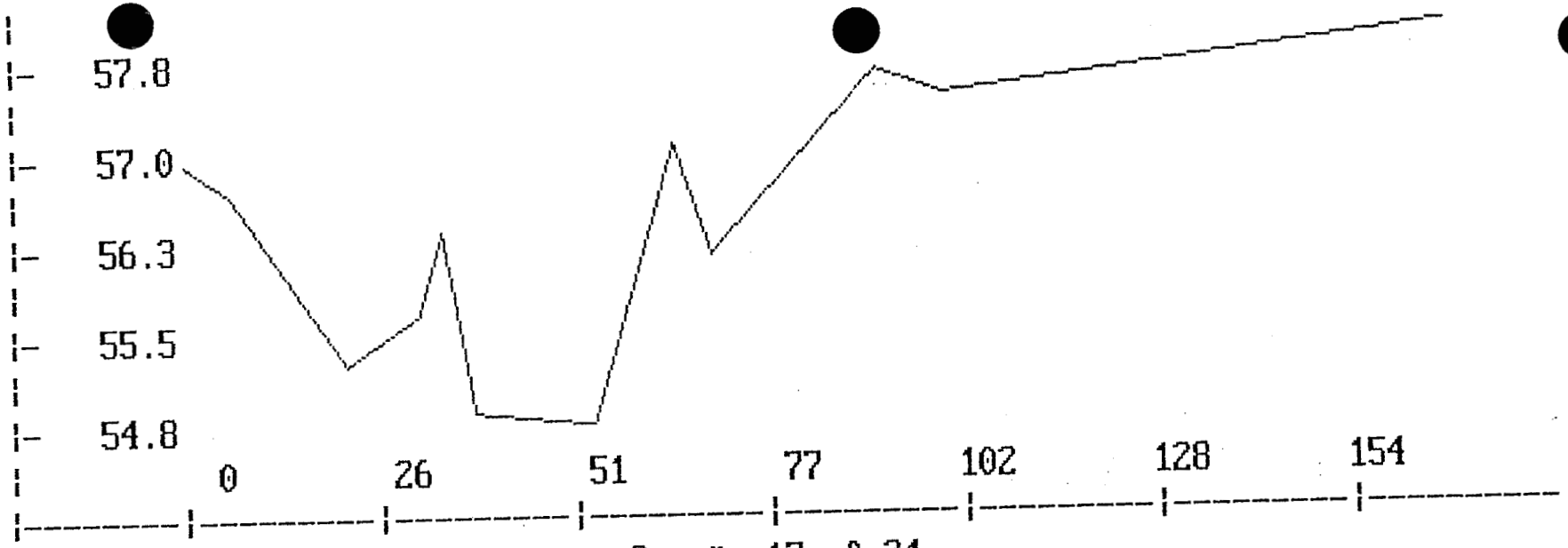
Grade Elevation = 57.80
Excavated Area = 36.52 Sq Ft
Filled Area = 28.37 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = %102.3:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

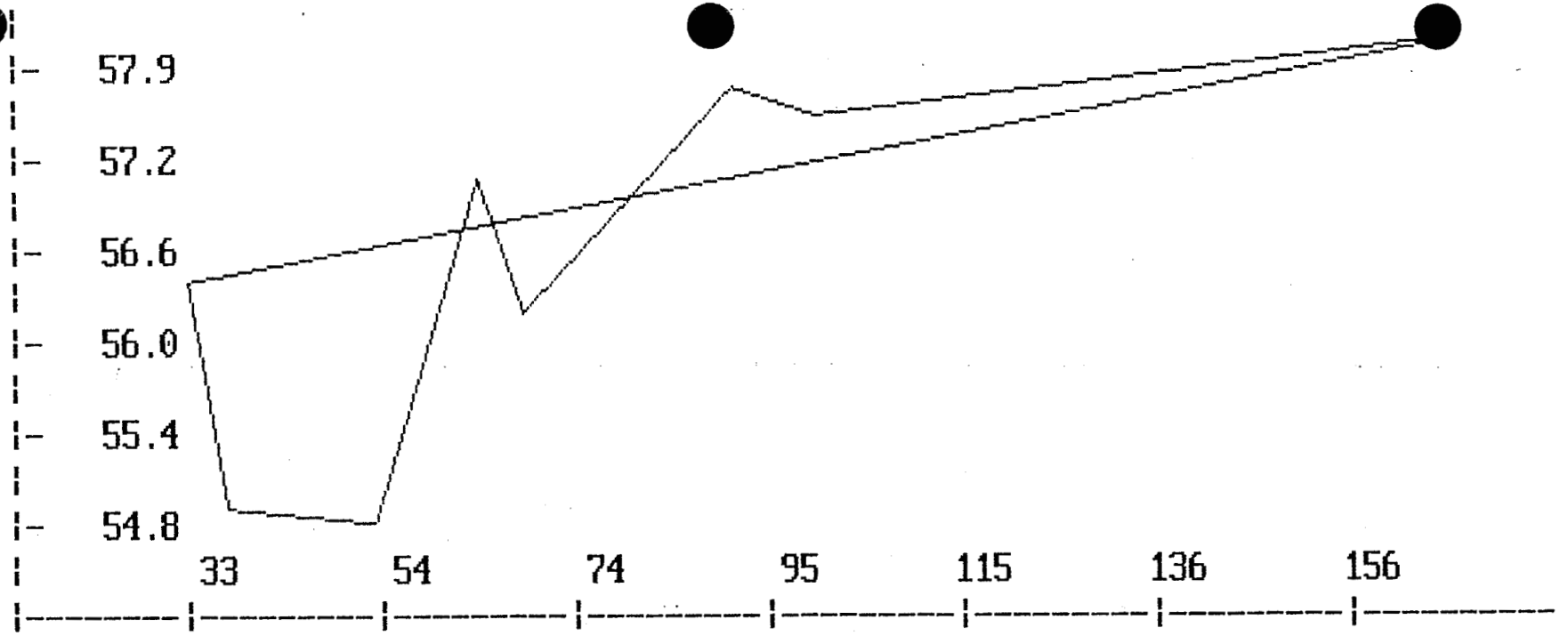
Left	33.0	56.5
Right	166.0	57.8



Sec # 17 of 24

Centerline Station = 20+40
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		57.0	5.4	56.7	21.0	55.3	30.2	55.7
2	33.3	56.4	37.4	54.9	53.0	54.8	64.0	57.1
3	68.8	56.2	91.0	57.7	100.0	57.5	166.0	58.0
4								
5								
6								



Section Number 8 of 24
Centerline Station 2+40

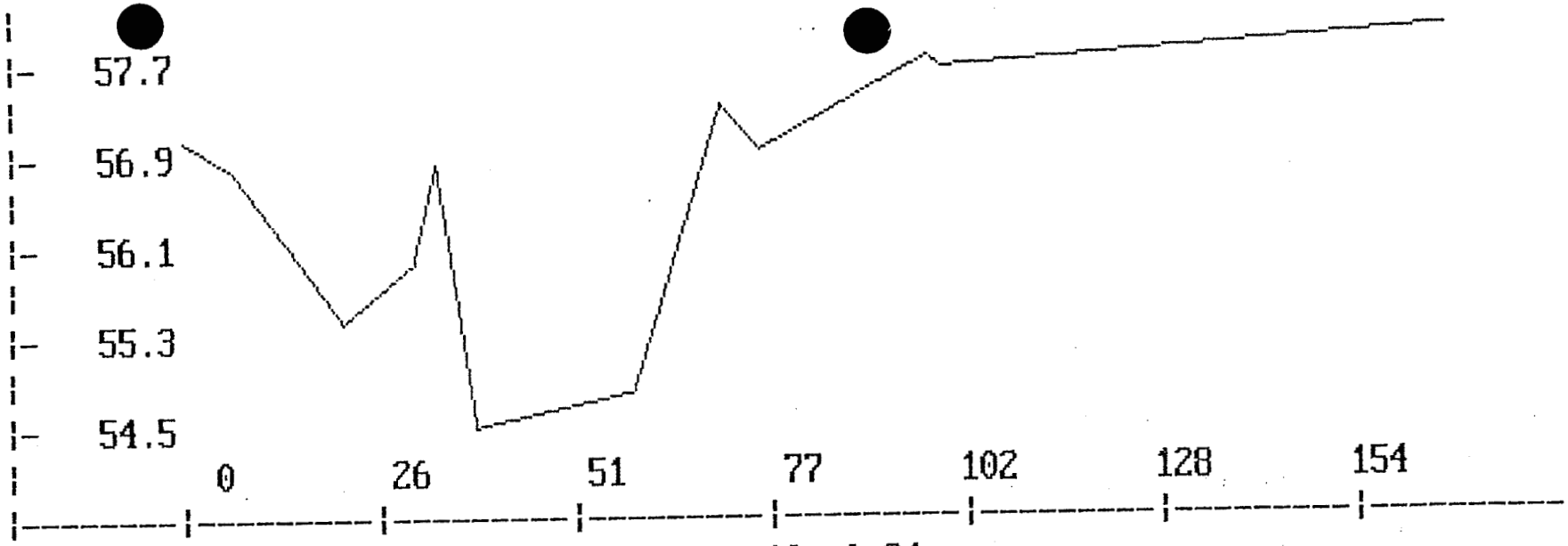
Grade Elevation = 58.00
Excavated Area = 17.65 Sq Ft
Filled Area = 42.70 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = 82.9:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

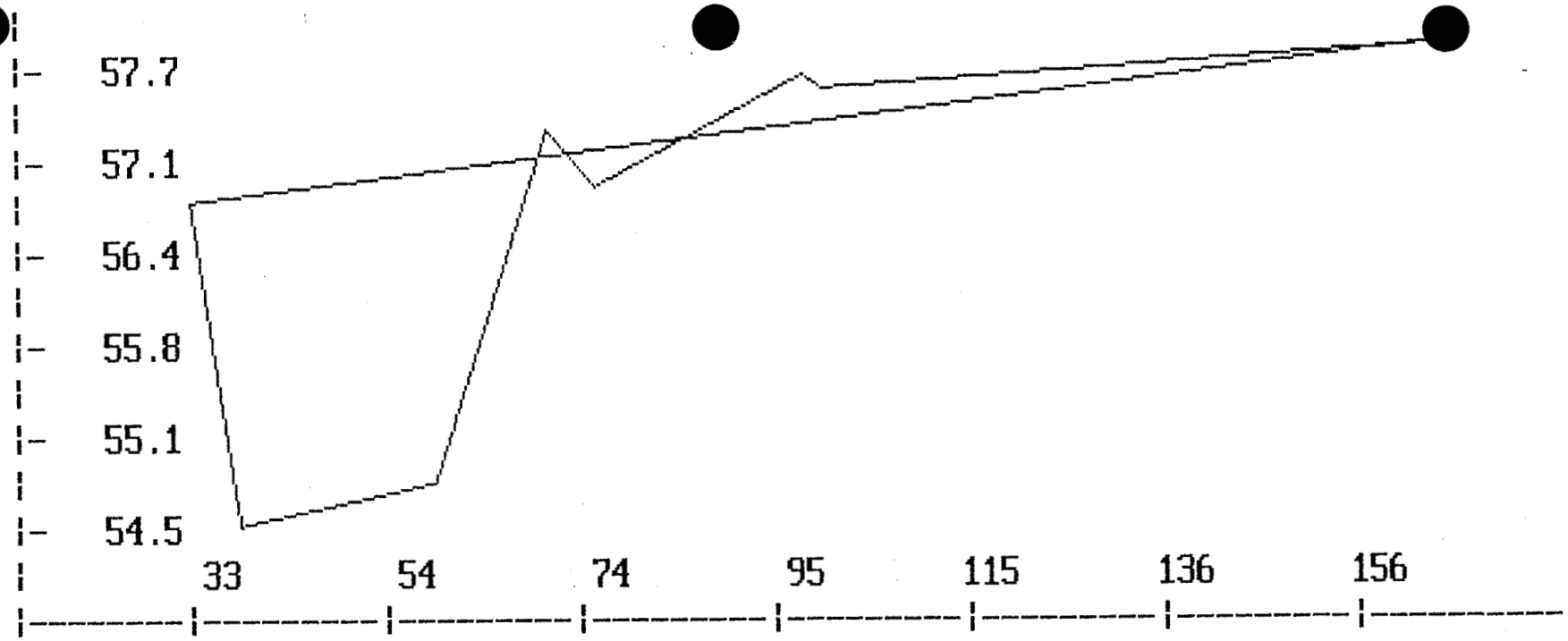
Left	33.3	56.4
Right	166.0	58.0



Sec # 16 of 24

Centerline Station = 20+60
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		57.0	6.2	56.8	21.0	55.4	30.0	55.9
2	33.3	56.8	38.4	54.5	59.0	54.8	71.0	57.3
3	76.0	56.9	98.0	57.7	100.0	57.6	166.0	57.9
4								
5								
6								



Section Number 9 of 24
Centerline Station 2+60

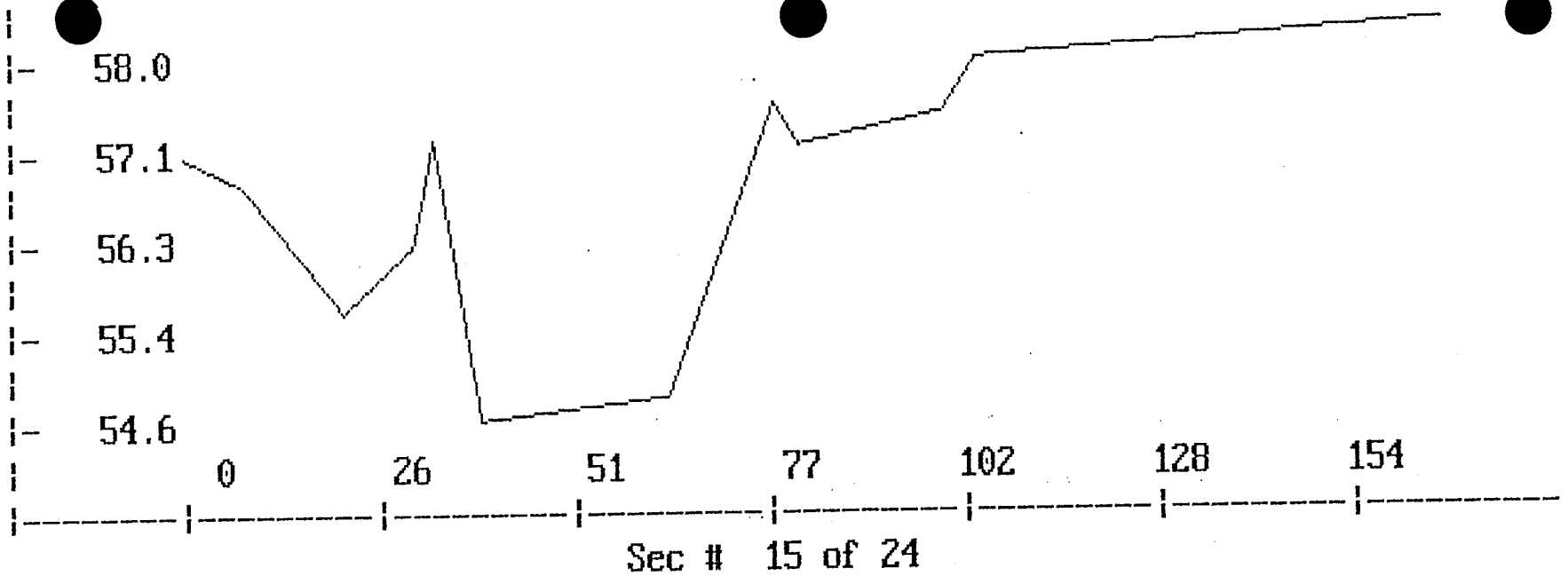
Grade Elevation = 57.90
Excavated Area = 11.41 Sq Ft
Filled Area = 66.65 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = %120.6:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

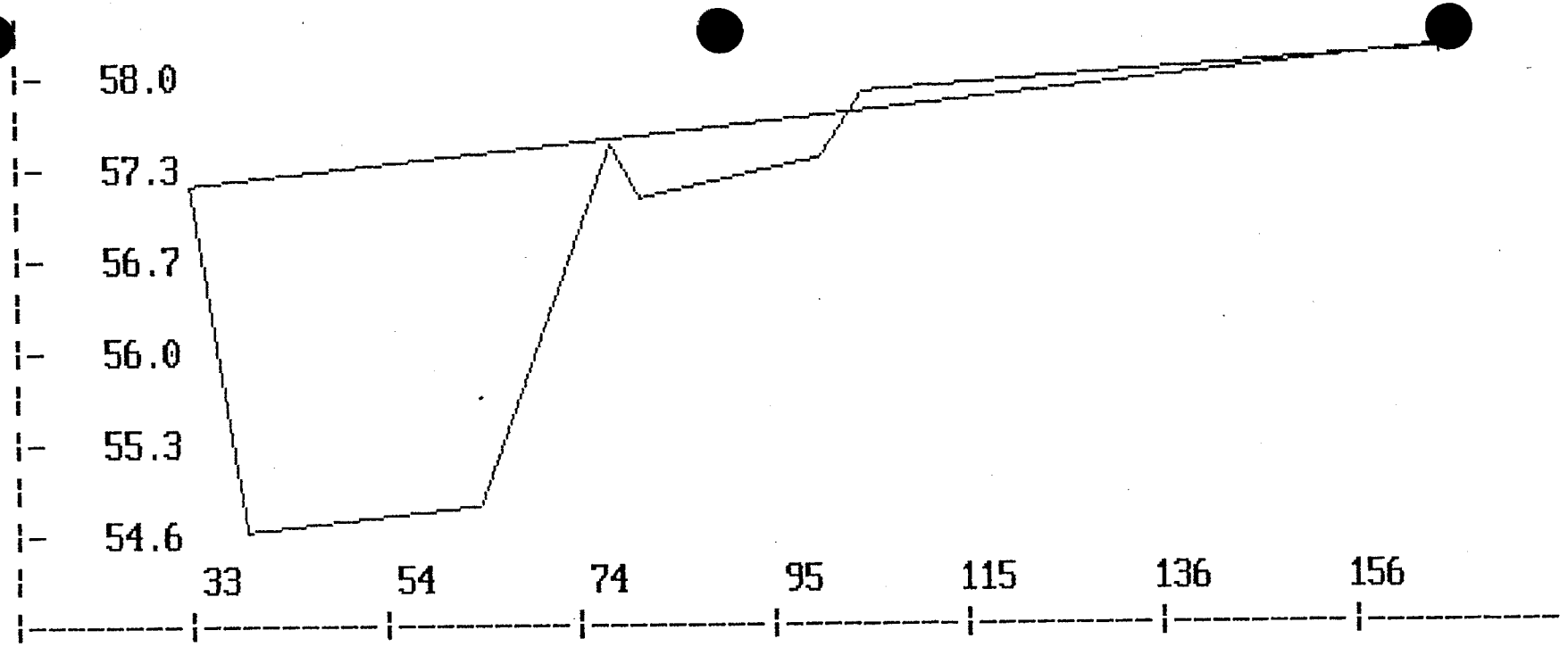
Slope Intercepts

Left	33.3	56.8
Right	166.0	57.9



Centerline Station = 20+80
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		57.1	7.5	56.8	21.0	55.6	30.0	56.2
2	33.0	57.2	39.0	54.6	63.7	54.8	77.8	57.5
3	81.0	57.1	100.0	57.4	104.5	57.9	166.0	58.2
4								
5								
6								



Section Number 10 of 24
Centerline Station 2+80

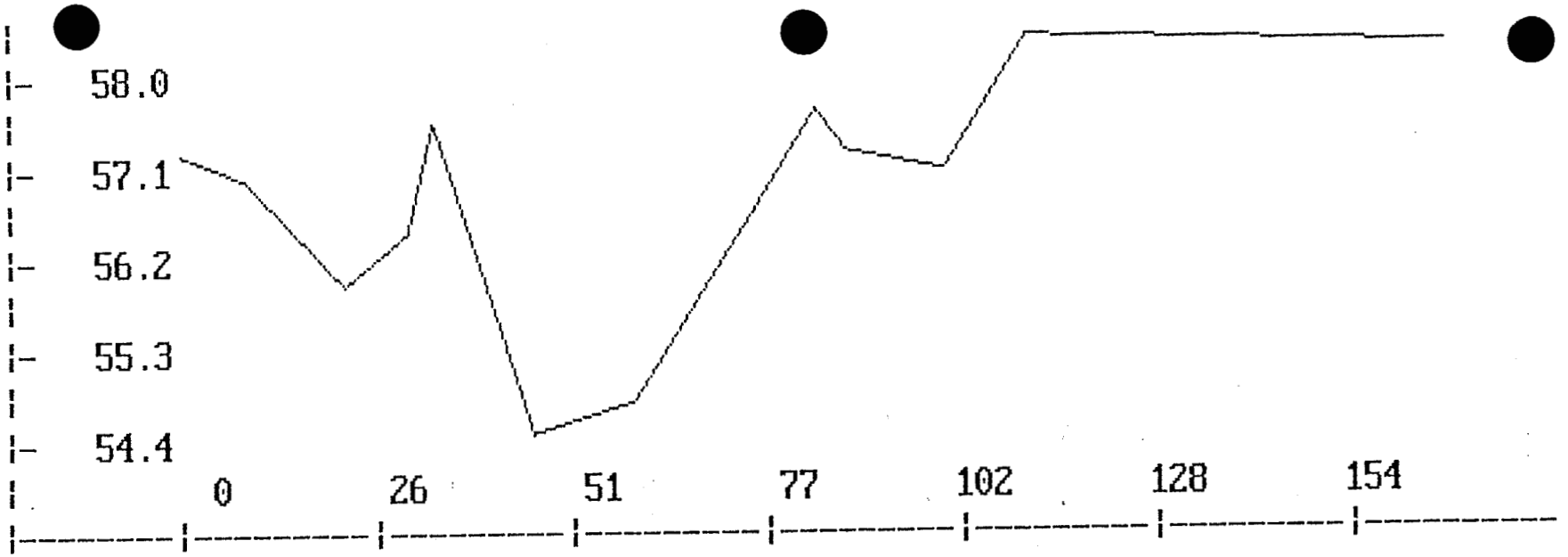
Grade Elevation = 58.20
Excavated Area = 5.12 Sq Ft
Filled Area = 100.41 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = %133.0:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

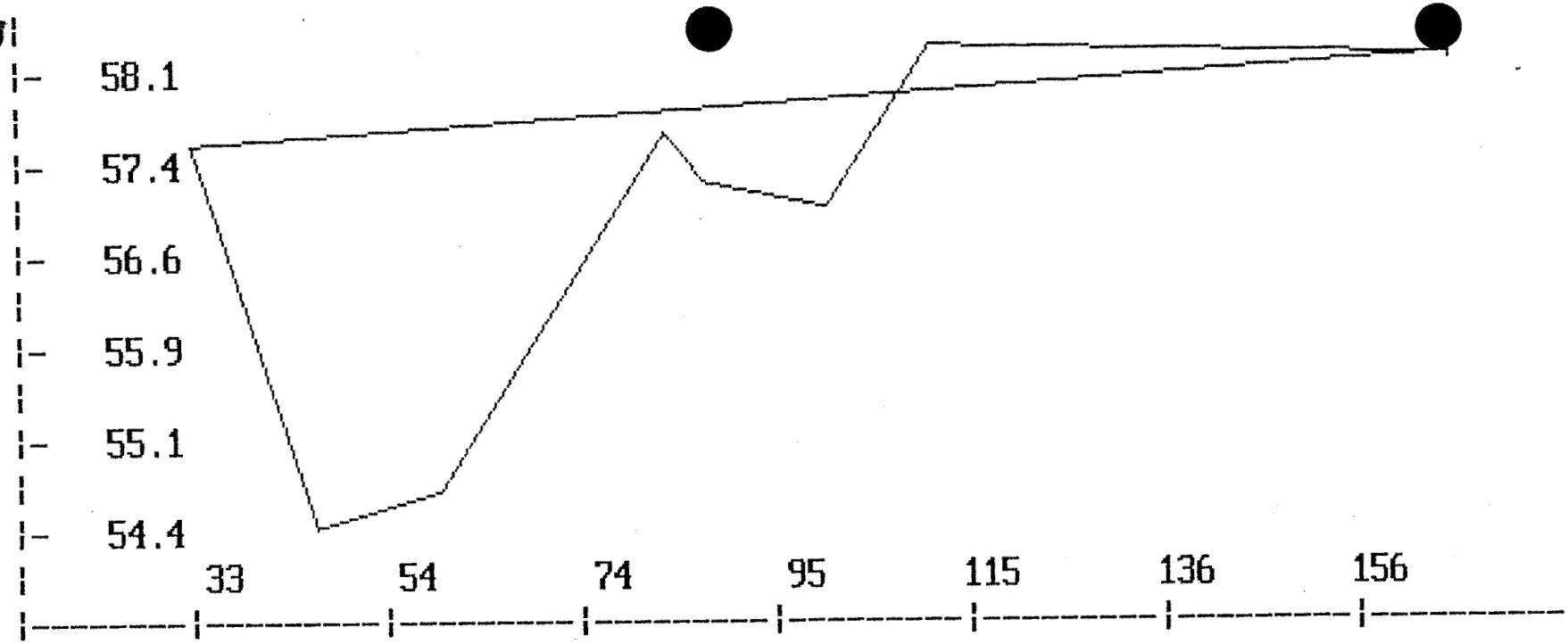
Left	33.0	57.2
Right	166.0	58.2



Sec # 14 of 24

Centerline Station = 30+00
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		57.3	8.4	57.0	21.4	55.9	29.5	56.4
2	33.0	57.5	46.0	54.4	59.0	54.7	83.0	57.6
3	87.0	57.2	100.0	57.0	111.0	58.3	166.0	58.2
4								
5								
6								



Section Number 11 of 24
Centerline Station 3+00

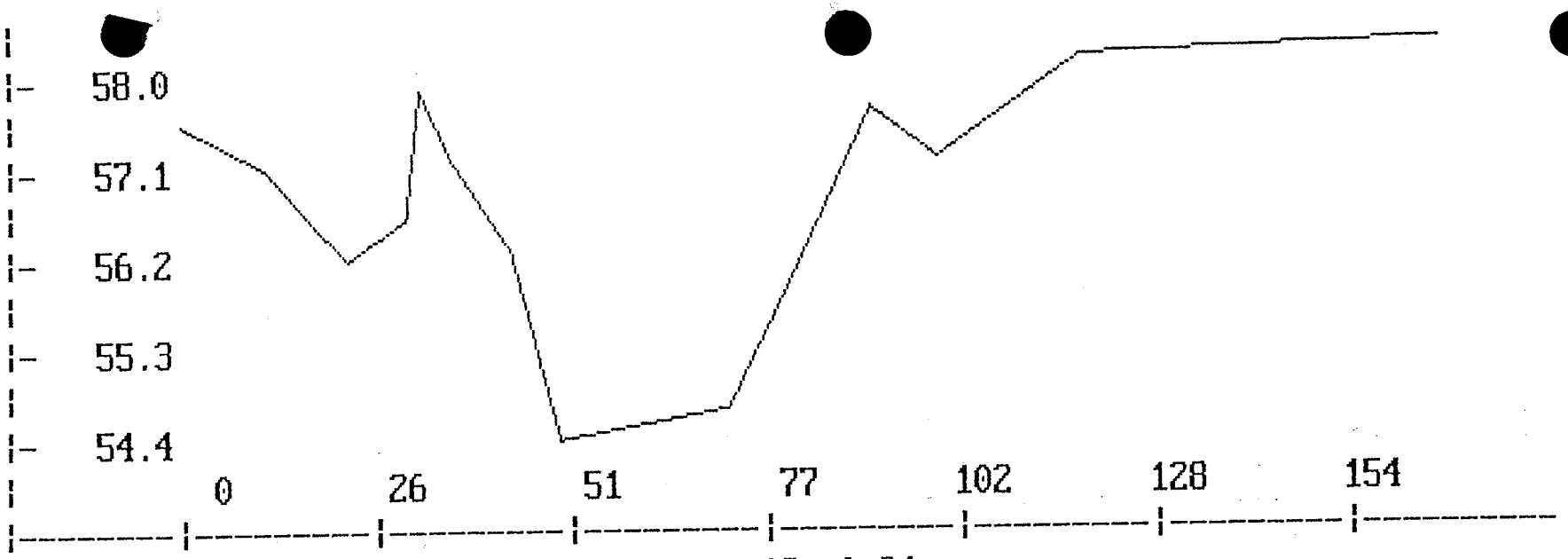
Grade Elevation = 58.20
Excavated Area = 11.38 Sq Ft
Filled Area = 111.53 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = %190.0:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

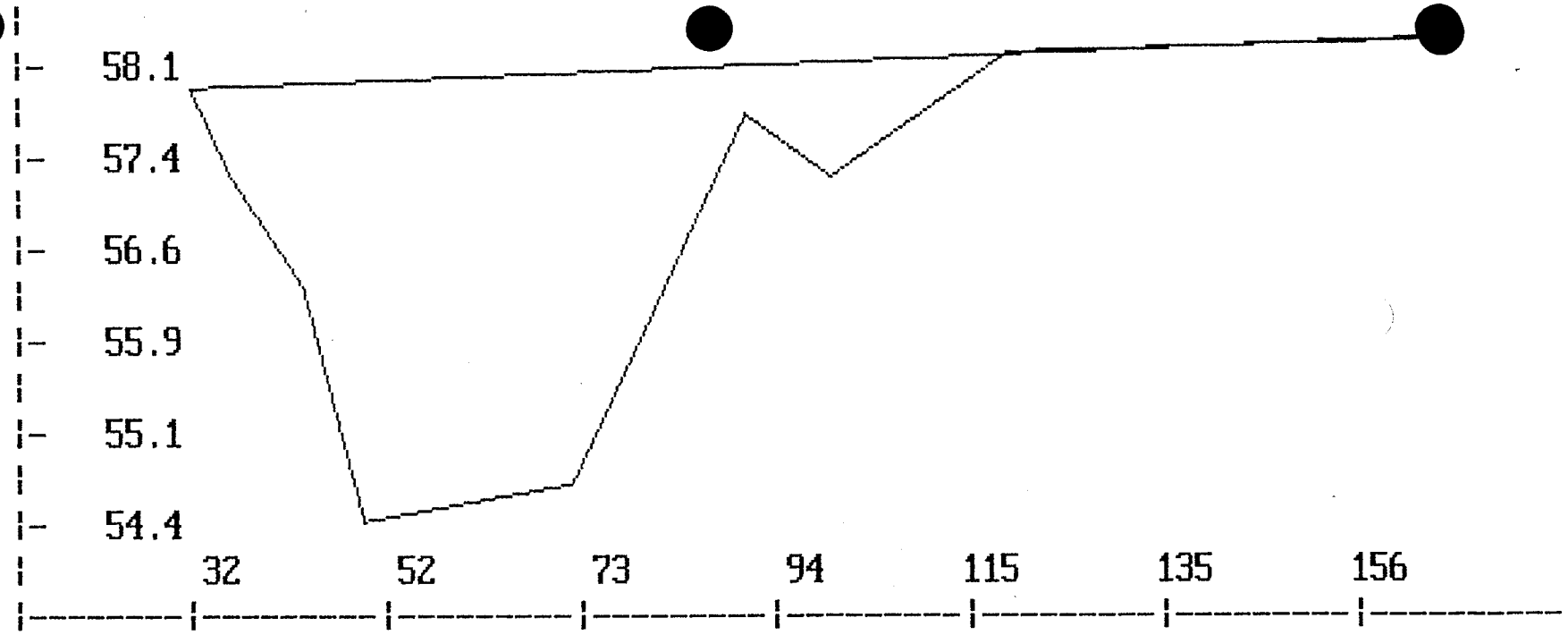
Left	33.0	57.5
Right	166.0	58.2



Sec # 13 of 24

Centerline Station = 30+20
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		57.6	11.0	57.1	22.0	56.2	29.7	56.6
2	31.7	57.9	35.8	57.2	43.5	56.3	50.0	54.4
3	72.0	54.7	91.0	57.7	100.0	57.2	119.0	58.2
4	166.0	58.3						
5								
6								



Section Number 12 of 24
Centerline Station 3+20

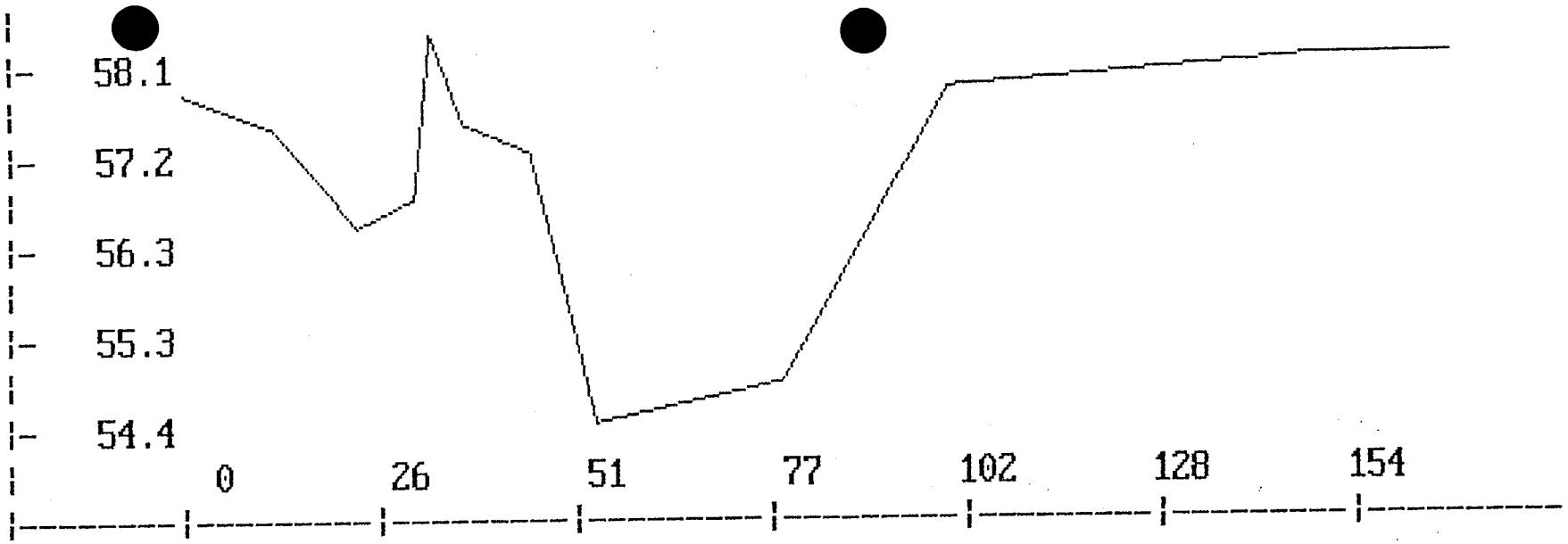
Grade Elevation = 58.30
Excavated Area = 0.96 Sq Ft
Filled Area = 152.08 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = %335.8:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

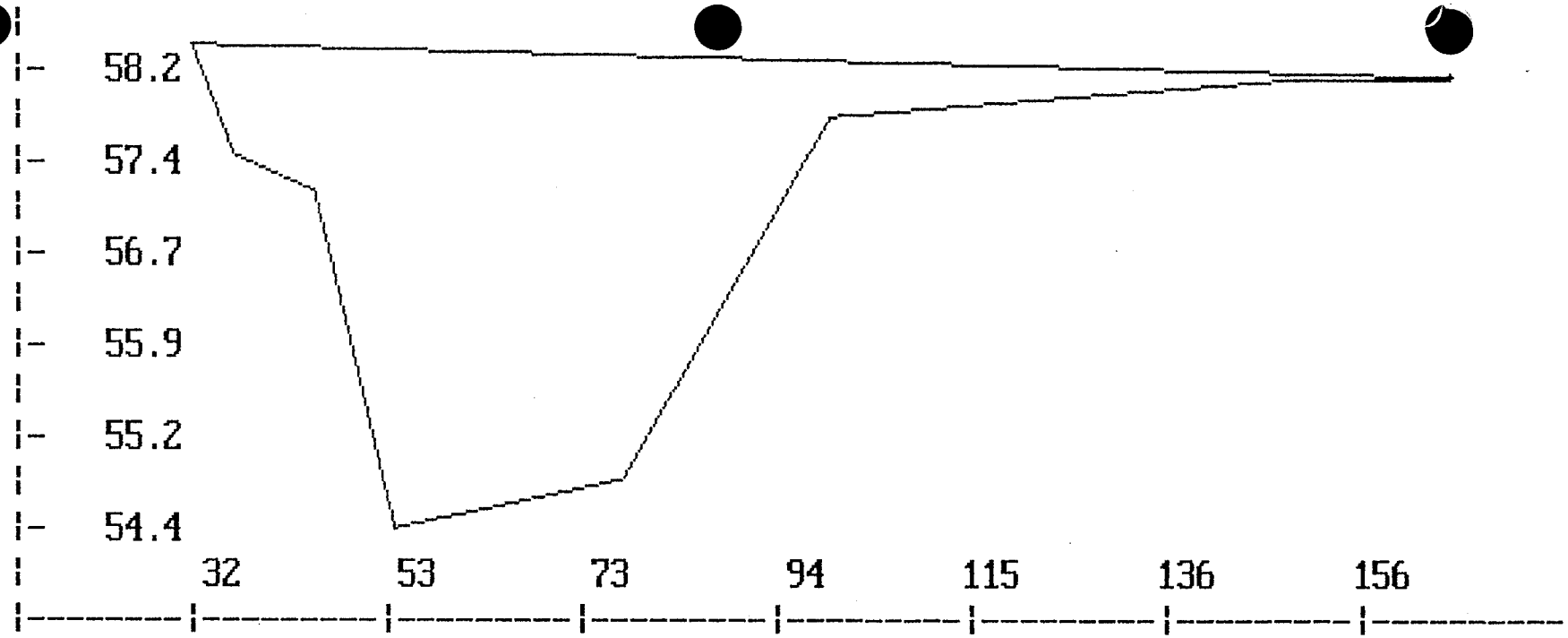
Left	31.7	57.9
Right	166.0	58.3



Sec # 12 of 24

Centerline Station = 30+40
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		57.8	11.4	57.5	22.5	56.4	30.0	56.7
2	32.1	58.4	36.4	57.5	45.0	57.2	53.6	54.4
3	78.0	54.8	100.0	57.8	150.0	58.1	166.0	58.1
4								
5								
6								



Section Number 13 of 24
Centerline Station 3+40

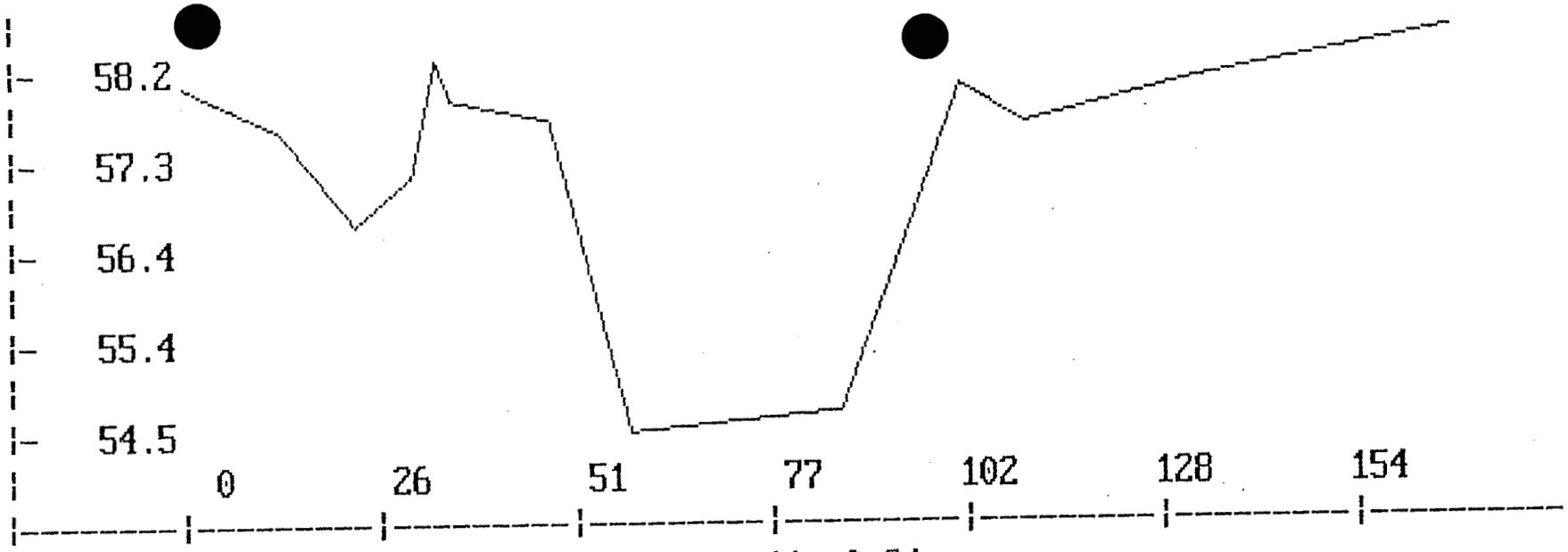
Grade Elevation = 58.10
Excavated Area = 0.00 Sq Ft
Filled Area = 179.46 Sq Ft

Rules - On ; Extrapolation - Y

Bottom Width = 0.0 ft.
Left Sideslope = %446.3:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

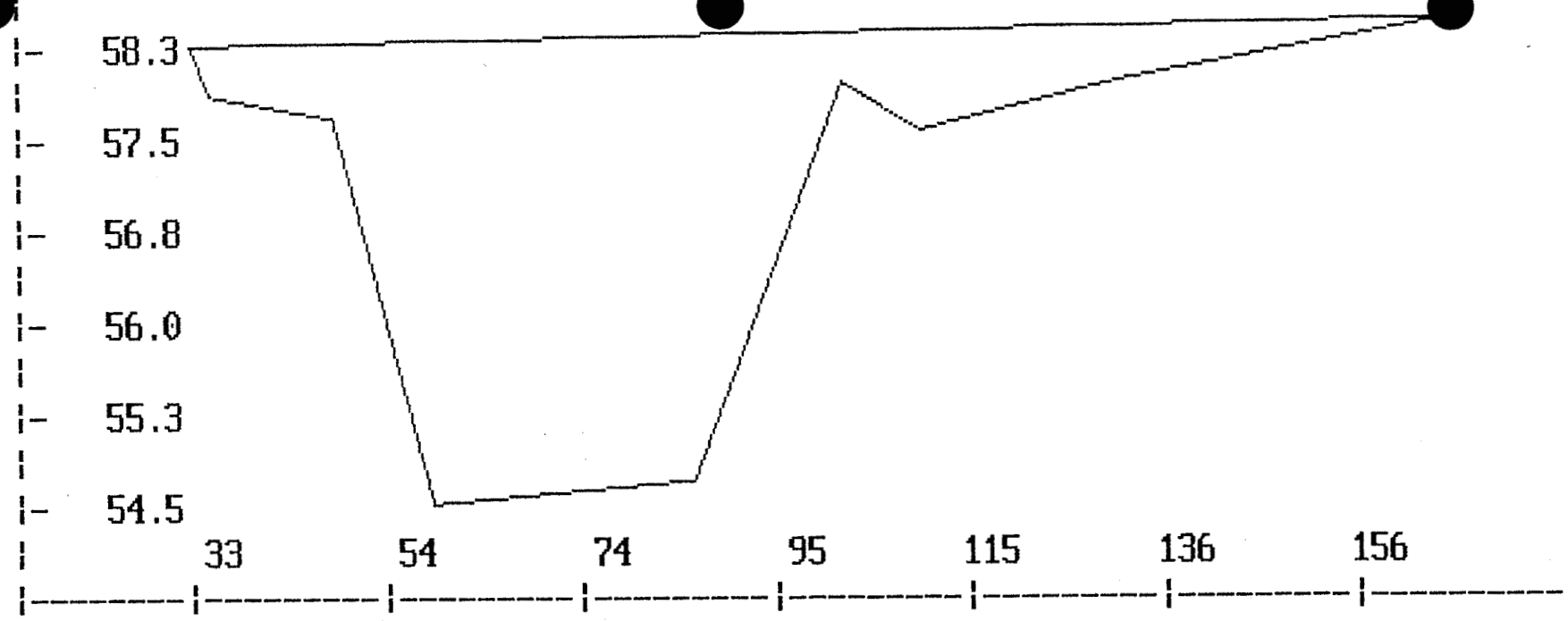
Left	32.1	58.4
Right	166.0	58.1



Sec # 11 of 24

Centerline Station = 30+60
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		58.0	12.6	57.6	22.5	56.6	30.0	57.1
2	33.3	58.3	35.3	57.9	48.0	57.7	58.5	54.5
3	86.0	54.7	102.0	58.0	110.5	57.6	131.5	58.0
4	166.0	58.5						
5								
6								



Section Number 14 of 24
Centerline Station 3+60

Grade Elevation = 58.50

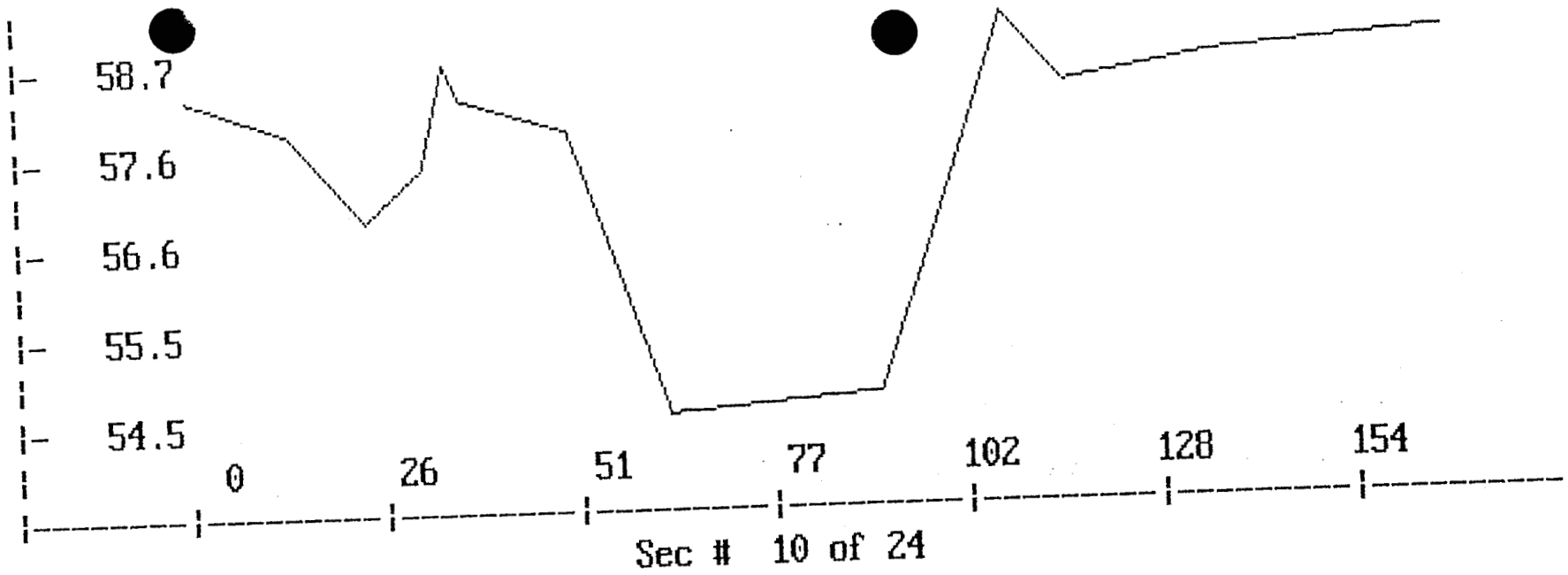
Filled Area = 192.55 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = %663.5:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

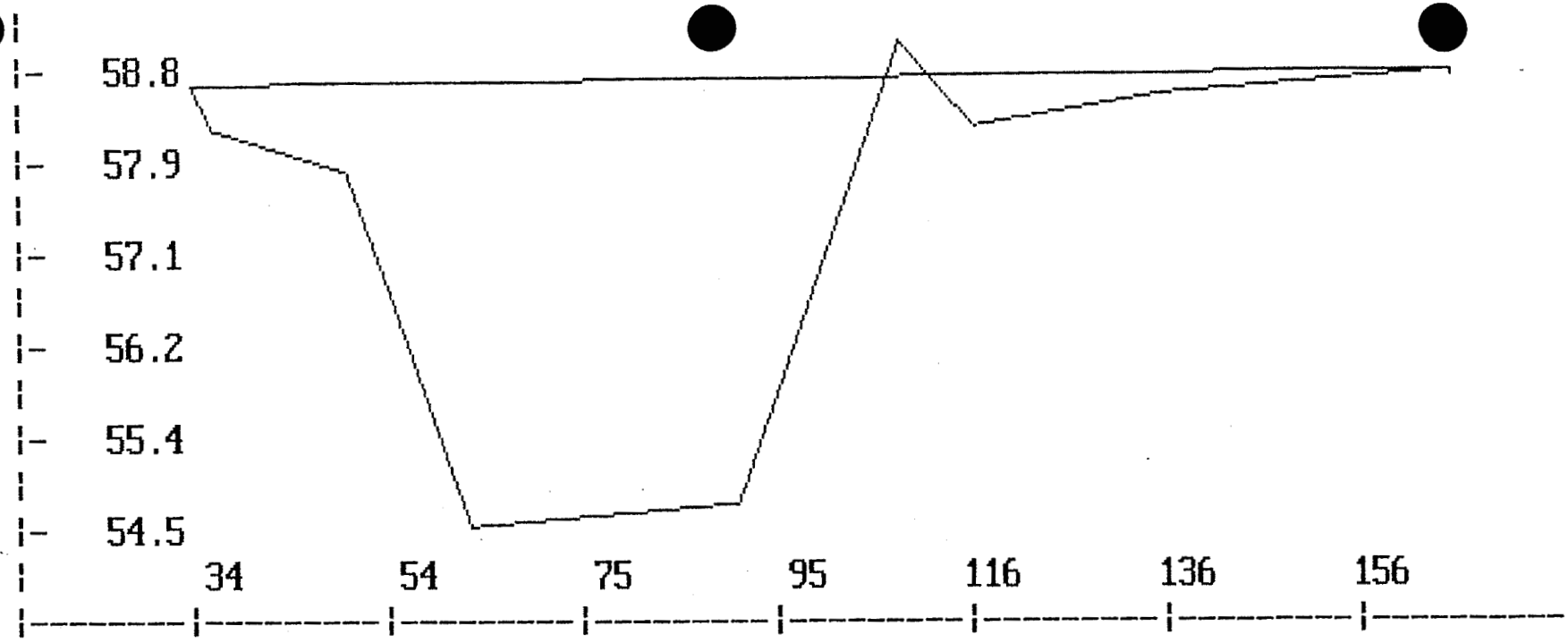
Slope Intercepts

Left	33.3	58.3
Right	166.0	58.5



Centerline Station = 30+80
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		58.3	13.0	57.8	23.3	56.8	30.7	57.4
2	34.0	58.6	36.0	58.2	50.0	57.8	63.0	54.5
3	91.0	54.7	108.0	59.0	116.0	58.2	136.0	58.5
4	166.0	58.7						
5								
6								



Section Number 15 of 24
Centerline Station 3+80

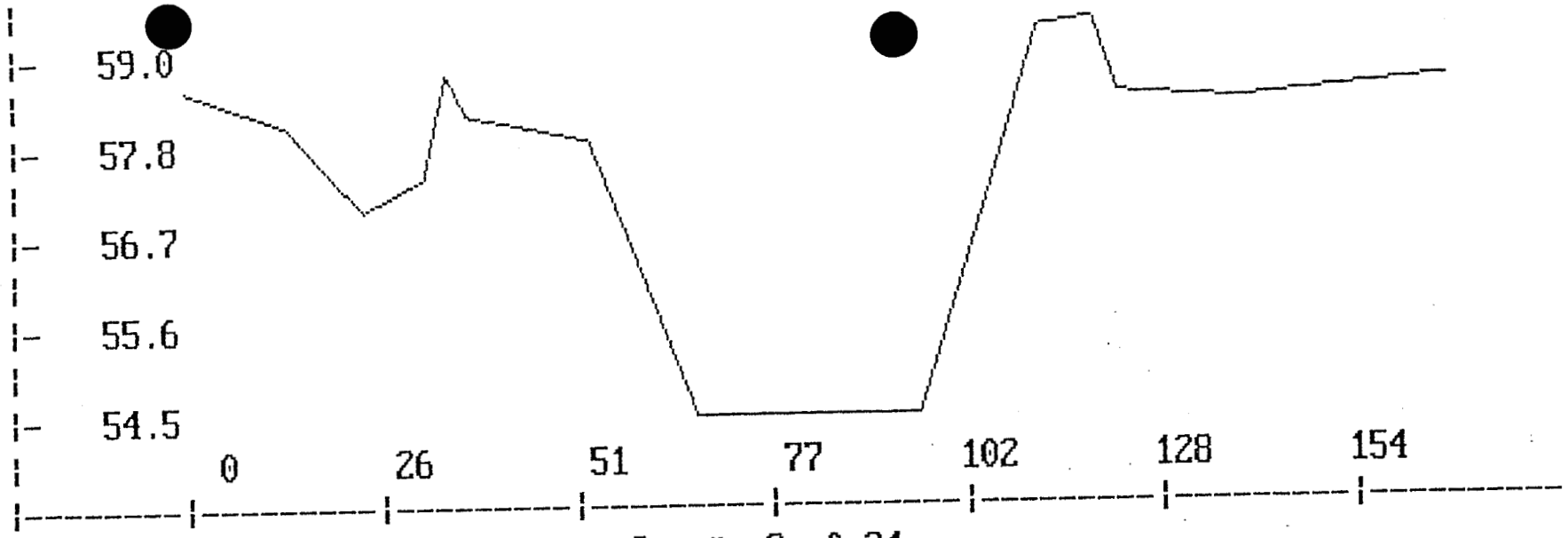
Grade Elevation = 58.70
Excavated Area = 0.82 Sq Ft
Filled Area = 194.82 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = %1320.0:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

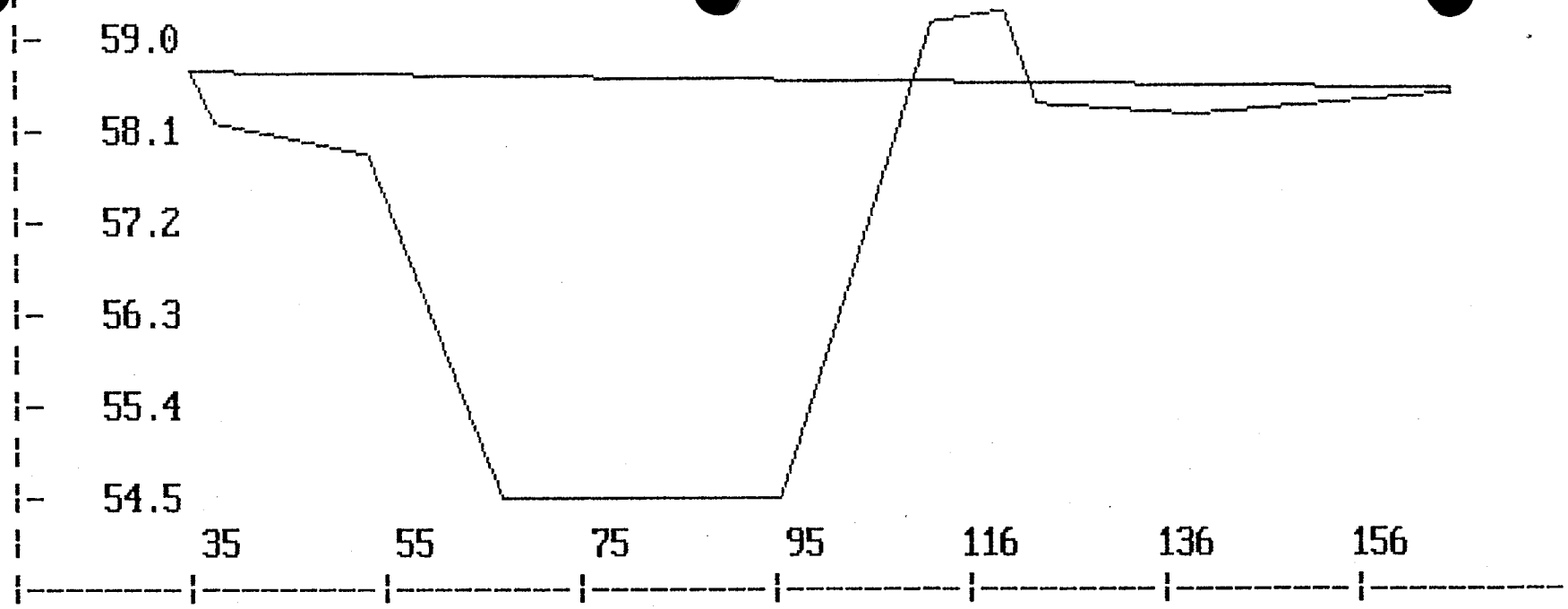
Left	34.0	58.6
Right	166.0	58.7



Sec # 9 of 24

Centerline Station = 40+00
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		58.5	13.2	58.1	23.6	57.0	31.4	57.4
2	34.5	58.7	37.0	58.2	53.0	57.9	67.0	54.5
3	96.0	54.5	112.0	59.2	119.5	59.3	122.7	58.4
4	140.0	58.3	166.0	58.5				
5								
6								



Section Number 16 of 24
Centerline Station 4+00

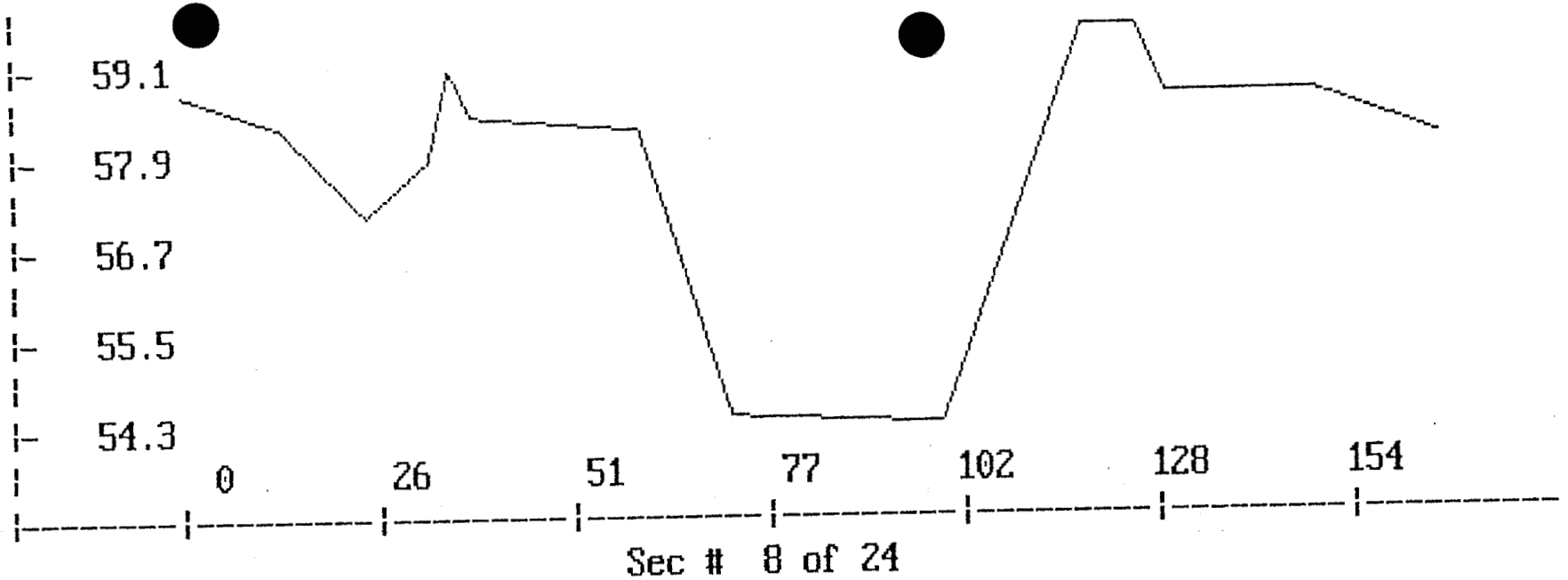
Grade Elevation = 58.50
Excavated Area = 6.65 Sq Ft
Filled Area = 200.17 Sq Ft

Rules - On ; Extrapolation - Y

Bottom Width = 0.0 ft.
Left Sideslope = %657.5:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

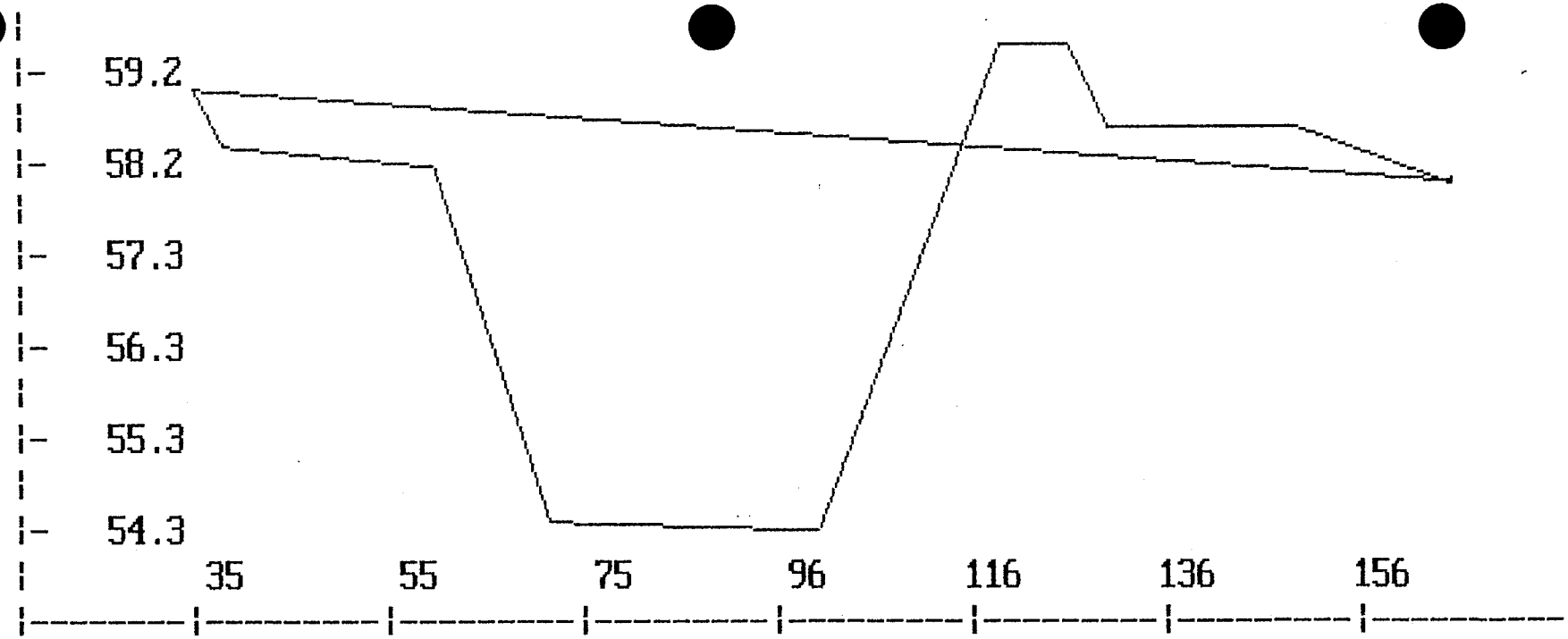
Left	34.5	58.7
Right	166.0	58.5



Sec # 8 of 24

Centerline Station = 40+20
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		58.7	12.9	58.3	24.0	57.1	32.0	57.8
2	35.0	59.0	38.0	58.4	60.0	58.2	72.0	54.4
3	100.0	54.3	119.0	59.5	126.0	59.5	130.0	58.6
4	150.0	58.6	166.0	58.0				
5								
6								



Section Number 17 of 24
Centerline Station 4+20

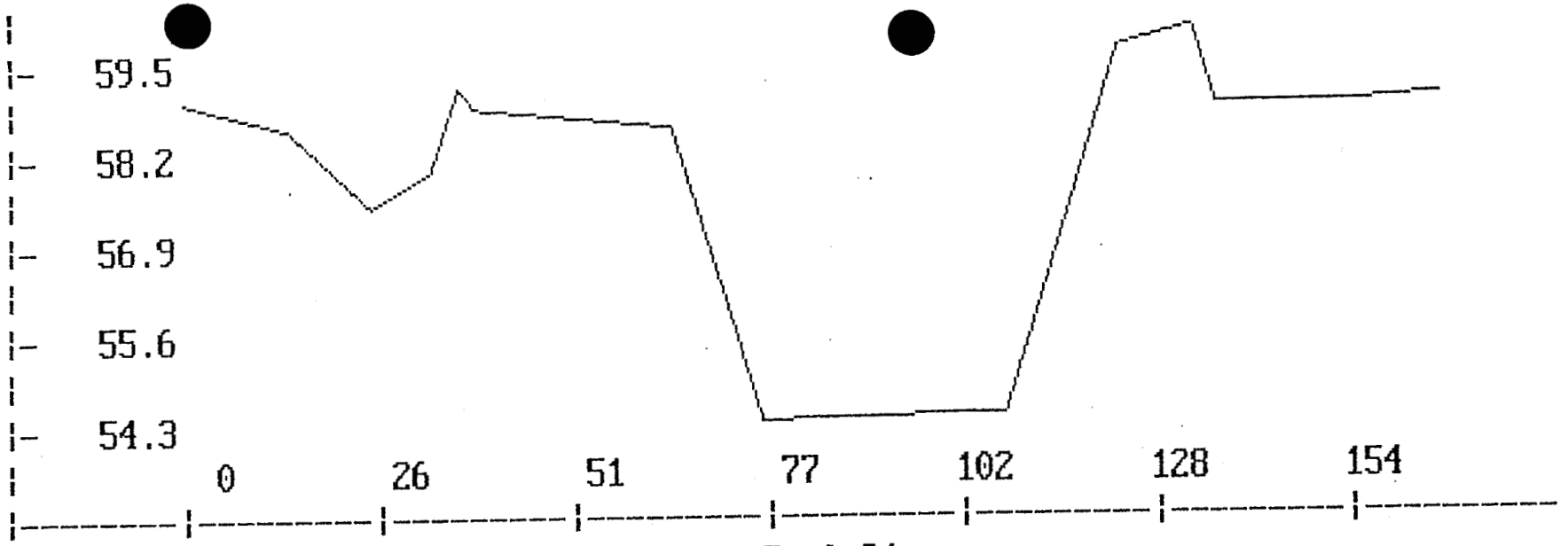
Grade Elevation = 58.00
Excavated Area = 25.38 Sq Ft
Filled Area = 194.18 Sq Ft

Rules - On ; Extrapolation - Y

Bottom Width = 0.0 ft.
Left Sideslope = %131.0:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

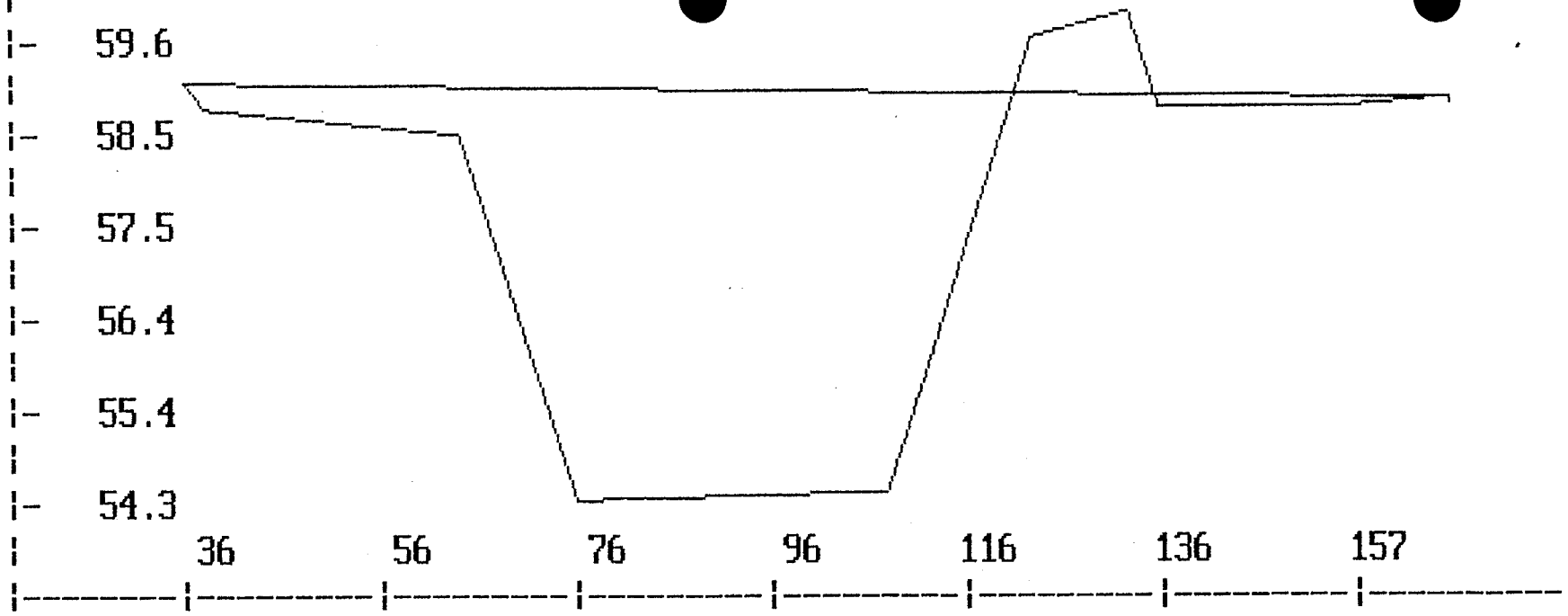
Left	35.0	59.0
Right	166.0	58.0



Sec # 7 of 24

Centerline Station = 40+40
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		59.0	13.7	58.5	24.6	57.4	32.2	57.9
2	36.0	59.1	38.0	58.8	64.0	58.5	76.0	54.3
3	108.0	54.4	123.0	59.6	133.0	59.9	136.0	58.8
4	156.0	58.8	166.0	58.9				
5								
6								



Section Number 18 of 24
Centerline Station 4+40

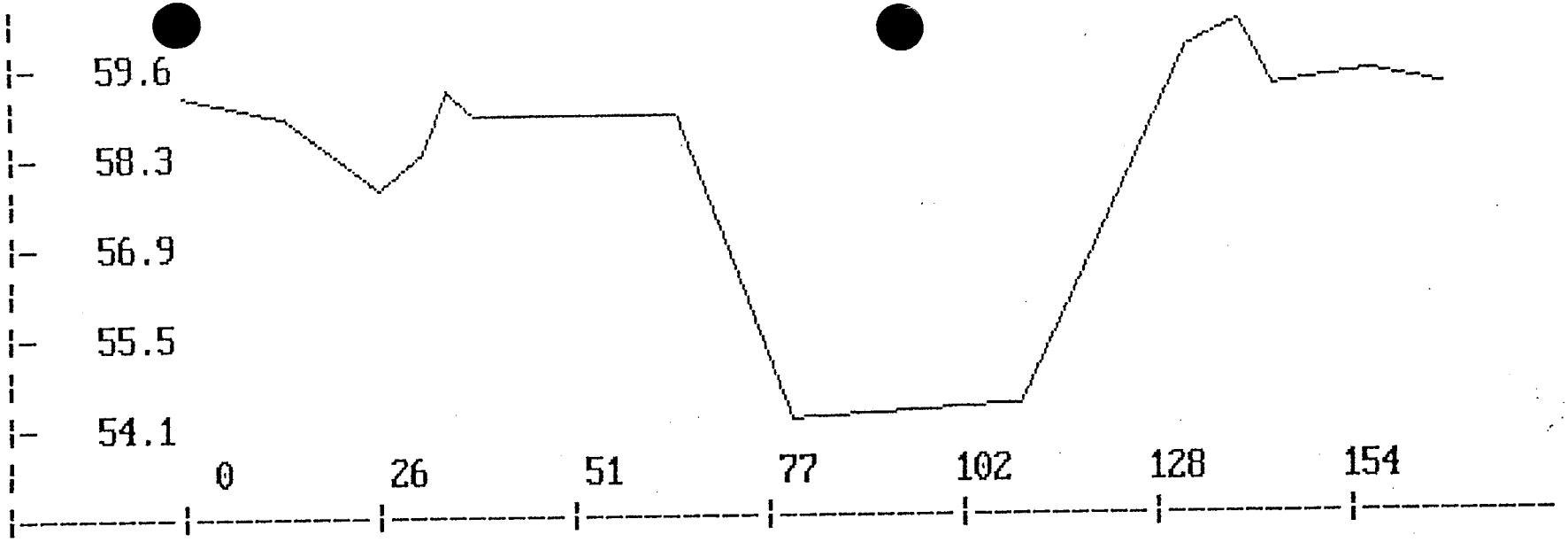
Grade Elevation = 58.90
Excavated Area = 9.73 Sq Ft
Filled Area = 225.88 Sq Ft

Rules - On ; Extrapolation - Y

Bottom Width = 0.0 ft.
Left Sideslope = %650.0:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

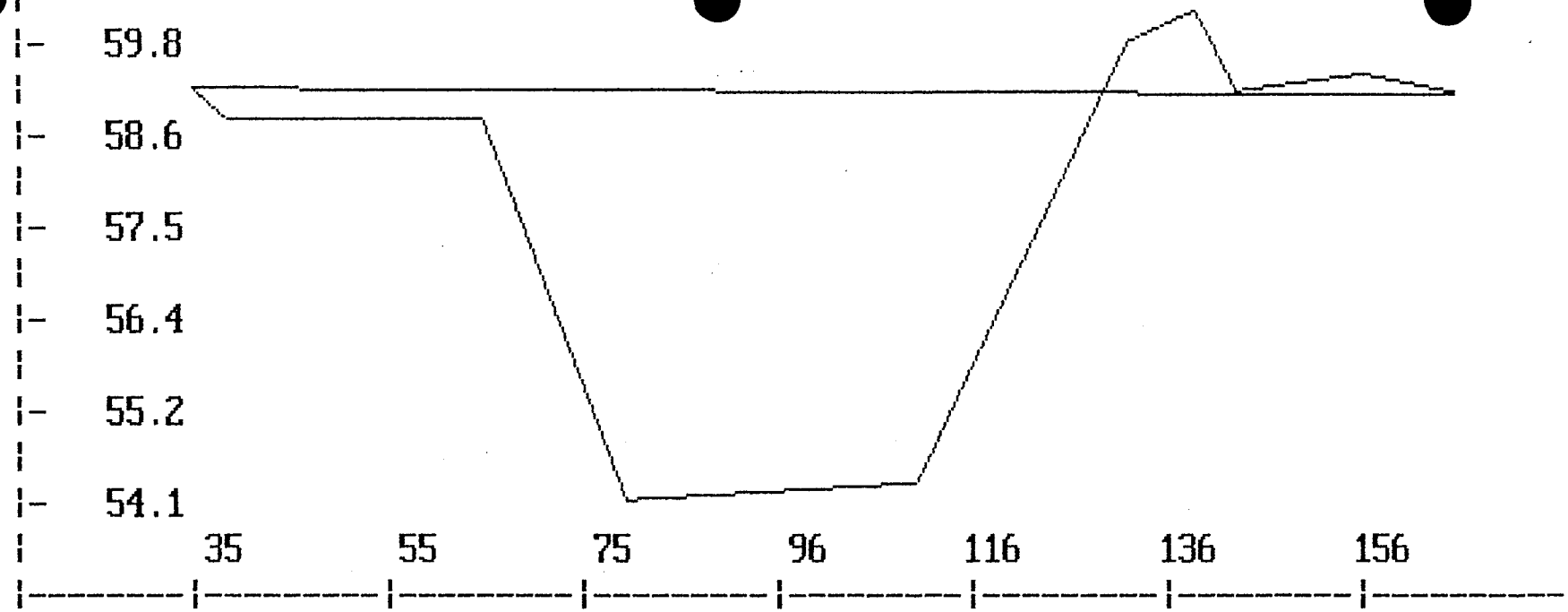
Left	36.0	59.1
Right	166.0	58.9



Sec # 6 of 24

Centerline Station = 40+60
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		59.2	13.5	58.8	26.0	57.7	31.5	58.2
2	35.0	59.2	38.5	58.8	65.0	58.8	80.0	54.1
3	110.0	54.3	132.0	59.7	139.0	60.1	143.4	59.1
4	157.0	59.3	166.0	59.1				
5								
6								



Section Number 19 of 24
Centerline Station 4+60

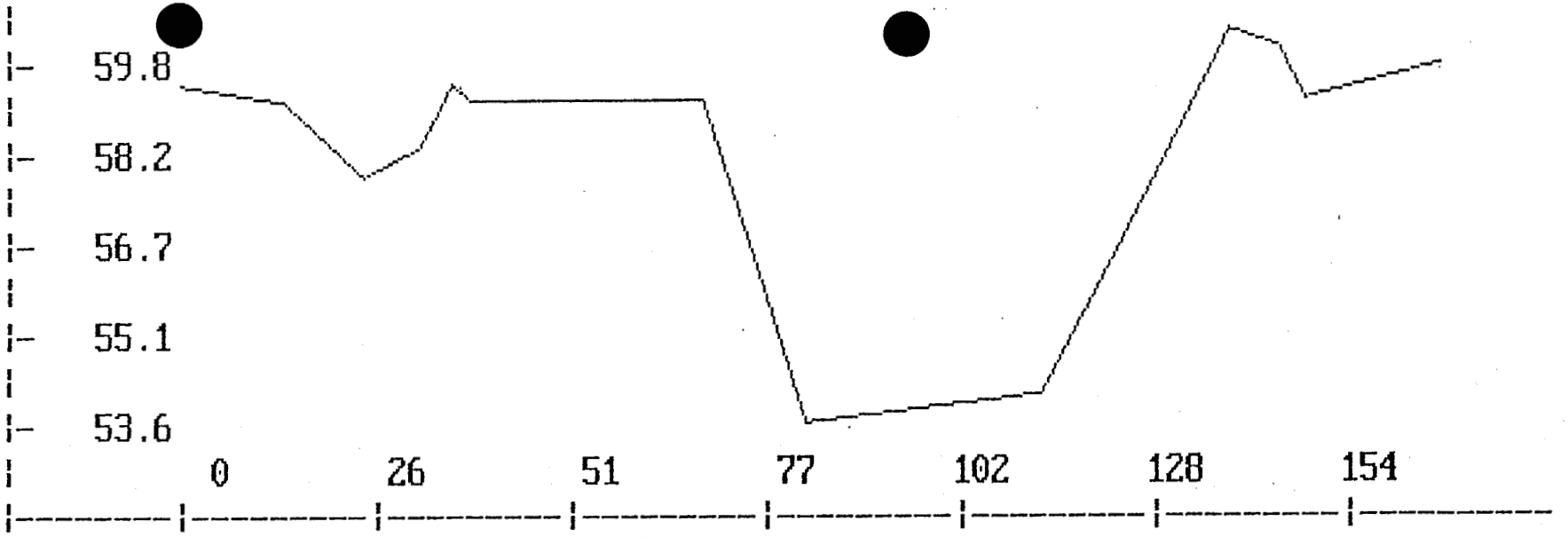
Grade Elevation = 59.10
Excavated Area = 10.30 Sq Ft
Filled Area = 248.04 Sq Ft

Rules - On ; Extrapolation - Y

Bottom Width = 0.0 ft.
Left Sideslope = %1310.0:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

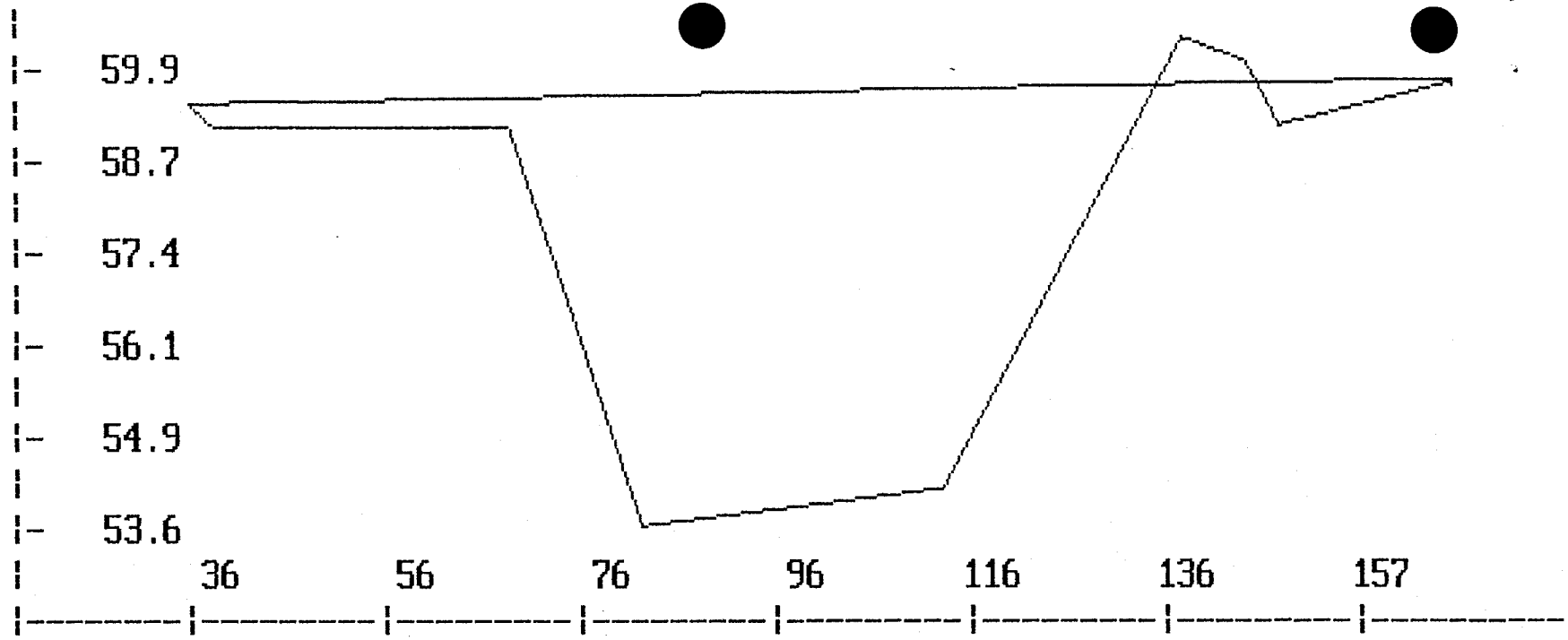
Left	35.0	59.2
Right	166.0	59.1



Sec # 5 of 24

Centerline Station = 40+80
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		59.4	13.3	59.1	24.0	57.8	31.0	58.3
2	35.5	59.4	38.0	59.1	68.5	59.1	82.0	53.6
3	113.0	54.1	138.0	60.3	144.5	60.0	148.0	59.1
4	166.0	59.7						
5								
6								



Section Number 20 of 24
Centerline Station 4+80

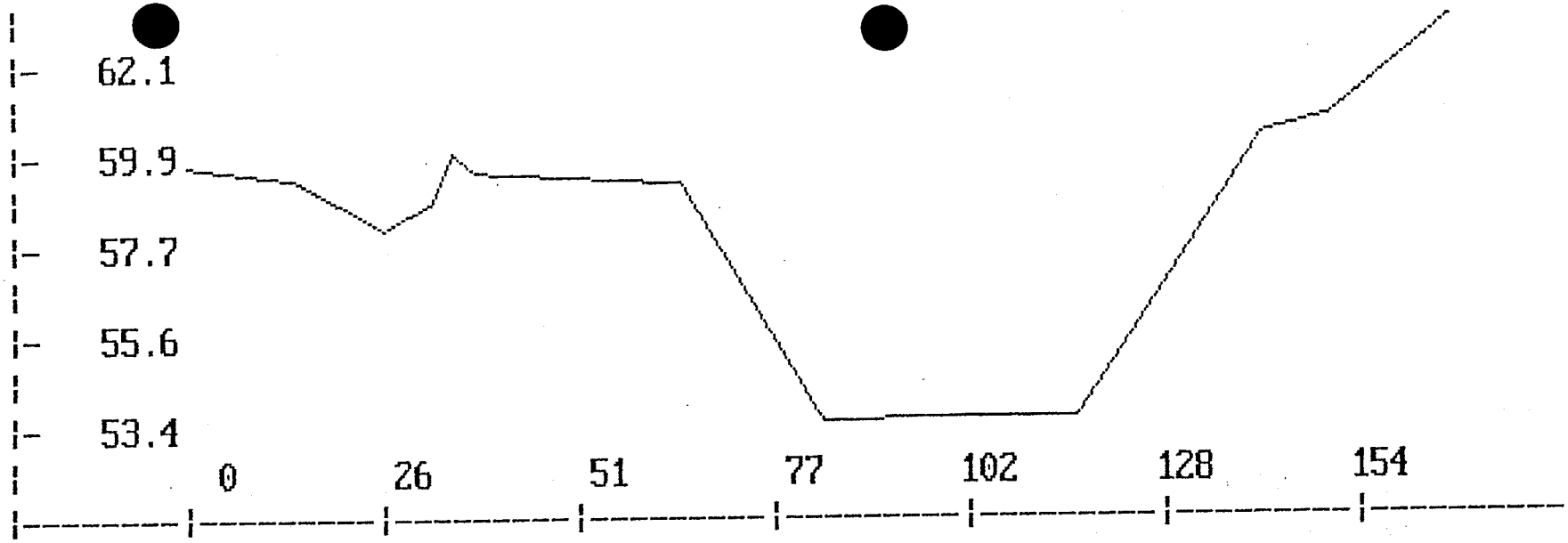
Grade Elevation = 59.70
Excavated Area = 4.43 Sq Ft
Filled Area = 296.35 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = %435.0:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

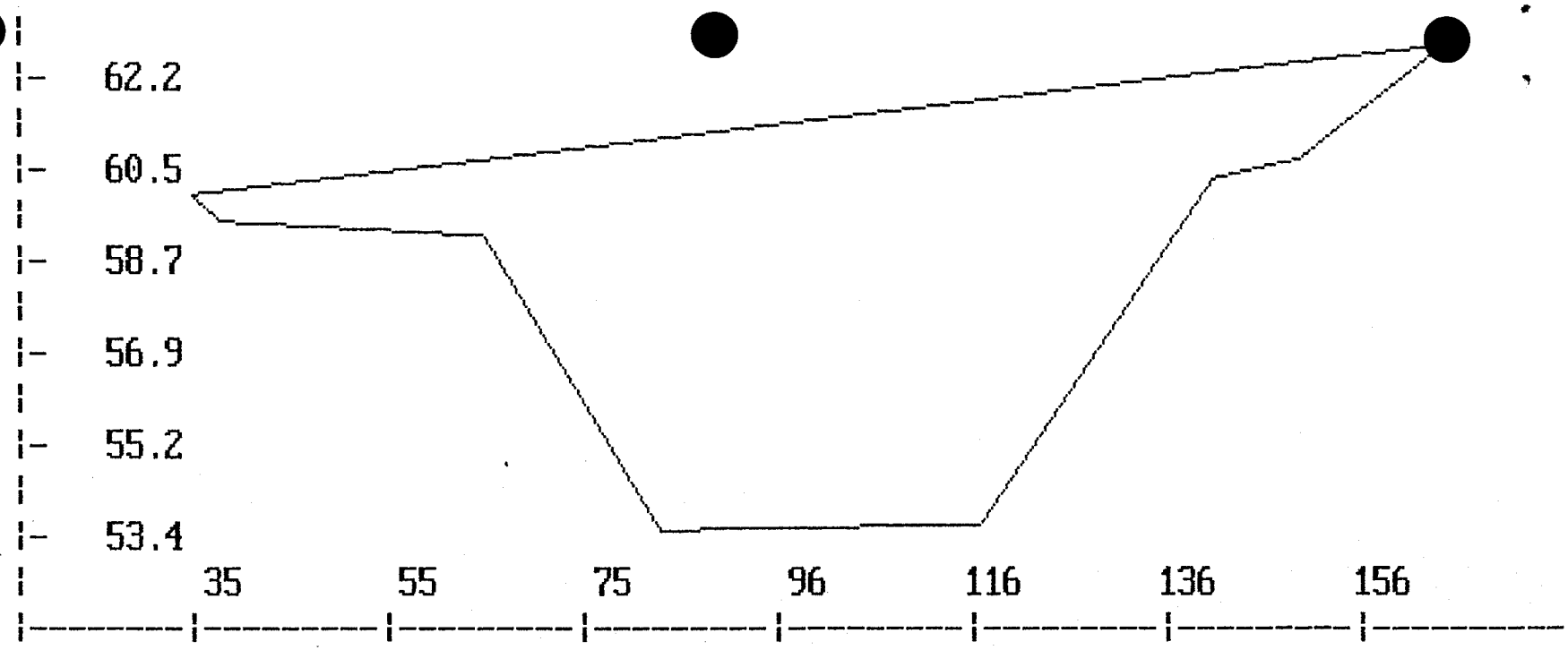
Left	35.5	59.4
Right	166.0	59.7



Sec # 4 of 24

Centerline Station = 50+00
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		59.7	14.0	59.3	26.0	58.1	32.0	58.7
2	35.0	59.9	38.0	59.4	65.0	59.1	83.5	53.4
3	116.7	53.5	141.0	60.1	150.0	60.5	166.0	62.8
4								
5								
6								



Section Number 21 of 24
Centerline Station 5+00

Grade Elevation = 62.80

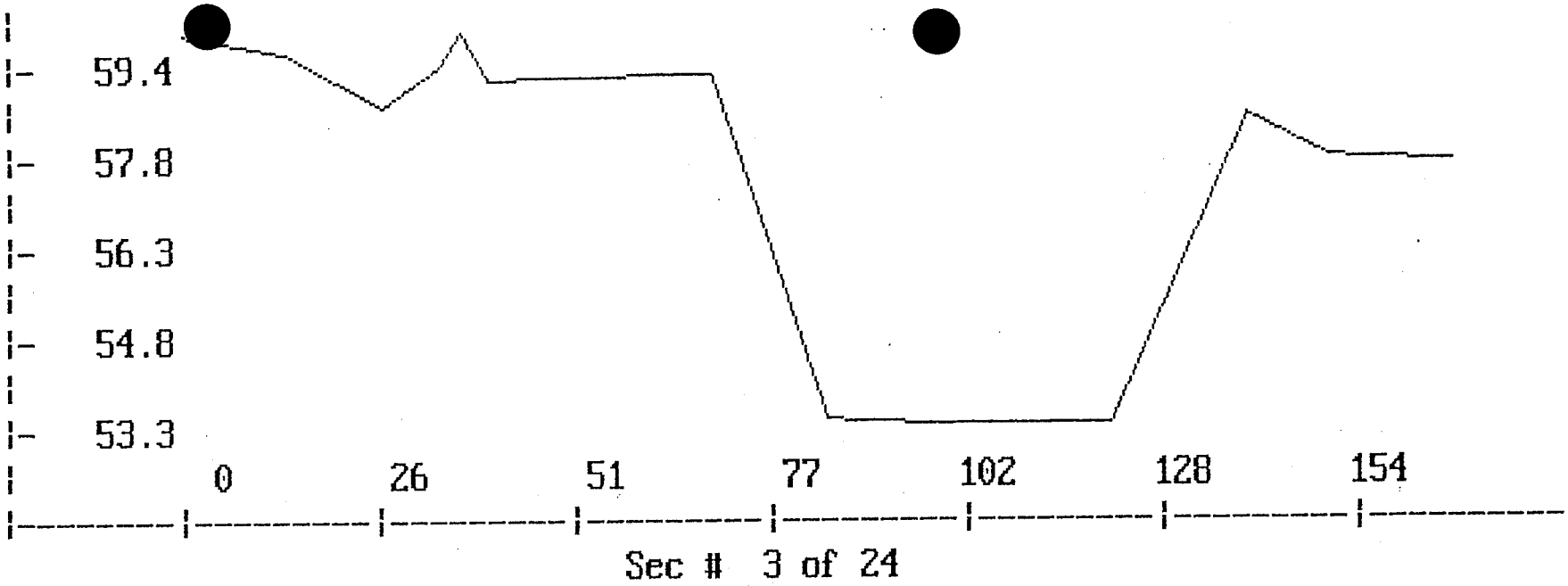
Filled Area = 533.64 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = 45.2:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

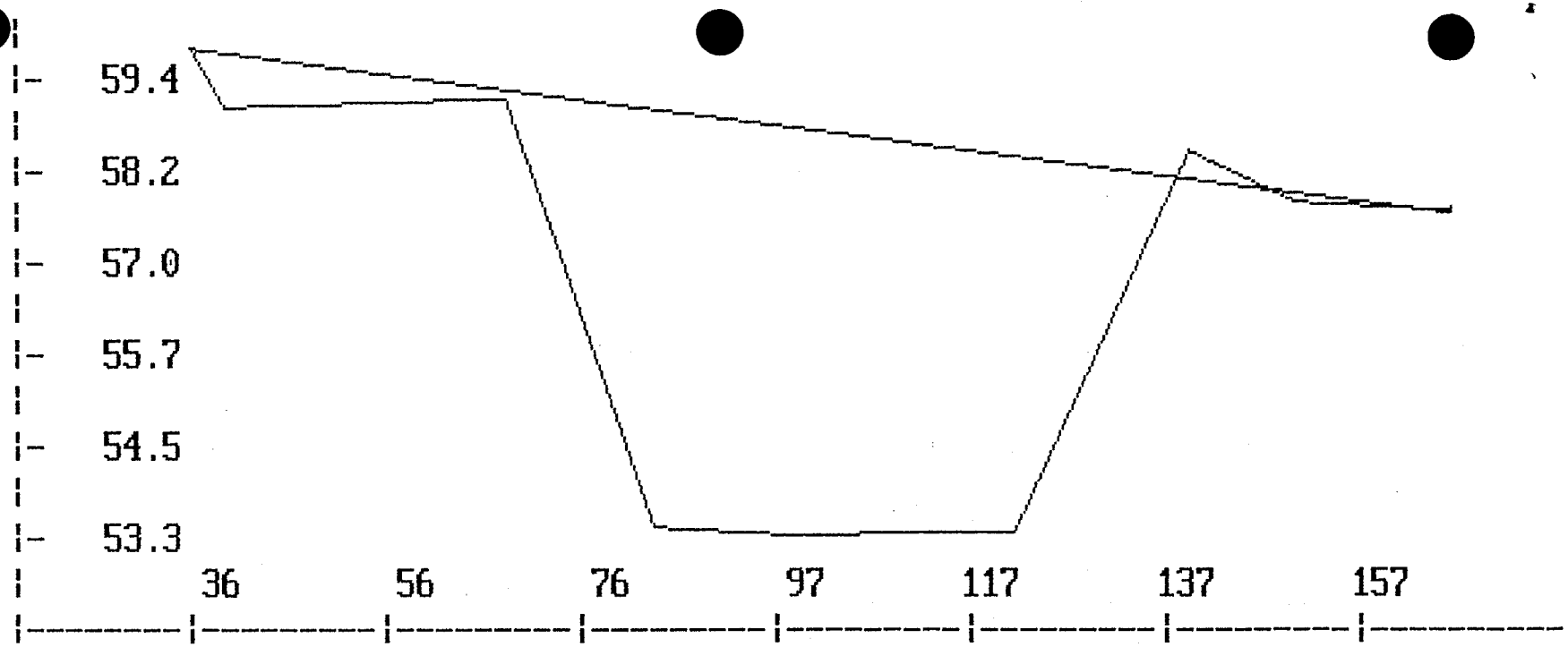
Left	35.0	59.9
Right	166.0	62.8



Sec # 3 of 24

Centerline Station = 50+20
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		59.8	13.9	59.5	26.3	58.6	33.3	59.2
2	36.4	59.8	40.0	59.0	69.0	59.1	84.0	53.4
3	100.0	53.3	121.0	53.3	139.0	58.4	150.0	57.7
4	166.0	57.6						
5								
6								



Section Number 22 of 24
Centerline Station 5+20

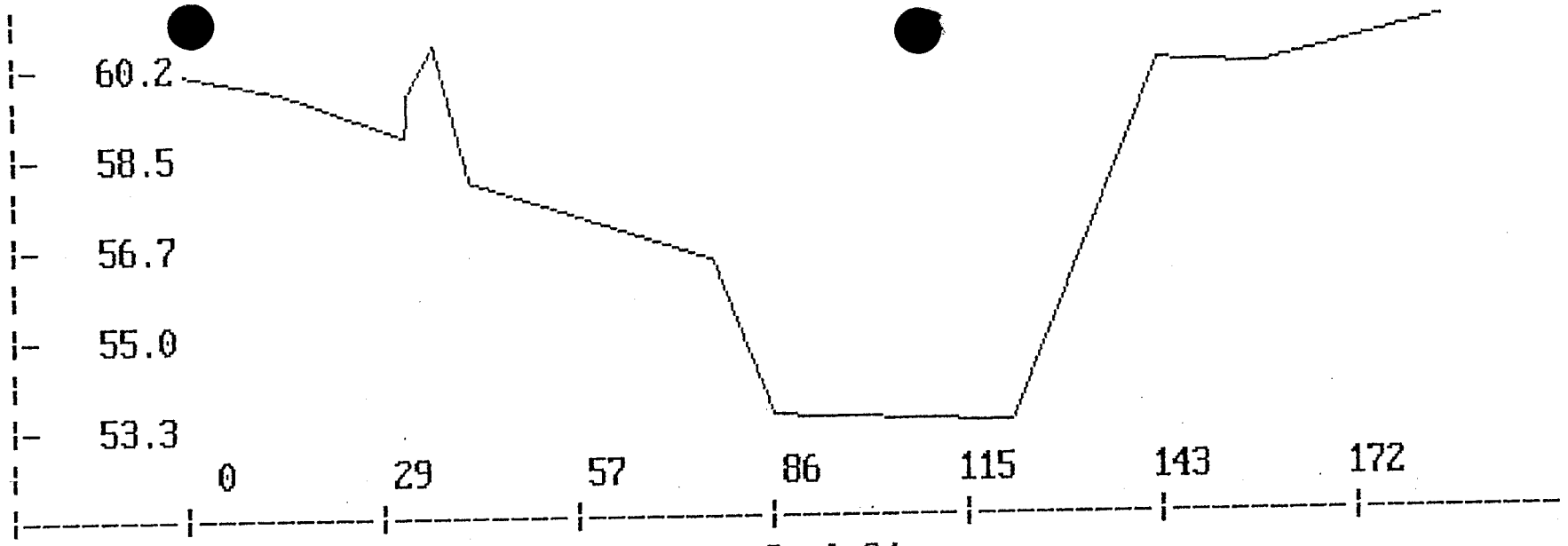
Grade Elevation = 57.60
Excavated Area = 1.44 Sq Ft
Filled Area = 300.47 Sq Ft

Rules - On ; Extrapolation - Y

Bottom Width = 0.0 ft.
Left Sideslope = 58.9:1
Right Sideslope = 1.0:1
CL Offset = 166.0 ft

Slope Intercepts

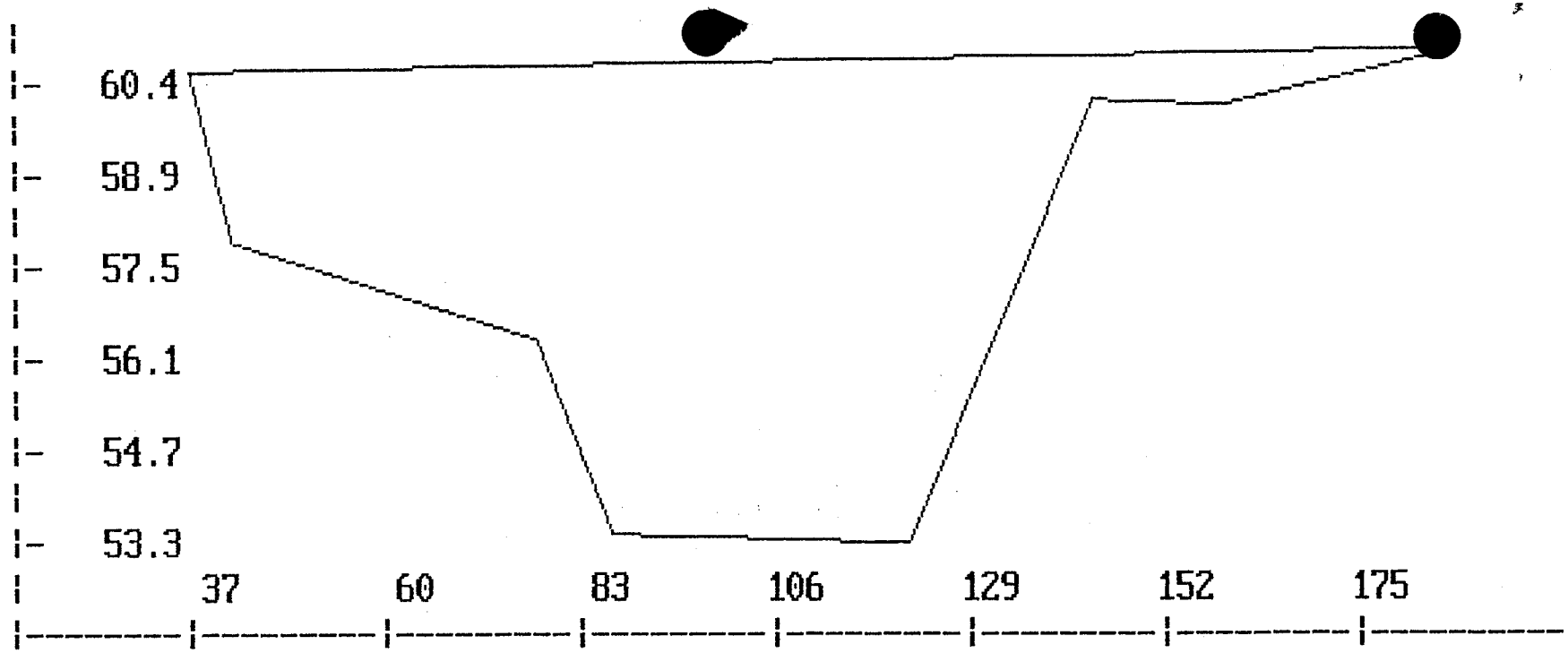
Left	36.4	59.8
Right	166.0	57.6



Sec # 2 of 24

Centerline Station = 50+40
Elevation or Rod Reading (E/R) E

	Dist	Elev	Dist	Elev	Dist	Elev	Dist	Elev
1		60.0	14.5	59.7	32.5	58.8	33.0	59.6
2	37.0	60.5	42.0	57.9	78.0	56.4	86.8	53.4
3	100.0	53.4	122.0	53.3	144.0	60.1	160.0	60.0
4	186.0	60.8						
5								
6								



Section Number 23 of 24
Centerline Station 5+40

Grade Elevation = 60.80

Filled Area = 544.73 Sq Ft

Rules - On ; Extrapolation - Y

Top Width = 0.0 ft.
Left Sideslope = %496.7:1
Right Sideslope = 1.0:1
CL Offset = 186.0 ft

Slope Intercepts

Left	37.0	60.5
Right	186.0	60.8

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	27	0.18	0.03	0.07
		28	-0.18	0.11	-0.11
28	1	28	-0.14	0.06	-0.04
		29	0.14	0.07	0.03
	2	28	0.14	-0.02	0.05
		29	-0.14	0.02	-0.06
	3	28	0.40	-0.05	0.14
		29	-0.40	0.05	-0.18
	4	28	0.05	0.00	0.01
		29	-0.05	0.00	-0.01
	5	28	-0.34	0.04	-0.11
		29	0.34	-0.04	0.15
	6	28	0.75	-0.02	0.26
		29	-0.75	0.19	-0.36
	7	28	-0.75	0.15	-0.24
		29	0.76	0.03	0.30
	8	28	0.32	0.02	0.11
		29	-0.32	0.12	-0.16
29	1	29	-0.19	0.05	-0.03
		30	0.20	0.09	0.01
	2	29	0.22	-0.01	0.06
		30	-0.22	0.01	-0.07
	3	29	0.64	-0.03	0.18
		30	-0.64	0.03	-0.22
	4	29	0.07	0.01	0.01
		30	-0.07	-0.01	0.00
	5	29	-0.54	0.03	-0.15
		30	0.54	-0.03	0.18
	6	29	1.20	-0.01	0.36
		30	-1.20	0.19	-0.46
	7	29	-1.16	0.11	-0.30
		30	1.16	0.07	0.31
	8	29	0.52	0.02	0.16
		30	-0.51	0.12	-0.21
30	1	30	-0.21	0.02	-0.01
		31	0.22	0.12	-0.05
	2	30	0.31	0.00	0.07
		31	-0.31	0.00	-0.07
	3	30	0.91	0.00	0.22
		31	-0.91	0.00	-0.22
	4	30	0.07	0.01	0.00
		31	-0.07	-0.01	0.01
	5	30	-0.76	0.00	-0.18
		31	0.76	0.00	0.18
	6	30	1.74	0.04	0.46
		31	-1.74	0.15	-0.51
	7	30	-1.56	0.02	-0.31
		31	1.56	0.16	0.25

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	30	0.76	0.03	0.21
		31	-0.76	0.11	-0.26
31	1	31	-0.17	-0.02	0.05
		32	0.18	0.17	-0.14
	2	31	0.40	0.02	0.07
		32	-0.40	-0.02	-0.05
	3	31	1.18	0.06	0.22
		32	-1.18	-0.06	-0.16
	4	31	0.06	0.02	-0.01
		32	-0.06	-0.02	0.03
	5	31	-0.98	-0.05	-0.18
		32	0.98	0.05	0.13
	6	31	2.36	0.13	0.51
		32	-2.36	0.06	-0.48
	7	31	-1.89	-0.11	-0.25
		32	1.89	0.30	0.04
	8	31	1.07	0.06	0.26
		32	-1.06	0.08	-0.27
32	1	32	-0.03	-0.07	0.14
		33	0.03	0.22	-0.28
	2	32	0.46	0.05	0.05
		33	-0.46	-0.05	0.00
	3	32	1.36	0.16	0.16
		33	-1.36	-0.16	0.00
	4	32	0.03	0.03	-0.03
		33	-0.03	-0.03	0.06
	5	32	-1.14	-0.13	-0.13
		33	1.14	0.13	0.00
	6	32	2.90	0.29	0.48
		33	-2.90	-0.10	-0.28
	7	32	-1.96	-0.32	-0.04
		33	1.96	0.51	-0.38
	8	32	1.36	0.12	0.27
		33	-1.36	0.03	-0.22
33	1	33	0.26	-0.12	0.28
		34	-0.26	0.28	-0.48
	2	33	0.46	0.10	0.00
		34	-0.46	-0.10	0.10
	3	33	1.36	0.30	0.00
		34	-1.36	-0.30	0.31
	4	33	-0.03	0.04	-0.06
		34	0.03	-0.04	0.10
	5	33	-1.13	-0.25	0.00
		34	1.13	0.25	-0.26
	6	33	3.18	0.54	0.28
		34	-3.18	-0.35	0.16
	7	33	-1.57	-0.59	0.38
		34	1.57	0.79	-1.07

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	33	1.58	0.22	0.22
		34	-1.58	-0.07	-0.07
34	1	34	0.76	-0.18	0.48
		35	-0.76	0.33	-0.74
	2	34	0.36	0.17	-0.10
		35	-0.36	-0.17	0.27
	3	34	1.06	0.49	-0.31
		35	-1.06	-0.49	0.80
	4	34	-0.14	0.06	-0.10
		35	0.14	-0.06	0.16
	5	34	-0.89	-0.41	0.26
		35	0.89	0.41	-0.67
	6	34	3.05	0.89	-0.16
		35	-3.05	-0.69	0.95
	7	34	-0.51	-0.92	1.07
		35	0.51	1.12	-2.09
	8	34	1.68	0.37	0.07
		35	-1.67	-0.22	0.22
35	1	35	1.48	-0.21	0.74
		36	-1.48	0.37	-1.03
	2	35	0.09	0.24	-0.27
		36	-0.09	-0.24	0.51
	3	35	0.28	0.71	-0.80
		36	-0.28	-0.71	1.52
	4	35	-0.30	0.06	-0.16
		36	0.30	-0.06	0.22
	5	35	-0.23	-0.60	0.67
		36	0.23	0.60	-1.27
	6	35	2.12	1.33	-0.95
		36	-2.12	-1.12	2.18
	7	35	1.54	-1.28	2.09
		36	-1.53	1.49	-3.48
	8	35	1.46	0.57	-0.22
		36	-1.46	-0.41	0.71
36	1	36	2.44	-0.21	1.03
		37	-2.44	0.37	-1.32
	2	36	-0.39	0.32	-0.51
		37	0.39	-0.32	0.83
	3	36	-1.15	0.95	-1.52
		37	1.15	-0.95	2.47
	4	36	-0.51	0.06	-0.22
		37	0.51	-0.06	0.29
	5	36	0.96	-0.80	1.27
		37	-0.96	0.80	-2.06
	6	36	0.06	1.84	-2.18
		37	-0.06	-1.63	3.91
	7	36	4.79	-1.62	3.48
		37	-4.79	1.83	-5.20

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	36	0.78	0.81	-0.71
		37	-0.78	-0.64	1.43
37	1	37	3.67	-0.15	1.32
		38	-3.67	0.31	-1.55
	2	37	-1.15	0.39	-0.83
		38	1.15	-0.39	1.22
	3	37	-3.42	1.17	-2.47
		38	3.42	-1.17	3.64
	4	37	-0.78	0.05	-0.29
		38	0.78	-0.05	0.34
	5	37	2.86	-0.98	2.06
		38	-2.86	0.98	-3.04
	6	37	-3.51	2.36	-3.91
		38	3.51	-2.14	6.16
	7	37	9.60	-1.84	5.20
		38	-9.60	2.06	-7.15
	8	37	-0.52	1.07	-1.43
		38	0.53	-0.91	2.42
38	1	38	5.05	0.01	1.55
		39	-5.05	0.16	-1.63
	2	38	-2.23	0.44	-1.22
		39	2.23	-0.44	1.66
	3	38	-6.63	1.30	-3.64
		39	6.63	-1.30	4.94
	4	38	-1.08	0.02	-0.34
		39	1.08	-0.02	0.35
	5	38	5.54	-1.09	3.04
		39	-5.54	1.09	-4.12
	6	38	-8.94	2.80	-6.16
		39	8.94	-2.58	8.85
	7	38	15.92	-1.82	7.15
		39	-15.92	2.04	-9.08
	8	38	-2.66	1.33	-2.42
		39	2.66	-1.16	3.67
39	1	39	6.40	0.30	1.63
		40	-6.39	-0.13	-1.41
	2	39	-3.61	0.43	-1.66
		40	3.61	-0.43	2.09
	3	39	-10.74	1.26	-4.94
		40	10.74	-1.26	6.20
	4	39	-1.37	-0.05	-0.35
		40	1.37	0.05	0.30
	5	39	8.97	-1.06	4.12
		40	-8.97	1.06	-5.18
	6	39	-16.32	3.02	-8.85
		40	16.33	-2.80	11.76
	7	39	23.48	-1.39	9.08
		40	-23.47	1.61	-10.59

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	39	-5.72	1.52	-3.67
		40	5.72	-1.35	5.10
40	1	40	7.64	0.76	1.41
		41	-7.64	-0.59	-0.73
	2	40	-5.37	0.32	-2.09
		41	5.37	-0.32	2.41
	3	40	-15.95	0.95	-6.20
		41	15.95	-0.95	7.16
	4	40	-1.65	-0.15	-0.30
		41	1.65	0.15	0.16
	5	40	13.33	-0.80	5.18
		41	-13.33	0.80	-5.98
	6	40	-26.14	2.83	-11.76
		41	26.15	-2.60	14.47
	7	40	32.46	-0.36	10.59
		41	-32.45	0.59	-11.06
	8	40	-9.96	1.57	-5.10
		41	9.96	-1.39	6.58
41	1	41	0.00	1.51	0.73
		42	0.00	-1.43	0.00
	2	41	0.59	0.00	-2.41
		42	-0.59	0.00	2.41
	3	41	2.61	0.00	-7.16
		42	-2.61	0.00	7.16
	4	41	0.00	-0.31	-0.16
		42	0.00	0.31	0.00
	5	41	-2.08	0.00	5.98
		42	2.08	0.00	-5.98
	6	41	5.17	1.56	-14.47
		42	-5.17	-1.45	15.23
	7	41	-3.52	1.97	11.06
		42	3.52	-1.85	-10.10
	8	41	2.61	1.20	-6.58
		42	-2.61	-1.11	7.16
42	1	43	0.00	0.00	0.00
		42	-1.23	0.00	0.00
	2	43	0.00	0.00	0.00
		42	0.00	0.59	-2.41
	3	43	0.00	0.00	0.00
		42	0.00	2.61	-7.16
	4	43	0.00	0.00	0.00
		42	0.00	0.00	0.00
	5	43	0.00	0.00	0.00
		42	0.00	-2.08	5.98
	6	43	0.00	0.00	0.00
		42	-1.60	5.17	-15.23
	7	43	0.00	0.00	0.00
		42	-1.60	-3.52	10.10

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	43	0.00	0.00	0.00
		42	-1.23	2.61	-7.16

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
1	1	1	0.00	0.00	0.00
		2	-1.23	0.00	0.00
	2	1	0.00	0.00	0.00
		2	0.00	-0.59	2.41
	3	1	0.00	0.00	0.00
		2	0.00	-2.61	7.16
	4	1	0.00	0.00	0.00
		2	0.00	0.00	0.00
	5	1	0.00	0.00	0.00
		2	0.00	2.08	-5.98
	6	1	0.00	0.00	0.00
		2	-1.60	-5.17	15.23
	7	1	0.00	0.00	0.00
		2	-1.60	3.52	-10.10
	8	1	0.00	0.00	0.00
		2	-1.23	-2.61	7.16
2	1	2	0.00	-1.43	0.00
		3	0.00	1.51	-0.73
	2	2	0.59	0.00	-2.41
		3	-0.59	0.00	2.41
	3	2	2.61	0.00	-7.16
		3	-2.61	0.00	7.16
	4	2	0.00	0.31	0.00
		3	0.00	-0.31	0.16
	5	2	-2.08	0.00	5.98
		3	2.08	0.00	-5.98
	6	2	5.17	-1.45	-15.23
		3	-5.17	1.56	14.47
	7	2	-3.52	-1.85	10.10
		3	3.52	1.97	-11.06
	8	2	2.61	-1.11	-7.16
		3	-2.61	1.20	6.58
3	1	3	7.65	-0.59	0.73
		4	-7.65	0.76	-1.41
	2	3	-5.38	-0.32	-2.41
		4	5.38	0.32	2.09
	3	3	-15.98	-0.96	-7.16
		4	15.98	0.96	6.20
	4	3	-1.65	0.15	-0.16
		4	1.65	-0.15	0.30
	5	3	13.35	0.80	5.98
		4	-13.35	-0.80	-5.18
	6	3	-26.20	-2.60	-14.47
		4	26.19	2.83	11.76
	7	3	32.50	0.59	11.06
		4	-32.50	-0.36	-10.58

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	3	-9.98	-1.39	-6.58
		4	9.98	1.57	5.10
4	1	4	6.40	-0.13	1.41
		5	-6.40	0.30	-1.62
	2	4	-3.62	-0.43	-2.09
		5	3.62	0.43	1.66
	3	4	-10.75	-1.26	-6.20
		5	10.75	1.26	4.94
	4	4	-1.38	0.05	-0.30
		5	1.38	-0.05	0.35
	5	4	8.98	1.06	5.18
		5	-8.98	-1.06	-4.12
	6	4	-16.35	-2.80	-11.76
		5	16.34	3.02	8.85
	7	4	23.50	1.61	10.58
		5	-23.50	-1.39	-9.08
	8	4	-5.73	-1.35	-5.10
		5	5.73	1.52	3.66
5	1	5	5.05	0.16	1.62
		6	-5.05	0.01	-1.55
	2	5	-2.23	-0.44	-1.66
		6	2.23	0.44	1.22
	3	5	-6.63	-1.30	-4.94
		6	6.63	1.30	3.64
	4	5	-1.08	-0.02	-0.35
		6	1.08	0.02	0.34
	5	5	5.54	1.09	4.12
		6	-5.54	-1.09	-3.04
	6	5	-8.94	-2.58	-8.85
		6	8.94	2.80	6.16
	7	5	15.92	2.04	9.08
		6	-15.93	-1.82	-7.15
	8	5	-2.66	-1.16	-3.66
		6	2.66	1.33	2.42
6	1	6	3.67	0.31	1.55
		7	-3.67	-0.15	-1.32
	2	6	-1.15	-0.39	-1.22
		7	1.15	0.39	0.83
	3	6	-3.41	-1.17	-3.64
		7	3.41	1.17	2.47
	4	6	-0.78	-0.05	-0.34
		7	0.78	0.05	0.29
	5	6	2.85	0.98	3.04
		7	-2.85	-0.98	-2.06
	6	6	-3.50	-2.14	-6.16
		7	3.50	2.36	3.90
	7	6	9.59	2.06	7.15
		7	-9.59	-1.84	-5.20

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	6	-0.52	-0.91	-2.42
		7	0.52	1.07	1.43
7	1	7	2.43	0.37	1.32
		8	-2.44	-0.21	-1.03
	2	7	-0.39	-0.32	-0.83
		8	0.39	0.32	0.51
	3	7	-1.14	-0.95	-2.47
		8	1.14	0.95	1.51
	4	7	-0.51	-0.06	-0.29
		8	0.51	0.06	0.22
	5	7	0.96	0.80	2.06
		8	-0.96	-0.80	-1.26
	6	7	0.07	-1.63	-3.90
		8	-0.07	1.84	2.17
	7	7	4.78	1.83	5.20
		8	-4.78	-1.62	-3.47
	8	7	0.78	-0.64	-1.43
		8	-0.78	0.81	0.71
8	1	8	1.48	0.37	1.03
		9	-1.48	-0.21	-0.74
	2	8	0.09	-0.24	-0.51
		9	-0.09	0.24	0.27
	3	8	0.28	-0.71	-1.51
		9	-0.28	0.71	0.80
	4	8	-0.30	-0.06	-0.22
		9	0.30	0.06	0.16
	5	8	-0.23	0.60	1.26
		9	0.23	-0.60	-0.67
	6	8	2.13	-1.12	-2.17
		9	-2.13	1.33	0.95
	7	8	1.53	1.49	3.47
		9	-1.53	-1.28	-2.09
	8	8	1.46	-0.41	-0.71
		9	-1.46	0.57	0.22
9	1	9	0.75	0.33	0.74
		10	-0.76	-0.18	-0.48
	2	9	0.36	-0.17	-0.27
		10	-0.36	0.17	0.10
	3	9	1.06	-0.49	-0.80
		10	-1.06	0.49	0.31
	4	9	-0.14	-0.06	-0.16
		10	0.14	0.06	0.10
	5	9	-0.89	0.41	0.67
		10	0.89	-0.41	-0.26
	6	9	3.06	-0.69	-0.95
		10	-3.06	0.89	0.16
	7	9	-0.52	1.12	2.09
		10	0.51	-0.92	-1.06

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	9	1.67	-0.22	-0.22
		10	-1.68	0.37	-0.07
10	1	10	0.26	0.28	0.48
		11	-0.26	-0.12	-0.28
	2	10	0.46	-0.10	-0.10
		11	-0.46	0.10	0.00
	3	10	1.36	-0.30	-0.31
		11	-1.36	0.30	0.00
	4	10	-0.03	-0.04	-0.10
		11	0.03	0.04	0.06
	5	10	-1.13	0.25	0.26
		11	1.13	-0.25	0.00
	6	10	3.18	-0.35	-0.16
		11	-3.18	0.54	-0.28
	7	10	-1.57	0.79	1.06
		11	1.57	-0.59	-0.38
	8	10	1.58	-0.07	0.07
		11	-1.59	0.22	-0.22
11	1	11	-0.03	0.22	0.28
		12	0.03	-0.07	-0.14
	2	11	0.46	-0.05	0.00
		12	-0.46	0.05	-0.05
	3	11	1.36	-0.16	0.00
		12	-1.36	0.16	-0.16
	4	11	0.03	-0.03	-0.06
		12	-0.03	0.03	0.03
	5	11	-1.14	0.13	0.00
		12	1.14	-0.13	0.13
	6	11	2.90	-0.10	0.28
		12	-2.90	0.29	-0.48
	7	11	-1.96	0.51	0.38
		12	1.96	-0.32	0.04
	8	11	1.36	0.03	0.22
		12	-1.36	0.12	-0.27
12	1	12	-0.18	0.17	0.14
		13	0.18	-0.02	-0.05
	2	12	0.40	-0.02	0.05
		13	-0.40	0.02	-0.07
	3	12	1.18	-0.06	0.16
		13	-1.18	0.06	-0.22
	4	12	0.06	-0.02	-0.03
		13	-0.06	0.02	0.01
	5	12	-0.98	0.05	-0.13
		13	0.98	-0.05	0.18
	6	12	2.35	0.06	0.48
		13	-2.36	0.13	-0.51
	7	12	-1.89	0.30	-0.04
		13	1.89	-0.11	0.25

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	12	1.06	0.08	0.27
		13	-1.06	0.06	-0.26
13	1	13	-0.22	0.12	0.05
		14	0.21	0.02	0.01
	2	13	0.30	0.00	0.07
		14	-0.30	0.00	-0.07
	3	13	0.91	0.00	0.22
		14	-0.91	0.00	-0.22
	4	13	0.07	-0.01	-0.01
		14	-0.07	0.01	0.00
	5	13	-0.76	0.00	-0.18
		14	0.76	0.00	0.18
	6	13	1.74	0.15	0.51
		14	-1.74	0.04	-0.46
	7	13	-1.56	0.16	-0.25
		14	1.56	0.02	0.31
	8	13	0.76	0.11	0.26
		14	-0.76	0.03	-0.21
14	1	14	-0.20	0.09	-0.01
		15	0.19	0.05	0.03
	2	14	0.22	0.01	0.07
		15	-0.22	-0.01	-0.06
	3	14	0.64	0.03	0.22
		15	-0.64	-0.03	-0.18
	4	14	0.07	-0.01	0.00
		15	-0.07	0.01	-0.01
	5	14	-0.54	-0.03	-0.18
		15	0.54	0.03	0.15
	6	14	1.20	0.19	0.46
		15	-1.20	-0.01	-0.36
	7	14	-1.16	0.07	-0.31
		15	1.16	0.11	0.30
	8	14	0.51	0.12	0.21
		15	-0.51	0.02	-0.16
15	1	15	-0.14	0.07	-0.03
		16	0.14	0.06	0.03
	2	15	0.14	0.02	0.06
		16	-0.14	-0.02	-0.05
	3	15	0.40	0.05	0.18
		16	-0.40	-0.05	-0.14
	4	15	0.05	0.00	0.01
		16	-0.05	0.00	-0.01
	5	15	-0.34	-0.04	-0.15
		16	0.34	0.04	0.11
	6	15	0.74	0.19	0.36
		16	-0.75	-0.02	-0.26
	7	15	-0.75	0.03	-0.30
		16	0.75	0.15	0.24

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	15	0.32	0.12	0.16
		16	-0.32	0.02	-0.11
16	1	16	-0.08	0.06	-0.03
		17	0.08	0.07	0.03
	2	16	0.07	0.02	0.05
		17	-0.07	-0.02	-0.03
	3	16	0.22	0.05	0.14
		17	-0.22	-0.05	-0.09
	4	16	0.04	0.00	0.01
		17	-0.04	0.00	-0.01
	5	16	-0.18	-0.04	-0.11
		17	0.18	0.04	0.07
	6	16	0.41	0.18	0.26
		17	-0.41	0.00	-0.16
	7	16	-0.41	0.01	-0.24
		17	0.41	0.16	0.16
	8	16	0.18	0.11	0.11
		17	-0.18	0.03	-0.07
17	1	17	-0.03	0.05	-0.03
		18	0.02	0.08	0.02
	2	17	0.03	0.01	0.03
		18	-0.03	-0.01	-0.02
	3	17	0.09	0.04	0.09
		18	-0.09	-0.04	-0.05
	4	17	0.03	0.00	0.01
		18	-0.03	0.00	-0.01
	5	17	-0.07	-0.03	-0.07
		18	0.07	0.03	0.04
	6	17	0.19	0.15	0.16
		18	-0.19	0.01	-0.09
	7	17	-0.16	0.01	-0.16
		18	0.15	0.15	0.09
	8	17	0.09	0.09	0.07
		18	-0.09	0.04	-0.04
18	1	18	0.01	0.05	-0.02
		19	-0.01	0.08	0.00
	2	18	0.00	0.01	0.02
		19	0.00	-0.01	-0.01
	3	18	0.01	0.03	0.05
		19	-0.01	-0.03	-0.02
	4	18	0.02	0.00	0.01
		19	-0.02	0.00	0.00
	5	18	-0.01	-0.02	-0.04
		19	0.01	0.02	0.02
	6	18	0.06	0.13	0.09
		19	-0.06	0.03	-0.05
	7	18	0.00	0.02	-0.09
		19	0.00	0.14	0.03

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	18	0.04	0.08	0.04
		19	-0.04	0.05	-0.02
19	1	19	0.03	0.05	0.00
		20	-0.03	0.07	-0.01
	2	19	-0.01	0.01	0.01
		20	0.01	-0.01	0.00
	3	19	-0.02	0.02	0.02
		20	0.02	-0.02	0.00
	4	19	0.01	0.00	0.00
		20	-0.01	0.00	0.00
	5	19	0.02	-0.02	-0.02
		20	-0.02	0.02	0.00
	6	19	0.00	0.11	0.05
		20	-0.01	0.05	-0.02
	7	19	0.07	0.04	-0.03
		20	-0.07	0.12	-0.01
	8	19	0.02	0.07	0.02
		20	-0.02	0.05	-0.01
20	1	20	0.03	0.05	0.01
		21	-0.03	0.07	-0.02
	2	20	-0.01	0.00	0.00
		21	0.01	0.00	0.00
	3	20	-0.03	0.01	0.00
		21	0.03	-0.01	0.01
	4	20	0.00	0.00	0.00
		21	0.00	0.00	0.00
	5	20	0.02	-0.01	0.00
		21	-0.02	0.01	-0.01
	6	20	-0.01	0.09	0.02
		21	0.01	0.07	-0.01
	7	20	0.08	0.05	0.01
		21	-0.08	0.10	-0.04
	8	20	0.01	0.06	0.01
		21	-0.01	0.06	-0.01
21	1	21	0.01	0.05	0.02
		22	-0.01	0.06	-0.02
	2	21	0.00	0.00	0.00
		22	0.00	0.00	0.00
	3	21	-0.01	0.00	-0.01
		22	0.01	0.00	0.01
	4	21	0.00	0.00	0.00
		22	0.00	0.00	0.00
	5	21	0.01	0.00	0.01
		22	-0.01	0.00	-0.01
	6	21	0.00	0.08	0.01
		22	0.00	0.07	-0.01
	7	21	0.03	0.06	0.04
		22	-0.03	0.09	-0.05

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	21	0.00	0.06	0.01
		22	0.00	0.06	-0.01
22	1	22	0.01	0.06	0.02
		23	-0.01	0.05	-0.02
	2	22	0.00	0.00	0.00
		23	0.00	0.00	0.00
	3	22	-0.01	0.00	-0.01
		23	0.01	0.00	0.01
	4	22	0.00	0.00	0.00
		23	0.00	0.00	0.00
	5	22	0.01	0.00	0.01
		23	-0.01	0.00	-0.01
	6	22	-0.01	0.07	0.01
		23	0.01	0.08	-0.01
	7	22	0.03	0.08	0.05
		23	-0.03	0.06	-0.04
	8	22	0.00	0.06	0.01
		23	0.00	0.06	-0.01
23	1	23	0.03	0.07	0.02
		24	-0.03	0.05	-0.01
	2	23	-0.01	0.00	0.00
		24	0.01	0.00	0.00
	3	23	-0.03	-0.01	-0.01
		24	0.03	0.01	0.00
	4	23	0.00	0.00	0.00
		24	0.00	0.00	0.00
	5	23	0.02	0.01	0.01
		24	-0.02	-0.01	0.00
	6	23	-0.01	0.07	0.01
		24	0.01	0.09	-0.02
	7	23	0.08	0.11	0.04
		24	-0.08	0.05	-0.01
	8	23	0.01	0.06	0.01
		24	-0.01	0.06	-0.02
24	1	24	0.03	0.07	0.01
		25	-0.03	0.05	0.00
	2	24	-0.01	-0.01	0.00
		25	0.01	0.01	-0.01
	3	24	-0.02	-0.02	0.00
		25	0.02	0.02	-0.02
	4	24	0.01	0.00	0.00
		25	-0.01	0.00	0.00
	5	24	0.02	0.02	0.00
		25	-0.02	-0.02	0.02
	6	24	0.01	0.05	0.02
		25	0.00	0.11	-0.05
	7	24	0.07	0.12	0.01
		25	-0.07	0.04	0.03

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	24	0.02	0.05	0.02
		25	-0.02	0.07	-0.02
25	1	25	0.01	0.08	0.00
		26	-0.01	0.05	0.02
	2	25	0.00	-0.01	0.01
		26	0.00	0.01	-0.02
	3	25	0.01	-0.03	0.02
		26	-0.01	0.03	-0.05
	4	25	0.02	0.00	0.00
		26	-0.02	0.00	-0.01
	5	25	-0.01	0.02	-0.02
		26	0.01	-0.02	0.04
	6	25	0.06	0.03	0.05
		26	-0.06	0.13	-0.10
	7	25	0.00	0.14	-0.03
		26	0.00	0.02	0.09
	8	25	0.04	0.05	0.02
		26	-0.04	0.08	-0.04
26	1	26	-0.02	0.08	-0.02
		27	0.03	0.05	0.03
	2	26	0.03	-0.01	0.02
		27	-0.03	0.01	-0.03
	3	26	0.09	-0.04	0.05
		27	-0.09	0.04	-0.09
	4	26	0.03	0.00	0.01
		27	-0.03	0.00	-0.01
	5	26	-0.07	0.03	-0.04
		27	0.07	-0.03	0.07
	6	26	0.19	0.01	0.10
		27	-0.19	0.15	-0.16
	7	26	-0.16	0.15	-0.09
		27	0.16	0.01	0.16
	8	26	0.09	0.04	0.04
		27	-0.09	0.09	-0.07
27	1	27	-0.08	0.07	-0.03
		28	0.08	0.06	0.04
	2	27	0.07	-0.02	0.03
		28	-0.07	0.02	-0.05
	3	27	0.22	-0.05	0.09
		28	-0.22	0.05	-0.14
	4	27	0.04	0.00	0.01
		28	-0.04	0.00	-0.01
	5	27	-0.18	0.04	-0.07
		28	0.18	-0.04	0.11
	6	27	0.41	0.00	0.16
		28	-0.41	0.18	-0.26
	7	27	-0.41	0.16	-0.16
		28	0.41	0.01	0.24

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	27	0.18	0.03	0.07
		28	-0.18	0.11	-0.11
28	1	28	-0.14	0.06	-0.04
		29	0.14	0.07	0.03
	2	28	0.14	-0.02	0.05
		29	-0.14	0.02	-0.06
	3	28	0.40	-0.05	0.14
		29	-0.40	0.05	-0.18
	4	28	0.05	0.00	0.01
		29	-0.05	0.00	-0.01
	5	28	-0.34	0.04	-0.11
		29	0.34	-0.04	0.15
	6	28	0.75	-0.02	0.26
		29	-0.75	0.19	-0.36
	7	28	-0.75	0.15	-0.24
		29	0.76	0.03	0.30
	8	28	0.32	0.02	0.11
		29	-0.32	0.12	-0.16
29	1	29	-0.19	0.05	-0.03
		30	0.20	0.09	0.01
	2	29	0.22	-0.01	0.06
		30	-0.22	0.01	-0.07
	3	29	0.64	-0.03	0.18
		30	-0.64	0.03	-0.22
	4	29	0.07	0.01	0.01
		30	-0.07	-0.01	0.00
	5	29	-0.54	0.03	-0.15
		30	0.54	-0.03	0.18
	6	29	1.20	-0.01	0.36
		30	-1.20	0.19	-0.46
	7	29	-1.16	0.11	-0.30
		30	1.16	0.07	0.31
	8	29	0.52	0.02	0.16
		30	-0.51	0.12	-0.21
30	1	30	-0.21	0.02	-0.01
		31	0.22	0.12	-0.05
	2	30	0.31	0.00	0.07
		31	-0.31	0.00	-0.07
	3	30	0.91	0.00	0.22
		31	-0.91	0.00	-0.22
	4	30	0.07	0.01	0.00
		31	-0.07	-0.01	0.01
	5	30	-0.76	0.00	-0.18
		31	0.76	0.00	0.18
	6	30	1.74	0.04	0.46
		31	-1.74	0.15	-0.51
	7	30	-1.56	0.02	-0.31
		31	1.56	0.16	0.25

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	30	0.76	0.03	0.21
		31	-0.76	0.11	-0.26
31	1	31	-0.17	-0.02	0.05
		32	0.18	0.17	-0.14
	2	31	0.40	0.02	0.07
		32	-0.40	-0.02	-0.05
	3	31	1.18	0.06	0.22
		32	-1.18	-0.06	-0.16
	4	31	0.06	0.02	-0.01
		32	-0.06	-0.02	0.03
	5	31	-0.98	-0.05	-0.18
		32	0.98	0.05	0.13
	6	31	2.36	0.13	0.51
		32	-2.36	0.06	-0.48
	7	31	-1.89	-0.11	-0.25
		32	1.89	0.30	0.04
	8	31	1.07	0.06	0.26
		32	-1.06	0.08	-0.27
32	1	32	-0.03	-0.07	0.14
		33	0.03	0.22	-0.28
	2	32	0.46	0.05	0.05
		33	-0.46	-0.05	0.00
	3	32	1.36	0.16	0.16
		33	-1.36	-0.16	0.00
	4	32	0.03	0.03	-0.03
		33	-0.03	-0.03	0.06
	5	32	-1.14	-0.13	-0.13
		33	1.14	0.13	0.00
	6	32	2.90	0.29	0.48
		33	-2.90	-0.10	-0.28
	7	32	-1.96	-0.32	-0.04
		33	1.96	0.51	-0.38
	8	32	1.36	0.12	0.27
		33	-1.36	0.03	-0.22
33	1	33	0.26	-0.12	0.28
		34	-0.26	0.28	-0.48
	2	33	0.46	0.10	0.00
		34	-0.46	-0.10	0.10
	3	33	1.36	0.30	0.00
		34	-1.36	-0.30	0.31
	4	33	-0.03	0.04	-0.06
		34	0.03	-0.04	0.10
	5	33	-1.13	-0.25	0.00
		34	1.13	0.25	-0.26
	6	33	3.18	0.54	0.28
		34	-3.18	-0.35	0.16
	7	33	-1.57	-0.59	0.38
		34	1.57	0.79	-1.07

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	33	1.58	0.22	0.22
		34	-1.58	-0.07	-0.07
34	1	34	0.76	-0.18	0.48
		35	-0.76	0.33	-0.74
	2	34	0.36	0.17	-0.10
		35	-0.36	-0.17	0.27
	3	34	1.06	0.49	-0.31
		35	-1.06	-0.49	0.80
	4	34	-0.14	0.06	-0.10
		35	0.14	-0.06	0.16
	5	34	-0.89	-0.41	0.26
		35	0.89	0.41	-0.67
	6	34	3.05	0.89	-0.16
		35	-3.05	-0.69	0.95
	7	34	-0.51	-0.92	1.07
		35	0.51	1.12	-2.09
	8	34	1.68	0.37	0.07
		35	-1.67	-0.22	0.22
35	1	35	1.48	-0.21	0.74
		36	-1.48	0.37	-1.03
	2	35	0.09	0.24	-0.27
		36	-0.09	-0.24	0.51
	3	35	0.28	0.71	-0.80
		36	-0.28	-0.71	1.52
	4	35	-0.30	0.06	-0.16
		36	0.30	-0.06	0.22
	5	35	-0.23	-0.60	0.67
		36	0.23	0.60	-1.27
	6	35	2.12	1.33	-0.95
		36	-2.12	-1.12	2.18
	7	35	1.54	-1.28	2.09
		36	-1.53	1.49	-3.48
	8	35	1.46	0.57	-0.22
		36	-1.46	-0.41	0.71
36	1	36	2.44	-0.21	1.03
		37	-2.44	0.37	-1.32
	2	36	-0.39	0.32	-0.51
		37	0.39	-0.32	0.83
	3	36	-1.15	0.95	-1.52
		37	1.15	-0.95	2.47
	4	36	-0.51	0.06	-0.22
		37	0.51	-0.06	0.29
	5	36	0.96	-0.80	1.27
		37	-0.96	0.80	-2.06
	6	36	0.06	1.84	-2.18
		37	-0.06	-1.63	3.91
	7	36	4.79	-1.62	3.48
		37	-4.79	1.83	-5.20

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	36	0.78	0.81	-0.71
		37	-0.78	-0.64	1.43
37	1	37	3.67	-0.15	1.32
		38	-3.67	0.31	-1.55
	2	37	-1.15	0.39	-0.83
		38	1.15	-0.39	1.22
	3	37	-3.42	1.17	-2.47
		38	3.42	-1.17	3.64
	4	37	-0.78	0.05	-0.29
		38	0.78	-0.05	0.34
	5	37	2.86	-0.98	2.06
		38	-2.86	0.98	-3.04
	6	37	-3.51	2.36	-3.91
		38	3.51	-2.14	6.16
	7	37	9.60	-1.84	5.20
		38	-9.60	2.06	-7.15
	8	37	-0.52	1.07	-1.43
		38	0.53	-0.91	2.42
38	1	38	5.05	0.01	1.55
		39	-5.05	0.16	-1.63
	2	38	-2.23	0.44	-1.22
		39	2.23	-0.44	1.66
	3	38	-6.63	1.30	-3.64
		39	6.63	-1.30	4.94
	4	38	-1.08	0.02	-0.34
		39	1.08	-0.02	0.35
	5	38	5.54	-1.09	3.04
		39	-5.54	1.09	-4.12
	6	38	-8.94	2.80	-6.16
		39	8.94	-2.58	8.85
	7	38	15.92	-1.82	7.15
		39	-15.92	2.04	-9.08
	8	38	-2.66	1.33	-2.42
		39	2.66	-1.16	3.67
39	1	39	6.40	0.30	1.63
		40	-6.39	-0.13	-1.41
	2	39	-3.61	0.43	-1.66
		40	3.61	-0.43	2.09
	3	39	-10.74	1.26	-4.94
		40	10.74	-1.26	6.20
	4	39	-1.37	-0.05	-0.35
		40	1.37	0.05	0.30
	5	39	8.97	-1.06	4.12
		40	-8.97	1.06	-5.18
	6	39	-16.32	3.02	-8.85
		40	16.33	-2.80	11.76
	7	39	23.48	-1.39	9.08
		40	-23.47	1.61	-10.59

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT	
	8	39	-5.72	1.52	-3.67	
		40	5.72	-1.35	5.10	
40	1	40	7.64	0.76	1.41	
		41	-7.64	-0.59	-0.73	
	2	40	-5.37	0.32	-2.09	
		41	5.37	-0.32	2.41	
	3	40	-15.95	0.95	-6.20	
		41	15.95	-0.95	7.16	
	4	40	-1.65	-0.15	-0.30	
		41	1.65	0.15	0.16	
	5	40	13.33	-0.80	5.18	
		41	-13.33	0.80	-5.98	
	6	40	-26.14	2.83	0.00	0.00
0.00						
-11.76						
		41	26.15	-2.60	14.47	
	7	40	32.46	-0.36	10.59	
		41	-32.45	0.59	0.00	0.00
0.00						
-11.06						
	8	40	-9.96	1.57	-5.10	
		41	9.96	-1.39	6.58	
41	1	41	0.00	1.51	0.73	
		42	0.00	-1.43	0.00	
	2	41	0.59	0.00	-2.41	
		42	-0.59	0.00	2.41	
	3	41	2.61	0.00	-7.16	
		42	-2.61	0.00	7.16	
	4	41	0.00	-0.31	-0.16	
		42	0.00	0.31	0.00	
	5	41	-2.08	0.00	5.98	
		42	2.08	0.00	-5.98	
	6	41	5.17	1.56	0.00	0.00
0.00						
-14.47						
		42	-5.17	-1.45	15.23	
	7	41	-3.52	1.97	11.06	
		42	3.52	-1.85	0.00	0.00
0.00						
-10.10						
	8	41	2.61	1.20	-6.58	
		42	-2.61	-1.11	7.16	
42	1	43	0.00	0.00	0.00	
		42	-1.23	0.00	0.00	
	2	43	0.00	0.00	0.00	
		42	0.00	0.59	-2.41	
	3	43	0.00	0.00	0.00	
		42	0.00	2.61	-7.16	

4	43	0.00	0.00	0.00
	42	0.00	0.00	0.00
5	43	0.00	0.00	0.00
	42	0.00	-2.08	5.98
6	43	0.00	0.00	0.00
	42	-1.60	5.17	-15.23
7	43	0.00	0.00	0.00
	42	-1.60	-3.52	10.10

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT GEOMETRIC PROPERTIES FOR CONCRETE DESIGN

1	DEPTH	1	IZ	.0104
2	DEPTH	1.1667	IZ	.0165
3	DEPTH	1.1667	IZ	.0165
4	DEPTH	1.1447	IZ	.0156
5	DEPTH	1.1228	IZ	.0147
6	DEPTH	1.1009	IZ	.0139
7	DEPTH	1.0789	IZ	.0131
8	DEPTH	1.0570	IZ	.0123
9	DEPTH	1.0350	IZ	.0116
10	DEPTH	1.0131	IZ	.0108
11	DEPTH	.9912	IZ	.0101
12	DEPTH	.9692	IZ	.0095
13	DEPTH	.9473	IZ	.0089
14	DEPTH	.9254	IZ	.0083
15	DEPTH	.9034	IZ	.0077
16	DEPTH	.8815	IZ	.0071
17	DEPTH	.8596	IZ	.0066
18	DEPTH	.8376	IZ	.0061
19	DEPTH	.8157	IZ	.0057
20	DEPTH	.7938	IZ	.0052
21	DEPTH	.7718	IZ	.0048
22	DEPTH	.7499	IZ	.0044
23	DEPTH	.7940	IZ	.0052
24	DEPTH	.8159	IZ	.0057
25	DEPTH	.8379	IZ	.0061
26	DEPTH	.8598	IZ	.0066
27	DEPTH	.8817	IZ	.0071
28	DEPTH	.9037	IZ	.0077
29	DEPTH	.9256	IZ	.0083
30	DEPTH	.9475	IZ	.0089
31	DEPTH	.9695	IZ	.0095
32	DEPTH	.9914	IZ	.0102
33	DEPTH	1.0133	IZ	.0108
34	DEPTH	1.0353	IZ	.0116
35	DEPTH	1.0572	IZ	.0123
36	DEPTH	1.0792	IZ	.0131
37	DEPTH	1.1011	IZ	.0139
38	DEPTH	1.1230	IZ	.0148
39	DEPTH	1.1450	IZ	.0156
40	DEPTH	1.1669	IZ	.0166
41	DEPTH	1.1667	IZ	.0165
42	DEPTH	1	IZ	.0104

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
1	1	-0.13822	-0.07594	0.00140
	2	0.22617	0.02798	-0.00265
	3	0.59952	0.08313	-0.00665
	4	0.02980	0.03850	-0.00030
	5	-0.50221	-0.10944	0.00558
	6	1.16626	0.12819	-0.01325
	7	-1.02842	-0.28368	0.01125
	8	0.49109	0.04569	-0.00555
2	1	0.00000	-0.07581	0.00140
	2	0.00001	0.02798	-0.00124
	3	0.00003	0.08313	-0.00370
	4	0.00000	0.03850	-0.00030
	5	-0.00002	-0.10944	0.00309
	6	0.00006	0.12836	-0.00643
	7	-0.00004	-0.28351	0.00704
	8	0.00003	0.04582	-0.00259
3	1	0.00000	-0.06740	0.00138
	2	0.00000	0.02100	-0.00108
	3	0.00000	0.06240	-0.00322
	4	0.00000	0.03669	-0.00030
	5	0.00000	-0.09213	0.00269
	6	0.00000	0.09283	-0.00543
	7	0.00000	-0.24332	0.00633
	8	0.00000	0.03168	-0.00213
4	1	0.00000	-0.05158	0.00124
	2	0.00000	0.00988	-0.00078
	3	0.00000	0.02935	-0.00232
	4	0.00000	0.03328	-0.00027
	5	0.00000	-0.06452	0.00194
	6	0.00000	0.03865	-0.00367
	7	0.00000	-0.17610	0.00488
	8	0.00000	0.01105	-0.00135
5	1	0.00000	-0.03797	0.00102
	2	0.00000	0.00218	-0.00052
	3	0.00000	0.00648	-0.00153
	4	0.00000	0.03035	-0.00022
	5	0.00000	-0.04541	0.00128
	6	0.00000	0.00388	-0.00221
	7	0.00000	-0.12611	0.00349
	8	0.00000	-0.00114	-0.00073
6	1	0.00000	-0.02711	0.00079
	2	0.00000	-0.00261	-0.00030
	3	0.00000	-0.00776	-0.00089
	4	0.00000	0.02803	-0.00017
	5	0.00000	-0.03351	0.00074
	6	0.00000	-0.01533	-0.00108
	7	0.00000	-0.09189	0.00227
	8	0.00000	-0.00685	-0.00027

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	*LOAD*	X DISPL	Y DISPL	ROTATION
7	1	0.00000	-0.01907	0.00056
	2	0.00000	-0.00513	-0.00013
	3	0.00000	-0.01524	-0.00040
	4	0.00000	0.02632	-0.00012
	5	0.00000	-0.02727	0.00033
	6	0.00000	-0.02300	-0.00028
	7	0.00000	-0.07087	0.00130
	8	0.00000	-0.00799	0.00004
8	1	0.00000	-0.01357	0.00037
	2	0.00000	-0.00600	-0.00002
	3	0.00000	-0.01783	-0.00006
	4	0.00000	0.02517	-0.00008
	5	0.00000	-0.02511	0.00005
	6	0.00000	-0.02285	0.00024
	7	0.00000	-0.06008	0.00057
	8	0.00000	-0.00623	0.00023
9	1	0.00000	-0.01019	0.00021
	2	0.00000	-0.00578	0.00005
	3	0.00000	-0.01719	0.00014
	4	0.00000	0.02449	-0.00004
	5	0.00000	-0.02564	-0.00012
	6	0.00000	-0.01799	0.00052
	7	0.00000	-0.05659	0.00007
	8	0.00000	-0.00289	0.00031
10	1	0.00000	-0.00843	0.00009
	2	0.00000	-0.00495	0.00008
	3	0.00000	-0.01471	0.00025
	4	0.00000	0.02416	-0.00002
	5	0.00000	-0.02771	-0.00021
	6	0.00000	-0.01086	0.00063
	7	0.00000	-0.05779	-0.00023
	8	0.00000	0.00101	0.00033
11	1	0.00000	-0.00780	0.00002
	2	0.00000	-0.00386	0.00009
	3	0.00000	-0.01145	0.00028
	4	0.00000	0.02407	0.00000
	5	0.00000	-0.03043	-0.00023
	6	0.00000	-0.00321	0.00062
	7	0.00000	-0.06157	-0.00037
	8	0.00000	0.00482	0.00030
12	1	0.00000	-0.00787	-0.00002
	2	0.00000	-0.00274	0.00009
	3	0.00000	-0.00814	0.00026
	4	0.00000	0.02415	0.00001
	5	0.00000	-0.03320	-0.00022
	6	0.00000	0.00385	0.00054
	7	0.00000	-0.06635	-0.00041
	8	0.00000	0.00814	0.00025

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
13	1	0.00000	-0.00831	-0.00004
	2	0.00000	-0.00175	0.00007
	3	0.00000	-0.00521	0.00022
	4	0.00000	0.02430	0.00001
	5	0.00000	-0.03565	-0.00018
	6	0.00000	0.00971	0.00043
	7	0.00000	-0.07105	-0.00037
	8	0.00000	0.01079	0.00019
14	1	0.00000	-0.00886	-0.00005
	2	0.00000	-0.00097	0.00006
	3	0.00000	-0.00288	0.00017
	4	0.00000	0.02449	0.00002
	5	0.00000	-0.03759	-0.00014
	6	0.00000	0.01418	0.00032
	7	0.00000	-0.07506	-0.00030
	8	0.00000	0.01274	0.00014
15	1	0.00000	-0.00937	-0.00004
	2	0.00000	-0.00041	0.00004
	3	0.00000	-0.00120	0.00011
	4	0.00000	0.02466	0.00001
	5	0.00000	-0.03899	-0.00010
	6	0.00000	0.01731	0.00021
	7	0.00000	-0.07808	-0.00021
	8	0.00000	0.01408	0.00009
16	1	0.00000	-0.00975	-0.00003
	2	0.00000	-0.00004	0.00002
	3	0.00000	-0.00013	0.00007
	4	0.00000	0.02480	0.00001
	5	0.00000	-0.03990	-0.00006
	6	0.00000	0.01930	0.00013
	7	0.00000	-0.08010	-0.00013
	8	0.00000	0.01492	0.00005
17	1	0.00000	-0.00997	-0.00001
	2	0.00000	0.00016	0.00001
	3	0.00000	0.00047	0.00003
	4	0.00000	0.02491	0.00001
	5	0.00000	-0.04039	-0.00003
	6	0.00000	0.02042	0.00007
	7	0.00000	-0.08122	-0.00006
	8	0.00000	0.01541	0.00003
18	1	0.00000	-0.01004	0.00000
	2	0.00000	0.00024	0.00000
	3	0.00000	0.00072	0.00001
	4	0.00000	0.02498	0.00000
	5	0.00000	-0.04060	-0.00001
	6	0.00000	0.02095	0.00003
	7	0.00000	-0.08166	-0.00002
	8	0.00000	0.01566	0.00001

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
19	1	0.00000	-0.01000	0.00001
	2	0.00000	0.00025	0.00000
	3	0.00000	0.00075	0.00000
	4	0.00000	0.02503	0.00000
	5	0.00000	-0.04063	0.00000
	6	0.00000	0.02113	0.00001
	7	0.00000	-0.08166	0.00001
	8	0.00000	0.01578	0.00001
20	1	0.00000	-0.00991	0.00001
	2	0.00000	0.00023	0.00000
	3	0.00000	0.00068	-0.00001
	4	0.00000	0.02505	0.00000
	5	0.00000	-0.04057	0.00001
	6	0.00000	0.02114	0.00000
	7	0.00000	-0.08144	0.00002
	8	0.00000	0.01583	0.00000
21	1	0.00000	-0.00981	0.00001
	2	0.00000	0.00020	0.00000
	3	0.00000	0.00060	-0.00001
	4	0.00000	0.02506	0.00000
	5	0.00000	-0.04051	0.00000
	6	0.00000	0.02111	0.00000
	7	0.00000	-0.08121	0.00002
	8	0.00000	0.01585	0.00000
22	1	0.00000	-0.00977	0.00000
	2	0.00000	0.00019	0.00000
	3	0.00000	0.00057	0.00000
	4	0.00000	0.02507	0.00000
	5	0.00000	-0.04048	0.00000
	6	0.00000	0.02110	0.00000
	7	0.00000	-0.08111	0.00000
	8	0.00000	0.01587	0.00000
23	1	0.00000	-0.00980	-0.00001
	2	0.00000	0.00020	0.00000
	3	0.00000	0.00060	0.00001
	4	0.00000	0.02506	0.00000
	5	0.00000	-0.04050	0.00000
	6	0.00000	0.02112	0.00000
	7	0.00000	-0.08120	-0.00002
	8	0.00000	0.01586	0.00000
24	1	0.00000	-0.00990	-0.00001
	2	0.00000	0.00023	0.00000
	3	0.00000	0.00068	0.00001
	4	0.00000	0.02505	0.00000
	5	0.00000	-0.04057	-0.00001
	6	0.00000	0.02115	0.00000
	7	0.00000	-0.08143	-0.00002
	8	0.00000	0.01584	0.00000

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
25	1	0.00000	-0.00999	-0.00001
	2	0.00000	0.00025	0.00000
	3	0.00000	0.00075	0.00000
	4	0.00000	0.02503	0.00000
	5	0.00000	-0.04063	0.00000
	6	0.00000	0.02114	-0.00001
	7	0.00000	-0.08165	-0.00001
	8	0.00000	0.01578	-0.00001
26	1	0.00000	-0.01003	0.00000
	2	0.00000	0.00024	0.00000
	3	0.00000	0.00072	-0.00001
	4	0.00000	0.02498	0.00000
	5	0.00000	-0.04060	0.00001
	6	0.00000	0.02096	-0.00003
	7	0.00000	-0.08165	0.00002
	8	0.00000	0.01566	-0.00001
27	1	0.00000	-0.00996	0.00001
	2	0.00000	0.00016	-0.00001
	3	0.00000	0.00047	-0.00003
	4	0.00000	0.02491	-0.00001
	5	0.00000	-0.04039	0.00003
	6	0.00000	0.02042	-0.00007
	7	0.00000	-0.08121	0.00006
	8	0.00000	0.01541	-0.00003
28	1	0.00000	-0.00975	0.00002
	2	0.00000	-0.00004	-0.00002
	3	0.00000	-0.00013	-0.00007
	4	0.00000	0.02480	-0.00001
	5	0.00000	-0.03989	0.00006
	6	0.00000	0.01930	-0.00013
	7	0.00000	-0.08009	0.00013
	8	0.00000	0.01492	-0.00005
29	1	0.00000	-0.00937	0.00004
	2	0.00000	-0.00041	-0.00004
	3	0.00000	-0.00121	-0.00011
	4	0.00000	0.02466	-0.00001
	5	0.00000	-0.03899	0.00010
	6	0.00000	0.01730	-0.00021
	7	0.00000	-0.07808	0.00021
	8	0.00000	0.01408	-0.00009
30	1	0.00000	-0.00886	0.00005
	2	0.00000	-0.00097	-0.00006
	3	0.00000	-0.00288	-0.00017
	4	0.00000	0.02448	-0.00002
	5	0.00000	-0.03759	0.00014
	6	0.00000	0.01417	-0.00032
	7	0.00000	-0.07505	0.00030
	8	0.00000	0.01274	-0.00014

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
31	1	0.00000	-0.00831	0.00004
	2	0.00000	-0.00175	-0.00007
	3	0.00000	-0.00521	-0.00022
	4	0.00000	0.02430	-0.00001
	5	0.00000	-0.03565	0.00018
	6	0.00000	0.00970	-0.00043
	7	0.00000	-0.07105	0.00037
	8	0.00000	0.01078	-0.00019
32	1	0.00000	-0.00788	0.00002
	2	0.00000	-0.00274	-0.00009
	3	0.00000	-0.00814	-0.00026
	4	0.00000	0.02415	-0.00001
	5	0.00000	-0.03320	0.00022
	6	0.00000	0.00383	-0.00054
	7	0.00000	-0.06634	0.00041
	8	0.00000	0.00813	-0.00025
33	1	0.00000	-0.00780	-0.00002
	2	0.00000	-0.00386	-0.00009
	3	0.00000	-0.01146	-0.00028
	4	0.00000	0.02407	0.00000
	5	0.00000	-0.03043	0.00023
	6	0.00000	-0.00323	-0.00062
	7	0.00000	-0.06157	0.00037
	8	0.00000	0.00481	-0.00030
34	1	0.00000	-0.00843	-0.00009
	2	0.00000	-0.00495	-0.00008
	3	0.00000	-0.01472	-0.00025
	4	0.00000	0.02416	0.00002
	5	0.00000	-0.02771	0.00021
	6	0.00000	-0.01087	-0.00063
	7	0.00000	-0.05779	0.00023
	8	0.00000	0.00100	-0.00033
35	1	0.00000	-0.01020	-0.00021
	2	0.00000	-0.00578	-0.00005
	3	0.00000	-0.01719	-0.00014
	4	0.00000	0.02449	0.00004
	5	0.00000	-0.02564	0.00012
	6	0.00000	-0.01799	-0.00052
	7	0.00000	-0.05659	-0.00007
	8	0.00000	-0.00290	-0.00031
36	1	0.00000	-0.01358	-0.00037
	2	0.00000	-0.00600	0.00002
	3	0.00000	-0.01782	0.00007
	4	0.00000	0.02517	0.00008
	5	0.00000	-0.02512	-0.00005
	6	0.00000	-0.02283	-0.00024
	7	0.00000	-0.06010	-0.00057
	8	0.00000	-0.00622	-0.00022

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
37	1	0.00000	-0.01908	-0.00056
	2	0.00000	-0.00512	0.00014
	3	0.00000	-0.01522	0.00040
	4	0.00000	0.02632	0.00012
	5	0.00000	-0.02728	-0.00034
	6	0.00000	-0.02297	0.00028
	7	0.00000	-0.07091	-0.00130
	8	0.00000	-0.00798	-0.00004
38	1	0.00000	-0.02713	-0.00079
	2	0.00000	-0.00260	0.00030
	3	0.00000	-0.00773	0.00089
	4	0.00000	0.02803	0.00017
	5	0.00000	-0.03354	-0.00074
	6	0.00000	-0.01527	0.00108
	7	0.00000	-0.09195	-0.00228
	8	0.00000	-0.00683	0.00027
39	1	0.00000	-0.03798	-0.00102
	2	0.00000	0.00219	0.00051
	3	0.00000	0.00651	0.00153
	4	0.00000	0.03035	0.00022
	5	0.00000	-0.04544	-0.00128
	6	0.00000	0.00393	0.00221
	7	0.00000	-0.12617	-0.00349
	8	0.00000	-0.00112	0.00072
40	1	0.00000	-0.05158	-0.00124
	2	0.00000	0.00988	0.00078
	3	0.00000	0.02935	0.00232
	4	0.00000	0.03328	0.00027
	5	0.00000	-0.06452	-0.00194
	6	0.00000	0.03865	0.00367
	7	0.00000	-0.17609	-0.00488
	8	0.00000	0.01105	0.00135
41	1	0.00000	-0.06738	-0.00138
	2	0.00000	0.02098	0.00108
	3	0.00000	0.06234	0.00321
	4	0.00000	0.03668	0.00030
	5	0.00000	-0.09207	-0.00268
	6	0.00000	0.09271	0.00542
	7	0.00000	-0.24321	-0.00632
	8	0.00000	0.03163	0.00213
42	1	0.00000	-0.07578	-0.00140
	2	-0.00001	0.02794	0.00124
	3	-0.00003	0.08302	0.00369
	4	0.00000	0.03849	0.00030
	5	0.00002	-0.10935	-0.00308
	6	-0.00005	0.12816	0.00642
	7	0.00003	-0.28332	-0.00703
	8	-0.00003	0.04573	0.00259

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
43	1	0.13804	-0.07591	-0.00140
	2	-0.22591	0.02794	0.00264
	3	-0.59874	0.08302	0.00665
	4	-0.02976	0.03849	0.00030
	5	0.50156	-0.10935	-0.00557
	6	-1.16479	0.12799	0.01324
	7	1.02710	-0.28349	-0.01123
	8	-0.49046	0.04560	0.00555

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
3	1	7.64	0.84	0.00
	2	-5.97	-0.26	0.00
	3	-18.60	-0.78	0.00
	4	-1.65	-0.46	0.00
	5	15.44	1.15	0.00
	6	-31.40	-1.16	0.00
	7	36.02	3.04	0.00
	8	-12.60	-0.40	0.00
4	1	-1.25	0.64	0.00
	2	1.76	-0.12	0.00
	3	5.22	-0.37	0.00
	4	0.27	-0.42	0.00
	5	-4.36	0.81	0.00
	6	9.85	-0.48	0.00
	7	-8.99	2.20	0.00
	8	4.25	-0.14	0.00
5	1	-1.34	0.47	0.00
	2	1.39	-0.03	0.00
	3	4.12	-0.08	0.00
	4	0.29	-0.38	0.00
	5	-3.44	0.57	0.00
	6	7.41	-0.05	0.00
	7	-7.57	1.58	0.00
	8	3.07	0.01	0.00
6	1	-1.38	0.34	0.00
	2	1.08	0.03	0.00
	3	3.22	0.10	0.00
	4	0.30	-0.35	0.00
	5	-2.69	0.42	0.00
	6	5.45	0.19	0.00
	7	-6.34	1.15	0.00
	8	2.14	0.09	0.00
7	1	-1.23	0.24	0.00
	2	0.76	0.06	0.00
	3	2.27	0.19	0.00
	4	0.27	-0.33	0.00
	5	-1.90	0.34	0.00
	6	3.57	0.29	0.00
	7	-4.81	0.89	0.00
	8	1.30	0.10	0.00
8	1	-0.96	0.17	0.00
	2	0.48	0.07	0.00
	3	1.43	0.22	0.00
	4	0.21	-0.31	0.00
	5	-1.19	0.31	0.00
	6	2.06	0.29	0.00
	7	-3.26	0.75	0.00
	8	0.68	0.08	0.00
9	1	-0.72	0.13	0.00
	2	0.26	0.07	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
	3	0.78	0.21	0.00
	4	0.16	-0.31	0.00
	5	-0.66	0.32	0.00
	6	0.93	0.22	0.00
	7	-2.05	0.71	0.00
	8	0.22	0.04	0.00
10	1	-0.49	0.11	0.00
	2	0.10	0.06	0.00
	3	0.30	0.18	0.00
	4	0.11	-0.30	0.00
	5	-0.25	0.35	0.00
	6	0.13	0.14	0.00
	7	-1.06	0.72	0.00
	8	-0.09	-0.01	0.00
11	1	-0.29	0.10	0.00
	2	0.00	0.05	0.00
	3	0.01	0.14	0.00
	4	0.06	-0.30	0.00
	5	-0.01	0.38	0.00
	6	-0.28	0.04	0.00
	7	-0.39	0.77	0.00
	8	-0.22	-0.06	0.00
12	1	-0.15	0.10	0.00
	2	-0.06	0.03	0.00
	3	-0.18	0.10	0.00
	4	0.03	-0.30	0.00
	5	0.15	0.42	0.00
	6	-0.54	-0.05	0.00
	7	0.07	0.83	0.00
	8	-0.30	-0.10	0.00
13	1	-0.04	0.10	0.00
	2	-0.09	0.02	0.00
	3	-0.27	0.07	0.00
	4	0.01	-0.30	0.00
	5	0.23	0.45	0.00
	6	-0.62	-0.12	0.00
	7	0.33	0.89	0.00
	8	-0.30	-0.13	0.00
14	1	0.02	0.11	0.00
	2	-0.09	0.01	0.00
	3	-0.26	0.04	0.00
	4	0.00	-0.31	0.00
	5	0.22	0.47	0.00
	6	-0.54	-0.18	0.00
	7	0.40	0.94	0.00
	8	-0.25	-0.16	0.00
15	1	0.05	0.12	0.00
	2	-0.08	0.01	0.00
	3	-0.24	0.02	0.00
	4	-0.01	-0.31	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
	5	0.20	0.49	0.00
	6	-0.45	-0.22	0.00
	7	0.41	0.98	0.00
	8	-0.20	-0.18	0.00
16	1	0.06	0.12	0.00
	2	-0.06	0.00	0.00
	3	-0.19	0.00	0.00
	4	-0.01	-0.31	0.00
	5	0.16	0.50	0.00
	6	-0.34	-0.24	0.00
	7	0.34	1.00	0.00
	8	-0.14	-0.19	0.00
17	1	0.05	0.12	0.00
	2	-0.04	0.00	0.00
	3	-0.13	-0.01	0.00
	4	-0.01	-0.31	0.00
	5	0.11	0.50	0.00
	6	-0.22	-0.26	0.00
	7	0.25	1.02	0.00
	8	-0.09	-0.19	0.00
18	1	0.04	0.13	0.00
	2	-0.03	0.00	0.00
	3	-0.08	-0.01	0.00
	4	-0.01	-0.31	0.00
	5	0.06	0.51	0.00
	6	-0.13	-0.26	0.00
	7	0.16	1.02	0.00
	8	-0.05	-0.20	0.00
19	1	0.02	0.13	0.00
	2	-0.01	0.00	0.00
	3	-0.03	-0.01	0.00
	4	-0.01	-0.31	0.00
	5	0.03	0.51	0.00
	6	-0.06	-0.26	0.00
	7	0.07	1.02	0.00
	8	-0.02	-0.20	0.00
20	1	0.00	0.12	0.00
	2	0.00	0.00	0.00
	3	0.00	-0.01	0.00
	4	0.00	-0.31	0.00
	5	0.00	0.51	0.00
	6	-0.01	-0.26	0.00
	7	0.00	1.02	0.00
	8	-0.01	-0.20	0.00
21	1	-0.02	0.12	0.00
	2	0.00	0.00	0.00
	3	0.01	-0.01	0.00
	4	0.00	-0.31	0.00
	5	-0.01	0.51	0.00
	6	0.01	-0.26	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
	7	-0.04	1.02	0.00
	8	0.00	-0.20	0.00
22	1	0.00	0.12	0.00
	2	0.00	0.00	0.00
	3	0.00	-0.01	0.00
	4	0.00	-0.31	0.00
	5	0.00	0.51	0.00
	6	0.00	-0.26	0.00
	7	0.00	1.01	0.00
	8	0.00	-0.20	0.00
23	1	0.02	0.12	0.00
	2	-0.01	0.00	0.00
	3	-0.02	-0.01	0.00
	4	0.00	-0.31	0.00
	5	0.01	0.51	0.00
	6	0.00	-0.26	0.00
	7	0.05	1.01	0.00
	8	0.01	-0.20	0.00
24	1	0.00	0.12	0.00
	2	0.00	0.00	0.00
	3	0.00	-0.01	0.00
	4	0.00	-0.31	0.00
	5	0.00	0.51	0.00
	6	0.02	-0.26	0.00
	7	0.00	1.02	0.00
	8	0.01	-0.20	0.00
25	1	-0.02	0.12	0.00
	2	0.01	0.00	0.00
	3	0.03	-0.01	0.00
	4	0.01	-0.31	0.00
	5	-0.03	0.51	0.00
	6	0.06	-0.26	0.00
	7	-0.07	1.02	0.00
	8	0.02	-0.20	0.00
26	1	-0.04	0.13	0.00
	2	0.03	0.00	0.00
	3	0.08	-0.01	0.00
	4	0.01	-0.31	0.00
	5	-0.06	0.51	0.00
	6	0.13	-0.26	0.00
	7	-0.16	1.02	0.00
	8	0.05	-0.20	0.00
27	1	-0.05	0.12	0.00
	2	0.04	0.00	0.00
	3	0.13	-0.01	0.00
	4	0.01	-0.31	0.00
	5	-0.11	0.50	0.00
	6	0.22	-0.26	0.00
	7	-0.25	1.02	0.00
	8	0.09	-0.19	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
28	1	-0.06	0.12	0.00
	2	0.06	0.00	0.00
	3	0.19	0.00	0.00
	4	0.01	-0.31	0.00
	5	-0.16	0.50	0.00
	6	0.34	-0.24	0.00
	7	-0.35	1.00	0.00
	8	0.14	-0.19	0.00
29	1	-0.05	0.12	0.00
	2	0.08	0.01	0.00
	3	0.24	0.02	0.00
	4	0.01	-0.31	0.00
	5	-0.20	0.49	0.00
	6	0.45	-0.22	0.00
	7	-0.41	0.98	0.00
	8	0.20	-0.18	0.00
30	1	-0.02	0.11	0.00
	2	0.09	0.01	0.00
	3	0.26	0.04	0.00
	4	0.00	-0.31	0.00
	5	-0.22	0.47	0.00
	6	0.54	-0.18	0.00
	7	-0.40	0.94	0.00
	8	0.25	-0.16	0.00
31	1	0.04	0.10	0.00
	2	0.09	0.02	0.00
	3	0.27	0.07	0.00
	4	-0.01	-0.30	0.00
	5	-0.23	0.45	0.00
	6	0.62	-0.12	0.00
	7	-0.33	0.89	0.00
	8	0.30	-0.13	0.00
32	1	0.15	0.10	0.00
	2	0.06	0.03	0.00
	3	0.18	0.10	0.00
	4	-0.03	-0.30	0.00
	5	-0.15	0.41	0.00
	6	0.54	-0.05	0.00
	7	-0.07	0.83	0.00
	8	0.30	-0.10	0.00
33	1	0.29	0.10	0.00
	2	0.00	0.05	0.00
	3	-0.01	0.14	0.00
	4	-0.06	-0.30	0.00
	5	0.01	0.38	0.00
	6	0.28	0.04	0.00
	7	0.39	0.77	0.00
	8	0.22	-0.06	0.00
34	1	0.49	0.11	0.00
	2	-0.10	0.06	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
	3	-0.30	0.18	0.00
	4	-0.11	-0.30	0.00
	5	0.25	0.35	0.00
	6	-0.13	0.14	0.00
	7	1.06	0.72	0.00
	8	0.09	-0.01	0.00
35	1	0.73	0.13	0.00
	2	-0.26	0.07	0.00
	3	-0.79	0.21	0.00
	4	-0.16	-0.31	0.00
	5	0.66	0.32	0.00
	6	-0.94	0.22	0.00
	7	2.05	0.71	0.00
	8	-0.22	0.04	0.00
36	1	0.96	0.17	0.00
	2	-0.48	0.07	0.00
	3	-1.43	0.22	0.00
	4	-0.21	-0.31	0.00
	5	1.19	0.31	0.00
	6	-2.07	0.29	0.00
	7	3.26	0.75	0.00
	8	-0.68	0.08	0.00
37	1	1.24	0.24	0.00
	2	-0.76	0.06	0.00
	3	-2.27	0.19	0.00
	4	-0.27	-0.33	0.00
	5	1.90	0.34	0.00
	6	-3.58	0.29	0.00
	7	4.81	0.89	0.00
	8	-1.31	0.10	0.00
38	1	1.38	0.34	0.00
	2	-1.08	0.03	0.00
	3	-3.21	0.10	0.00
	4	-0.30	-0.35	0.00
	5	2.68	0.42	0.00
	6	-5.43	0.19	0.00
	7	6.32	1.15	0.00
	8	-2.13	0.09	0.00
39	1	1.34	0.47	0.00
	2	-1.38	-0.03	0.00
	3	-4.11	-0.08	0.00
	4	-0.29	-0.38	0.00
	5	3.44	0.57	0.00
	6	-7.39	-0.05	0.00
	7	7.55	1.58	0.00
	8	-3.07	0.01	0.00
40	1	1.24	0.64	0.00
	2	-1.75	-0.12	0.00
	3	-5.21	-0.37	0.00
	4	-0.27	-0.42	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
	5	4.35	0.81	0.00
	6	-9.82	-0.48	0.00
	7	8.97	2.20	0.00
	8	-4.24	-0.14	0.00
41	1	-7.63	0.84	0.00
	2	5.96	-0.26	0.00
	3	18.57	-0.78	0.00
	4	1.65	-0.46	0.00
	5	-15.41	1.15	0.00
	6	31.35	-1.16	0.00
	7	-35.97	3.04	0.00
	8	12.58	-0.40	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
1	1	1	0.00	0.00	0.00
		2	-1.23	0.00	0.00
	2	1	0.00	0.00	0.00
		2	0.00	-0.59	2.41
	3	1	0.00	0.00	0.00
		2	0.00	-2.61	7.16
	4	1	0.00	0.00	0.00
		2	0.00	0.00	0.00
	5	1	0.00	0.00	0.00
		2	0.00	2.08	-5.98
	6	1	0.00	0.00	0.00
		2	-1.60	-5.17	15.23
	7	1	0.00	0.00	0.00
		2	-1.60	3.52	-10.10
	8	1	0.00	0.00	0.00
		2	-1.23	-2.61	7.16
2	1	2	0.00	-1.43	0.00
		3	0.00	1.51	-0.73
	2	2	0.59	0.00	-2.41
		3	-0.59	0.00	2.41
	3	2	2.61	0.00	-7.16
		3	-2.61	0.00	7.16
	4	2	0.00	0.31	0.00
		3	0.00	-0.31	0.16
	5	2	-2.08	0.00	5.98
		3	2.08	0.00	-5.98
	6	2	5.17	-1.45	-15.23
		3	-5.17	1.56	14.47
	7	2	-3.52	-1.85	10.10
		3	3.52	1.97	-11.06
	8	2	2.61	-1.11	-7.16
		3	-2.61	1.20	6.58
3	1	3	7.65	-0.59	0.73
		4	-7.65	0.76	-1.41
	2	3	-5.38	-0.32	-2.41
		4	5.38	0.32	2.09
	3	3	-15.98	-0.96	-7.16
		4	15.98	0.96	6.20
	4	3	-1.65	0.15	-0.16
		4	1.65	-0.15	0.30
	5	3	13.35	0.80	5.98
		4	-13.35	-0.80	-5.18
	6	3	-26.20	-2.60	-14.47
		4	26.19	2.83	11.76
	7	3	32.50	0.59	11.06
		4	-32.50	-0.36	-10.58

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	3	-9.98	-1.39	-6.58
		4	9.98	1.57	5.10
4	1	4	6.40	-0.13	1.41
		5	-6.40	0.30	-1.62
	2	4	-3.62	-0.43	-2.09
		5	3.62	0.43	1.66
	3	4	-10.75	-1.26	-6.20
		5	10.75	1.26	4.94
	4	4	-1.38	0.05	-0.30
		5	1.38	-0.05	0.35
	5	4	8.98	1.06	5.18
		5	-8.98	-1.06	-4.12
	6	4	-16.35	-2.80	-11.76
		5	16.34	3.02	8.85
	7	4	23.50	1.61	10.58
		5	-23.50	-1.39	-9.08
	8	4	-5.73	-1.35	-5.10
		5	5.73	1.52	3.66
5	1	5	5.05	0.16	1.62
		6	-5.05	0.01	-1.55
	2	5	-2.23	-0.44	-1.66
		6	2.23	0.44	1.22
	3	5	-6.63	-1.30	-4.94
		6	6.63	1.30	3.64
	4	5	-1.08	-0.02	-0.35
		6	1.08	0.02	0.34
	5	5	5.54	1.09	4.12
		6	-5.54	-1.09	-3.04
	6	5	-8.94	-2.58	-8.85
		6	8.94	2.80	6.16
	7	5	15.92	2.04	9.08
		6	-15.93	-1.82	-7.15
	8	5	-2.66	-1.16	-3.66
		6	2.66	1.33	2.42
6	1	6	3.67	0.31	1.55
		7	-3.67	-0.15	-1.32
	2	6	-1.15	-0.39	-1.22
		7	1.15	0.39	0.83
	3	6	-3.41	-1.17	-3.64
		7	3.41	1.17	2.47
	4	6	-0.78	-0.05	-0.34
		7	0.78	0.05	0.29
	5	6	2.85	0.98	3.04
		7	-2.85	-0.98	-2.06
	6	6	-3.50	-2.14	-6.16
		7	3.50	2.36	3.90
	7	6	9.59	2.06	7.15
		7	-9.59	-1.84	-5.20

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	*LOAD*	*JT*	AXIAL	SHEAR	MOMENT
	8	6	-0.52	-0.91	-2.42
		7	0.52	1.07	1.43
7	1	7	2.43	0.37	1.32
		8	-2.44	-0.21	-1.03
	2	7	-0.39	-0.32	-0.83
		8	0.39	0.32	0.51
	3	7	-1.14	-0.95	-2.47
		8	1.14	0.95	1.51
	4	7	-0.51	-0.06	-0.29
		8	0.51	0.06	0.22
	5	7	0.96	0.80	2.06
		8	-0.96	-0.80	-1.26
	6	7	0.07	-1.63	-3.90
		8	-0.07	1.84	2.17
	7	7	4.78	1.83	5.20
		8	-4.78	-1.62	-3.47
	8	7	0.78	-0.64	-1.43
		8	-0.78	0.81	0.71
8	1	8	1.48	0.37	1.03
		9	-1.48	-0.21	-0.74
	2	8	0.09	-0.24	-0.51
		9	-0.09	0.24	0.27
	3	8	0.28	-0.71	-1.51
		9	-0.28	0.71	0.80
	4	8	-0.30	-0.06	-0.22
		9	0.30	0.06	0.16
	5	8	-0.23	0.60	1.26
		9	0.23	-0.60	-0.67
	6	8	2.13	-1.12	-2.17
		9	-2.13	1.33	0.95
	7	8	1.53	1.49	3.47
		9	-1.53	-1.28	-2.09
	8	8	1.46	-0.41	-0.71
		9	-1.46	0.57	0.22
9	1	9	0.75	0.33	0.74
		10	-0.76	-0.18	-0.48
	2	9	0.36	-0.17	-0.27
		10	-0.36	0.17	0.10
	3	9	1.06	-0.49	-0.80
		10	-1.06	0.49	0.31
	4	9	-0.14	-0.06	-0.16
		10	0.14	0.06	0.10
	5	9	-0.89	0.41	0.67
		10	0.89	-0.41	-0.26
	6	9	3.06	-0.69	-0.95
		10	-3.06	0.89	0.16
	7	9	-0.52	1.12	2.09
		10	0.51	-0.92	-1.06

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	9	1.67	-0.22	-0.22
		10	-1.68	0.37	-0.07
10	1	10	0.26	0.28	0.48
		11	-0.26	-0.12	-0.28
	2	10	0.46	-0.10	-0.10
		11	-0.46	0.10	0.00
	3	10	1.36	-0.30	-0.31
		11	-1.36	0.30	0.00
	4	10	-0.03	-0.04	-0.10
		11	0.03	0.04	0.06
	5	10	-1.13	0.25	0.26
		11	1.13	-0.25	0.00
	6	10	3.18	-0.35	-0.16
		11	-3.18	0.54	-0.28
	7	10	-1.57	0.79	1.06
		11	1.57	-0.59	-0.38
	8	10	1.58	-0.07	0.07
		11	-1.59	0.22	-0.22
11	1	11	-0.03	0.22	0.28
		12	0.03	-0.07	-0.14
	2	11	0.46	-0.05	0.00
		12	-0.46	0.05	-0.05
	3	11	1.36	-0.16	0.00
		12	-1.36	0.16	-0.16
	4	11	0.03	-0.03	-0.06
		12	-0.03	0.03	0.03
	5	11	-1.14	0.13	0.00
		12	1.14	-0.13	0.13
	6	11	2.90	-0.10	0.28
		12	-2.90	0.29	-0.48
	7	11	-1.96	0.51	0.38
		12	1.96	-0.32	0.04
	8	11	1.36	0.03	0.22
		12	-1.36	0.12	-0.27
12	1	12	-0.18	0.17	0.14
		13	0.18	-0.02	-0.05
	2	12	0.40	-0.02	0.05
		13	-0.40	0.02	-0.07
	3	12	1.18	-0.06	0.16
		13	-1.18	0.06	-0.22
	4	12	0.06	-0.02	-0.03
		13	-0.06	0.02	0.01
	5	12	-0.98	0.05	-0.13
		13	0.98	-0.05	0.18
	6	12	2.35	0.06	0.48
		13	-2.36	0.13	-0.51
	7	12	-1.89	0.30	-0.04
		13	1.89	-0.11	0.25

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	12	1.06	0.08	0.27
		13	-1.06	0.06	-0.26
13	1	13	-0.22	0.12	0.05
		14	0.21	0.02	0.01
	2	13	0.30	0.00	0.07
		14	-0.30	0.00	-0.07
	3	13	0.91	0.00	0.22
		14	-0.91	0.00	-0.22
	4	13	0.07	-0.01	-0.01
		14	-0.07	0.01	0.00
	5	13	-0.76	0.00	-0.18
		14	0.76	0.00	0.18
	6	13	1.74	0.15	0.51
		14	-1.74	0.04	-0.46
	7	13	-1.56	0.16	-0.25
		14	1.56	0.02	0.31
	8	13	0.76	0.11	0.26
		14	-0.76	0.03	-0.21
14	1	14	-0.20	0.09	-0.01
		15	0.19	0.05	0.03
	2	14	0.22	0.01	0.07
		15	-0.22	-0.01	-0.06
	3	14	0.64	0.03	0.22
		15	-0.64	-0.03	-0.18
	4	14	0.07	-0.01	0.00
		15	-0.07	0.01	-0.01
	5	14	-0.54	-0.03	-0.18
		15	0.54	0.03	0.15
	6	14	1.20	0.19	0.46
		15	-1.20	-0.01	-0.36
	7	14	-1.16	0.07	-0.31
		15	1.16	0.11	0.30
	8	14	0.51	0.12	0.21
		15	-0.51	0.02	-0.16
15	1	15	-0.14	0.07	-0.03
		16	0.14	0.06	0.03
	2	15	0.14	0.02	0.06
		16	-0.14	-0.02	-0.05
	3	15	0.40	0.05	0.18
		16	-0.40	-0.05	-0.14
	4	15	0.05	0.00	0.01
		16	-0.05	0.00	-0.01
	5	15	-0.34	-0.04	-0.15
		16	0.34	0.04	0.11
	6	15	0.74	0.19	0.36
		16	-0.75	-0.02	-0.26
	7	15	-0.75	0.03	-0.30
		16	0.75	0.15	0.24

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	15	0.32	0.12	0.16
		16	-0.32	0.02	-0.11
16	1	16	-0.08	0.06	-0.03
		17	0.08	0.07	0.03
	2	16	0.07	0.02	0.05
		17	-0.07	-0.02	-0.03
	3	16	0.22	0.05	0.14
		17	-0.22	-0.05	-0.09
	4	16	0.04	0.00	0.01
		17	-0.04	0.00	-0.01
	5	16	-0.18	-0.04	-0.11
		17	0.18	0.04	0.07
	6	16	0.41	0.18	0.26
		17	-0.41	0.00	-0.16
	7	16	-0.41	0.01	-0.24
		17	0.41	0.16	0.16
	8	16	0.18	0.11	0.11
		17	-0.18	0.03	-0.07
17	1	17	-0.03	0.05	-0.03
		18	0.02	0.08	0.02
	2	17	0.03	0.01	0.03
		18	-0.03	-0.01	-0.02
	3	17	0.09	0.04	0.09
		18	-0.09	-0.04	-0.05
	4	17	0.03	0.00	0.01
		18	-0.03	0.00	-0.01
	5	17	-0.07	-0.03	-0.07
		18	0.07	0.03	0.04
	6	17	0.19	0.15	0.16
		18	-0.19	0.01	-0.09
	7	17	-0.16	0.01	-0.16
		18	0.15	0.15	0.09
	8	17	0.09	0.09	0.07
		18	-0.09	0.04	-0.04
18	1	18	0.01	0.05	-0.02
		19	-0.01	0.08	0.00
	2	18	0.00	0.01	0.02
		19	0.00	-0.01	-0.01
	3	18	0.01	0.03	0.05
		19	-0.01	-0.03	-0.02
	4	18	0.02	0.00	0.01
		19	-0.02	0.00	0.00
	5	18	-0.01	-0.02	-0.04
		19	0.01	0.02	0.02
	6	18	0.06	0.13	0.09
		19	-0.06	0.03	-0.05
	7	18	0.00	0.02	-0.09
		19	0.00	0.14	0.03

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	18	0.04	0.08	0.04
		19	-0.04	0.05	-0.02
19	1	19	0.03	0.05	0.00
		20	-0.03	0.07	-0.01
	2	19	-0.01	0.01	0.01
		20	0.01	-0.01	0.00
	3	19	-0.02	0.02	0.02
		20	0.02	-0.02	0.00
	4	19	0.01	0.00	0.00
		20	-0.01	0.00	0.00
	5	19	0.02	-0.02	-0.02
		20	-0.02	0.02	0.00
	6	19	0.00	0.11	0.05
		20	-0.01	0.05	-0.02
	7	19	0.07	0.04	-0.03
		20	-0.07	0.12	-0.01
	8	19	0.02	0.07	0.02
		20	-0.02	0.05	-0.01
20	1	20	0.03	0.05	0.01
		21	-0.03	0.07	-0.02
	2	20	-0.01	0.00	0.00
		21	0.01	0.00	0.00
	3	20	-0.03	0.01	0.00
		21	0.03	-0.01	0.01
	4	20	0.00	0.00	0.00
		21	0.00	0.00	0.00
	5	20	0.02	-0.01	0.00
		21	-0.02	0.01	-0.01
	6	20	-0.01	0.09	0.02
		21	0.01	0.07	-0.01
	7	20	0.08	0.05	0.01
		21	-0.08	0.10	-0.04
	8	20	0.01	0.06	0.01
		21	-0.01	0.06	-0.01
21	1	21	0.01	0.05	0.02
		22	-0.01	0.06	-0.02
	2	21	0.00	0.00	0.00
		22	0.00	0.00	0.00
	3	21	-0.01	0.00	-0.01
		22	0.01	0.00	0.01
	4	21	0.00	0.00	0.00
		22	0.00	0.00	0.00
	5	21	0.01	0.00	0.01
		22	-0.01	0.00	-0.01
	6	21	0.00	0.08	0.01
		22	0.00	0.07	-0.01
	7	21	0.03	0.06	0.04
		22	-0.03	0.09	-0.05

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	21	0.00	0.06	0.01
		22	0.00	0.06	-0.01
22	1	22	0.01	0.06	0.02
		23	-0.01	0.05	-0.02
	2	22	0.00	0.00	0.00
		23	0.00	0.00	0.00
	3	22	-0.01	0.00	-0.01
		23	0.01	0.00	0.01
	4	22	0.00	0.00	0.00
		23	0.00	0.00	0.00
	5	22	0.01	0.00	0.01
		23	-0.01	0.00	-0.01
	6	22	-0.01	0.07	0.01
		23	0.01	0.08	-0.01
	7	22	0.03	0.08	0.05
		23	-0.03	0.06	-0.04
	8	22	0.00	0.06	0.01
		23	0.00	0.06	-0.01
23	1	23	0.03	0.07	0.02
		24	-0.03	0.05	-0.01
	2	23	-0.01	0.00	0.00
		24	0.01	0.00	0.00
	3	23	-0.03	-0.01	-0.01
		24	0.03	0.01	0.00
	4	23	0.00	0.00	0.00
		24	0.00	0.00	0.00
	5	23	0.02	0.01	0.01
		24	-0.02	-0.01	0.00
	6	23	-0.01	0.07	0.01
		24	0.01	0.09	-0.02
	7	23	0.08	0.11	0.04
		24	-0.08	0.05	-0.01
	8	23	0.01	0.06	0.01
		24	-0.01	0.06	-0.02
24	1	24	0.03	0.07	0.01
		25	-0.03	0.05	0.00
	2	24	-0.01	-0.01	0.00
		25	0.01	0.01	-0.01
	3	24	-0.02	-0.02	0.00
		25	0.02	0.02	-0.02
	4	24	0.01	0.00	0.00
		25	-0.01	0.00	0.00
	5	24	0.02	0.02	0.00
		25	-0.02	-0.02	0.02
	6	24	0.01	0.05	0.02
		25	0.00	0.11	-0.05
	7	24	0.07	0.12	0.01
		25	-0.07	0.04	0.03

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	24	0.02	0.05	0.02
		25	-0.02	0.07	-0.02
25	1	25	0.01	0.08	0.00
		26	-0.01	0.05	0.02
	2	25	0.00	-0.01	0.01
		26	0.00	0.01	-0.02
	3	25	0.01	-0.03	0.02
		26	-0.01	0.03	-0.05
	4	25	0.02	0.00	0.00
		26	-0.02	0.00	-0.01
	5	25	-0.01	0.02	-0.02
		26	0.01	-0.02	0.04
	6	25	0.06	0.03	0.05
		26	-0.06	0.13	-0.10
	7	25	0.00	0.14	-0.03
		26	0.00	0.02	0.09
	8	25	0.04	0.05	0.02
		26	-0.04	0.08	-0.04
26	1	26	-0.02	0.08	-0.02
		27	0.03	0.05	0.03
	2	26	0.03	-0.01	0.02
		27	-0.03	0.01	-0.03
	3	26	0.09	-0.04	0.05
		27	-0.09	0.04	-0.09
	4	26	0.03	0.00	0.01
		27	-0.03	0.00	-0.01
	5	26	-0.07	0.03	-0.04
		27	0.07	-0.03	0.07
	6	26	0.19	0.01	0.10
		27	-0.19	0.15	-0.16
	7	26	-0.16	0.15	-0.09
		27	0.16	0.01	0.16
	8	26	0.09	0.04	0.04
		27	-0.09	0.09	-0.07
27	1	27	-0.08	0.07	-0.03
		28	0.08	0.06	0.04
	2	27	0.07	-0.02	0.03
		28	-0.07	0.02	-0.05
	3	27	0.22	-0.05	0.09
		28	-0.22	0.05	-0.14
	4	27	0.04	0.00	0.01
		28	-0.04	0.00	-0.01
	5	27	-0.18	0.04	-0.07
		28	0.18	-0.04	0.11
	6	27	0.41	0.00	0.16
		28	-0.41	0.18	-0.26
	7	27	-0.41	0.16	-0.16
		28	0.41	0.01	0.24

ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT U-CHANNEL

NODE	L/VECTR	X-DISPL. IN.	Y-DISPL. IN.	ROTATION RAD.
37	1	0.00000	-0.02810	-0.00033
	2	0.00000	0.00093	0.00008
	3	0.00000	0.00275	0.00025
	4	0.00000	0.02809	0.00007
	5	0.00000	-0.04230	-0.00021
	6	0.00000	0.00585	0.00020
	7	0.00000	-0.10801	-0.00078
	8	0.00000	0.00275	-0.00001
38	1	0.00000	-0.03220	-0.00036
	2	0.00000	0.00205	0.00010
	3	0.00000	0.00608	0.00031
	4	0.00000	0.02893	0.00007
	5	0.00000	-0.04508	-0.00026
	6	0.00000	0.00869	0.00029
	7	0.00000	-0.11804	-0.00090
	8	0.00000	0.00282	0.00003
39	1	0.00000	-0.03665	-0.00038
	2	0.00000	0.00341	0.00012
	3	0.00000	0.01013	0.00037
	4	0.00000	0.02985	0.00008
	5	0.00000	-0.04846	-0.00031
	6	0.00000	0.01272	0.00039
	7	0.00000	-0.12955	-0.00102
	8	0.00000	0.00333	0.00007
40	1	0.00000	-0.04140	-0.00040
	2	0.00000	0.00503	0.00015
	3	0.00000	0.01494	0.00043
	4	0.00000	0.03083	0.00008
	5	0.00000	-0.05248	-0.00036
	6	0.00000	0.01805	0.00051
	7	0.00000	-0.14251	-0.00114
	8	0.00000	0.00438	0.00012
41	1	0.00000	-0.04634	-0.00041
	2	0.00000	0.00691	0.00017
	3	0.00000	0.02052	0.00050
	4	0.00000	0.03185	0.00009
	5	0.00000	-0.05714	-0.00042
	6	0.00000	0.02483	0.00063
	7	0.00000	-0.15681	-0.00124
	8	0.00000	0.00603	0.00017
42	1	0.00000	-0.04886	-0.00041
	2	-0.00001	0.00795	0.00018
	3	-0.00003	0.02361	0.00053
	4	0.00000	0.03237	0.00009
	5	0.00002	-0.05972	-0.00044
	6	-0.00005	0.02880	0.00070
	7	0.00004	-0.16444	-0.00129

8	-0.00003	0.00712	0.00020

ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT U-CHANNEL

NODE	L/VECTR	X-DISPL.	Y-DISPL.	ROTATION
43	1	0.04087	-0.04899	-0.00041
	2	-0.02633	0.00795	0.00030
	3	-0.07216	0.02361	0.00078
	4	-0.00846	0.03237	0.00009
	5	0.06040	-0.05972	-0.00065
	6	-0.11406	0.02862	0.00127
	7	0.15520	-0.16462	-0.00164
	8	-0.03976	0.00699	0.00045

ANALYSIS NOTES:

1 THE ANALYSIS OF THESE RESULTS SHOWS THAT THE STRUCTURE DOES NOT COMPLY WITH USDA OR AASHTO DESIGN CRITERIA, AS IT HAS BEEN STATED BEFORE IT IS RECOMMENDED THAT THE DESIGN BE MODIFIED.

ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS U-CHANNEL

NODE	L/VECTR	X-FORCE	Y-FORCE
3	1	2.55	0.58
	2	-1.56	-0.09
	3	-5.50	-0.26
	4	-0.53	-0.40
	5	4.50	0.71
	6	-8.70	-0.31
	7	10.92	1.96
	8	-3.48	-0.08
4	1	-0.17	0.52
	2	0.16	-0.06
	3	0.46	-0.19
	4	0.04	-0.39
	5	-0.39	0.66
	6	0.82	-0.23
	7	-0.87	1.78
	8	0.33	-0.05
5	1	-0.16	0.46
	2	0.13	-0.04
	3	0.40	-0.13
	4	0.04	-0.37
	5	-0.33	0.61
	6	0.68	-0.16
	7	-0.77	1.62
	8	0.27	-0.04
6	1	-0.21	0.40
	2	0.13	-0.03
	3	0.39	-0.08
	4	0.05	-0.36
	5	-0.33	0.56
	6	0.62	-0.11
	7	-0.83	1.48
	8	0.23	-0.04
7	1	-0.24	0.35
	2	0.12	-0.01
	3	0.37	-0.03
	4	0.05	-0.35
	5	-0.31	0.53
	6	0.53	-0.07
	7	-0.83	1.35
	8	0.18	-0.03
8	1	-0.21	0.30
	2	0.10	0.00
	3	0.30	0.00
	4	0.05	-0.34
	5	-0.25	0.50
	6	0.43	-0.05
	7	-0.71	1.24

	8	0.14	-0.04
9	1	-0.23	0.26
	2	0.09	0.01

ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS U-CHANNEL

NODE	L/VECTR	X-FORCE	Y-FORCE
	3	0.28	0.02
	4	0.05	-0.33
	5	-0.23	0.48
	6	0.35	-0.04
	7	-0.68	1.15
	8	0.10	-0.05
10	1	-0.23	0.23
	2	0.08	0.01
	3	0.24	0.04
	4	0.05	-0.33
	5	-0.20	0.46
	6	0.27	-0.04
	7	-0.63	1.08
	8	0.06	-0.06
11	1	-0.19	0.20
	2	0.06	0.02
	3	0.19	0.06
	4	0.04	-0.32
	5	-0.16	0.45
	6	0.21	-0.04
	7	-0.51	1.02
	8	0.04	-0.07
12	1	-0.18	0.17
	2	0.05	0.02
	3	0.15	0.06
	4	0.04	-0.32
	5	-0.13	0.45
	6	0.14	-0.05
	7	-0.45	0.98
	8	0.01	-0.08
13	1	-0.16	0.15
	2	0.04	0.02
	3	0.12	0.07
	4	0.03	-0.31
	5	-0.10	0.44
	6	0.08	-0.07
	7	-0.37	0.95
	8	-0.01	-0.09
14	1	-0.13	0.13
	2	0.03	0.02
	3	0.08	0.07
	4	0.03	-0.31
	5	-0.07	0.45
	6	0.04	-0.09
	7	-0.28	0.93
	8	-0.02	-0.11
15	1	-0.11	0.12

2	0.02	0.02
3	0.05	0.06
4	0.02	-0.31

ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS U-CHANNEL

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KIPS

NODE	L/VECTR	X-FORCE	Y-FORCE
	5	-0.04	0.45
	6	-0.01	-0.11
	7	-0.22	0.91
	8	-0.04	-0.12
16	1	-0.09	0.11
	2	0.01	0.02
	3	0.03	0.06
	4	0.02	-0.30
	5	-0.02	0.45
	6	-0.04	-0.13
	7	-0.15	0.91
	8	-0.05	-0.13
17	1	-0.07	0.10
	2	0.00	0.02
	3	0.00	0.05
	4	0.01	-0.30
	5	0.00	0.45
	6	-0.07	-0.15
	7	-0.10	0.90
	8	-0.06	-0.15
18	1	-0.05	0.10
	2	0.00	0.02
	3	-0.01	0.05
	4	0.01	-0.30
	5	0.01	0.46
	6	-0.09	-0.16
	7	-0.05	0.90
	8	-0.06	-0.16
19	1	-0.04	0.09
	2	-0.01	0.01
	3	-0.03	0.04
	4	0.01	-0.30
	5	0.02	0.46
	6	-0.11	-0.18
	7	-0.01	0.91
	8	-0.07	-0.16
20	1	-0.03	0.09
	2	-0.01	0.01
	3	-0.04	0.04
	4	0.00	-0.30
	5	0.03	0.47
	6	-0.13	-0.19
	7	0.02	0.91
	8	-0.07	-0.17
21	1	-0.03	0.09
	2	-0.02	0.01

3	-0.05	0.04
4	0.00	-0.30
5	0.04	0.47
6	-0.13	-0.20

ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS U-CHANNEL

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KIPS

NODE	L/VECTR	X-FORCE	Y-FORCE
	7	0.03	0.91
	8	-0.07	-0.17
22	1	0.00	0.09
	2	0.00	0.01
	3	0.00	0.04
	4	0.00	-0.30
	5	0.00	0.47
	6	-0.01	-0.20
	7	0.00	0.91
	8	0.00	-0.18
23	1	0.03	0.09
	2	0.02	0.01
	3	0.05	0.04
	4	0.00	-0.30
	5	-0.04	0.47
	6	0.14	-0.20
	7	-0.04	0.91
	8	0.08	-0.17
24	1	0.03	0.09
	2	0.01	0.01
	3	0.04	0.04
	4	0.00	-0.30
	5	-0.03	0.47
	6	0.12	-0.19
	7	-0.02	0.91
	8	0.07	-0.17
25	1	0.04	0.09
	2	0.01	0.01
	3	0.03	0.04
	4	-0.01	-0.30
	5	-0.03	0.46
	6	0.11	-0.18
	7	0.01	0.91
	8	0.07	-0.16
26	1	0.06	0.10
	2	0.01	0.02
	3	0.02	0.05
	4	-0.01	-0.30
	5	-0.01	0.46
	6	0.09	-0.16
	7	0.05	0.90
	8	0.06	-0.16
27	1	0.07	0.10
	2	0.00	0.02
	3	0.00	0.05
	4	-0.01	-0.30

5	0.00	0.45
6	0.06	-0.15
7	0.10	0.90
8	0.05	-0.15

ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS U-CHANNEL

NODE	L/VECTR	X-FORCE	Y-FORCE
28	1	0.09	0.11
	2	-0.01	0.02
	3	-0.02	0.06
	4	-0.02	-0.30
	5	0.02	0.45
	6	0.05	-0.13
	7	0.16	0.91
	8	0.05	-0.13
29	1	0.11	0.12
	2	-0.02	0.02
	3	-0.05	0.06
	4	-0.02	-0.31
	5	0.04	0.45
	6	0.01	-0.11
	7	0.22	0.91
	8	0.04	-0.12
30	1	0.13	0.13
	2	-0.03	0.02
	3	-0.08	0.07
	4	-0.03	-0.31
	5	0.07	0.45
	6	-0.04	-0.09
	7	0.28	0.93
	8	0.02	-0.11
31	1	0.16	0.15
	2	-0.04	0.02
	3	-0.12	0.07
	4	-0.03	-0.31
	5	0.10	0.45
	6	-0.08	-0.07
	7	0.37	0.95
	8	0.01	-0.09
32	1	0.18	0.17
	2	-0.05	0.02
	3	-0.15	0.06
	4	-0.04	-0.32
	5	0.13	0.45
	6	-0.14	-0.05
	7	0.45	0.98
	8	-0.01	-0.08
33	1	0.19	0.20
	2	-0.06	0.02
	3	-0.19	0.06
	4	-0.04	-0.32
	5	0.16	0.45
	6	-0.21	-0.04
	7	0.51	1.02

	8	-0.04	-0.07
34	1	0.23	0.23
	2	-0.08	0.01

ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS U-CHANNEL

KIPS

NODE	L/VECTR	X-FORCE	Y-FORCE
	3	-0.24	0.04
	4	-0.05	-0.33
	5	0.20	0.46
	6	-0.27	-0.04
	7	0.63	1.08
	8	-0.06	-0.06
35	1	0.23	0.26
	2	-0.09	0.01
	3	-0.27	0.02
	4	-0.05	-0.33
	5	0.23	0.48
	6	-0.35	-0.04
	7	0.68	1.15
	8	-0.10	-0.05
36	1	0.21	0.30
	2	-0.10	0.00
	3	-0.30	0.00
	4	-0.05	-0.34
	5	0.25	0.50
	6	-0.43	-0.05
	7	0.71	1.24
	8	-0.14	-0.04
37	1	0.24	0.35
	2	-0.12	-0.01
	3	-0.37	-0.03
	4	-0.05	-0.35
	5	0.31	0.53
	6	-0.53	-0.07
	7	0.83	1.35
	8	-0.18	-0.03
38	1	0.21	0.40
	2	-0.13	-0.03
	3	-0.39	-0.08
	4	-0.05	-0.36
	5	0.33	0.56
	6	-0.62	-0.11
	7	0.83	1.48
	8	-0.23	-0.04
39	1	0.16	0.46
	2	-0.13	-0.04
	3	-0.40	-0.13
	4	-0.04	-0.37
	5	0.33	0.61
	6	-0.68	-0.16
	7	0.77	1.62
	8	-0.27	-0.04

40	1	0.17	0.52
	2	-0.16	-0.06
	3	-0.46	-0.19
	4	-0.04	-0.39

ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIPS U-CHANNEL

NODE	L/VECTR	X-FORCE	Y-FORCE
	5	0.39	0.66
	6	-0.82	-0.23
	7	0.87	1.78
	8	-0.33	-0.05
41	1	-2.55	0.58
	2	1.56	-0.09
	3	5.50	-0.26
	4	0.53	-0.40
	5	-4.50	0.71
	6	8.70	-0.31
	7	-10.92	1.96
	8	3.48	-0.08

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
1	1	1	0.00	0.00	
		2	-1.23	0.00	
	2	1	0.00	0.00	
		2	0.00	-0.59	2.41
	3	1	0.00	0.00	
		2	0.00	-2.61	7.16
	4	1	0.00	0.00	
		2	0.00	0.00	
	5	1	0.00	0.00	
		2	0.00	2.08	-5.98
	6	1	0.00	0.00	
		2	-1.60	-5.17	15.23
	7	1	0.00	0.00	
		2	-1.60	3.52	-10.10
	8	1	0.00	0.00	
		2	-1.23	-2.61	7.16
2	1	2	0.00	-1.43	
		3	0.00	1.52	-0.74
	2	2	0.59	0.00	-2.41
		3	-0.59	0.00	2.41
	3	2	2.61	0.00	-7.16
		3	-2.61	0.00	7.16
	4	2	0.00	0.31	
		3	0.00	-0.31	0.16
	5	2	-2.08	0.00	5.98
		3	2.08	0.00	-5.98
	6	2	5.17	-1.45	-15.23
		3	-5.17	1.57	14.47
	7	2	-3.52	-1.85	10.10
		3	3.52	1.98	-11.06
	8	2	2.61	-1.11	-7.16
		3	-2.61	1.21	6.58
3	1	3	2.56	-0.91	0.74
		4	-2.56	1.10	-1.74
	2	3	-0.97	-0.10	-2.41
		4	0.97	0.10	2.31
	3	3	-2.89	-0.29	-7.16
		4	2.89	0.29	6.87
	4	3	-0.53	0.22	-0.16
		4	0.53	-0.22	0.38
	5	3	2.42	0.24	5.98
		4	-2.42	-0.24	-5.74
	6	3	-3.51	-1.51	-14.47

	4	3.51	1.76	12.84
7	3	7.41	-0.78	11.06
	4	-7.42	1.02	-11.96

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	3	-0.86	-0.98	-6.58
		4	0.86	1.17	5.50
4	1	4	2.39	-0.58	1.74
		5	-2.39	0.77	-2.42
	2	4	-0.82	-0.16	-2.31
		5	0.82	0.16	2.15
	3	4	-2.43	-0.47	-6.87
		5	2.43	0.47	6.40
	4	4	-0.49	0.15	-0.38
		5	0.49	-0.15	0.53
	5	4	2.03	0.39	5.74
		5	-2.03	-0.39	-5.34
	6	4	-2.69	-1.57	-12.84
		5	2.69	1.81	11.15
	7	4	6.54	-0.10	11.96
		5	-6.54	0.33	-12.17
	8	4	-0.53	-0.91	-5.50
		5	0.53	1.09	4.51
5	1	5	2.23	-0.31	2.42
		6	-2.23	0.49	-2.82
	2	5	-0.68	-0.20	-2.15
		6	0.68	0.20	1.95
	3	5	-2.03	-0.59	-6.40
		6	2.03	0.59	5.81
	4	5	-0.46	0.09	-0.53
		6	0.46	-0.09	0.61
	5	5	1.69	0.49	5.34
		6	-1.69	-0.49	-4.85
	6	5	-2.01	-1.55	-11.15
		6	2.01	1.79	9.48
	7	5	5.75	0.43	12.17
		6	-5.76	-0.20	-11.86
	8	5	-0.26	-0.82	-4.51
		6	0.26	1.00	3.60
6	1	6	2.01	-0.09	2.82
		7	-2.01	0.27	-3.00
	2	6	-0.55	-0.22	-1.95
		7	0.55	0.22	1.73
	3	6	-1.63	-0.66	-5.81
		7	1.63	0.66	5.14
	4	6	-0.41	0.04	-0.61
		7	0.41	-0.04	0.65
	5	6	1.37	0.55	4.85

	7	-1.37	-0.55	-4.29
6	6	-1.40	-1.48	-9.48
	7	1.39	1.71	7.89
7	6	4.92	0.82	11.86
	7	-4.93	-0.59	-11.16

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	6	-0.03	-0.72	-3.60
		7	0.03	0.89	2.79
7	1	7	1.77	0.08	3.00
		8	-1.77	0.10	-3.01
	2	7	-0.43	-0.23	-1.73
		8	0.43	0.23	1.50
	3	7	-1.27	-0.69	-5.14
		8	1.27	0.69	4.45
	4	7	-0.36	0.00	-0.65
		8	0.36	0.00	0.66
	5	7	1.06	0.58	4.29
		8	-1.06	-0.58	-3.71
	6	7	-0.86	-1.37	-7.89
		8	0.86	1.60	6.40
	7	7	4.09	1.08	11.16
		8	-4.09	-0.86	-10.19
	8	7	0.14	-0.61	-2.79
		8	-0.14	0.79	2.09
8	1	8	1.55	0.21	3.01
		9	-1.55	-0.04	-2.89
	2	8	-0.32	-0.23	-1.50
		9	0.32	0.23	1.26
	3	8	-0.96	-0.69	-4.45
		9	0.96	0.69	3.75
	4	8	-0.31	-0.03	-0.66
		9	0.31	0.03	0.63
	5	8	0.80	0.58	3.71
		9	-0.80	-0.58	-3.14
	6	8	-0.43	-1.24	-6.40
		9	0.43	1.46	5.05
	7	8	3.37	1.25	10.19
		9	-3.38	-1.02	-9.05
	8	8	0.28	-0.51	-2.09
		9	-0.28	0.68	1.49
9	1	9	1.32	0.30	2.89
		10	-1.33	-0.13	-2.68
	2	9	-0.23	-0.22	-1.26
		10	0.23	0.22	1.04
	3	9	-0.69	-0.67	-3.75
		10	0.69	0.67	3.09
	4	9	-0.26	-0.05	-0.63
		10	0.26	0.05	0.58
	5	9	0.57	0.56	3.14

	10	-0.57	-0.56	-2.58
6	9	-0.08	-1.09	-5.05
	10	0.08	1.31	3.85
7	9	2.69	1.32	9.05
	10	-2.69	-1.11	-7.84

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	9	0.37	-0.42	-1.49
		10	-0.38	0.58	0.99
10	1	10	1.10	0.35	2.68
		11	-1.10	-0.19	-2.40
	2	10	-0.15	-0.21	-1.04
		11	0.15	0.21	0.83
	3	10	-0.45	-0.62	-3.09
		11	0.45	0.62	2.47
	4	10	-0.21	-0.06	-0.58
		11	0.21	0.06	0.52
	5	10	0.38	0.52	2.58
		11	-0.38	-0.52	-2.06
	6	10	0.19	-0.94	-3.85
		11	-0.19	1.15	2.81
	7	10	2.06	1.34	7.84
		11	-2.07	-1.12	-6.61
	8	10	0.43	-0.33	-0.99
		11	-0.44	0.49	0.59
11	1	11	0.91	0.39	2.40
		12	-0.91	-0.22	-2.10
	2	11	-0.09	-0.19	-0.83
		12	0.09	0.19	0.64
	3	11	-0.26	-0.56	-2.47
		12	0.26	0.56	1.91
	4	11	-0.17	-0.07	-0.52
		12	0.17	0.07	0.45
	5	11	0.22	0.47	2.06
		12	-0.22	-0.47	-1.59
	6	11	0.40	-0.78	-2.81
		12	-0.40	0.99	1.92
	7	11	1.55	1.30	6.61
		12	-1.56	-1.09	-5.42
	8	11	0.47	-0.25	-0.59
		12	-0.47	0.41	0.26
12	1	12	0.73	0.39	2.10
		13	-0.73	-0.24	-1.78
	2	12	-0.04	-0.17	-0.64
		13	0.04	0.17	0.47
	3	12	-0.11	-0.50	-1.91
		13	0.11	0.50	1.41
	4	12	-0.14	-0.07	-0.45
		13	0.14	0.07	0.38
	5	12	0.09	0.42	1.59

	13	-0.09	-0.42	-1.18
6	12	0.54	-0.64	-1.92
	13	-0.54	0.84	1.17
7	12	1.11	1.22	5.42
	13	-1.11	-1.01	-4.31

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	12	0.48	-0.17	-0.26
		13	-0.48	0.33	0.01
13	1	13	0.57	0.39	1.78
		14	-0.57	-0.23	-1.47
	2	13	0.00	-0.15	-0.47
		14	0.00	0.15	0.33
	3	13	0.00	-0.43	-1.41
		14	0.00	0.43	0.98
	4	13	-0.10	-0.07	-0.38
		14	0.10	0.07	0.31
	5	13	0.00	0.36	1.18
		14	0.00	-0.36	-0.82
	6	13	0.61	-0.51	-1.17
		14	-0.62	0.71	0.57
	7	13	0.73	1.11	4.31
		14	-0.74	-0.91	-3.30
	8	13	0.47	-0.12	-0.01
		14	-0.47	0.27	-0.19
14	1	14	0.44	0.36	1.47
		15	-0.44	-0.21	-1.18
	2	14	0.03	-0.12	-0.33
		15	-0.03	0.12	0.21
	3	14	0.08	-0.36	-0.98
		15	-0.08	0.36	0.61
	4	14	-0.07	-0.07	-0.31
		15	0.07	0.07	0.24
	5	14	-0.07	0.30	0.82
		15	0.07	-0.30	-0.51
	6	14	0.65	-0.39	-0.57
		15	-0.66	0.58	0.08
	7	14	0.45	0.99	3.30
		15	-0.45	-0.79	-2.41
	8	14	0.45	-0.07	0.19
		15	-0.45	0.22	-0.33
15	1	15	0.33	0.33	1.18
		16	-0.33	-0.18	-0.93
	2	15	0.05	-0.10	-0.21
		16	-0.05	0.10	0.11
	3	15	0.14	-0.30	-0.61
		16	-0.14	0.30	0.31
	4	15	-0.05	-0.06	-0.24
		16	0.05	0.06	0.18
	5	15	-0.11	0.25	0.51

	16	0.11	-0.25	-0.26
6	15	0.65	-0.28	-0.08
	16	-0.65	0.48	-0.30
7	15	0.23	0.86	2.41
	16	-0.24	-0.66	-1.65

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	15	0.41	-0.03	0.33
		16	-0.41	0.18	-0.43
16	1	16	0.24	0.29	0.93
		17	-0.24	-0.15	-0.70
	2	16	0.05	-0.08	-0.11
		17	-0.05	0.08	0.02
	3	16	0.16	-0.24	-0.31
		17	-0.16	0.24	0.07
	4	16	-0.03	-0.05	-0.18
		17	0.03	0.05	0.13
	5	16	-0.13	0.20	0.26
		17	0.13	-0.20	-0.06
	6	16	0.61	-0.20	0.30
		17	-0.61	0.39	-0.59
	7	16	0.08	0.72	1.65
		17	-0.08	-0.54	-1.02
	8	16	0.36	0.00	0.43
		17	-0.37	0.14	-0.50
17	1	17	0.16	0.25	0.70
		18	-0.17	-0.11	-0.52
	2	17	0.05	-0.06	-0.02
		18	-0.05	0.06	-0.04
	3	17	0.16	-0.19	-0.07
		18	-0.16	0.19	-0.11
	4	17	-0.02	-0.04	-0.13
		18	0.02	0.04	0.09
	5	17	-0.14	0.16	0.06
		18	0.14	-0.16	0.10
	6	17	0.53	-0.13	0.59
		18	-0.53	0.31	-0.81
	7	17	-0.02	0.59	1.02
		18	0.01	-0.41	-0.52
	8	17	0.31	0.02	0.50
		18	-0.31	0.12	-0.55
18	1	18	0.11	0.21	0.52
		19	-0.11	-0.07	-0.38
	2	18	0.05	-0.05	0.04
		19	-0.05	0.05	-0.09
	3	18	0.15	-0.14	0.11
		19	-0.15	0.14	-0.25
	4	18	-0.01	-0.03	-0.09
		19	0.01	0.03	0.05
	5	18	-0.12	0.12	-0.10

	19	0.12	-0.12	0.21
6	18	0.44	-0.07	0.81
	19	-0.45	0.25	-0.96
7	18	-0.06	0.47	0.52
	19	0.06	-0.29	-0.14

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	18	0.25	0.04	0.55
		19	-0.25	0.10	-0.58
19	1	19	0.07	0.17	0.38
		20	-0.07	-0.03	-0.28
	2	19	0.04	-0.03	0.09
		20	-0.04	0.03	-0.12
	3	19	0.12	-0.09	0.25
		20	-0.12	0.09	-0.35
	4	19	-0.01	-0.02	-0.05
		20	0.01	0.02	0.03
	5	19	-0.10	0.08	-0.21
		20	0.10	-0.08	0.29
	6	19	0.33	-0.02	0.96
		20	-0.33	0.19	-1.07
	7	19	-0.08	0.35	0.14
		20	0.07	-0.17	0.12
	8	19	0.18	0.05	0.58
		20	-0.18	0.09	-0.60
20	1	20	0.04	0.12	0.28
		21	-0.04	0.01	-0.23
	2	20	0.03	-0.02	0.12
		21	-0.03	0.02	-0.14
	3	20	0.08	-0.05	0.35
		21	-0.08	0.05	-0.40
	4	20	0.00	-0.01	-0.03
		21	0.00	0.01	0.01
	5	20	-0.06	0.05	-0.29
		21	0.06	-0.05	0.34
	6	20	0.21	0.02	1.07
		21	-0.21	0.15	-1.13
	7	20	-0.06	0.24	-0.12
		21	0.06	-0.07	0.27
	8	20	0.11	0.05	0.60
		21	-0.11	0.08	-0.62
21	1	21	0.01	0.08	0.23
		22	-0.01	0.05	-0.21
	2	21	0.01	-0.01	0.14
		22	-0.01	0.01	-0.14
	3	21	0.03	-0.02	0.40
		22	-0.03	0.02	-0.42
	4	21	0.00	0.00	-0.01
		22	0.00	0.00	0.01
	5	21	-0.02	0.01	-0.34

	22	0.02	-0.01	0.35
6	21	0.07	0.06	1.13
	22	-0.07	0.11	-1.15
7	21	-0.02	0.13	-0.27
	22	0.02	0.04	0.32

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	21	0.04	0.06	0.62
		22	-0.04	0.07	-0.62
22	1	22	0.01	0.04	0.21
		23	-0.01	0.08	-0.23
	2	22	0.01	0.01	0.14
		23	-0.01	-0.01	-0.14
	3	22	0.03	0.02	0.42
		23	-0.03	-0.02	-0.40
	4	22	0.00	0.00	-0.01
		23	0.00	0.00	0.01
	5	22	-0.02	-0.02	-0.35
		23	0.02	0.02	0.34
	6	22	0.07	0.10	1.15
		23	-0.07	0.06	-1.13
	7	22	-0.02	0.03	-0.32
		23	0.02	0.13	0.27
	8	22	0.04	0.07	0.62
		23	-0.04	0.06	-0.62
23	1	23	0.04	0.01	0.23
		24	-0.04	0.12	-0.28
	2	23	0.03	0.02	0.14
		24	-0.03	-0.02	-0.12
	3	23	0.08	0.06	0.40
		24	-0.08	-0.06	-0.35
	4	23	0.00	0.01	-0.01
		24	0.00	-0.01	0.03
	5	23	-0.06	-0.05	-0.34
		24	0.06	0.05	0.29
	6	23	0.21	0.15	1.13
		24	-0.21	0.02	-1.07
	7	23	-0.06	-0.07	-0.27
		24	0.06	0.24	0.12
	8	23	0.11	0.08	0.62
		24	-0.11	0.05	-0.60
24	1	24	0.07	-0.03	0.28
		25	-0.07	0.17	-0.38
	2	24	0.04	0.03	0.12
		25	-0.04	-0.03	-0.08
	3	24	0.12	0.09	0.35
		25	-0.12	-0.09	-0.25
	4	24	-0.01	0.02	-0.03
		25	0.01	-0.02	0.05
	5	24	-0.10	-0.08	-0.29

	25	0.10	0.08	0.21
6	24	0.33	0.19	1.07
	25	-0.33	-0.02	-0.96
7	24	-0.07	-0.17	-0.12
	25	0.07	0.35	-0.14

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	24	0.18	0.09	0.60
		25	-0.18	0.05	-0.58
25	1	25	0.11	-0.07	0.38
		26	-0.11	0.21	-0.52
	2	25	0.05	0.05	0.08
		26	-0.05	-0.05	-0.04
	3	25	0.15	0.14	0.25
		26	-0.15	-0.14	-0.11
	4	25	-0.01	0.03	-0.05
		26	0.01	-0.03	0.09
	5	25	-0.12	-0.12	-0.21
		26	0.12	0.12	0.10
	6	25	0.45	0.25	0.96
		26	-0.44	-0.07	-0.81
	7	25	-0.06	-0.29	0.14
		26	0.06	0.47	-0.52
	8	25	0.25	0.10	0.58
		26	-0.25	0.04	-0.55
26	1	26	0.17	-0.11	0.52
		27	-0.17	0.25	-0.70
	2	26	0.05	0.06	0.04
		27	-0.05	-0.06	0.02
	3	26	0.16	0.19	0.11
		27	-0.16	-0.19	0.07
	4	26	-0.02	0.04	-0.09
		27	0.02	-0.04	0.13
	5	26	-0.14	-0.16	-0.10
		27	0.14	0.16	-0.06
	6	26	0.54	0.31	0.81
		27	-0.54	-0.13	-0.59
	7	26	-0.01	-0.41	0.52
		27	0.02	0.59	-1.02
	8	26	0.31	0.12	0.55
		27	-0.31	0.02	-0.50
27	1	27	0.24	-0.15	0.70
		28	-0.23	0.29	-0.93
	2	27	0.05	0.08	-0.02
		28	-0.05	-0.08	0.11
	3	27	0.16	0.24	-0.07
		28	-0.16	-0.24	0.31
	4	27	-0.03	0.05	-0.13
		28	0.03	-0.05	0.18
	5	27	-0.13	-0.20	0.06

	28	0.13	0.20	-0.26
6	27	0.60	0.39	0.59
	28	-0.60	-0.20	-0.30
7	27	0.08	-0.54	1.02
	28	-0.08	0.72	-1.65

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	27	0.36	0.14	0.50
		28	-0.36	0.00	-0.43
28	1	28	0.33	-0.18	0.93
		29	-0.33	0.33	-1.19
	2	28	0.05	0.10	-0.11
		29	-0.05	-0.10	0.21
	3	28	0.14	0.30	-0.31
		29	-0.14	-0.30	0.61
	4	28	-0.05	0.06	-0.18
		29	0.05	-0.06	0.24
	5	28	-0.11	-0.25	0.26
		29	0.11	0.25	-0.51
	6	28	0.65	0.48	0.30
		29	-0.65	-0.28	0.08
	7	28	0.24	-0.66	1.65
		29	-0.23	0.86	-2.41
	8	28	0.41	0.18	0.43
		29	-0.41	-0.03	-0.33
29	1	29	0.44	-0.21	1.19
		30	-0.44	0.36	-1.47
	2	29	0.03	0.12	-0.21
		30	-0.03	-0.12	0.33
	3	29	0.08	0.36	-0.61
		30	-0.08	-0.36	0.98
	4	29	-0.07	0.07	-0.24
		30	0.07	-0.07	0.31
	5	29	-0.07	-0.30	0.51
		30	0.07	0.30	-0.82
	6	29	0.66	0.58	-0.08
		30	-0.65	-0.39	0.57
	7	29	0.45	-0.79	2.41
		30	-0.45	0.99	-3.30
	8	29	0.45	0.22	0.33
		30	-0.45	-0.07	-0.19
30	1	30	0.57	-0.23	1.47
		31	-0.57	0.39	-1.78
	2	30	0.00	0.15	-0.33
		31	0.00	-0.15	0.47
	3	30	0.00	0.43	-0.98
		31	0.00	-0.43	1.41
	4	30	-0.10	0.07	-0.31
		31	0.10	-0.07	0.38
	5	30	0.00	-0.36	0.82

	31	0.00	0.36	-1.18
6	30	0.62	0.71	-0.57
	31	-0.61	-0.51	1.18
7	30	0.74	-0.91	3.30
	31	-0.73	1.11	-4.31

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	30	0.47	0.27	0.19
		31	-0.47	-0.12	0.01
31	1	31	0.73	-0.24	1.78
		32	-0.73	0.39	-2.10
	2	31	-0.04	0.17	-0.47
		32	0.04	-0.17	0.64
	3	31	-0.11	0.50	-1.41
		32	0.11	-0.50	1.91
	4	31	-0.14	0.07	-0.38
		32	0.14	-0.07	0.45
	5	31	0.09	-0.42	1.18
		32	-0.09	0.42	-1.59
	6	31	0.54	0.84	-1.18
		32	-0.54	-0.64	1.92
	7	31	1.11	-1.01	4.31
		32	-1.11	1.22	-5.42
	8	31	0.48	0.33	-0.01
		32	-0.48	-0.17	0.26
32	1	32	0.91	-0.22	2.10
		33	-0.91	0.39	-2.40
	2	32	-0.09	0.19	-0.64
		33	0.09	-0.19	0.83
	3	32	-0.26	0.56	-1.91
		33	0.26	-0.56	2.47
	4	32	-0.17	0.07	-0.45
		33	0.17	-0.07	0.52
	5	32	0.22	-0.47	1.59
		33	-0.22	0.47	-2.06
	6	32	0.40	0.99	-1.92
		33	-0.40	-0.78	2.81
	7	32	1.56	-1.09	5.42
		33	-1.55	1.30	-6.61
	8	32	0.47	0.41	-0.26
		33	-0.47	-0.25	0.59
33	1	33	1.10	-0.19	2.40
		34	-1.10	0.35	-2.68
	2	33	-0.15	0.21	-0.83
		34	0.15	-0.21	1.04
	3	33	-0.45	0.62	-2.47
		34	0.45	-0.62	3.09
	4	33	-0.21	0.06	-0.52
		34	0.21	-0.06	0.58
	5	33	0.38	-0.52	2.06

	34	-0.38	0.52	-2.58
6	33	0.19	1.15	-2.81
	34	-0.19	-0.94	3.85
7	33	2.07	-1.12	6.61
	34	-2.06	1.34	-7.84

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	33	0.44	0.49	-0.59
		34	-0.43	-0.33	1.00
34	1	34	1.33	-0.13	2.68
		35	-1.32	0.30	-2.89
	2	34	-0.23	0.22	-1.04
		35	0.23	-0.22	1.26
	3	34	-0.69	0.66	-3.09
		35	0.69	-0.66	3.76
	4	34	-0.26	0.05	-0.58
		35	0.26	-0.05	0.63
	5	34	0.57	-0.56	2.58
		35	-0.57	0.56	-3.14
	6	34	-0.08	1.31	-3.85
		35	0.08	-1.09	5.05
	7	34	2.69	-1.11	7.84
		35	-2.69	1.32	-9.06
	8	34	0.38	0.58	-1.00
		35	-0.37	-0.42	1.49
35	1	35	1.55	-0.04	2.89
		36	-1.55	0.21	-3.01
	2	35	-0.32	0.23	-1.26
		36	0.32	-0.23	1.50
	3	35	-0.96	0.69	-3.76
		36	0.96	-0.69	4.45
	4	35	-0.31	0.03	-0.63
		36	0.31	-0.03	0.66
	5	35	0.80	-0.58	3.14
		36	-0.80	0.58	-3.72
	6	35	-0.43	1.46	-5.05
		36	0.43	-1.24	6.40
	7	35	3.38	-1.02	9.06
		36	-3.37	1.25	-10.19
	8	35	0.28	0.68	-1.49
		36	-0.28	-0.51	2.09
36	1	36	1.77	0.10	3.01
		37	-1.77	0.08	-3.00
	2	36	-0.43	0.23	-1.50
		37	0.43	-0.23	1.73
	3	36	-1.27	0.69	-4.45
		37	1.27	-0.69	5.14
	4	36	-0.36	0.00	-0.66
		37	0.36	0.00	0.65
	5	36	1.06	-0.58	3.72

	37	-1.06	0.58	-4.30
6	36	-0.86	1.60	-6.40
	37	0.86	-1.37	7.89
7	36	4.09	-0.86	10.19
	37	-4.09	1.08	-11.16

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	36	0.14	0.79	-2.09
		37	-0.14	-0.61	2.79
37	1	37	2.01	0.27	3.00
		38	-2.01	-0.09	-2.82
	2	37	-0.55	0.22	-1.73
		38	0.55	-0.22	1.95
	3	37	-1.63	0.66	-5.14
		38	1.63	-0.66	5.81
	4	37	-0.41	-0.04	-0.65
		38	0.41	0.04	0.61
	5	37	1.37	-0.55	4.30
		38	-1.37	0.55	-4.85
	6	37	-1.39	1.71	-7.89
		38	1.40	-1.48	9.48
	7	37	4.92	-0.59	11.16
		38	-4.92	0.82	-11.86
	8	37	-0.03	0.89	-2.79
		38	0.03	-0.72	3.60
38	1	38	2.23	0.49	2.82
		39	-2.23	-0.31	-2.42
	2	38	-0.68	0.20	-1.95
		39	0.68	-0.20	2.15
	3	38	-2.03	0.59	-5.81
		39	2.03	-0.59	6.40
	4	38	-0.46	-0.09	-0.61
		39	0.46	0.09	0.53
	5	38	1.69	-0.49	4.85
		39	-1.69	0.49	-5.34
	6	38	-2.01	1.79	-9.48
		39	2.01	-1.55	11.15
	7	38	5.76	-0.20	11.86
		39	-5.75	0.43	-12.17
	8	38	-0.26	1.00	-3.60
		39	0.26	-0.82	4.51
39	1	39	2.39	0.77	2.42
		40	-2.39	-0.58	-1.74
	2	39	-0.82	0.16	-2.15
		40	0.82	-0.16	2.31
	3	39	-2.43	0.47	-6.40
		40	2.43	-0.47	6.87
	4	39	-0.49	-0.15	-0.53
		40	0.49	0.15	0.38
	5	39	2.03	-0.39	5.34

	40	-2.03	0.39	-5.74
6	39	-2.69	1.80	-11.15
	40	2.69	-1.57	12.84
7	39	6.54	0.34	12.17
	40	-6.53	-0.10	-11.96

ANALYSIS BY EDGAR O ORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	39	-0.53	1.09	-4.51
		40	0.53	-0.90	5.50
40	1	40	2.56	1.10	1.74
		41	-2.56	-0.91	-0.74
	2	40	-0.97	0.10	-2.31
		41	0.97	-0.10	2.41
	3	40	-2.89	0.29	-6.87
		41	2.89	-0.29	7.16
	4	40	-0.53	-0.22	-0.38
		41	0.53	0.22	0.16
	5	40	2.42	-0.24	5.74
		41	-2.42	0.24	-5.98
	6	40	-3.51	1.76	-12.84
		41	3.51	-1.51	14.47
	7	40	7.41	1.02	11.96
		41	-7.41	-0.78	-11.06
	8	40	-0.86	1.17	-5.50
		41	0.86	-0.98	6.58
41	1	41	0.00	1.52	0.74
		42	0.00	-1.43	
	2	41	0.59	0.00	-2.41
		42	-0.59	0.00	2.41
	3	41	2.61	0.00	-7.16
		42	-2.61	0.00	7.16
	4	41	0.00	-0.31	-0.16
		42	0.00	0.31	
	5	41	-2.08	0.00	5.98
		42	2.08	0.00	-5.98
	6	41	5.17	1.57	-14.47
		42	-5.17	-1.45	15.23
	7	41	-3.52	1.97	11.06
		42	3.52	-1.85	-10.10
	8	41	2.61	1.21	-6.58
		42	-2.61	-1.11	7.16
42	1	43	0.00	0.00	
		42	-1.23	0.00	
	2	43	0.00	0.00	
		42	0.00	0.59	-2.41
	3	43	0.00	0.00	
		42	0.00	2.61	-7.16
	4	43	0.00	0.00	
		42	0.00	0.00	
	5	43	0.00	0.00	

	42	0.00	-2.08	5.98
6	43	0.00	0.00	
	42	-1.60	5.17	-15.23
7	43	0.00	0.00	
	42	-1.60	-3.52	10.10

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	43	0.00	0.00	
		42	-1.23	2.61	-7.16

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
1	1	1	0.00	0.00	
		2	-1.23	0.00	
	2	1	0.00	0.00	
		2	0.00	-0.59	2.41
	3	1	0.00	0.00	
		2	0.00	-2.61	7.16
	4	1	0.00	0.00	
		2	0.00	0.00	
	5	1	0.00	0.00	
		2	0.00	2.08	-5.98
	6	1	0.00	0.00	
		2	-1.60	-5.17	15.23
	7	1	0.00	0.00	
		2	-1.60	3.52	-10.10
	8	1	0.00	0.00	
		2	-1.23	-2.61	7.16
2	1	2	0.00	-1.43	
		3	0.00	1.52	-0.74
	2	2	0.59	0.00	-2.41
		3	-0.59	0.00	2.41
	3	2	2.61	0.00	-7.16
		3	-2.61	0.00	7.16
	4	2	0.00	0.31	
		3	0.00	-0.31	0.16
	5	2	-2.08	0.00	5.98
		3	2.08	0.00	-5.98
	6	2	5.17	-1.45	-15.23
		3	-5.17	1.57	14.47
	7	2	-3.52	-1.85	10.10
		3	3.52	1.98	-11.06
	8	2	2.61	-1.11	-7.16
		3	-2.61	1.21	6.58
3	1	3	2.56	-0.91	0.74
		4	-2.56	1.10	-1.74
	2	3	-0.97	-0.10	-2.41
		4	0.97	0.10	2.31
	3	3	-2.89	-0.29	-7.16
		4	2.89	0.29	6.87
	4	3	-0.53	0.22	-0.16
		4	0.53	-0.22	0.38
	5	3	2.42	0.24	5.98
		4	-2.42	-0.24	-5.74
	6	3	-3.51	-1.51	-14.47

	4	3.51	1.76	12.84
7	3	7.41	-0.78	11.06
	4	-7.42	1.02	-11.96

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	3	-0.86	-0.98	-6.58
		4	0.86	1.17	5.50
4	1	4	2.39	-0.58	1.74
		5	-2.39	0.77	-2.42
	2	4	-0.82	-0.16	-2.31
		5	0.82	0.16	2.15
	3	4	-2.43	-0.47	-6.87
		5	2.43	0.47	6.40
	4	4	-0.49	0.15	-0.38
		5	0.49	-0.15	0.53
	5	4	2.03	0.39	5.74
		5	-2.03	-0.39	-5.34
	6	4	-2.69	-1.57	-12.84
		5	2.69	1.81	11.15
	7	4	6.54	-0.10	11.96
		5	-6.54	0.33	-12.17
	8	4	-0.53	-0.91	-5.50
		5	0.53	1.09	4.51
5	1	5	2.23	-0.31	2.42
		6	-2.23	0.49	-2.82
	2	5	-0.68	-0.20	-2.15
		6	0.68	0.20	1.95
	3	5	-2.03	-0.59	-6.40
		6	2.03	0.59	5.81
	4	5	-0.46	0.09	-0.53
		6	0.46	-0.09	0.61
	5	5	1.69	0.49	5.34
		6	-1.69	-0.49	-4.85
	6	5	-2.01	-1.55	-11.15
		6	2.01	1.79	9.48
	7	5	5.75	0.43	12.17
		6	-5.76	-0.20	-11.86
	8	5	-0.26	-0.82	-4.51
		6	0.26	1.00	3.60
6	1	6	2.01	-0.09	2.82
		7	-2.01	0.27	-3.00
	2	6	-0.55	-0.22	-1.95
		7	0.55	0.22	1.73
	3	6	-1.63	-0.66	-5.81
		7	1.63	0.66	5.14
	4	6	-0.41	0.04	-0.61
		7	0.41	-0.04	0.65
	5	6	1.37	0.55	4.85

	7	-1.37	-0.55	-4.29
6	6	-1.40	-1.48	-9.48
	7	1.39	1.71	7.89
7	6	4.92	0.82	11.86
	7	-4.93	-0.59	-11.16

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	6	-0.03	-0.72	-3.60
		7	0.03	0.89	2.79
7	1	7	1.77	0.08	3.00
		8	-1.77	0.10	-3.01
	2	7	-0.43	-0.23	-1.73
		8	0.43	0.23	1.50
	3	7	-1.27	-0.69	-5.14
		8	1.27	0.69	4.45
	4	7	-0.36	0.00	-0.65
		8	0.36	0.00	0.66
	5	7	1.06	0.58	4.29
		8	-1.06	-0.58	-3.71
	6	7	-0.86	-1.37	-7.89
		8	0.86	1.60	6.40
	7	7	4.09	1.08	11.16
		8	-4.09	-0.86	-10.19
	8	7	0.14	-0.61	-2.79
		8	-0.14	0.79	2.09
8	1	8	1.55	0.21	3.01
		9	-1.55	-0.04	-2.89
	2	8	-0.32	-0.23	-1.50
		9	0.32	0.23	1.26
	3	8	-0.96	-0.69	-4.45
		9	0.96	0.69	3.75
	4	8	-0.31	-0.03	-0.66
		9	0.31	0.03	0.63
	5	8	0.80	0.58	3.71
		9	-0.80	-0.58	-3.14
	6	8	-0.43	-1.24	-6.40
		9	0.43	1.46	5.05
	7	8	3.37	1.25	10.19
		9	-3.38	-1.02	-9.05
	8	8	0.28	-0.51	-2.09
		9	-0.28	0.68	1.49
9	1	9	1.32	0.30	2.89
		10	-1.33	-0.13	-2.68
	2	9	-0.23	-0.22	-1.26
		10	0.23	0.22	1.04
	3	9	-0.69	-0.67	-3.75
		10	0.69	0.67	3.09
	4	9	-0.26	-0.05	-0.63
		10	0.26	0.05	0.58
	5	9	0.57	0.56	3.14

	10	-0.57	-0.56	-2.58
6	9	-0.08	-1.09	-5.05
	10	0.08	1.31	3.85
7	9	2.69	1.32	9.05
	10	-2.69	-1.11	-7.84

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	9	0.37	-0.42	-1.49
		10	-0.38	0.58	0.99
10	1	10	1.10	0.35	2.68
		11	-1.10	-0.19	-2.40
	2	10	-0.15	-0.21	-1.04
		11	0.15	0.21	0.83
	3	10	-0.45	-0.62	-3.09
		11	0.45	0.62	2.47
	4	10	-0.21	-0.06	-0.58
		11	0.21	0.06	0.52
	5	10	0.38	0.52	2.58
		11	-0.38	-0.52	-2.06
	6	10	0.19	-0.94	-3.85
		11	-0.19	1.15	2.81
	7	10	2.06	1.34	7.84
		11	-2.07	-1.12	-6.61
	8	10	0.43	-0.33	-0.99
		11	-0.44	0.49	0.59
11	1	11	0.91	0.39	2.40
		12	-0.91	-0.22	-2.10
	2	11	-0.09	-0.19	-0.83
		12	0.09	0.19	0.64
	3	11	-0.26	-0.56	-2.47
		12	0.26	0.56	1.91
	4	11	-0.17	-0.07	-0.52
		12	0.17	0.07	0.45
	5	11	0.22	0.47	2.06
		12	-0.22	-0.47	-1.59
	6	11	0.40	-0.78	-2.81
		12	-0.40	0.99	1.92
	7	11	1.55	1.30	6.61
		12	-1.56	-1.09	-5.42
	8	11	0.47	-0.25	-0.59
		12	-0.47	0.41	0.26
12	1	12	0.73	0.39	2.10
		13	-0.73	-0.24	-1.78
	2	12	-0.04	-0.17	-0.64
		13	0.04	0.17	0.47
	3	12	-0.11	-0.50	-1.91
		13	0.11	0.50	1.41
	4	12	-0.14	-0.07	-0.45
		13	0.14	0.07	0.38
	5	12	0.09	0.42	1.59

	13	-0.09	-0.42	-1.18
6	12	0.54	-0.64	-1.92
	13	-0.54	0.84	1.17
7	12	1.11	1.22	5.42
	13	-1.11	-1.01	-4.31

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	12	0.48	-0.17	-0.26
		13	-0.48	0.33	0.01
13	1	13	0.57	0.39	1.78
		14	-0.57	-0.23	-1.47
	2	13	0.00	-0.15	-0.47
		14	0.00	0.15	0.33
	3	13	0.00	-0.43	-1.41
		14	0.00	0.43	0.98
	4	13	-0.10	-0.07	-0.38
		14	0.10	0.07	0.31
	5	13	0.00	0.36	1.18
		14	0.00	-0.36	-0.82
	6	13	0.61	-0.51	-1.17
		14	-0.62	0.71	0.57
	7	13	0.73	1.11	4.31
		14	-0.74	-0.91	-3.30
	8	13	0.47	-0.12	-0.01
		14	-0.47	0.27	-0.19
14	1	14	0.44	0.36	1.47
		15	-0.44	-0.21	-1.18
	2	14	0.03	-0.12	-0.33
		15	-0.03	0.12	0.21
	3	14	0.08	-0.36	-0.98
		15	-0.08	0.36	0.61
	4	14	-0.07	-0.07	-0.31
		15	0.07	0.07	0.24
	5	14	-0.07	0.30	0.82
		15	0.07	-0.30	-0.51
	6	14	0.65	-0.39	-0.57
		15	-0.66	0.58	0.08
	7	14	0.45	0.99	3.30
		15	-0.45	-0.79	-2.41
	8	14	0.45	-0.07	0.19
		15	-0.45	0.22	-0.33
15	1	15	0.33	0.33	1.18
		16	-0.33	-0.18	-0.93
	2	15	0.05	-0.10	-0.21
		16	-0.05	0.10	0.11
	3	15	0.14	-0.30	-0.61
		16	-0.14	0.30	0.31
	4	15	-0.05	-0.06	-0.24
		16	0.05	0.06	0.18
	5	15	-0.11	0.25	0.51

	16	0.11	-0.25	-0.26
6	15	0.65	-0.28	-0.08
	16	-0.65	0.48	-0.30
7	15	0.23	0.86	2.41
	16	-0.24	-0.66	-1.65

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	15	0.41	-0.03	0.33
		16	-0.41	0.18	-0.43
16	1	16	0.24	0.29	0.93
		17	-0.24	-0.15	-0.70
	2	16	0.05	-0.08	-0.11
		17	-0.05	0.08	0.02
	3	16	0.16	-0.24	-0.31
		17	-0.16	0.24	0.07
	4	16	-0.03	-0.05	-0.18
		17	0.03	0.05	0.13
	5	16	-0.13	0.20	0.26
		17	0.13	-0.20	-0.06
	6	16	0.61	-0.20	0.30
		17	-0.61	0.39	-0.59
	7	16	0.08	0.72	1.65
		17	-0.08	-0.54	-1.02
	8	16	0.36	0.00	0.43
		17	-0.37	0.14	-0.50
17	1	17	0.16	0.25	0.70
		18	-0.17	-0.11	-0.52
	2	17	0.05	-0.06	-0.02
		18	-0.05	0.06	-0.04
	3	17	0.16	-0.19	-0.07
		18	-0.16	0.19	-0.11
	4	17	-0.02	-0.04	-0.13
		18	0.02	0.04	0.09
	5	17	-0.14	0.16	0.06
		18	0.14	-0.16	0.10
	6	17	0.53	-0.13	0.59
		18	-0.53	0.31	-0.81
	7	17	-0.02	0.59	1.02
		18	0.01	-0.41	-0.52
	8	17	0.31	0.02	0.50
		18	-0.31	0.12	-0.55
18	1	18	0.11	0.21	0.52
		19	-0.11	-0.07	-0.38
	2	18	0.05	-0.05	0.04
		19	-0.05	0.05	-0.09
	3	18	0.15	-0.14	0.11
		19	-0.15	0.14	-0.25
	4	18	-0.01	-0.03	-0.09
		19	0.01	0.03	0.05
	5	18	-0.12	0.12	-0.10

	19	0.12	-0.12	0.21
6	18	0.44	-0.07	0.81
	19	-0.45	0.25	-0.96
7	18	-0.06	0.47	0.52
	19	0.06	-0.29	-0.14

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	18	0.25	0.04	0.55
		19	-0.25	0.10	-0.58
19	1	19	0.07	0.17	0.38
		20	-0.07	-0.03	-0.28
	2	19	0.04	-0.03	0.09
		20	-0.04	0.03	-0.12
	3	19	0.12	-0.09	0.25
		20	-0.12	0.09	-0.35
	4	19	-0.01	-0.02	-0.05
		20	0.01	0.02	0.03
	5	19	-0.10	0.08	-0.21
		20	0.10	-0.08	0.29
	6	19	0.33	-0.02	0.96
		20	-0.33	0.19	-1.07
	7	19	-0.08	0.35	0.14
		20	0.07	-0.17	0.12
	8	19	0.18	0.05	0.58
		20	-0.18	0.09	-0.60
20	1	20	0.04	0.12	0.28
		21	-0.04	0.01	-0.23
	2	20	0.03	-0.02	0.12
		21	-0.03	0.02	-0.14
	3	20	0.08	-0.05	0.35
		21	-0.08	0.05	-0.40
	4	20	0.00	-0.01	-0.03
		21	0.00	0.01	0.01
	5	20	-0.06	0.05	-0.29
		21	0.06	-0.05	0.34
	6	20	0.21	0.02	1.07
		21	-0.21	0.15	-1.13
	7	20	-0.06	0.24	-0.12
		21	0.06	-0.07	0.27
	8	20	0.11	0.05	0.60
		21	-0.11	0.08	-0.62
21	1	21	0.01	0.08	0.23
		22	-0.01	0.05	-0.21
	2	21	0.01	-0.01	0.14
		22	-0.01	0.01	-0.14
	3	21	0.03	-0.02	0.40
		22	-0.03	0.02	-0.42
	4	21	0.00	0.00	-0.01
		22	0.00	0.00	0.01
	5	21	-0.02	0.01	-0.34

	22	0.02	-0.01	0.35
6	21	0.07	0.06	1.13
	22	-0.07	0.11	-1.15
7	21	-0.02	0.13	-0.27
	22	0.02	0.04	0.32

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	21	0.04	0.06	0.62
		22	-0.04	0.07	-0.62
22	1	22	0.01	0.04	0.21
		23	-0.01	0.08	-0.23
	2	22	0.01	0.01	0.14
		23	-0.01	-0.01	-0.14
	3	22	0.03	0.02	0.42
		23	-0.03	-0.02	-0.40
	4	22	0.00	0.00	-0.01
		23	0.00	0.00	0.01
	5	22	-0.02	-0.02	-0.35
		23	0.02	0.02	0.34
	6	22	0.07	0.10	1.15
		23	-0.07	0.06	-1.13
	7	22	-0.02	0.03	-0.32
		23	0.02	0.13	0.27
	8	22	0.04	0.07	0.62
		23	-0.04	0.06	-0.62
23	1	23	0.04	0.01	0.23
		24	-0.04	0.12	-0.28
	2	23	0.03	0.02	0.14
		24	-0.03	-0.02	-0.12
	3	23	0.08	0.06	0.40
		24	-0.08	-0.06	-0.35
	4	23	0.00	0.01	-0.01
		24	0.00	-0.01	0.03
	5	23	-0.06	-0.05	-0.34
		24	0.06	0.05	0.29
	6	23	0.21	0.15	1.13
		24	-0.21	0.02	-1.07
	7	23	-0.06	-0.07	-0.27
		24	0.06	0.24	0.12
	8	23	0.11	0.08	0.62
		24	-0.11	0.05	-0.60
24	1	24	0.07	-0.03	0.28
		25	-0.07	0.17	-0.38
	2	24	0.04	0.03	0.12
		25	-0.04	-0.03	-0.08
	3	24	0.12	0.09	0.35
		25	-0.12	-0.09	-0.25
	4	24	-0.01	0.02	-0.03
		25	0.01	-0.02	0.05
	5	24	-0.10	-0.08	-0.29

	25	0.10	0.08	0.21
6	24	0.33	0.19	1.07
	25	-0.33	-0.02	-0.96
7	24	-0.07	-0.17	-0.12
	25	0.07	0.35	-0.14

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	24	0.18	0.09	0.60
		25	-0.18	0.05	-0.58
25	1	25	0.11	-0.07	0.38
		26	-0.11	0.21	-0.52
	2	25	0.05	0.05	0.08
		26	-0.05	-0.05	-0.04
	3	25	0.15	0.14	0.25
		26	-0.15	-0.14	-0.11
	4	25	-0.01	0.03	-0.05
		26	0.01	-0.03	0.09
	5	25	-0.12	-0.12	-0.21
		26	0.12	0.12	0.10
	6	25	0.45	0.25	0.96
		26	-0.44	-0.07	-0.81
	7	25	-0.06	-0.29	0.14
		26	0.06	0.47	-0.52
	8	25	0.25	0.10	0.58
		26	-0.25	0.04	-0.55
26	1	26	0.17	-0.11	0.52
		27	-0.17	0.25	-0.70
	2	26	0.05	0.06	0.04
		27	-0.05	-0.06	0.02
	3	26	0.16	0.19	0.11
		27	-0.16	-0.19	0.07
	4	26	-0.02	0.04	-0.09
		27	0.02	-0.04	0.13
	5	26	-0.14	-0.16	-0.10
		27	0.14	0.16	-0.06
	6	26	0.54	0.31	0.81
		27	-0.54	-0.13	-0.59
	7	26	-0.01	-0.41	0.52
		27	0.02	0.59	-1.02
	8	26	0.31	0.12	0.55
		27	-0.31	0.02	-0.50
27	1	27	0.24	-0.15	0.70
		28	-0.23	0.29	-0.93
	2	27	0.05	0.08	-0.02
		28	-0.05	-0.08	0.11
	3	27	0.16	0.24	-0.07
		28	-0.16	-0.24	0.31
	4	27	-0.03	0.05	-0.13
		28	0.03	-0.05	0.18
	5	27	-0.13	-0.20	0.06

	28	0.13	0.20	-0.26
6	27	0.60	0.39	0.59
	28	-0.60	-0.20	-0.30
7	27	0.08	-0.54	1.02
	28	-0.08	0.72	-1.65

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	27	0.36	0.14	0.50
		28	-0.36	0.00	-0.43
28	1	28	0.33	-0.18	0.93
		29	-0.33	0.33	-1.19
	2	28	0.05	0.10	-0.11
		29	-0.05	-0.10	0.21
	3	28	0.14	0.30	-0.31
		29	-0.14	-0.30	0.61
	4	28	-0.05	0.06	-0.18
		29	0.05	-0.06	0.24
	5	28	-0.11	-0.25	0.26
		29	0.11	0.25	-0.51
	6	28	0.65	0.48	0.30
		29	-0.65	-0.28	0.08
	7	28	0.24	-0.66	1.65
		29	-0.23	0.86	-2.41
	8	28	0.41	0.18	0.43
		29	-0.41	-0.03	-0.33
29	1	29	0.44	-0.21	1.19
		30	-0.44	0.36	-1.47
	2	29	0.03	0.12	-0.21
		30	-0.03	-0.12	0.33
	3	29	0.08	0.36	-0.61
		30	-0.08	-0.36	0.98
	4	29	-0.07	0.07	-0.24
		30	0.07	-0.07	0.31
	5	29	-0.07	-0.30	0.51
		30	0.07	0.30	-0.82
	6	29	0.66	0.58	-0.08
		30	-0.65	-0.39	0.57
	7	29	0.45	-0.79	2.41
		30	-0.45	0.99	-3.30
	8	29	0.45	0.22	0.33
		30	-0.45	-0.07	-0.19
30	1	30	0.57	-0.23	1.47
		31	-0.57	0.39	-1.78
	2	30	0.00	0.15	-0.33
		31	0.00	-0.15	0.47
	3	30	0.00	0.43	-0.98
		31	0.00	-0.43	1.41
	4	30	-0.10	0.07	-0.31
		31	0.10	-0.07	0.38
	5	30	0.00	-0.36	0.82

	31	0.00	0.36	-1.18
6	30	0.62	0.71	-0.57
	31	-0.61	-0.51	1.18
7	30	0.74	-0.91	3.30
	31	-0.73	1.11	-4.31

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	30	0.47	0.27	0.19
		31	-0.47	-0.12	0.01
31	1	31	0.73	-0.24	1.78
		32	-0.73	0.39	-2.10
	2	31	-0.04	0.17	-0.47
		32	0.04	-0.17	0.64
	3	31	-0.11	0.50	-1.41
		32	0.11	-0.50	1.91
	4	31	-0.14	0.07	-0.38
		32	0.14	-0.07	0.45
	5	31	0.09	-0.42	1.18
		32	-0.09	0.42	-1.59
	6	31	0.54	0.84	-1.18
		32	-0.54	-0.64	1.92
	7	31	1.11	-1.01	4.31
		32	-1.11	1.22	-5.42
	8	31	0.48	0.33	-0.01
		32	-0.48	-0.17	0.26
32	1	32	0.91	-0.22	2.10
		33	-0.91	0.39	-2.40
	2	32	-0.09	0.19	-0.64
		33	0.09	-0.19	0.83
	3	32	-0.26	0.56	-1.91
		33	0.26	-0.56	2.47
	4	32	-0.17	0.07	-0.45
		33	0.17	-0.07	0.52
	5	32	0.22	-0.47	1.59
		33	-0.22	0.47	-2.06
	6	32	0.40	0.99	-1.92
		33	-0.40	-0.78	2.81
	7	32	1.56	-1.09	5.42
		33	-1.55	1.30	-6.61
	8	32	0.47	0.41	-0.26
		33	-0.47	-0.25	0.59
33	1	33	1.10	-0.19	2.40
		34	-1.10	0.35	-2.68
	2	33	-0.15	0.21	-0.83
		34	0.15	-0.21	1.04
	3	33	-0.45	0.62	-2.47
		34	0.45	-0.62	3.09
	4	33	-0.21	0.06	-0.52
		34	0.21	-0.06	0.58
	5	33	0.38	-0.52	2.06

	34	-0.38	0.52	-2.58
6	33	0.19	1.15	-2.81
	34	-0.19	-0.94	3.85
7	33	2.07	-1.12	6.61
	34	-2.06	1.34	-7.84

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	33	0.44	0.49	-0.59
		34	-0.43	-0.33	1.00
34	1	34	1.33	-0.13	2.68
		35	-1.32	0.30	-2.89
	2	34	-0.23	0.22	-1.04
		35	0.23	-0.22	1.26
	3	34	-0.69	0.66	-3.09
		35	0.69	-0.66	3.76
	4	34	-0.26	0.05	-0.58
		35	0.26	-0.05	0.63
	5	34	0.57	-0.56	2.58
		35	-0.57	0.56	-3.14
	6	34	-0.08	1.31	-3.85
		35	0.08	-1.09	5.05
	7	34	2.69	-1.11	7.84
		35	-2.69	1.32	-9.06
	8	34	0.38	0.58	-1.00
		35	-0.37	-0.42	1.49
35	1	35	1.55	-0.04	2.89
		36	-1.55	0.21	-3.01
	2	35	-0.32	0.23	-1.26
		36	0.32	-0.23	1.50
	3	35	-0.96	0.69	-3.76
		36	0.96	-0.69	4.45
	4	35	-0.31	0.03	-0.63
		36	0.31	-0.03	0.66
	5	35	0.80	-0.58	3.14
		36	-0.80	0.58	-3.72
	6	35	-0.43	1.46	-5.05
		36	0.43	-1.24	6.40
	7	35	3.38	-1.02	9.06
		36	-3.37	1.25	-10.19
	8	35	0.28	0.68	-1.49
		36	-0.28	-0.51	2.09
36	1	36	1.77	0.10	3.01
		37	-1.77	0.08	-3.00
	2	36	-0.43	0.23	-1.50
		37	0.43	-0.23	1.73
	3	36	-1.27	0.69	-4.45
		37	1.27	-0.69	5.14
	4	36	-0.36	0.00	-0.66
		37	0.36	0.00	0.65
	5	36	1.06	-0.58	3.72

	37	-1.06	0.58	-4.30
6	36	-0.86	1.60	-6.40
	37	0.86	-1.37	7.89
7	36	4.09	-0.86	10.19
	37	-4.09	1.08	-11.16

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	36	0.14	0.79	-2.09
		37	-0.14	-0.61	2.79
37	1	37	2.01	0.27	3.00
		38	-2.01	-0.09	-2.82
	2	37	-0.55	0.22	-1.73
		38	0.55	-0.22	1.95
	3	37	-1.63	0.66	-5.14
		38	1.63	-0.66	5.81
	4	37	-0.41	-0.04	-0.65
		38	0.41	0.04	0.61
	5	37	1.37	-0.55	4.30
		38	-1.37	0.55	-4.85
	6	37	-1.39	1.71	-7.89
		38	1.40	-1.48	9.48
	7	37	4.92	-0.59	11.16
		38	-4.92	0.82	-11.86
	8	37	-0.03	0.89	-2.79
		38	0.03	-0.72	3.60
38	1	38	2.23	0.49	2.82
		39	-2.23	-0.31	-2.42
	2	38	-0.68	0.20	-1.95
		39	0.68	-0.20	2.15
	3	38	-2.03	0.59	-5.81
		39	2.03	-0.59	6.40
	4	38	-0.46	-0.09	-0.61
		39	0.46	0.09	0.53
	5	38	1.69	-0.49	4.85
		39	-1.69	0.49	-5.34
	6	38	-2.01	1.79	-9.48
		39	2.01	-1.55	11.15
	7	38	5.76	-0.20	11.86
		39	-5.75	0.43	-12.17
	8	38	-0.26	1.00	-3.60
		39	0.26	-0.82	4.51
39	1	39	2.39	0.77	2.42
		40	-2.39	-0.58	-1.74
	2	39	-0.82	0.16	-2.15
		40	0.82	-0.16	2.31
	3	39	-2.43	0.47	-6.40
		40	2.43	-0.47	6.87
	4	39	-0.49	-0.15	-0.53
		40	0.49	0.15	0.38

5	39	2.03	-0.39	5.34
	40	-2.03	0.39	-5.74
6	39	-2.69	1.80	-11.15
	40	2.69	-1.57	12.84
7	39	6.54	0.34	12.17
	40	-6.53	-0.10	-11.96

ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES U-CHANNEL

KIP FEET

MEMB	L/VECTR	JT	AXIAL	SHEAR-Y	MOM-Z
	8	39	-0.53	1.09	-4.51
		40	0.53	-0.90	5.50
40	1	40	2.56	1.10	1.74
		41	-2.56	-0.91	-0.74
	2	40	-0.97	0.10	-2.31
		41	0.97	-0.10	2.41
	3	40	-2.89	0.29	-6.87
		41	2.89	-0.29	7.16
	4	40	-0.53	-0.22	-0.38
		41	0.53	0.22	0.16
	5	40	2.42	-0.24	5.74
		41	-2.42	0.24	-5.98
	6	40	-3.51	1.76	-12.84
		41	3.51	-1.51	14.47
	7	40	7.41	1.02	11.96
		41	-7.41	-0.78	-11.06
	8	40	-0.86	1.17	-5.50
		41	0.86	-0.98	6.58
41	1	41	0.00	1.52	0.74
		42	0.00	-1.43	
	2	41	0.59	0.00	-2.41
		42	-0.59	0.00	2.41
	3	41	2.61	0.00	-7.16
		42	-2.61	0.00	7.16
	4	41	0.00	-0.31	-0.16
		42	0.00	0.31	
	5	41	-2.08	0.00	5.98
		42	2.08	0.00	-5.98
	6	41	5.17	1.57	-14.47
		42	-5.17	-1.45	15.23
	7	41	-3.52	1.97	11.06
		42	3.52	-1.85	-10.10
	8	41	2.61	1.21	-6.58
		42	-2.61	-1.11	7.16
42	1	43	0.00	0.00	
		42	-1.23	0.00	
	2	43	0.00	0.00	
		42	0.00	0.59	-2.41
	3	43	0.00	0.00	
		42	0.00	2.61	-7.16
	4	43	0.00	0.00	
		42	0.00	0.00	

5	43	0.00	0.00	
	42	0.00	-2.08	5.98
6	43	0.00	0.00	
	42	-1.60	5.17	-15.23
7	43	0.00	0.00	
	42	-1.60	-3.52	10.10
8	43	0.00	0.00	
	42	-1.23	2.61	-7.16

SUPPORT REACTIONS U-CHANNEL

ODE	L/VECTR	X-FORCE	Y-FORCE
3	1	2.55	0.58
	2	-1.56	-0.09
	3	-5.50	-0.26
	4	-0.53	-0.40
	5	4.50	0.71
	6	-8.70	-0.31
	7	10.92	1.96
	8	-3.48	-0.08
4	1	-0.17	0.52
	2	0.16	-0.06
	3	0.46	-0.19
	4	0.04	-0.39
	5	-0.39	0.66
	6	0.82	-0.23
	7	-0.87	1.78
	8	0.33	-0.05
5	1	-0.16	0.46
	2	0.13	-0.04
	3	0.40	-0.13
	4	0.04	-0.37
	5	-0.33	0.61
	6	0.68	-0.16
	7	-0.77	1.62
	8	0.27	-0.04
6	1	-0.21	0.40
	2	0.13	-0.03
	3	0.39	-0.08
	4	0.05	-0.36
	5	-0.33	0.56
	6	0.62	-0.11
	7	-0.83	1.48
	8	0.23	-0.04
7	1	-0.24	0.35
	2	0.12	-0.01
	3	0.37	-0.03
	4	0.05	-0.35
	5	-0.31	0.53
	6	0.53	-0.07
	7	-0.83	1.35
	8	0.18	-0.03
8	1	-0.21	0.30
	2	0.10	0.00
	3	0.30	0.00
	4	0.05	-0.34
	5	-0.25	0.50
	6	0.43	-0.05
	7	-0.71	1.24
	8	0.14	-0.04

9	1	-0.23	0.26
	2	0.09	0.01

ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS U-CHANNEL

NODE	L/VECTR	X-FORCE	Y-FORCE
	3	0.28	0.02
	4	0.05	-0.33
	5	-0.23	0.48
	6	0.35	-0.04
	7	-0.68	1.15
	8	0.10	-0.05
10	1	-0.23	0.23
	2	0.08	0.01
	3	0.24	0.04
	4	0.05	-0.33
	5	-0.20	0.46
	6	0.27	-0.04
	7	-0.63	1.08
	8	0.06	-0.06
11	1	-0.19	0.20
	2	0.06	0.02
	3	0.19	0.06
	4	0.04	-0.32
	5	-0.16	0.45
	6	0.21	-0.04
	7	-0.51	1.02
	8	0.04	-0.07
12	1	-0.18	0.17
	2	0.05	0.02
	3	0.15	0.06
	4	0.04	-0.32
	5	-0.13	0.45
	6	0.14	-0.05
	7	-0.45	0.98
	8	0.01	-0.08
13	1	-0.16	0.15
	2	0.04	0.02
	3	0.12	0.07
	4	0.03	-0.31
	5	-0.10	0.44
	6	0.08	-0.07
	7	-0.37	0.95
	8	-0.01	-0.09
14	1	-0.13	0.13
	2	0.03	0.02
	3	0.08	0.07
	4	0.03	-0.31
	5	-0.07	0.45
	6	0.04	-0.09
	7	-0.28	0.93
	8	-0.02	-0.11
15	1	-0.11	0.12

2	0.02	0.02
3	0.05	0.06
4	0.02	-0.31

ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS U-CHANNEL

NODE	L/VECTR	X-FORCE	Y-FORCE
	5	-0.04	0.45
	6	-0.01	-0.11
	7	-0.22	0.91
	8	-0.04	-0.12
16	1	-0.09	0.11
	2	0.01	0.02
	3	0.03	0.06
	4	0.02	-0.30
	5	-0.02	0.45
	6	-0.04	-0.13
	7	-0.15	0.91
	8	-0.05	-0.13
17	1	-0.07	0.10
	2	0.00	0.02
	3	0.00	0.05
	4	0.01	-0.30
	5	0.00	0.45
	6	-0.07	-0.15
	7	-0.10	0.90
	8	-0.06	-0.15
18	1	-0.05	0.10
	2	0.00	0.02
	3	-0.01	0.05
	4	0.01	-0.30
	5	0.01	0.46
	6	-0.09	-0.16
	7	-0.05	0.90
	8	-0.06	-0.16
19	1	-0.04	0.09
	2	-0.01	0.01
	3	-0.03	0.04
	4	0.01	-0.30
	5	0.02	0.46
	6	-0.11	-0.18
	7	-0.01	0.91
	8	-0.07	-0.16
20	1	-0.03	0.09
	2	-0.01	0.01
	3	-0.04	0.04
	4	0.00	-0.30
	5	0.03	0.47
	6	-0.13	-0.19
	7	0.02	0.91
	8	-0.07	-0.17
21	1	-0.03	0.09
	2	-0.02	0.01
	3	-0.05	0.04

4	0.00	-0.30
5	0.04	0.47
6	-0.13	-0.20

ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS U-CHANNEL

NODE	L/VECTR	X-FORCE	Y-FORCE
	7	0.03	0.91
	8	-0.07	-0.17
22	1	0.00	0.09
	2	0.00	0.01
	3	0.00	0.04
	4	0.00	-0.30
	5	0.00	0.47
	6	-0.01	-0.20
	7	0.00	0.91
	8	0.00	-0.18
23	1	0.03	0.09
	2	0.02	0.01
	3	0.05	0.04
	4	0.00	-0.30
	5	-0.04	0.47
	6	0.14	-0.20
	7	-0.04	0.91
	8	0.08	-0.17
24	1	0.03	0.09
	2	0.01	0.01
	3	0.04	0.04
	4	0.00	-0.30
	5	-0.03	0.47
	6	0.12	-0.19
	7	-0.02	0.91
	8	0.07	-0.17
25	1	0.04	0.09
	2	0.01	0.01
	3	0.03	0.04
	4	-0.01	-0.30
	5	-0.03	0.46
	6	0.11	-0.18
	7	0.01	0.91
	8	0.07	-0.16
26	1	0.06	0.10
	2	0.01	0.02
	3	0.02	0.05
	4	-0.01	-0.30
	5	-0.01	0.46
	6	0.09	-0.16
	7	0.05	0.90
	8	0.06	-0.16
27	1	0.07	0.10
	2	0.00	0.02
	3	0.00	0.05
	4	-0.01	-0.30
	5	0.00	0.45

6	0.06	-0.15
7	0.10	0.90
8	0.05	-0.15

ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS U-CHANNEL

NODE	L/VECTR	X-FORCE	Y-FORCE
28	1	0.09	0.11
	2	-0.01	0.02
	3	-0.02	0.06
	4	-0.02	-0.30
	5	0.02	0.45
	6	0.05	-0.13
	7	0.16	0.91
	8	0.05	-0.13
29	1	0.11	0.12
	2	-0.02	0.02
	3	-0.05	0.06
	4	-0.02	-0.31
	5	0.04	0.45
	6	0.01	-0.11
	7	0.22	0.91
	8	0.04	-0.12
30	1	0.13	0.13
	2	-0.03	0.02
	3	-0.08	0.07
	4	-0.03	-0.31
	5	0.07	0.45
	6	-0.04	-0.09
	7	0.28	0.93
	8	0.02	-0.11
31	1	0.16	0.15
	2	-0.04	0.02
	3	-0.12	0.07
	4	-0.03	-0.31
	5	0.10	0.45
	6	-0.08	-0.07
	7	0.37	0.95
	8	0.01	-0.09
32	1	0.18	0.17
	2	-0.05	0.02
	3	-0.15	0.06
	4	-0.04	-0.32
	5	0.13	0.45
	6	-0.14	-0.05
	7	0.45	0.98
	8	-0.01	-0.08
33	1	0.19	0.20
	2	-0.06	0.02
	3	-0.19	0.06
	4	-0.04	-0.32
	5	0.16	0.45
	6	-0.21	-0.04
	7	0.51	1.02

	8	-0.04	-0.07
34	1	0.23	0.23
	2	-0.08	0.01

ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS U-CHANNEL

NODE	L/VECTR	X-FORCE	Y-FORCE
	3	-0.24	0.04
	4	-0.05	-0.33
	5	0.20	0.46
	6	-0.27	-0.04
	7	0.63	1.08
	8	-0.06	-0.06
35	1	0.23	0.26
	2	-0.09	0.01
	3	-0.27	0.02
	4	-0.05	-0.33
	5	0.23	0.48
	6	-0.35	-0.04
	7	0.68	1.15
	8	-0.10	-0.05
36	1	0.21	0.30
	2	-0.10	0.00
	3	-0.30	0.00
	4	-0.05	-0.34
	5	0.25	0.50
	6	-0.43	-0.05
	7	0.71	1.24
	8	-0.14	-0.04
37	1	0.24	0.35
	2	-0.12	-0.01
	3	-0.37	-0.03
	4	-0.05	-0.35
	5	0.31	0.53
	6	-0.53	-0.07
	7	0.83	1.35
	8	-0.18	-0.03
38	1	0.21	0.40
	2	-0.13	-0.03
	3	-0.39	-0.08
	4	-0.05	-0.36
	5	0.33	0.56
	6	-0.62	-0.11
	7	0.83	1.48
	8	-0.23	-0.04
39	1	0.16	0.46
	2	-0.13	-0.04
	3	-0.40	-0.13
	4	-0.04	-0.37
	5	0.33	0.61
	6	-0.68	-0.16
	7	0.77	1.62
	8	-0.27	-0.04
40	1	0.17	0.52

2	-0.16	-0.06
3	-0.46	-0.19
4	-0.04	-0.39

ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS U-CHANNEL

NODE	L/VECTR	X-FORCE	Y-FORCE
	5	0.39	0.66
	6	-0.82	-0.23
	7	0.87	1.78
	8	-0.33	-0.05
41	1	-2.55	0.58
	2	1.56	-0.09
	3	5.50	-0.26
	4	0.53	-0.40
	5	-4.50	0.71
	6	8.70	-0.31
	7	-10.92	1.96
	8	3.48	-0.08

NOTE:

AFTER THE ANALYSIS OF THESE RESULTS IT IS RECOMMENDED THAT THE SLAB THICKNESS SHALL BE INCREASED AND THAT THE CORRESPONDING DESIGN DRAWINGS BE CHANGED, IT IS ALSO RECOMMENDED THAT THE REQUIRED STEEL, ITS DISTRIBUTION AND LAYOUT SHALL BE CHANGED TO THE CONFIGURATION THAT THEY HAD IN THE ORIGINAL DESIGN BY MR. MORENO. IT IS ALSO ADVISED THAT AT THIS POINT MR. MORENO DOES NOT KNOW THE CRITERIA USED BY MR. HANUMAIAH TO MODIFIED MR. MORENO ORIGINAL DESIGN.

SOSSAMAN BOX CULVERT DESIGN (shear check)
BARREL SIZE 10X6
EDGAR O. MORENO (Work Update)

F I E L D D A T A

HEIGHT OF FILL OVER CULVERT,FT	2.000
SOIL UNIT WEIGHT, PCF	120.000
LATERAL SOIL PRESSURE COEFFICIENT	.325

D E S I G N C R I T E R I A AASHTO

DEAD LOAD FACTOR - MOMENT AND SHEAR	1.300
DEAD LOAD FACTOR - THRUST	.650
LIVE LOAD FACTOR - MOMENT AND SHEAR	2.170
LIVE LOAD FACTOR - THRUST	1.090
STRENGTH REDUCTION FACTOR-FLEXURE	.900
STRENGTH REDUCTION FACTOR-DIAGONAL TENSION	.850
LIVE LOAD TYPE	HS-20
DIRECTION OF TRAFFIC	TRANSVERSE
VERTICAL SURCHARGE PRESSURE, PSF	.0
LATERAL SURCHARGE PRESSURE, PSF	78.0

M A T E R I A L P R O P E R T I E S

MINIMUM SPECIFIED REINFORCING YIELD STRENGTH, KSI	60.000
CONCRETE - SPECIFIED COMPRESSIVE STRENGTH, KSI	4.000

B A R R E L G E O M E T R Y

TOP SLAB THICKNESS, INCHES				10.500
SIDE WALL THICKNESS, INCHES				11.000
BOTTOM SLAB THICKNESS, INCHES				12.500
HORIZONTAL HAUNCH DIMENSION, INCHES	TOP	6.000	BOTTOM	.000
VERTICAL HAUNCH DIMENSION, INCHES	TOP	6.000	BOTTOM	.000

CONCRETE CLEAR COVER OVER STEEL, INCHES

TOP SLAB - OUTSIDE FACE	2.000
SIDE WALL - OUTSIDE FACE	2.000
BOTTOM SLAB - OUTSIDE FACE	3.000
TOP SLAB - INSIDE FACE	1.000
SIDE WALL - INSIDE FACE	1.500
BOTTOM SLAB - INSIDE FACE	2.000

G O V E R N I N G C O N D I T I O N

AN NON OVERLOADED AASHTO HS-20 TRUCK CENTERED IN 4- 12FT WIDE LANES

ULTIMATE LOAD FORCES AASHTO

SECTION	MAX M+ (IN.-K/FT)	MAX V+ (K/FT)	MAX P+ (K/FT)	MAX M- (IN.-K/FT)	MAX V- (K/FT)	MAX P- (K/FT)
1	138.23	1.72	-.49	.00	-1.72	-.72
2	.00	7.13	-.20	-72.84	.00	-.71
3	.00	7.37	-1.29	-106.54	.00	-.72
4	.00	.00	-1.71	-125.40	-2.93	-3.64
5	.00	.00	-1.71	-119.29	-2.51	-3.64
6	5.00	.15	-1.71	-100.89	-.74	-3.83
7	.00	2.79	-1.71	-92.62	-.54	-4.19
8	.00	2.79	-1.71	-92.62	-.54	-4.19
9	.00	.00	-.28	-59.16	-7.90	-.59
10	.00	.00	-.28	-59.16	-7.90	-.59
11	160.14	.55	.01	.00	-.55	-1.16
12	15.90	6.51	-.65	-39.36	.00	-.72
13	15.90	6.51	-.65	-39.36	.00	-.72
14	.00	.00	-1.71	-113.89	-2.00	-3.45
15	.00	.00	-1.71	-113.89	-2.00	-3.45
16	.00	2.27	-1.71	-88.90	-.54	-3.45
17	.00	2.27	-1.71	-88.90	-.54	-3.45
18	15.50	.00	-.66	-20.63	-6.61	-.59
19	15.50	.00	-.66	-20.63	-6.61	-.59
20	.00	7.59	-.61	-141.08	.00	-.72
21	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00
23	.00	8.85	-.59	-105.20	.00	-.98

FLEXURE DESIGN TABLE PER AASHTO 17.4.6.1

DES. SEC.	WALL, SIGN OF MOMENT	DEPTH TO STEEL (IN)	ULT. MOMENT (IN-K/FT)	ULT. THRUST (K/FT)	FLEX. REINF. ULT.(1) (SQ.IN/FT)	FLEX. REINF. MIN.(2) (SQ.IN/FT)	CRACK INDEX	GOV. STEEL (3) (SQ.IN/FT)	GOV. MODE (4)
1	TOP-NEG	8.06	.0	.7	.000	.252	.0	.252	MIN STL
2	TOP-NEG	8.06	72.8	.7	.162	.252	.0	.252	MIN STL
3	TOP-NEG	14.06	106.5	.7	.134	.252	.0	.252	MIN STL
4	SIDE-NEG	14.69	125.4	3.6	.121	.264	.0	.264	MIN STL
5	SIDE-NEG	8.69	119.3	3.6	.219	.264	.0	.264	MIN STL
6	SIDE-NEG	8.69	100.9	3.8	.176	.264	.0	.264	MIN STL
7	SIDE-NEG	8.69	92.6	4.2	.153	.264	.0	.264	MIN STL
8	SIDE-NEG	8.69	92.6	4.2	.153	.264	.0	.264	MIN STL
9	BOTTOM-NEG	9.19	59.2	.6	.113	.300	.0	.300	MIN STL
10	BOTTOM-NEG	9.19	59.2	.6	.113	.300	.0	.300	MIN STL
11	BOTTOM-NEG	9.19	.0	1.2	.000	.300	.0	.300	MIN STL

1	TOP-POS	9.13	138.2	.5	.283	.252	.0	.283	FLEXURE
6	SIDE-POS	9.25	5.0	1.7	.000	.264	.0	.264	MIN STL
	BOTTOM-POS	10.13	160.1	-.0	.300	.300	.0	.300	FLEXURE

NOTES:
1. REQUIRED REINFORCING TO DEVELOP ULTIMATE FLEXURAL STRENGTH.
2. MINIMUM FLEXURAL REINFORCING ALLOWED.
3. REINFORCING REQUIRED TO MEET ALL DESIGN CRITERIA. THE GOVERNING CRITERIA IS INDICATED UNDER THE COLUMN "GOVERNING MODE".
4. IF GOVERNING MODE IS LISTED AS CRACK, THE REINFORCING MAY BE REDUCED BY DECREASING THE MAXIMUM REINFORCING SPACING.

SHEAR DESIGN Vc=2*PHI*SQR(F'c)bd PER AASHTO 8.16.6.2.1

LOCATION	ULTIMATE SHEAR (K/FT)	ALLOWABLE SHEAR (K/FT)	DIAGONAL TENSION INDEX	DEPTH TO STEEL (IN.)	STIRRUPS REQD?
12	6.5	10.4	.63	8.06	NO
13	6.5	10.4	.63	8.06	NO
14	2.0	11.2	.18	8.69	NO
15	2.0	11.2	.18	8.69	NO
16	2.3	11.2	.20	8.69	NO
17	2.3	11.2	.20	8.69	NO
18	6.6	11.9	.56	9.19	NO
19	6.6	11.9	.56	9.19	NO

SHEAR DESIGN PER AASHTO 17.4.6.4.5.

DESIGN SECTION	12	13	14	15
M/(V*PHI*D)	1.492	1.210	3.430	6.442
ULTIMATE SHEAR (KIPS/FT)	6.508	6.508	2.000	2.000

ULTIMATE THRUST (KIPS/FT)	.710	.717	3.638	3.638
STEEL RATIO	.002605	.001690	.001702	.002878
DEPTH TO STEEL (IN.)	8.063	14.063	14.688	8.688
DISTANCE FROM A-END, (IN.)	18.353	18.353	64.866	64.866
THRUST FACTOR (FN)	.984	.984	.834	.814
DIAGONAL TENSION STRENGTH, (KIPS/FT)	11.090	18.800	12.728	8.973
ULTIMATE SHEAR/ ALLOWABLE SHEAR	.587	.346	.157	.223
NEW STEEL AREA DUE TO DIAGONAL TENSION (SQ.IN./FT)	.000	.000	.000	.000
DESIGN SECTION	16	17	18	19
M/(V*PHI*D)	4.499	4.499	.959	.959
ULTIMATE SHEAR (KIPS/FT)	2.265	2.265	6.606	6.606
ULTIMATE THRUST (KIPS/FT)	4.194	4.194	.592	.592
STEEL RATIO	.002878	.002878	.002999	.002721
DEPTH TO STEEL (IN.)	8.688	8.688	9.188	9.188
DISTANCE FROM A-END, (IN.)	13.634	13.634	117.691	117.691
THRUST FACTOR (FN)	.809	.809	.988	.988
DIAGONAL TENSION STRENGTH, (KIPS/FT)	9.028	9.028	15.872	15.656
ULTIMATE SHEAR/ ALLOWABLE SHEAR	.251	.251	.416	.422
NEW STEEL AREA DUE TO DIAGONAL TENSION NN(SQ.IN./FT)	.000	.000	.000	.000

SOSSAMAN BOX CULVERT DESIGN SUMMARY

R E I N F O R C I N G S T E E L

LOCATION	AREA SQ. IN. PER FT	STIRRUPS REQUIRED?	BAR SIZE	SPACING IN.
TRANSVERSE				
SIDE WALL - OUTSIDE FACE (hh)	.264	NO	#5	6.
TOP SLAB - INSIDE FACE (ee,dd)	.283	NO	#5,#6	12.
BOTTOM SLAB - INSIDE FACE (ee,dd)	.300	NO	#5,#6	12.
SIDE WALL - INSIDE FACE (aa)	.264	NO	#5	12.
TOP SLAB - OUTSIDE FACE (ff)	.252	NO	#6	12.
BOTTOM SLAB - OUTSIDE FACE (ff)	.300	NO	#6	12.
DISTRIBUTION				
TOP SLAB - INSIDE FACE (gg)	.252		#4	8.
TOP SLAB - OUTSIDE FACE	.252		#4	14.

NOTES:

1 TOP SLAB OUTSIDE FACE STEEL (ff) MUST EXTEND COMPLETELY ACROSS THE TOP SLAB. THE SIDEWALL OUTSIDE FACE STEEL (hh) MUST BE BENT AT THE CORNER AND EXTENDED ACROSS THE OUTSIDE FACE OF THE TOP SLAB SUFFICIENTLY TO MEET AASHTO REQUIREMENTS FOR TENSION LAPS.

2 BOTTOM SLAB OUTSIDE FACE STEEL (ff) MUST EXTEND COMPLETELY ACROSS THE BOTTOM SLAB. THE SIDEWALL OUTSIDE FACE STEEL (hh) MUST BE BENT AT THE CORNER AND EXTENDED ACROSS THE OUTSIDE FACE OF THE BOTTOM SLAB SUFFICIENTLY TO MEET AASHTO REQUIREMENTS FOR TENSION LAPS.

3 ASMIN = 0.002 x GROSS SECTION AREA

4 THERE MAY BE NEGATIVE MOMENT FROM THE OUTSIDE CORNER OF THE BOX TO 38. INCHES ACROSS THE TOP SLAB (F=3'-2").

5 THERE MAY BE NEGATIVE MOMENT FROM THE OUTSIDE CORNER OF THE BOX TO 35. INCHES ACROSS THE BOTTOM SLAB (f=3'-2").

at point, X= -56.8934 Y= 76.6665

With Vertex

at point, X=-113.7789 Y= 76.6665

With Vertex

at point, X=-124.3851 Y= 87.2727

With Vertex

at point, X=-108.2116 Y= 86.4165

With Vertex

at point, X=-105.8116 Y= 85.8165

With Vertex

at point, X= -91.2116 Y= 78.7165

With Vertex

at point, X= -67.2116 Y= 78.2165

END AREA

surface in sqf = 273.7960

text STA. 51+00

AREA

With Vertex

at point, X= -35.9823 Y= 97.6548

With Vertex

at point, X= -23.9048 Y= 102.1503

With Vertex

at point, X= -41.6446 Y= 103.9243

With Vertex

at point, X= -48.0144 Y= 97.5545

END AREA

surface in sqf = 88.5890

AREA

With Vertex

at point, X= -55.2437 Y= 78.3162

With Vertex

AREA

With Vertex

at point, X= -87.3334 Y= 84.5695

With Vertex

at point, X=-104.6225 Y= 84.1853

With Vertex

at point, X= -96.3334 Y= 75.8961

With Vertex

at point, X= -52.3334 Y= 75.8961

With Vertex

at point, X= -51.2026 Y= 77.0269

With Vertex

at point, X= -64.3334 Y= 77.3695

END AREA

surface in sqf = 245.4227

With Vertex

at point, X= -40.3755 Y= 93.4812

END AREA

surface in sqf = 280.4871

text STA. 50+00

AREA

With Vertex

at point, X= -49.0850 Y= 90.6567

With Vertex

at point, X= -43.5082 Y= 96.2335

With Vertex

at point, X= -42.5946 Y= 97.1472

With Vertex

at point, X= -7.4684 Y= 93.6345

With Vertex

at point, X= -27.7158 Y= 90.0993

END AREA

surface in sqf = 168.8074

at point, X= -49.1930 Y= 112.1705

END AREA

surface in sqf = 146.6920

AREA

With Vertex

at point, X= -17.3755 Y= 85.6812

With Vertex

at point, X= -3.7520 Y= 85.5515

With Vertex

at point, X= -5.3755 Y= 83.9279

With Vertex

at point, X= -49.3755 Y= 83.9279

With Vertex

at point, X= -58.3431 Y= 92.8954

With Vertex

at point, X= -55.3755 Y= 93.2812

With Vertex

at point, X= -54.7459 Y= 143.4254

With Vertex

at point, X= -54.2459 Y= 143.4254

END AREA

surface in sqf = 38.7174

AREA

With Vertex

at point, X= -28.1930 Y= 112.3705

With Vertex

at point, X= -16.8152 Y= 114.8357

With Vertex

at point, X= -50.5964 Y= 118.2138

With Vertex

at point, X= -56.5695 Y= 112.2407

With Vertex

With Vertex

at point, X= -44.6085 Y= 161.2320

With Vertex

at point, X= -45.5221 Y= 160.3183

END AREA

surface in sqf = 9.1854

AREA

With Vertex

at point, X= -54.2459 Y= 141.9254

With Vertex

at point, X= -52.7459 Y= 141.9254

With Vertex

at point, X= -51.1223 Y= 143.5490

With Vertex

at point, X= -46.0629 Y= 148.6084

With Vertex

at point, X= -54.7459 Y= 149.4767

With Vertex

at point, X= 58.2368 Y= 169.2244

With Vertex

at point, X= 58.2368 Y= 168.7244

With Vertex

at point, X= 58.2368 Y= 167.7194

With Vertex

at point, X= 58.2368 Y= 161.6681

With Vertex

at point, X= 58.7368 Y= 161.6681

END AREA

surface in sqf = 68.6960

AREA

With Vertex

at point, X= -54.2052 Y= 161.1866

With Vertex

at point, X= -54.2052 Y= 162.1916

at point, X= 17.7368 Y= 161.6681

With Vertex

at point, X= 18.2368 Y= 161.6681

With Vertex

at point, X= 18.2368 Y= 169.2244

With Vertex

at point, X= 19.2368 Y= 169.2244

With Vertex

at point, X= 19.2368 Y= 161.6681

With Vertex

at point, X= 38.2368 Y= 161.2514

With Vertex

at point, X= 57.2368 Y= 161.6681

With Vertex

at point, X= 57.2368 Y= 169.2244

at point, X= -31.6918 Y= 72.2275

With Vertex

at point, X= -68.5423 Y= 72.6104

With Vertex

at point, X= -85.0423 Y= 79.9104

With Vertex

at point, X=-101.5434 Y= 79.3781

With Vertex

at point, X= -94.0423 Y= 71.8771

END AREA

surface in sqf = 192.2668

text STA. 49+00

AREA

With Vertex

at point, X= 58.7368 Y= 160.1681

With Vertex

at point, X= 17.7368 Y= 160.1681

With Vertex

With Vertex

at point, X= -51.4702 Y= 111.8441

END AREA

surface in sqf = 48.5806

AREA

With Vertex

at point, X= -54.8743 Y= 95.8533

With Vertex

at point, X= -47.7853 Y= 102.9423

With Vertex

at point, X= -39.8372 Y= 102.1475

With Vertex

at point, X= -53.2247 Y= 95.8362

END AREA

surface in sqf = 36.3089

AREA

With Vertex

at point, X= -32.0423 Y= 71.8771

With Vertex

With Vertex

at point, X= -44.5833 Y= 123.0242

END AREA

surface in sqf = 11.0374

AREA

With Vertex

at point, X= -53.9702 Y= 111.8441

With Vertex

at point, X= -53.9702 Y= 117.9225

With Vertex

at point, X= -43.4445 Y= 116.8699

With Vertex

at point, X= -49.6198 Y= 110.6946

With Vertex

at point, X= -51.4702 Y= 110.7138

With Vertex

at point, X= -64.0171 Y= 134.0727

With Vertex

at point, X= -64.0171 Y= 134.4424

With Vertex

at point, X= -64.0171 Y= 135.5727

With Vertex

at point, X= -66.5171 Y= 135.5727

END AREA

surface in sqf = 103.3333

AREA

With Vertex

at point, X= -55.1090 Y= 124.0768

With Vertex

at point, X= -55.1090 Y= 125.0818

With Vertex

at point, X= -43.6696 Y= 123.9378

With Vertex

at point, X= -83.5171 Y= 143.1560

With Vertex

at point, X= -83.5171 Y= 135.5727

With Vertex

at point, X=-102.5171 Y= 135.1560

With Vertex

at point, X=-121.5171 Y= 135.5727

With Vertex

at point, X=-121.5171 Y= 143.1560

With Vertex

at point, X=-122.5171 Y= 143.1560

With Vertex

at point, X=-122.5171 Y= 135.5727

With Vertex

at point, X=-123.0171 Y= 135.5727

With Vertex

at point, X=-123.0171 Y= 134.0727

DETAIL CALCULATION OF AREAS BY CROSS PRODUCT
by EDGAR O. MORENO

STA. 48+00

AREA

With Vertex

at point, X= -66.5171 Y= 141.6510

With Vertex

at point, X= -66.5171 Y= 142.6560

With Vertex

at point, X= -66.5171 Y= 143.1560

With Vertex

at point, X= -67.5171 Y= 143.1560

With Vertex

at point, X= -67.5171 Y= 135.5727

With Vertex

at point, X= -82.0171 Y= 135.5727

With Vertex

at point, X= -82.5171 Y= 135.5727

With Vertex

at point, X= -82.5171 Y= 143.1560

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS - KIP FEET

NODE	LOAD	X FORCE	Y FORCE	MOMENT
	5	4.35	0.81	0.00
	6	-9.82	-0.48	0.00
	7	8.97	2.20	0.00
	8	-4.24	-0.14	0.00
41	1	-7.63	0.84	0.00
	2	5.96	-0.26	0.00
	3	18.57	-0.78	0.00
	4	1.65	-0.46	0.00
	5	-15.41	1.15	0.00
	6	31.35	-1.16	0.00
	7	-35.97	3.04	0.00
	8	12.58	-0.40	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	Y FORCE	MOMENT
	3	-0.30	0.18	0.00
	4	-0.11	-0.30	0.00
	5	0.25	0.35	0.00
	6	-0.13	0.14	0.00
	7	1.06	0.72	0.00
	8	0.09	-0.01	0.00
35	1	0.73	0.13	0.00
	2	-0.26	0.07	0.00
	3	-0.79	0.21	0.00
	4	-0.16	-0.31	0.00
	5	0.66	0.32	0.00
	6	-0.94	0.22	0.00
	7	2.05	0.71	0.00
	8	-0.22	0.04	0.00
36	1	0.96	0.17	0.00
	2	-0.48	0.07	0.00
	3	-1.43	0.22	0.00
	4	-0.21	-0.31	0.00
	5	1.19	0.31	0.00
	6	-2.07	0.29	0.00
	7	3.26	0.75	0.00
	8	-0.68	0.08	0.00
37	1	1.24	0.24	0.00
	2	-0.76	0.06	0.00
	3	-2.27	0.19	0.00
	4	-0.27	-0.33	0.00
	5	1.90	0.34	0.00
	6	-3.58	0.29	0.00
	7	4.81	0.89	0.00
	8	-1.31	0.10	0.00
38	1	1.38	0.34	0.00
	2	-1.08	0.03	0.00
	3	-3.21	0.10	0.00
	4	-0.30	-0.35	0.00
	5	2.68	0.42	0.00
	6	-5.43	0.19	0.00
	7	6.32	1.15	0.00
	8	-2.13	0.09	0.00
39	1	1.34	0.47	0.00
	2	-1.38	-0.03	0.00
	3	-4.11	-0.08	0.00
	4	-0.29	-0.38	0.00
	5	3.44	0.57	0.00
	6	-7.39	-0.05	0.00
	7	7.55	1.58	0.00
	8	-3.07	0.01	0.00
40	1	1.24	0.64	0.00
	2	-1.75	-0.12	0.00
	3	-5.21	-0.37	0.00
	4	-0.27	-0.42	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	Y FORCE	MOMENT
28	1	-0.06	0.12	0.00
	2	0.06	0.00	0.00
	3	0.19	0.00	0.00
	4	0.01	-0.31	0.00
	5	-0.16	0.50	0.00
	6	0.34	-0.24	0.00
	7	-0.35	1.00	0.00
	8	0.14	-0.19	0.00
29	1	-0.05	0.12	0.00
	2	0.08	0.01	0.00
	3	0.24	0.02	0.00
	4	0.01	-0.31	0.00
	5	-0.20	0.49	0.00
	6	0.45	-0.22	0.00
	7	-0.41	0.98	0.00
	8	0.20	-0.18	0.00
30	1	-0.02	0.11	0.00
	2	0.09	0.01	0.00
	3	0.26	0.04	0.00
	4	0.00	-0.31	0.00
	5	-0.22	0.47	0.00
	6	0.54	-0.18	0.00
	7	-0.40	0.94	0.00
	8	0.25	-0.16	0.00
31	1	0.04	0.10	0.00
	2	0.09	0.02	0.00
	3	0.27	0.07	0.00
	4	-0.01	-0.30	0.00
	5	-0.23	0.45	0.00
	6	0.62	-0.12	0.00
	7	-0.33	0.89	0.00
	8	0.30	-0.13	0.00
32	1	0.15	0.10	0.00
	2	0.06	0.03	0.00
	3	0.18	0.10	0.00
	4	-0.03	-0.30	0.00
	5	-0.15	0.41	0.00
	6	0.54	-0.05	0.00
	7	-0.07	0.83	0.00
	8	0.30	-0.10	0.00
33	1	0.29	0.10	0.00
	2	0.00	0.05	0.00
	3	-0.01	0.14	0.00
	4	-0.06	-0.30	0.00
	5	0.01	0.38	0.00
	6	0.28	0.04	0.00
	7	0.39	0.77	0.00
	8	0.22	-0.06	0.00
34	1	0.49	0.11	0.00
	2	-0.10	0.06	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	Y FORCE	MOMENT
	7	-0.04	1.02	0.00
	8	0.00	-0.20	0.00
22	1	0.00	0.12	0.00
	2	0.00	0.00	0.00
	3	0.00	-0.01	0.00
	4	0.00	-0.31	0.00
	5	0.00	0.51	0.00
	6	0.00	-0.26	0.00
	7	0.00	1.01	0.00
	8	0.00	-0.20	0.00
23	1	0.02	0.12	0.00
	2	-0.01	0.00	0.00
	3	-0.02	-0.01	0.00
	4	0.00	-0.31	0.00
	5	0.01	0.51	0.00
	6	0.00	-0.26	0.00
	7	0.05	1.01	0.00
	8	0.01	-0.20	0.00
24	1	0.00	0.12	0.00
	2	0.00	0.00	0.00
	3	0.00	-0.01	0.00
	4	0.00	-0.31	0.00
	5	0.00	0.51	0.00
	6	0.02	-0.26	0.00
	7	0.00	1.02	0.00
	8	0.01	-0.20	0.00
25	1	-0.02	0.12	0.00
	2	0.01	0.00	0.00
	3	0.03	-0.01	0.00
	4	0.01	-0.31	0.00
	5	-0.03	0.51	0.00
	6	0.06	-0.26	0.00
	7	-0.07	1.02	0.00
	8	0.02	-0.20	0.00
26	1	-0.04	0.13	0.00
	2	0.03	0.00	0.00
	3	0.08	-0.01	0.00
	4	0.01	-0.31	0.00
	5	-0.06	0.51	0.00
	6	0.13	-0.26	0.00
	7	-0.16	1.02	0.00
	8	0.05	-0.20	0.00
27	1	-0.05	0.12	0.00
	2	0.04	0.00	0.00
	3	0.13	-0.01	0.00
	4	0.01	-0.31	0.00
	5	-0.11	0.50	0.00
	6	0.22	-0.26	0.00
	7	-0.25	1.02	0.00
	8	0.09	-0.19	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	Y FORCE	MOMENT
	5	0.20	0.49	0.00
	6	-0.45	-0.22	0.00
	7	0.41	0.98	0.00
	8	-0.20	-0.18	0.00
16	1	0.06	0.12	0.00
	2	-0.06	0.00	0.00
	3	-0.19	0.00	0.00
	4	-0.01	-0.31	0.00
	5	0.16	0.50	0.00
	6	-0.34	-0.24	0.00
	7	0.34	1.00	0.00
	8	-0.14	-0.19	0.00
17	1	0.05	0.12	0.00
	2	-0.04	0.00	0.00
	3	-0.13	-0.01	0.00
	4	-0.01	-0.31	0.00
	5	0.11	0.50	0.00
	6	-0.22	-0.26	0.00
	7	0.25	1.02	0.00
	8	-0.09	-0.19	0.00
18	1	0.04	0.13	0.00
	2	-0.03	0.00	0.00
	3	-0.08	-0.01	0.00
	4	-0.01	-0.31	0.00
	5	0.06	0.51	0.00
	6	-0.13	-0.26	0.00
	7	0.16	1.02	0.00
	8	-0.05	-0.20	0.00
19	1	0.02	0.13	0.00
	2	-0.01	0.00	0.00
	3	-0.03	-0.01	0.00
	4	-0.01	-0.31	0.00
	5	0.03	0.51	0.00
	6	-0.06	-0.26	0.00
	7	0.07	1.02	0.00
	8	-0.02	-0.20	0.00
20	1	0.00	0.12	0.00
	2	0.00	0.00	0.00
	3	0.00	-0.01	0.00
	4	0.00	-0.31	0.00
	5	0.00	0.51	0.00
	6	-0.01	-0.26	0.00
	7	0.00	1.02	0.00
	8	-0.01	-0.20	0.00
21	1	-0.02	0.12	0.00
	2	0.00	0.00	0.00
	3	0.01	-0.01	0.00
	4	0.00	-0.31	0.00
	5	-0.01	0.51	0.00
	6	0.01	-0.26	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	Y FORCE	MOMENT
	3	0.78	0.21	0.00
	4	0.16	-0.31	0.00
	5	-0.66	0.32	0.00
	6	0.93	0.22	0.00
	7	-2.05	0.71	0.00
	8	0.22	0.04	0.00
10	1	-0.49	0.11	0.00
	2	0.10	0.06	0.00
	3	0.30	0.18	0.00
	4	0.11	-0.30	0.00
	5	-0.25	0.35	0.00
	6	0.13	0.14	0.00
	7	-1.06	0.72	0.00
	8	-0.09	-0.01	0.00
11	1	-0.29	0.10	0.00
	2	0.00	0.05	0.00
	3	0.01	0.14	0.00
	4	0.06	-0.30	0.00
	5	-0.01	0.38	0.00
	6	-0.28	0.04	0.00
	7	-0.39	0.77	0.00
	8	-0.22	-0.06	0.00
12	1	-0.15	0.10	0.00
	2	-0.06	0.03	0.00
	3	-0.18	0.10	0.00
	4	0.03	-0.30	0.00
	5	0.15	0.42	0.00
	6	-0.54	-0.05	0.00
	7	0.07	0.83	0.00
	8	-0.30	-0.10	0.00
13	1	-0.04	0.10	0.00
	2	-0.09	0.02	0.00
	3	-0.27	0.07	0.00
	4	0.01	-0.30	0.00
	5	0.23	0.45	0.00
	6	-0.62	-0.12	0.00
	7	0.33	0.89	0.00
	8	-0.30	-0.13	0.00
14	1	0.02	0.11	0.00
	2	-0.09	0.01	0.00
	3	-0.26	0.04	0.00
	4	0.00	-0.31	0.00
	5	0.22	0.47	0.00
	6	-0.54	-0.18	0.00
	7	0.40	0.94	0.00
	8	-0.25	-0.16	0.00
15	1	0.05	0.12	0.00
	2	-0.08	0.01	0.00
	3	-0.24	0.02	0.00
	4	-0.01	-0.31	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	Y FORCE	MOMENT
3	1	7.64	0.84	0.00
	2	-5.97	-0.26	0.00
	3	-18.60	-0.78	0.00
	4	-1.65	-0.46	0.00
	5	15.44	1.15	0.00
	6	-31.40	-1.16	0.00
	7	36.02	3.04	0.00
	8	-12.60	-0.40	0.00
4	1	-1.25	0.64	0.00
	2	1.76	-0.12	0.00
	3	5.22	-0.37	0.00
	4	0.27	-0.42	0.00
	5	-4.36	0.81	0.00
	6	9.85	-0.48	0.00
	7	-8.99	2.20	0.00
	8	4.25	-0.14	0.00
5	1	-1.34	0.47	0.00
	2	1.39	-0.03	0.00
	3	4.12	-0.08	0.00
	4	0.29	-0.38	0.00
	5	-3.44	0.57	0.00
	6	7.41	-0.05	0.00
	7	-7.57	1.58	0.00
	8	3.07	0.01	0.00
6	1	-1.38	0.34	0.00
	2	1.08	0.03	0.00
	3	3.22	0.10	0.00
	4	0.30	-0.35	0.00
	5	-2.69	0.42	0.00
	6	5.45	0.19	0.00
	7	-6.34	1.15	0.00
	8	2.14	0.09	0.00
7	1	-1.23	0.24	0.00
	2	0.76	0.06	0.00
	3	2.27	0.19	0.00
	4	0.27	-0.33	0.00
	5	-1.90	0.34	0.00
	6	3.57	0.29	0.00
	7	-4.81	0.89	0.00
	8	1.30	0.10	0.00
8	1	-0.96	0.17	0.00
	2	0.48	0.07	0.00
	3	1.43	0.22	0.00
	4	0.21	-0.31	0.00
	5	-1.19	0.31	0.00
	6	2.06	0.29	0.00
	7	-3.26	0.75	0.00
	8	0.68	0.08	0.00
9	1	-0.72	0.13	0.00
	2	0.26	0.07	0.00

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	43	0.00	0.00	0.00
		42	-1.23	2.61	-7.16

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
3	1	7.64	0.84	0.00
	2	-5.97	-0.26	0.00
	3	-18.60	-0.78	0.00
	4	-1.65	-0.46	0.00
	5	15.44	1.15	0.00
	6	-31.40	-1.16	0.00
	7	36.02	3.04	0.00
	8	-12.60	-0.40	0.00
4	1	-1.25	0.64	0.00
	2	1.76	-0.12	0.00
	3	5.22	-0.37	0.00
	4	0.27	-0.42	0.00
	5	-4.36	0.81	0.00
	6	9.85	-0.48	0.00
	7	-8.99	2.20	0.00
	8	4.25	-0.14	0.00
5	1	-1.34	0.47	0.00
	2	1.39	-0.03	0.00
	3	4.12	-0.08	0.00
	4	0.29	-0.38	0.00
	5	-3.44	0.57	0.00
	6	7.41	-0.05	0.00
	7	-7.57	1.58	0.00
	8	3.07	0.01	0.00
6	1	-1.38	0.34	0.00
	2	1.08	0.03	0.00
	3	3.22	0.10	0.00
	4	0.30	-0.35	0.00
	5	-2.69	0.42	0.00
	6	5.45	0.19	0.00
	7	-6.34	1.15	0.00
	8	2.14	0.09	0.00
7	1	-1.23	0.24	0.00
	2	0.76	0.06	0.00
	3	2.27	0.19	0.00
	4	0.27	-0.33	0.00
	5	-1.90	0.34	0.00
	6	3.57	0.29	0.00
	7	-4.81	0.89	0.00
	8	1.30	0.10	0.00
8	1	-0.96	0.17	0.00
	2	0.48	0.07	0.00
	3	1.43	0.22	0.00
	4	0.21	-0.31	0.00
	5	-1.19	0.31	0.00
	6	2.06	0.29	0.00
	7	-3.26	0.75	0.00
	8	0.68	0.08	0.00
9	1	-0.72	0.13	0.00
	2	0.26	0.07	0.00

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
	3	0.78	0.21	0.00
	4	0.16	-0.31	0.00
	5	-0.66	0.32	0.00
	6	0.93	0.22	0.00
	7	-2.05	0.71	0.00
	8	0.22	0.04	0.00
10	1	-0.49	0.11	0.00
	2	0.10	0.06	0.00
	3	0.30	0.18	0.00
	4	0.11	-0.30	0.00
	5	-0.25	0.35	0.00
	6	0.13	0.14	0.00
	7	-1.06	0.72	0.00
	8	-0.09	-0.01	0.00
11	1	-0.29	0.10	0.00
	2	0.00	0.05	0.00
	3	0.01	0.14	0.00
	4	0.06	-0.30	0.00
	5	-0.01	0.38	0.00
	6	-0.28	0.04	0.00
	7	-0.39	0.77	0.00
	8	-0.22	-0.06	0.00
12	1	-0.15	0.10	0.00
	2	-0.06	0.03	0.00
	3	-0.18	0.10	0.00
	4	0.03	-0.30	0.00
	5	0.15	0.42	0.00
	6	-0.54	-0.05	0.00
	7	0.07	0.83	0.00
	8	-0.30	-0.10	0.00
13	1	-0.04	0.10	0.00
	2	-0.09	0.02	0.00
	3	-0.27	0.07	0.00
	4	0.01	-0.30	0.00
	5	0.23	0.45	0.00
	6	-0.62	-0.12	0.00
	7	0.33	0.89	0.00
	8	-0.30	-0.13	0.00
14	1	0.02	0.11	0.00
	2	-0.09	0.01	0.00
	3	-0.26	0.04	0.00
	4	0.00	-0.31	0.00
	5	0.22	0.47	0.00
	6	-0.54	-0.18	0.00
	7	0.40	0.94	0.00
	8	-0.25	-0.16	0.00
15	1	0.05	0.12	0.00
	2	-0.08	0.01	0.00
	3	-0.24	0.02	0.00
	4	-0.01	-0.31	0.00

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
	5	0.20	0.49	0.00
	6	-0.45	-0.22	0.00
	7	0.41	0.98	0.00
	8	-0.20	-0.18	0.00
16	1	0.06	0.12	0.00
	2	-0.06	0.00	0.00
	3	-0.19	0.00	0.00
	4	-0.01	-0.31	0.00
	5	0.16	0.50	0.00
	6	-0.34	-0.24	0.00
	7	0.34	1.00	0.00
	8	-0.14	-0.19	0.00
17	1	0.05	0.12	0.00
	2	-0.04	0.00	0.00
	3	-0.13	-0.01	0.00
	4	-0.01	-0.31	0.00
	5	0.11	0.50	0.00
	6	-0.22	-0.26	0.00
	7	0.25	1.02	0.00
	8	-0.09	-0.19	0.00
18	1	0.04	0.13	0.00
	2	-0.03	0.00	0.00
	3	-0.08	-0.01	0.00
	4	-0.01	-0.31	0.00
	5	0.06	0.51	0.00
	6	-0.13	-0.26	0.00
	7	0.16	1.02	0.00
	8	-0.05	-0.20	0.00
19	1	0.02	0.13	0.00
	2	-0.01	0.00	0.00
	3	-0.03	-0.01	0.00
	4	-0.01	-0.31	0.00
	5	0.03	0.51	0.00
	6	-0.06	-0.26	0.00
	7	0.07	1.02	0.00
	8	-0.02	-0.20	0.00
20	1	0.00	0.12	0.00
	2	0.00	0.00	0.00
	3	0.00	-0.01	0.00
	4	0.00	-0.31	0.00
	5	0.00	0.51	0.00
	6	-0.01	-0.26	0.00
	7	0.00	1.02	0.00
	8	-0.01	-0.20	0.00
21	1	-0.02	0.12	0.00
	2	0.00	0.00	0.00
	3	0.01	-0.01	0.00
	4	0.00	-0.31	0.00
	5	-0.01	0.51	0.00
	6	0.01	-0.26	0.00

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
	7	-0.04	1.02	0.00
	8	0.00	-0.20	0.00
22	1	0.00	0.12	0.00
	2	0.00	0.00	0.00
	3	0.00	-0.01	0.00
	4	0.00	-0.31	0.00
	5	0.00	0.51	0.00
	6	0.00	-0.26	0.00
	7	0.00	1.01	0.00
	8	0.00	-0.20	0.00
23	1	0.02	0.12	0.00
	2	-0.01	0.00	0.00
	3	-0.02	-0.01	0.00
	4	0.00	-0.31	0.00
	5	0.01	0.51	0.00
	6	0.00	-0.26	0.00
	7	0.05	1.01	0.00
	8	0.01	-0.20	0.00
24	1	0.00	0.12	0.00
	2	0.00	0.00	0.00
	3	0.00	-0.01	0.00
	4	0.00	-0.31	0.00
	5	0.00	0.51	0.00
	6	0.02	-0.26	0.00
	7	0.00	1.02	0.00
	8	0.01	-0.20	0.00
25	1	-0.02	0.12	0.00
	2	0.01	0.00	0.00
	3	0.03	-0.01	0.00
	4	0.01	-0.31	0.00
	5	-0.03	0.51	0.00
	6	0.06	-0.26	0.00
	7	-0.07	1.02	0.00
	8	0.02	-0.20	0.00
26	1	-0.04	0.13	0.00
	2	0.03	0.00	0.00
	3	0.08	-0.01	0.00
	4	0.01	-0.31	0.00
	5	-0.06	0.51	0.00
	6	0.13	-0.26	0.00
	7	-0.16	1.02	0.00
	8	0.05	-0.20	0.00
27	1	-0.05	0.12	0.00
	2	0.04	0.00	0.00
	3	0.13	-0.01	0.00
	4	0.01	-0.31	0.00
	5	-0.11	0.50	0.00
	6	0.22	-0.26	0.00
	7	-0.25	1.02	0.00
	8	0.09	-0.19	0.00

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
28	1	-0.06	0.12	0.00
	2	0.06	0.00	0.00
	3	0.19	0.00	0.00
	4	0.01	-0.31	0.00
	5	-0.16	0.50	0.00
	6	0.34	-0.24	0.00
	7	-0.35	1.00	0.00
	8	0.14	-0.19	0.00
29	1	-0.05	0.12	0.00
	2	0.08	0.01	0.00
	3	0.24	0.02	0.00
	4	0.01	-0.31	0.00
	5	-0.20	0.49	0.00
	6	0.45	-0.22	0.00
	7	-0.41	0.98	0.00
	8	0.20	-0.18	0.00
30	1	-0.02	0.11	0.00
	2	0.09	0.01	0.00
	3	0.26	0.04	0.00
	4	0.00	-0.31	0.00
	5	-0.22	0.47	0.00
	6	0.54	-0.18	0.00
	7	-0.40	0.94	0.00
	8	0.25	-0.16	0.00
31	1	0.04	0.10	0.00
	2	0.09	0.02	0.00
	3	0.27	0.07	0.00
	4	-0.01	-0.30	0.00
	5	-0.23	0.45	0.00
	6	0.62	-0.12	0.00
	7	-0.33	0.89	0.00
	8	0.30	-0.13	0.00
32	1	0.15	0.10	0.00
	2	0.06	0.03	0.00
	3	0.18	0.10	0.00
	4	-0.03	-0.30	0.00
	5	-0.15	0.41	0.00
	6	0.54	-0.05	0.00
	7	-0.07	0.83	0.00
	8	0.30	-0.10	0.00
33	1	0.29	0.10	0.00
	2	0.00	0.05	0.00
	3	-0.01	0.14	0.00
	4	-0.06	-0.30	0.00
	5	0.01	0.38	0.00
	6	0.28	0.04	0.00
	7	0.39	0.77	0.00
	8	0.22	-0.06	0.00
34	1	0.49	0.11	0.00
	2	-0.10	0.06	0.00

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
	3	-0.30	0.18	0.00
	4	-0.11	-0.30	0.00
	5	0.25	0.35	0.00
	6	-0.13	0.14	0.00
	7	1.06	0.72	0.00
	8	0.09	-0.01	0.00
35	1	0.73	0.13	0.00
	2	-0.26	0.07	0.00
	3	-0.79	0.21	0.00
	4	-0.16	-0.31	0.00
	5	0.66	0.32	0.00
	6	-0.94	0.22	0.00
	7	2.05	0.71	0.00
	8	-0.22	0.04	0.00
36	1	0.96	0.17	0.00
	2	-0.48	0.07	0.00
	3	-1.43	0.22	0.00
	4	-0.21	-0.31	0.00
	5	1.19	0.31	0.00
	6	-2.07	0.29	0.00
	7	3.26	0.75	0.00
	8	-0.68	0.08	0.00
37	1	1.24	0.24	0.00
	2	-0.76	0.06	0.00
	3	-2.27	0.19	0.00
	4	-0.27	-0.33	0.00
	5	1.90	0.34	0.00
	6	-3.58	0.29	0.00
	7	4.81	0.89	0.00
	8	-1.31	0.10	0.00
38	1	1.38	0.34	0.00
	2	-1.08	0.03	0.00
	3	-3.21	0.10	0.00
	4	-0.30	-0.35	0.00
	5	2.68	0.42	0.00
	6	-5.43	0.19	0.00
	7	6.32	1.15	0.00
	8	-2.13	0.09	0.00
39	1	1.34	0.47	0.00
	2	-1.38	-0.03	0.00
	3	-4.11	-0.08	0.00
	4	-0.29	-0.38	0.00
	5	3.44	0.57	0.00
	6	-7.39	-0.05	0.00
	7	7.55	1.58	0.00
	8	-3.07	0.01	0.00
40	1	1.24	0.64	0.00
	2	-1.75	-0.12	0.00
	3	-5.21	-0.37	0.00
	4	-0.27	-0.42	0.00

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

SUPPORT REACTIONS KIP FEET

NODE	LOAD	X FORCE	FORCE-Y	MOMENT
	5	4.35	0.81	0.00
	6	-9.82	-0.48	0.00
	7	8.97	2.20	0.00
	8	-4.24	-0.14	0.00
41	1	-7.63	0.84	0.00
	2	5.96	-0.26	0.00
	3	18.57	-0.78	0.00
	4	1.65	-0.46	0.00
	5	-15.41	1.15	0.00
	6	31.35	-1.16	0.00
	7	-35.97	3.04	0.00
	8	12.58	-0.40	0.00

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
1	1	1	0.00	0.00	0.00
		2	-1.23	0.00	0.00
	2	1	0.00	0.00	0.00
		2	0.00	-0.59	2.41
	3	1	0.00	0.00	0.00
		2	0.00	-2.61	7.16
	4	1	0.00	0.00	0.00
		2	0.00	0.00	0.00
	5	1	0.00	0.00	0.00
		2	0.00	2.08	-5.98
	6	1	0.00	0.00	0.00
		2	-1.60	-5.17	15.23
	7	1	0.00	0.00	0.00
		2	-1.60	3.52	-10.10
	8	1	0.00	0.00	0.00
		2	-1.23	-2.61	7.16
2	1	2	0.00	-1.43	0.00
		3	0.00	1.51	-0.73
	2	2	0.59	0.00	-2.41
		3	-0.59	0.00	2.41
	3	2	2.61	0.00	-7.16
		3	-2.61	0.00	7.16
	4	2	0.00	0.31	0.00
		3	0.00	-0.31	0.16
	5	2	-2.08	0.00	5.98
		3	2.08	0.00	-5.98
	6	2	5.17	-1.45	-15.23
		3	-5.17	1.56	14.47
	7	2	-3.52	-1.85	10.10
		3	3.52	1.97	-11.06
	8	2	2.61	-1.11	-7.16
		3	-2.61	1.20	6.58
3	1	3	7.65	-0.59	0.73
		4	-7.65	0.76	-1.41
	2	3	-5.38	-0.32	-2.41
		4	5.38	0.32	2.09
	3	3	-15.98	-0.96	-7.16
		4	15.98	0.96	6.20
	4	3	-1.65	0.15	-0.16
		4	1.65	-0.15	0.30
	5	3	13.35	0.80	5.98
		4	-13.35	-0.80	-5.18
	6	3	-26.20	-2.60	-14.47
		4	26.19	2.83	11.76
	7	3	32.50	0.59	11.06
		4	-32.50	-0.36	-10.58

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	3	-9.98	-1.39	-6.58
		4	9.98	1.57	5.10
4	1	4	6.40	-0.13	1.41
		5	-6.40	0.30	-1.62
	2	4	-3.62	-0.43	-2.09
		5	3.62	0.43	1.66
	3	4	-10.75	-1.26	-6.20
		5	10.75	1.26	4.94
	4	4	-1.38	0.05	-0.30
		5	1.38	-0.05	0.35
	5	4	8.98	1.06	5.18
		5	-8.98	-1.06	-4.12
	6	4	-16.35	-2.80	-11.76
		5	16.34	3.02	8.85
	7	4	23.50	1.61	10.58
		5	-23.50	-1.39	-9.08
	8	4	-5.73	-1.35	-5.10
		5	5.73	1.52	3.66
5	1	5	5.05	0.16	1.62
		6	-5.05	0.01	-1.55
	2	5	-2.23	-0.44	-1.66
		6	2.23	0.44	1.22
	3	5	-6.63	-1.30	-4.94
		6	6.63	1.30	3.64
	4	5	-1.08	-0.02	-0.35
		6	1.08	0.02	0.34
	5	5	5.54	1.09	4.12
		6	-5.54	-1.09	-3.04
	6	5	-8.94	-2.58	-8.85
		6	8.94	2.80	6.16
	7	5	15.92	2.04	9.08
		6	-15.93	-1.82	-7.15
	8	5	-2.66	-1.16	-3.66
		6	2.66	1.33	2.42
6	1	6	3.67	0.31	1.55
		7	-3.67	-0.15	-1.32
	2	6	-1.15	-0.39	-1.22
		7	1.15	0.39	0.83
	3	6	-3.41	-1.17	-3.64
		7	3.41	1.17	2.47
	4	6	-0.78	-0.05	-0.34
		7	0.78	0.05	0.29
	5	6	2.85	0.98	3.04
		7	-2.85	-0.98	-2.06
	6	6	-3.50	-2.14	-6.16
		7	3.50	2.36	3.90
	7	6	9.59	2.06	7.15
		7	-9.59	-1.84	-5.20

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	6	-0.52	-0.91	-2.42
		7	0.52	1.07	1.43
7	1	7	2.43	0.37	1.32
		8	-2.44	-0.21	-1.03
	2	7	-0.39	-0.32	-0.83
		8	0.39	0.32	0.51
	3	7	-1.14	-0.95	-2.47
		8	1.14	0.95	1.51
	4	7	-0.51	-0.06	-0.29
		8	0.51	0.06	0.22
	5	7	0.96	0.80	2.06
		8	-0.96	-0.80	-1.26
	6	7	0.07	-1.63	-3.90
		8	-0.07	1.84	2.17
	7	7	4.78	1.83	5.20
		8	-4.78	-1.62	-3.47
	8	7	0.78	-0.64	-1.43
		8	-0.78	0.81	0.71
8	1	8	1.48	0.37	1.03
		9	-1.48	-0.21	-0.74
	2	8	0.09	-0.24	-0.51
		9	-0.09	0.24	0.27
	3	8	0.28	-0.71	-1.51
		9	-0.28	0.71	0.80
	4	8	-0.30	-0.06	-0.22
		9	0.30	0.06	0.16
	5	8	-0.23	0.60	1.26
		9	0.23	-0.60	-0.67
	6	8	2.13	-1.12	-2.17
		9	-2.13	1.33	0.95
	7	8	1.53	1.49	3.47
		9	-1.53	-1.28	-2.09
	8	8	1.46	-0.41	-0.71
		9	-1.46	0.57	0.22
9	1	9	0.75	0.33	0.74
		10	-0.76	-0.18	-0.48
	2	9	0.36	-0.17	-0.27
		10	-0.36	0.17	0.10
	3	9	1.06	-0.49	-0.80
		10	-1.06	0.49	0.31
	4	9	-0.14	-0.06	-0.16
		10	0.14	0.06	0.10
	5	9	-0.89	0.41	0.67
		10	0.89	-0.41	-0.26
	6	9	3.06	-0.69	-0.95
		10	-3.06	0.89	0.16
	7	9	-0.52	1.12	2.09
		10	0.51	-0.92	-1.06

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	9	1.67	-0.22	-0.22
		10	-1.68	0.37	-0.07
10	1	10	0.26	0.28	0.48
		11	-0.26	-0.12	-0.28
	2	10	0.46	-0.10	-0.10
		11	-0.46	0.10	0.00
	3	10	1.36	-0.30	-0.31
		11	-1.36	0.30	0.00
	4	10	-0.03	-0.04	-0.10
		11	0.03	0.04	0.06
	5	10	-1.13	0.25	0.26
		11	1.13	-0.25	0.00
	6	10	3.18	-0.35	-0.16
		11	-3.18	0.54	-0.28
	7	10	-1.57	0.79	1.06
		11	1.57	-0.59	-0.38
	8	10	1.58	-0.07	0.07
		11	-1.59	0.22	-0.22
11	1	11	-0.03	0.22	0.28
		12	0.03	-0.07	-0.14
	2	11	0.46	-0.05	0.00
		12	-0.46	0.05	-0.05
	3	11	1.36	-0.16	0.00
		12	-1.36	0.16	-0.16
	4	11	0.03	-0.03	-0.06
		12	-0.03	0.03	0.03
	5	11	-1.14	0.13	0.00
		12	1.14	-0.13	0.13
	6	11	2.90	-0.10	0.28
		12	-2.90	0.29	-0.48
	7	11	-1.96	0.51	0.38
		12	1.96	-0.32	0.04
	8	11	1.36	0.03	0.22
		12	-1.36	0.12	-0.27
12	1	12	-0.18	0.17	0.14
		13	0.18	-0.02	-0.05
	2	12	0.40	-0.02	0.05
		13	-0.40	0.02	-0.07
	3	12	1.18	-0.06	0.16
		13	-1.18	0.06	-0.22
	4	12	0.06	-0.02	-0.03
		13	-0.06	0.02	0.01
	5	12	-0.98	0.05	-0.13
		13	0.98	-0.05	0.18
	6	12	2.35	0.06	0.48
		13	-2.36	0.13	-0.51
	7	12	-1.89	0.30	-0.04
		13	1.89	-0.11	0.25

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	12	1.06	0.08	0.27
		13	-1.06	0.06	-0.26
13	1	13	-0.22	0.12	0.05
		14	0.21	0.02	0.01
	2	13	0.30	0.00	0.07
		14	-0.30	0.00	-0.07
	3	13	0.91	0.00	0.22
		14	-0.91	0.00	-0.22
	4	13	0.07	-0.01	-0.01
		14	-0.07	0.01	0.00
	5	13	-0.76	0.00	-0.18
		14	0.76	0.00	0.18
	6	13	1.74	0.15	0.51
		14	-1.74	0.04	-0.46
	7	13	-1.56	0.16	-0.25
		14	1.56	0.02	0.31
	8	13	0.76	0.11	0.26
		14	-0.76	0.03	-0.21
14	1	14	-0.20	0.09	-0.01
		15	0.19	0.05	0.03
	2	14	0.22	0.01	0.07
		15	-0.22	-0.01	-0.06
	3	14	0.64	0.03	0.22
		15	-0.64	-0.03	-0.18
	4	14	0.07	-0.01	0.00
		15	-0.07	0.01	-0.01
	5	14	-0.54	-0.03	-0.18
		15	0.54	0.03	0.15
	6	14	1.20	0.19	0.46
		15	-1.20	-0.01	-0.36
	7	14	-1.16	0.07	-0.31
		15	1.16	0.11	0.30
	8	14	0.51	0.12	0.21
		15	-0.51	0.02	-0.16
15	1	15	-0.14	0.07	-0.03
		16	0.14	0.06	0.03
	2	15	0.14	0.02	0.06
		16	-0.14	-0.02	-0.05
	3	15	0.40	0.05	0.18
		16	-0.40	-0.05	-0.14
	4	15	0.05	0.00	0.01
		16	-0.05	0.00	-0.01
	5	15	-0.34	-0.04	-0.15
		16	0.34	0.04	0.11
	6	15	0.74	0.19	0.36
		16	-0.75	-0.02	-0.26
	7	15	-0.75	0.03	-0.30
		16	0.75	0.15	0.24

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	15	0.32	0.12	0.16
		16	-0.32	0.02	-0.11
16	1	16	-0.08	0.06	-0.03
		17	0.08	0.07	0.03
	2	16	0.07	0.02	0.05
		17	-0.07	-0.02	-0.03
	3	16	0.22	0.05	0.14
		17	-0.22	-0.05	-0.09
	4	16	0.04	0.00	0.01
		17	-0.04	0.00	-0.01
	5	16	-0.18	-0.04	-0.11
		17	0.18	0.04	0.07
	6	16	0.41	0.18	0.26
		17	-0.41	0.00	-0.16
	7	16	-0.41	0.01	-0.24
		17	0.41	0.16	0.16
	8	16	0.18	0.11	0.11
		17	-0.18	0.03	-0.07
17	1	17	-0.03	0.05	-0.03
		18	0.02	0.08	0.02
	2	17	0.03	0.01	0.03
		18	-0.03	-0.01	-0.02
	3	17	0.09	0.04	0.09
		18	-0.09	-0.04	-0.05
	4	17	0.03	0.00	0.01
		18	-0.03	0.00	-0.01
	5	17	-0.07	-0.03	-0.07
		18	0.07	0.03	0.04
	6	17	0.19	0.15	0.16
		18	-0.19	0.01	-0.09
	7	17	-0.16	0.01	-0.16
		18	0.15	0.15	0.09
	8	17	0.09	0.09	0.07
		18	-0.09	0.04	-0.04
18	1	18	0.01	0.05	-0.02
		19	-0.01	0.08	0.00
	2	18	0.00	0.01	0.02
		19	0.00	-0.01	-0.01
	3	18	0.01	0.03	0.05
		19	-0.01	-0.03	-0.02
	4	18	0.02	0.00	0.01
		19	-0.02	0.00	0.00
	5	18	-0.01	-0.02	-0.04
		19	0.01	0.02	0.02
	6	18	0.06	0.13	0.09
		19	-0.06	0.03	-0.05
	7	18	0.00	0.02	-0.09
		19	0.00	0.14	0.03

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	18	0.04	0.08	0.04
		19	-0.04	0.05	-0.02
19	1	19	0.03	0.05	0.00
		20	-0.03	0.07	-0.01
	2	19	-0.01	0.01	0.01
		20	0.01	-0.01	0.00
	3	19	-0.02	0.02	0.02
		20	0.02	-0.02	0.00
	4	19	0.01	0.00	0.00
		20	-0.01	0.00	0.00
	5	19	0.02	-0.02	-0.02
		20	-0.02	0.02	0.00
	6	19	0.00	0.11	0.05
		20	-0.01	0.05	-0.02
	7	19	0.07	0.04	-0.03
		20	-0.07	0.12	-0.01
	8	19	0.02	0.07	0.02
		20	-0.02	0.05	-0.01
20	1	20	0.03	0.05	0.01
		21	-0.03	0.07	-0.02
	2	20	-0.01	0.00	0.00
		21	0.01	0.00	0.00
	3	20	-0.03	0.01	0.00
		21	0.03	-0.01	0.01
	4	20	0.00	0.00	0.00
		21	0.00	0.00	0.00
	5	20	0.02	-0.01	0.00
		21	-0.02	0.01	-0.01
	6	20	-0.01	0.09	0.02
		21	0.01	0.07	-0.01
	7	20	0.08	0.05	0.01
		21	-0.08	0.10	-0.04
	8	20	0.01	0.06	0.01
		21	-0.01	0.06	-0.01
21	1	21	0.01	0.05	0.02
		22	-0.01	0.06	-0.02
	2	21	0.00	0.00	0.00
		22	0.00	0.00	0.00
	3	21	-0.01	0.00	-0.01
		22	0.01	0.00	0.01
	4	21	0.00	0.00	0.00
		22	0.00	0.00	0.00
	5	21	0.01	0.00	0.01
		22	-0.01	0.00	-0.01
	6	21	0.00	0.08	0.01
		22	0.00	0.07	-0.01
	7	21	0.03	0.06	0.04
		22	-0.03	0.09	-0.05

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	21	0.00	0.06	0.01
		22	0.00	0.06	-0.01
22	1	22	0.01	0.06	0.02
		23	-0.01	0.05	-0.02
	2	22	0.00	0.00	0.00
		23	0.00	0.00	0.00
	3	22	-0.01	0.00	-0.01
		23	0.01	0.00	0.01
	4	22	0.00	0.00	0.00
		23	0.00	0.00	0.00
	5	22	0.01	0.00	0.01
		23	-0.01	0.00	-0.01
	6	22	-0.01	0.07	0.01
		23	0.01	0.08	-0.01
	7	22	0.03	0.08	0.05
		23	-0.03	0.06	-0.04
	8	22	0.00	0.06	0.01
		23	0.00	0.06	-0.01
23	1	23	0.03	0.07	0.02
		24	-0.03	0.05	-0.01
	2	23	-0.01	0.00	0.00
		24	0.01	0.00	0.00
	3	23	-0.03	-0.01	-0.01
		24	0.03	0.01	0.00
	4	23	0.00	0.00	0.00
		24	0.00	0.00	0.00
	5	23	0.02	0.01	0.01
		24	-0.02	-0.01	0.00
	6	23	-0.01	0.07	0.01
		24	0.01	0.09	-0.02
	7	23	0.08	0.11	0.04
		24	-0.08	0.05	-0.01
	8	23	0.01	0.06	0.01
		24	-0.01	0.06	-0.02
24	1	24	0.03	0.07	0.01
		25	-0.03	0.05	0.00
	2	24	-0.01	-0.01	0.00
		25	0.01	0.01	-0.01
	3	24	-0.02	-0.02	0.00
		25	0.02	0.02	-0.02
	4	24	0.01	0.00	0.00
		25	-0.01	0.00	0.00
	5	24	0.02	0.02	0.00
		25	-0.02	-0.02	0.02
	6	24	0.01	0.05	0.02
		25	0.00	0.11	-0.05
	7	24	0.07	0.12	0.01
		25	-0.07	0.04	0.03

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	24	0.02	0.05	0.02
		25	-0.02	0.07	-0.02
25	1	25	0.01	0.08	0.00
		26	-0.01	0.05	0.02
	2	25	0.00	-0.01	0.01
		26	0.00	0.01	-0.02
	3	25	0.01	-0.03	0.02
		26	-0.01	0.03	-0.05
	4	25	0.02	0.00	0.00
		26	-0.02	0.00	-0.01
	5	25	-0.01	0.02	-0.02
		26	0.01	-0.02	0.04
	6	25	0.06	0.03	0.05
		26	-0.06	0.13	-0.10
	7	25	0.00	0.14	-0.03
		26	0.00	0.02	0.09
	8	25	0.04	0.05	0.02
		26	-0.04	0.08	-0.04
26	1	26	-0.02	0.08	-0.02
		27	0.03	0.05	0.03
	2	26	0.03	-0.01	0.02
		27	-0.03	0.01	-0.03
	3	26	0.09	-0.04	0.05
		27	-0.09	0.04	-0.09
	4	26	0.03	0.00	0.01
		27	-0.03	0.00	-0.01
	5	26	-0.07	0.03	-0.04
		27	0.07	-0.03	0.07
	6	26	0.19	0.01	0.10
		27	-0.19	0.15	-0.16
	7	26	-0.16	0.15	-0.09
		27	0.16	0.01	0.16
	8	26	0.09	0.04	0.04
		27	-0.09	0.09	-0.07
27	1	27	-0.08	0.07	-0.03
		28	0.08	0.06	0.04
	2	27	0.07	-0.02	0.03
		28	-0.07	0.02	-0.05
	3	27	0.22	-0.05	0.09
		28	-0.22	0.05	-0.14
	4	27	0.04	0.00	0.01
		28	-0.04	0.00	-0.01
	5	27	-0.18	0.04	-0.07
		28	0.18	-0.04	0.11
	6	27	0.41	0.00	0.16
		28	-0.41	0.18	-0.26
	7	27	-0.41	0.16	-0.16
		28	0.41	0.01	0.24

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	27	0.18	0.03	0.07
		28	-0.18	0.11	-0.11
28	1	28	-0.14	0.06	-0.04
		29	0.14	0.07	0.03
	2	28	0.14	-0.02	0.05
		29	-0.14	0.02	-0.06
	3	28	0.40	-0.05	0.14
		29	-0.40	0.05	-0.18
	4	28	0.05	0.00	0.01
		29	-0.05	0.00	-0.01
	5	28	-0.34	0.04	-0.11
		29	0.34	-0.04	0.15
	6	28	0.75	-0.02	0.26
		29	-0.75	0.19	-0.36
	7	28	-0.75	0.15	-0.24
		29	0.76	0.03	0.30
	8	28	0.32	0.02	0.11
		29	-0.32	0.12	-0.16
29	1	29	-0.19	0.05	-0.03
		30	0.20	0.09	0.01
	2	29	0.22	-0.01	0.06
		30	-0.22	0.01	-0.07
	3	29	0.64	-0.03	0.18
		30	-0.64	0.03	-0.22
	4	29	0.07	0.01	0.01
		30	-0.07	-0.01	0.00
	5	29	-0.54	0.03	-0.15
		30	0.54	-0.03	0.18
	6	29	1.20	-0.01	0.36
		30	-1.20	0.19	-0.46
	7	29	-1.16	0.11	-0.30
		30	1.16	0.07	0.31
	8	29	0.52	0.02	0.16
		30	-0.51	0.12	-0.21
30	1	30	-0.21	0.02	-0.01
		31	0.22	0.12	-0.05
	2	30	0.31	0.00	0.07
		31	-0.31	0.00	-0.07
	3	30	0.91	0.00	0.22
		31	-0.91	0.00	-0.22
	4	30	0.07	0.01	0.00
		31	-0.07	-0.01	0.01
	5	30	-0.76	0.00	-0.18
		31	0.76	0.00	0.18
	6	30	1.74	0.04	0.46
		31	-1.74	0.15	-0.51
	7	30	-1.56	0.02	-0.31
		31	1.56	0.16	0.25

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	30	0.76	0.03	0.21
		31	-0.76	0.11	-0.26
31	1	31	-0.17	-0.02	0.05
		32	0.18	0.17	-0.14
	2	31	0.40	0.02	0.07
		32	-0.40	-0.02	-0.05
	3	31	1.18	0.06	0.22
		32	-1.18	-0.06	-0.16
	4	31	0.06	0.02	-0.01
		32	-0.06	-0.02	0.03
	5	31	-0.98	-0.05	-0.18
		32	0.98	0.05	0.13
	6	31	2.36	0.13	0.51
		32	-2.36	0.06	-0.48
	7	31	-1.89	-0.11	-0.25
		32	1.89	0.30	0.04
	8	31	1.07	0.06	0.26
		32	-1.06	0.08	-0.27
32	1	32	-0.03	-0.07	0.14
		33	0.03	0.22	-0.28
	2	32	0.46	0.05	0.05
		33	-0.46	-0.05	0.00
	3	32	1.36	0.16	0.16
		33	-1.36	-0.16	0.00
	4	32	0.03	0.03	-0.03
		33	-0.03	-0.03	0.06
	5	32	-1.14	-0.13	-0.13
		33	1.14	0.13	0.00
	6	32	2.90	0.29	0.48
		33	-2.90	-0.10	-0.28
	7	32	-1.96	-0.32	-0.04
		33	1.96	0.51	-0.38
	8	32	1.36	0.12	0.27
		33	-1.36	0.03	-0.22
33	1	33	0.26	-0.12	0.28
		34	-0.26	0.28	-0.48
	2	33	0.46	0.10	0.00
		34	-0.46	-0.10	0.10
	3	33	1.36	0.30	0.00
		34	-1.36	-0.30	0.31
	4	33	-0.03	0.04	-0.06
		34	0.03	-0.04	0.10
	5	33	-1.13	-0.25	0.00
		34	1.13	0.25	-0.26
	6	33	3.18	0.54	0.28
		34	-3.18	-0.35	0.16
	7	33	-1.57	-0.59	0.38
		34	1.57	0.79	-1.07

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	33	1.58	0.22	0.22
		34	-1.58	-0.07	-0.07
34	1	34	0.76	-0.18	0.48
		35	-0.76	0.33	-0.74
	2	34	0.36	0.17	-0.10
		35	-0.36	-0.17	0.27
	3	34	1.06	0.49	-0.31
		35	-1.06	-0.49	0.80
	4	34	-0.14	0.06	-0.10
		35	0.14	-0.06	0.16
	5	34	-0.89	-0.41	0.26
		35	0.89	0.41	-0.67
	6	34	3.05	0.89	-0.16
		35	-3.05	-0.69	0.95
	7	34	-0.51	-0.92	1.07
		35	0.51	1.12	-2.09
	8	34	1.68	0.37	0.07
		35	-1.67	-0.22	0.22
35	1	35	1.48	-0.21	0.74
		36	-1.48	0.37	-1.03
	2	35	0.09	0.24	-0.27
		36	-0.09	-0.24	0.51
	3	35	0.28	0.71	-0.80
		36	-0.28	-0.71	1.52
	4	35	-0.30	0.06	-0.16
		36	0.30	-0.06	0.22
	5	35	-0.23	-0.60	0.67
		36	0.23	0.60	-1.27
	6	35	2.12	1.33	-0.95
		36	-2.12	-1.12	2.18
	7	35	1.54	-1.28	2.09
		36	-1.53	1.49	-3.48
	8	35	1.46	0.57	-0.22
		36	-1.46	-0.41	0.71
36	1	36	2.44	-0.21	1.03
		37	-2.44	0.37	-1.32
	2	36	-0.39	0.32	-0.51
		37	0.39	-0.32	0.83
	3	36	-1.15	0.95	-1.52
		37	1.15	-0.95	2.47
	4	36	-0.51	0.06	-0.22
		37	0.51	-0.06	0.29
	5	36	0.96	-0.80	1.27
		37	-0.96	0.80	-2.06
	6	36	0.06	1.84	-2.18
		37	-0.06	-1.63	3.91
	7	36	4.79	-1.62	3.48
		37	-4.79	1.83	-5.20

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	36	0.78	0.81	-0.71
		37	-0.78	-0.64	1.43
37	1	37	3.67	-0.15	1.32
		38	-3.67	0.31	-1.55
	2	37	-1.15	0.39	-0.83
		38	1.15	-0.39	1.22
	3	37	-3.42	1.17	-2.47
		38	3.42	-1.17	3.64
	4	37	-0.78	0.05	-0.29
		38	0.78	-0.05	0.34
	5	37	2.86	-0.98	2.06
		38	-2.86	0.98	-3.04
	6	37	-3.51	2.36	-3.91
		38	3.51	-2.14	6.16
	7	37	9.60	-1.84	5.20
		38	-9.60	2.06	-7.15
	8	37	-0.52	1.07	-1.43
		38	0.53	-0.91	2.42
38	1	38	5.05	0.01	1.55
		39	-5.05	0.16	-1.63
	2	38	-2.23	0.44	-1.22
		39	2.23	-0.44	1.66
	3	38	-6.63	1.30	-3.64
		39	6.63	-1.30	4.94
	4	38	-1.08	0.02	-0.34
		39	1.08	-0.02	0.35
	5	38	5.54	-1.09	3.04
		39	-5.54	1.09	-4.12
	6	38	-8.94	2.80	-6.16
		39	8.94	-2.58	8.85
	7	38	15.92	-1.82	7.15
		39	-15.92	2.04	-9.08
	8	38	-2.66	1.33	-2.42
		39	2.66	-1.16	3.67
39	1	39	6.40	0.30	1.63
		40	-6.39	-0.13	-1.41
	2	39	-3.61	0.43	-1.66
		40	3.61	-0.43	2.09
	3	39	-10.74	1.26	-4.94
		40	10.74	-1.26	6.20
	4	39	-1.37	-0.05	-0.35
		40	1.37	0.05	0.30
	5	39	8.97	-1.06	4.12
		40	-8.97	1.06	-5.18
	6	39	-16.32	3.02	-8.85
		40	16.33	-2.80	11.76
	7	39	23.48	-1.39	9.08
		40	-23.47	1.61	-10.59

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	39	-5.72	1.52	-3.67
		40	5.72	-1.35	5.10
40	1	40	7.64	0.76	1.41
		41	-7.64	-0.59	-0.73
	2	40	-5.37	0.32	-2.09
		41	5.37	-0.32	2.41
	3	40	-15.95	0.95	-6.20
		41	15.95	-0.95	7.16
	4	40	-1.65	-0.15	-0.30
		41	1.65	0.15	0.16
	5	40	13.33	-0.80	5.18
		41	-13.33	0.80	-5.98
	6	40	-26.14	2.83	-11.76
		41	26.15	-2.60	14.47
	7	40	32.46	-0.36	10.59
		41	-32.45	0.59	-11.06
	8	40	-9.96	1.57	-5.10
		41	9.96	-1.39	6.58
41	1	41	0.00	1.51	0.73
		42	0.00	-1.43	0.00
	2	41	0.59	0.00	-2.41
		42	-0.59	0.00	2.41
	3	41	2.61	0.00	-7.16
		42	-2.61	0.00	7.16
	4	41	0.00	-0.31	-0.16
		42	0.00	0.31	0.00
	5	41	-2.08	0.00	5.98
		42	2.08	0.00	-5.98
	6	41	5.17	1.56	-14.47
		42	-5.17	-1.45	15.23
	7	41	-3.52	1.97	11.06
		42	3.52	-1.85	-10.10
	8	41	2.61	1.20	-6.58
		42	-2.61	-1.11	7.16
42	1	43	0.00	0.00	0.00
		42	-1.23	0.00	0.00
	2	43	0.00	0.00	0.00
		42	0.00	0.59	-2.41
	3	43	0.00	0.00	0.00
		42	0.00	2.61	-7.16
	4	43	0.00	0.00	0.00
		42	0.00	0.00	0.00
	5	43	0.00	0.00	0.00
		42	0.00	-2.08	5.98
	6	43	0.00	0.00	0.00
		42	-1.60	5.17	-15.23
	7	43	0.00	0.00	0.00
		42	-1.60	-3.52	10.10

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	43	0.00	0.00	0.00
		42	-1.23	2.61	-7.16

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
1	1	1	0.00	0.00	0.00
		2	-1.23	0.00	0.00
	2	1	0.00	0.00	0.00
		2	0.00	-0.59	2.41
	3	1	0.00	0.00	0.00
		2	0.00	-2.61	7.16
	4	1	0.00	0.00	0.00
		2	0.00	0.00	0.00
	5	1	0.00	0.00	0.00
		2	0.00	2.08	-5.98
	6	1	0.00	0.00	0.00
		2	-1.60	-5.17	15.23
	7	1	0.00	0.00	0.00
		2	-1.60	3.52	-10.10
	8	1	0.00	0.00	0.00
		2	-1.23	-2.61	7.16
2	1	2	0.00	-1.43	0.00
		3	0.00	1.51	-0.73
	2	2	0.59	0.00	-2.41
		3	-0.59	0.00	2.41
	3	2	2.61	0.00	-7.16
		3	-2.61	0.00	7.16
	4	2	0.00	0.31	0.00
		3	0.00	-0.31	0.16
	5	2	-2.08	0.00	5.98
		3	2.08	0.00	-5.98
	6	2	5.17	-1.45	-15.23
		3	-5.17	1.56	14.47
	7	2	-3.52	-1.85	10.10
		3	3.52	1.97	-11.06
	8	2	2.61	-1.11	-7.16
		3	-2.61	1.20	6.58
3	1	3	7.65	-0.59	0.73
		4	-7.65	0.76	-1.41
	2	3	-5.38	-0.32	-2.41
		4	5.38	0.32	2.09
	3	3	-15.98	-0.96	-7.16
		4	15.98	0.96	6.20
	4	3	-1.65	0.15	-0.16
		4	1.65	-0.15	0.30
	5	3	13.35	0.80	5.98
		4	-13.35	-0.80	-5.18
	6	3	-26.20	-2.60	-14.47
		4	26.19	2.83	11.76
	7	3	32.50	0.59	11.06
		4	-32.50	-0.36	-10.58

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	3	-9.98	-1.39	-6.58
		4	9.98	1.57	5.10
4	1	4	6.40	-0.13	1.41
		5	-6.40	0.30	-1.62
	2	4	-3.62	-0.43	-2.09
		5	3.62	0.43	1.66
	3	4	-10.75	-1.26	-6.20
		5	10.75	1.26	4.94
	4	4	-1.38	0.05	-0.30
		5	1.38	-0.05	0.35
	5	4	8.98	1.06	5.18
		5	-8.98	-1.06	-4.12
	6	4	-16.35	-2.80	-11.76
		5	16.34	3.02	8.85
	7	4	23.50	1.61	10.58
		5	-23.50	-1.39	-9.08
	8	4	-5.73	-1.35	-5.10
		5	5.73	1.52	3.66
5	1	5	5.05	0.16	1.62
		6	-5.05	0.01	-1.55
	2	5	-2.23	-0.44	-1.66
		6	2.23	0.44	1.22
	3	5	-6.63	-1.30	-4.94
		6	6.63	1.30	3.64
	4	5	-1.08	-0.02	-0.35
		6	1.08	0.02	0.34
	5	5	5.54	1.09	4.12
		6	-5.54	-1.09	-3.04
	6	5	-8.94	-2.58	-8.85
		6	8.94	2.80	6.16
	7	5	15.92	2.04	9.08
		6	-15.93	-1.82	-7.15
	8	5	-2.66	-1.16	-3.66
		6	2.66	1.33	2.42
6	1	6	3.67	0.31	1.55
		7	-3.67	-0.15	-1.32
	2	6	-1.15	-0.39	-1.22
		7	1.15	0.39	0.83
	3	6	-3.41	-1.17	-3.64
		7	3.41	1.17	2.47
	4	6	-0.78	-0.05	-0.34
		7	0.78	0.05	0.29
	5	6	2.85	0.98	3.04
		7	-2.85	-0.98	-2.06
	6	6	-3.50	-2.14	-6.16
		7	3.50	2.36	3.90
	7	6	9.59	2.06	7.15
		7	-9.59	-1.84	-5.20

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT END FORCES KIP FEET

MEMB	LOAD	JT	AXIAL	SHEAR	MOMENT
	8	6	-0.52	-0.91	-2.42
		7	0.52	1.07	1.43
7	1	7	2.43	0.37	1.32
		8	-2.44	-0.21	-1.03
	2	7	-0.39	-0.32	-0.83
		8	0.39	0.32	0.51
	3	7	-1.14	-0.95	-2.47
		8	1.14	0.95	1.51
	4	7	-0.51	-0.06	-0.29
		8	0.51	0.06	0.22
	5	7	0.96	0.80	2.06
		8	-0.96	-0.80	-1.26
	6	7	0.07	-1.63	-3.90
		8	-0.07	1.84	2.17
	7	7	4.78	1.83	5.20
		8	-4.78	-1.62	-3.47
	8	7	0.78	-0.64	-1.43
		8	-0.78	0.81	0.71
8	1	8	1.48	0.37	1.03
		9	-1.48	-0.21	-0.74
	2	8	0.09	-0.24	-0.51
		9	-0.09	0.24	0.27
	3	8	0.28	-0.71	-1.51
		9	-0.28	0.71	0.80
	4	8	-0.30	-0.06	-0.22
		9	0.30	0.06	0.16
	5	8	-0.23	0.60	1.26
		9	0.23	-0.60	-0.67
	6	8	2.13	-1.12	-2.17
		9	-2.13	1.33	0.95
	7	8	1.53	1.49	3.47
		9	-1.53	-1.28	-2.09
	8	8	1.46	-0.41	-0.71
		9	-1.46	0.57	0.22
9	1	9	0.75	0.33	0.74
		10	-0.76	-0.18	-0.48
	2	9	0.36	-0.17	-0.27
		10	-0.36	0.17	0.10
	3	9	1.06	-0.49	-0.80
		10	-1.06	0.49	0.31
	4	9	-0.14	-0.06	-0.16
		10	0.14	0.06	0.10
	5	9	-0.89	0.41	0.67
		10	0.89	-0.41	-0.26
	6	9	3.06	-0.69	-0.95
		10	-3.06	0.89	0.16
	7	9	-0.52	1.12	2.09
		10	0.51	-0.92	-1.06

FINITE ELEMENT ANALYSIS BY EDGAR O. MORENO

NODE	COORDINATES	
1	1.0000	8.8333
2	1.0000	.6250
3	1.5000	.6250
4	2.50	.6140
5	3.50	.6031
6	4.50	.5921
7	5.50	.5811
8	6.50	.5702
9	7.50	.5592
10	8.50	.5482
11	9.50	.5373
12	10.50	.5263
13	11.50	.5153
14	12.50	.5044
15	13.50	.4934
16	14.50	.4824
17	15.50	.4714
18	16.50	.4605
19	17.50	.4495
20	18.50	.4385
21	19.50	.4276
22	20.50	.4166
23	21.50	.4277
24	22.50	.4387
25	23.50	.4496
26	24.50	.4606
27	25.50	.4716
28	26.50	.4825
29	27.50	.4935
30	28.50	.5045
31	29.50	.5154
32	30.50	.5264
33	31.50	.5374
34	32.50	.5483
35	33.50	.5593
36	34.50	.5703
37	35.50	.5812
38	36.50	.5922
39	37.50	.6032
40	38.50	.6141
41	39.50	.6251
42	40	.6250
43	40	8.8333

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
43	1	0.13804	-0.07591	-0.00140
	2	-0.22591	0.02794	0.00264
	3	-0.59874	0.08302	0.00665
	4	-0.02976	0.03849	0.00030
	5	0.50156	-0.10935	-0.00557
	6	-1.16479	0.12799	0.01324
	7	1.02710	-0.28349	-0.01123
	8	-0.49046	0.04560	0.00555

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
37	1	0.00000	-0.01908	-0.00056
	2	0.00000	-0.00512	0.00014
	3	0.00000	-0.01522	0.00040
	4	0.00000	0.02632	0.00012
	5	0.00000	-0.02728	-0.00034
	6	0.00000	-0.02297	0.00028
	7	0.00000	-0.07091	-0.00130
	8	0.00000	-0.00798	-0.00004
38	1	0.00000	-0.02713	-0.00079
	2	0.00000	-0.00260	0.00030
	3	0.00000	-0.00773	0.00089
	4	0.00000	0.02803	0.00017
	5	0.00000	-0.03354	-0.00074
	6	0.00000	-0.01527	0.00108
	7	0.00000	-0.09195	-0.00228
	8	0.00000	-0.00683	0.00027
39	1	0.00000	-0.03798	-0.00102
	2	0.00000	0.00219	0.00051
	3	0.00000	0.00651	0.00153
	4	0.00000	0.03035	0.00022
	5	0.00000	-0.04544	-0.00128
	6	0.00000	0.00393	0.00221
	7	0.00000	-0.12617	-0.00349
	8	0.00000	-0.00112	0.00072
40	1	0.00000	-0.05158	-0.00124
	2	0.00000	0.00988	0.00078
	3	0.00000	0.02935	0.00232
	4	0.00000	0.03328	0.00027
	5	0.00000	-0.06452	-0.00194
	6	0.00000	0.03865	0.00367
	7	0.00000	-0.17609	-0.00488
	8	0.00000	0.01105	0.00135
41	1	0.00000	-0.06738	-0.00138
	2	0.00000	0.02098	0.00108
	3	0.00000	0.06234	0.00321
	4	0.00000	0.03668	0.00030
	5	0.00000	-0.09207	-0.00268
	6	0.00000	0.09271	0.00542
	7	0.00000	-0.24321	-0.00632
	8	0.00000	0.03163	0.00213
42	1	0.00000	-0.07578	-0.00140
	2	-0.00001	0.02794	0.00124
	3	-0.00003	0.08302	0.00369
	4	0.00000	0.03849	0.00030
	5	0.00002	-0.10935	-0.00308
	6	-0.00005	0.12816	0.00642
	7	0.00003	-0.28332	-0.00703
	8	-0.00003	0.04573	0.00259

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
31	1	0.00000	-0.00831	0.00004
	2	0.00000	-0.00175	-0.00007
	3	0.00000	-0.00521	-0.00022
	4	0.00000	0.02430	-0.00001
	5	0.00000	-0.03565	0.00018
	6	0.00000	0.00970	-0.00043
	7	0.00000	-0.07105	0.00037
	8	0.00000	0.01078	-0.00019
32	1	0.00000	-0.00788	0.00002
	2	0.00000	-0.00274	-0.00009
	3	0.00000	-0.00814	-0.00026
	4	0.00000	0.02415	-0.00001
	5	0.00000	-0.03320	0.00022
	6	0.00000	0.00383	-0.00054
	7	0.00000	-0.06634	0.00041
	8	0.00000	0.00813	-0.00025
33	1	0.00000	-0.00780	-0.00002
	2	0.00000	-0.00386	-0.00009
	3	0.00000	-0.01146	-0.00028
	4	0.00000	0.02407	0.00000
	5	0.00000	-0.03043	0.00023
	6	0.00000	-0.00323	-0.00062
	7	0.00000	-0.06157	0.00037
	8	0.00000	0.00481	-0.00030
34	1	0.00000	-0.00843	-0.00009
	2	0.00000	-0.00495	-0.00008
	3	0.00000	-0.01472	-0.00025
	4	0.00000	0.02416	0.00002
	5	0.00000	-0.02771	0.00021
	6	0.00000	-0.01087	-0.00063
	7	0.00000	-0.05779	0.00023
	8	0.00000	0.00100	-0.00033
35	1	0.00000	-0.01020	-0.00021
	2	0.00000	-0.00578	-0.00005
	3	0.00000	-0.01719	-0.00014
	4	0.00000	0.02449	0.00004
	5	0.00000	-0.02564	0.00012
	6	0.00000	-0.01799	-0.00052
	7	0.00000	-0.05659	-0.00007
	8	0.00000	-0.00290	-0.00031
36	1	0.00000	-0.01358	-0.00037
	2	0.00000	-0.00600	0.00002
	3	0.00000	-0.01782	0.00007
	4	0.00000	0.02517	0.00008
	5	0.00000	-0.02512	-0.00005
	6	0.00000	-0.02283	-0.00024
	7	0.00000	-0.06010	-0.00057
	8	0.00000	-0.00622	-0.00022

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
25	1	0.00000	-0.00999	-0.00001
	2	0.00000	0.00025	0.00000
	3	0.00000	0.00075	0.00000
	4	0.00000	0.02503	0.00000
	5	0.00000	-0.04063	0.00000
	6	0.00000	0.02114	-0.00001
	7	0.00000	-0.08165	-0.00001
	8	0.00000	0.01578	-0.00001
26	1	0.00000	-0.01003	0.00000
	2	0.00000	0.00024	0.00000
	3	0.00000	0.00072	-0.00001
	4	0.00000	0.02498	0.00000
	5	0.00000	-0.04060	0.00001
	6	0.00000	0.02096	-0.00003
	7	0.00000	-0.08165	0.00002
	8	0.00000	0.01566	-0.00001
27	1	0.00000	-0.00996	0.00001
	2	0.00000	0.00016	-0.00001
	3	0.00000	0.00047	-0.00003
	4	0.00000	0.02491	-0.00001
	5	0.00000	-0.04039	0.00003
	6	0.00000	0.02042	-0.00007
	7	0.00000	-0.08121	0.00006
	8	0.00000	0.01541	-0.00003
28	1	0.00000	-0.00975	0.00002
	2	0.00000	-0.00004	-0.00002
	3	0.00000	-0.00013	-0.00007
	4	0.00000	0.02480	-0.00001
	5	0.00000	-0.03989	0.00006
	6	0.00000	0.01930	-0.00013
	7	0.00000	-0.08009	0.00013
	8	0.00000	0.01492	-0.00005
29	1	0.00000	-0.00937	0.00004
	2	0.00000	-0.00041	-0.00004
	3	0.00000	-0.00121	-0.00011
	4	0.00000	0.02466	-0.00001
	5	0.00000	-0.03899	0.00010
	6	0.00000	0.01730	-0.00021
	7	0.00000	-0.07808	0.00021
	8	0.00000	0.01408	-0.00009
30	1	0.00000	-0.00886	0.00005
	2	0.00000	-0.00097	-0.00006
	3	0.00000	-0.00288	-0.00017
	4	0.00000	0.02448	-0.00002
	5	0.00000	-0.03759	0.00014
	6	0.00000	0.01417	-0.00032
	7	0.00000	-0.07505	0.00030
	8	0.00000	0.01274	-0.00014

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
19	1	0.00000	-0.01000	0.00001
	2	0.00000	0.00025	0.00000
	3	0.00000	0.00075	0.00000
	4	0.00000	0.02503	0.00000
	5	0.00000	-0.04063	0.00000
	6	0.00000	0.02113	0.00001
	7	0.00000	-0.08166	0.00001
	8	0.00000	0.01578	0.00001
20	1	0.00000	-0.00991	0.00001
	2	0.00000	0.00023	0.00000
	3	0.00000	0.00068	-0.00001
	4	0.00000	0.02505	0.00000
	5	0.00000	-0.04057	0.00001
	6	0.00000	0.02114	0.00000
	7	0.00000	-0.08144	0.00002
	8	0.00000	0.01583	0.00000
21	1	0.00000	-0.00981	0.00001
	2	0.00000	0.00020	0.00000
	3	0.00000	0.00060	-0.00001
	4	0.00000	0.02506	0.00000
	5	0.00000	-0.04051	0.00000
	6	0.00000	0.02111	0.00000
	7	0.00000	-0.08121	0.00002
	8	0.00000	0.01585	0.00000
22	1	0.00000	-0.00977	0.00000
	2	0.00000	0.00019	0.00000
	3	0.00000	0.00057	0.00000
	4	0.00000	0.02507	0.00000
	5	0.00000	-0.04048	0.00000
	6	0.00000	0.02110	0.00000
	7	0.00000	-0.08111	0.00000
	8	0.00000	0.01587	0.00000
23	1	0.00000	-0.00980	-0.00001
	2	0.00000	0.00020	0.00000
	3	0.00000	0.00060	0.00001
	4	0.00000	0.02506	0.00000
	5	0.00000	-0.04050	0.00000
	6	0.00000	0.02112	0.00000
	7	0.00000	-0.08120	-0.00002
	8	0.00000	0.01586	0.00000
24	1	0.00000	-0.00990	-0.00001
	2	0.00000	0.00023	0.00000
	3	0.00000	0.00068	0.00001
	4	0.00000	0.02505	0.00000
	5	0.00000	-0.04057	-0.00001
	6	0.00000	0.02115	0.00000
	7	0.00000	-0.08143	-0.00002
	8	0.00000	0.01584	0.00000

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
13	1	0.00000	-0.00831	-0.00004
	2	0.00000	-0.00175	0.00007
	3	0.00000	-0.00521	0.00022
	4	0.00000	0.02430	0.00001
	5	0.00000	-0.03565	-0.00018
	6	0.00000	0.00971	0.00043
	7	0.00000	-0.07105	-0.00037
	8	0.00000	0.01079	0.00019
14	1	0.00000	-0.00886	-0.00005
	2	0.00000	-0.00097	0.00006
	3	0.00000	-0.00288	0.00017
	4	0.00000	0.02449	0.00002
	5	0.00000	-0.03759	-0.00014
	6	0.00000	0.01418	0.00032
	7	0.00000	-0.07506	-0.00030
	8	0.00000	0.01274	0.00014
15	1	0.00000	-0.00937	-0.00004
	2	0.00000	-0.00041	0.00004
	3	0.00000	-0.00120	0.00011
	4	0.00000	0.02466	0.00001
	5	0.00000	-0.03899	-0.00010
	6	0.00000	0.01731	0.00021
	7	0.00000	-0.07808	-0.00021
	8	0.00000	0.01408	0.00009
16	1	0.00000	-0.00975	-0.00003
	2	0.00000	-0.00004	0.00002
	3	0.00000	-0.00013	0.00007
	4	0.00000	0.02480	0.00001
	5	0.00000	-0.03990	-0.00006
	6	0.00000	0.01930	0.00013
	7	0.00000	-0.08010	-0.00013
	8	0.00000	0.01492	0.00005
17	1	0.00000	-0.00997	-0.00001
	2	0.00000	0.00016	0.00001
	3	0.00000	0.00047	0.00003
	4	0.00000	0.02491	0.00001
	5	0.00000	-0.04039	-0.00003
	6	0.00000	0.02042	0.00007
	7	0.00000	-0.08122	-0.00006
	8	0.00000	0.01541	0.00003
18	1	0.00000	-0.01004	0.00000
	2	0.00000	0.00024	0.00000
	3	0.00000	0.00072	0.00001
	4	0.00000	0.02498	0.00000
	5	0.00000	-0.04060	-0.00001
	6	0.00000	0.02095	0.00003
	7	0.00000	-0.08166	-0.00002
	8	0.00000	0.01566	0.00001

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
7	1	0.00000	-0.01907	0.00056
	2	0.00000	-0.00513	-0.00013
	3	0.00000	-0.01524	-0.00040
	4	0.00000	0.02632	-0.00012
	5	0.00000	-0.02727	0.00033
	6	0.00000	-0.02300	-0.00028
	7	0.00000	-0.07087	0.00130
	8	0.00000	-0.00799	0.00004
8	1	0.00000	-0.01357	0.00037
	2	0.00000	-0.00600	-0.00002
	3	0.00000	-0.01783	-0.00006
	4	0.00000	0.02517	-0.00008
	5	0.00000	-0.02511	0.00005
	6	0.00000	-0.02285	0.00024
	7	0.00000	-0.06008	0.00057
	8	0.00000	-0.00623	0.00023
9	1	0.00000	-0.01019	0.00021
	2	0.00000	-0.00578	0.00005
	3	0.00000	-0.01719	0.00014
	4	0.00000	0.02449	-0.00004
	5	0.00000	-0.02564	-0.00012
	6	0.00000	-0.01799	0.00052
	7	0.00000	-0.05659	0.00007
	8	0.00000	-0.00289	0.00031
10	1	0.00000	-0.00843	0.00009
	2	0.00000	-0.00495	0.00008
	3	0.00000	-0.01471	0.00025
	4	0.00000	0.02416	-0.00002
	5	0.00000	-0.02771	-0.00021
	6	0.00000	-0.01086	0.00063
	7	0.00000	-0.05779	-0.00023
	8	0.00000	0.00101	0.00033
11	1	0.00000	-0.00780	0.00002
	2	0.00000	-0.00386	0.00009
	3	0.00000	-0.01145	0.00028
	4	0.00000	0.02407	0.00000
	5	0.00000	-0.03043	-0.00023
	6	0.00000	-0.00321	0.00062
	7	0.00000	-0.06157	-0.00037
	8	0.00000	0.00482	0.00030
12	1	0.00000	-0.00787	-0.00002
	2	0.00000	-0.00274	0.00009
	3	0.00000	-0.00814	0.00026
	4	0.00000	0.02415	0.00001
	5	0.00000	-0.03320	-0.00022
	6	0.00000	0.00385	0.00054
	7	0.00000	-0.06635	-0.00041
	8	0.00000	0.00814	0.00025

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

NODE DISPLACEMENT INCH RADIANS

NODE	LOAD	X DISPL	Y DISPL	ROTATION
1	1	-0.13822	-0.07594	0.00140
	2	0.22617	0.02798	-0.00265
	3	0.59952	0.08313	-0.00665
	4	0.02980	0.03850	-0.00030
	5	-0.50221	-0.10944	0.00558
	6	1.16626	0.12819	-0.01325
	7	-1.02842	-0.28368	0.01125
	8	0.49109	0.04569	-0.00555
2	1	0.00000	-0.07581	0.00140
	2	0.00001	0.02798	-0.00124
	3	0.00003	0.08313	-0.00370
	4	0.00000	0.03850	-0.00030
	5	-0.00002	-0.10944	0.00309
	6	0.00006	0.12836	-0.00643
	7	-0.00004	-0.28351	0.00704
	8	0.00003	0.04582	-0.00259
3	1	0.00000	-0.06740	0.00138
	2	0.00000	0.02100	-0.00108
	3	0.00000	0.06240	-0.00322
	4	0.00000	0.03669	-0.00030
	5	0.00000	-0.09213	0.00269
	6	0.00000	0.09283	-0.00543
	7	0.00000	-0.24332	0.00633
	8	0.00000	0.03168	-0.00213
4	1	0.00000	-0.05158	0.00124
	2	0.00000	0.00988	-0.00078
	3	0.00000	0.02935	-0.00232
	4	0.00000	0.03328	-0.00027
	5	0.00000	-0.06452	0.00194
	6	0.00000	0.03865	-0.00367
	7	0.00000	-0.17610	0.00488
	8	0.00000	0.01105	-0.00135
5	1	0.00000	-0.03797	0.00102
	2	0.00000	0.00218	-0.00052
	3	0.00000	0.00648	-0.00153
	4	0.00000	0.03035	-0.00022
	5	0.00000	-0.04541	0.00128
	6	0.00000	0.00388	-0.00221
	7	0.00000	-0.12611	0.00349
	8	0.00000	-0.00114	-0.00073
6	1	0.00000	-0.02711	0.00079
	2	0.00000	-0.00261	-0.00030
	3	0.00000	-0.00776	-0.00089
	4	0.00000	0.02803	-0.00017
	5	0.00000	-0.03351	0.00074
	6	0.00000	-0.01533	-0.00108
	7	0.00000	-0.09189	0.00227
	8	0.00000	-0.00685	-0.00027

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

ELEMENT GEOMETRIC PROPERTIES FOR CONCRETE DESIGN

1	DEPTH	1	IZ	.0104
2	DEPTH	1.1667	IZ	.0165
3	DEPTH	1.1667	IZ	.0165
4	DEPTH	1.1447	IZ	.0156
5	DEPTH	1.1228	IZ	.0147
6	DEPTH	1.1009	IZ	.0139
7	DEPTH	1.0789	IZ	.0131
8	DEPTH	1.0570	IZ	.0123
9	DEPTH	1.0350	IZ	.0116
10	DEPTH	1.0131	IZ	.0108
11	DEPTH	.9912	IZ	.0101
12	DEPTH	.9692	IZ	.0095
13	DEPTH	.9473	IZ	.0089
14	DEPTH	.9254	IZ	.0083
15	DEPTH	.9034	IZ	.0077
16	DEPTH	.8815	IZ	.0071
17	DEPTH	.8596	IZ	.0066
18	DEPTH	.8376	IZ	.0061
19	DEPTH	.8157	IZ	.0057
20	DEPTH	.7938	IZ	.0052
21	DEPTH	.7718	IZ	.0048
22	DEPTH	.7499	IZ	.0044
23	DEPTH	.7940	IZ	.0052
24	DEPTH	.8159	IZ	.0057
25	DEPTH	.8379	IZ	.0061
26	DEPTH	.8598	IZ	.0066
27	DEPTH	.8817	IZ	.0071
28	DEPTH	.9037	IZ	.0077
29	DEPTH	.9256	IZ	.0083
30	DEPTH	.9475	IZ	.0089
31	DEPTH	.9695	IZ	.0095
32	DEPTH	.9914	IZ	.0102
33	DEPTH	1.0133	IZ	.0108
34	DEPTH	1.0353	IZ	.0116
35	DEPTH	1.0572	IZ	.0123
36	DEPTH	1.0792	IZ	.0131
37	DEPTH	1.1011	IZ	.0139
38	DEPTH	1.1230	IZ	.0148
39	DEPTH	1.1450	IZ	.0156
40	DEPTH	1.1669	IZ	.0166
41	DEPTH	1.1667	IZ	.0165
42	DEPTH	1	IZ	.0104

GUADALUPE CHANNEL STRUCTURAL ANALYSIS BY EDGAR O. MORENO

NODE	COORDINATES	
1	1.0000	8.8333
2	1.0000	.6250
3	1.5000	.6250
4	2.50	.6140
5	3.50	.6031
6	4.50	.5921
7	5.50	.5811
8	6.50	.5702
9	7.50	.5592
10	8.50	.5482
11	9.50	.5373
12	10.50	.5263
13	11.50	.5153
14	12.50	.5044
15	13.50	.4934
16	14.50	.4824
17	15.50	.4714
18	16.50	.4605
19	17.50	.4495
20	18.50	.4385
21	19.50	.4276
22	20.50	.4166
23	21.50	.4277
24	22.50	.4387
25	23.50	.4496
26	24.50	.4606
27	25.50	.4716
28	26.50	.4825
29	27.50	.4935
30	28.50	.5045
31	29.50	.5154
32	30.50	.5264
33	31.50	.5374
34	32.50	.5483
35	33.50	.5593
36	34.50	.5703
37	35.50	.5812
38	36.50	.5922
39	37.50	.6032
40	38.50	.6141
41	39.50	.6251
42	40	.6250
43	40	8.8333

GUADALUPE Rd. Sta W->E	Dist (ft)	CONCRETE CLASS AA Area (SqFt)	Volume (Cu.Yds)	STR. W/Ft (Lbs)	STEEL Weight (Lbs)
47+00		68.7		282.2	
	32		97.4		9024.0
47+32		95.7		300.0	
	13		143.5		12924.0
47+45		95.7/103.3		362.3	
	80		449.6		41884.0
48+25		103.3/86.2		297.2	
	30		545.4		50800.0
48+55		86.2/68.7		208.0	
	170		977.9		86160.0
50+25		68.7		265.4	
	28		1060.0		95591.2
50+53		89.8		276.0	
	27		1149.8		103043.2
50+80		89.8		293.0	
	14		1196.4		107145.2
50+94		89.8/138.2		840.0	
	57		1488.2		155025.2
51+51		138.2/27.4		140.0	
	79		1568.4		166085.2
52+30		27.4			

SOSSAMAN Rd. Sta N->S	Dist (ft)	CONCRETE CLASS AA Area (SqFt)	Volume (Cu.Yds)	STR. W/Ft (Lbs)	STEEL Weight (Lbs)
5+63		140.0		836.0	
	45		234.0		37620.0
5+78		140./105.		836./627.	
	19		307.0		49533.0
5+94		105./90.0		627./400.	
	19		370.5		57133.0
6+12		90.0/47.0		400./100	
	30		423.0		60133.0
6+37		47.0			

SOSSAMAN Rd. Sta N->S	Dist (ft)	CONCRETE CLASS B V/Ft (Cu.Yds)	Volume (Cu.Yds)	STR. W/Ft (Lbs)	STEEL Weight (Lbs)
6+12		2.15		133.1	
	90		194.0		11980.0
7+02					

GUADALUPE Rd. Sta W->E	Dist (ft)	STR. EXCAVATION Area (SqFt)	Volume (Cu.Yds)	FILL CONSTRUCTION Area (SqFt)	Volume (Cu.Yds)
47+00		0.0		0.0	
	100		356.1		322.8
48+00		192.3		174.3	
	100		1231.6		1086.9
49+00		280.5		238.3	
	100		2205.5		2039.1
50+00		245.4		275.9	
	100		3166.9		2870.8
51+00		273.8		173.2	
	51		3677.1		3034.4
51+51		266.4		0.0	
	49		3986.7		3034.4
52+00		74.8		0.0	

GUADALUPE Rd. Sta W->E	Dist (ft)	STR. BACKFILL Area (SqFt)	Volume (Cu.Yds)
47+00		0.0	
	100		180.0
48+00		97.2	
	100		521.7
49+00		87.3	
	100		861.2
50+00		96.0	
	100		1209.7
51+00		92.2	
	51		1367.4
51+51		74.8	
	49		1503.1
52+00		74.8	
	30		1586.2
52+30		74.8	

	20		246.0		1040.7
4+20		25.4		194.2	
	20		259.0		1196.3
4+40		9.7		225.9	
	20		266.5		1371.8
4+60		10.3		248.0	
	20		271.9		1573.5
4+80		4.4		296.4	
	20		273.5		1880.9
5+00		0.0		533.6	
	20		274.1		2189.8
5+20		1.4		300.5	
	20		274.6		2502.8
5+40		0.0		544.7	

length = 8.1686

Bar #5
length = 1.9724

Bar #5
length = 21.4539

Bar #5
length = 13.7045

Bar #5
length = 40.3157

Bar #5
length 35.1515

THEORY AND CALCS BY EDGAR O. MORENO.

SOSSAMAN Rd.		STR. EXCAVATION		FILL CONSTRUCTION	
Sta S->N	Dist (ft)	Area (SqFt)	Volume (Cu.Yds)	Area (SqFt)	Volume (Cu.Yds)
1+00		8.0		11.5	
	20		17.1		5.3
1+20		38.1		2.9	
	20		59.4		7.7
1+40		76.2		3.4	
	20		96.8		11.4
1+60		24.8		6.7	
	20		121.3		15.8
1+80		41.3		5.1	
	20		153.1		23.3
2+00		44.5		15.3	
	20		183.1		39.5
2+20		36.5		28.4	
	20		203.2		65.8
2+40		17.6		42.7	
	20		213.9		106.3
2+60		11.4		66.6	
	20		220.1		168.2
2+80		5.1		100.4	
	20		226.2		246.7
3+00		11.4		111.5	
	20		230.7		344.3
3+20		1.0		152.1	
	20		231.1		467.1
3+40		0.0		179.5	
	20		231.1		604.9
3+60		0.0		192.5	
	20		231.4		748.4
3+80		0.8		194.8	
	20		234.2		894.7
4+00		6.6		200.2	

Bars: (40) #6 @ 16"
length each = 25.7961

Bars: (13) #6
length each = 19.5610

Bars: (13) #6 @ 6"
length each = 33.6583

Bars: (40) #6 @ 16"
length each = 33.7199

Bars: (80) #6 @ 8"
length each = 11.4153

Bars: (53) #6
length each = 19.5625

Bars: (41) @6 @ 16"
length each = 40.0924

Bar #5
length 35.5613

Bar #5
length = 20.6250

Bar #5
length 7.7285

Bar #5
length 39.9363

Bar #5
length 7.7285

Bar #5
length 15.8947

Bar #6
length 13.8931

Bar #5
length 38.7060

Bar #6
length 13.8931

Bar #5
length 15.8944

Bar #5

length 27.4494

Bar #5 VARIES FROM 21.5371' TO 20.72'
length 21.1285

Bar #5
length 5.0774

Bar #5
length 7.6802

Bar #5
length 11.1588

Bar #5 VARIES FROM 21.5371' TO 20.72'
length 21.1285

Bar #5"
length 15.3727

Bar #5
length 7.6802

Bar #5 Bars
length 11.1588

Bar #5" VARIES FROM 26.5371' TO 25.8192'
length 26.1781

Bar #4"
length 6.1320

Bar #4"
length 6.1320

STATION 5+63 TO 5+94

Bars: (13) #6 @ 6"
length each = 4.7241

Bars: (40) #6 @ 16"
length each = 35.6151

Bars: (41) #6 @ 4"
length each = 4.7495

Bars: (80) #6 @ 8"
length each = 13.8483

Bars: (40) #6 @ 16"
length each = 22.2792

Bars: (161) #6 @ 4"
length each = 4.7528

Bar #5
length 6.736615

Bar #5
length 4.950618

Bar #5 VARIES FROM 15' TO 21.5371'
length 18.268551

Bar #5 Bar is 21.5359'
length 20.834004

Bar #5
length 5.077412

Bar #5
length 7.680211

Bar #5
length 11.158751

Bar #5
length 15.372678

Bar #5
length 20.013523

Bar #5
length 7.689503

Bar #5
length 11.153736

Bar #4
length 6.132044

Bar #4
length 6.132044

STA. 50+80.52 TO STA. 50+94.96

Bar #5"
length 6.7366

Bar #5 VARIES FROM 27.8225' TO 27.1117'
length 27.4671

Bar #5"
length 6.7366

Bar #5"
length 5.0774

Bar #5 VARIES FROM 27.7871' TO 27.1117'

Bar #5
length 6.7366

Bar #5
length 5.0774

Bar #5 VARIES FROM 21.2853' TO 27.833'
length 24.5591

Bar #5
length 5.0774

Bar #5
length 15.0232

Bar #5 VARIES FROM 15' TO 21.5371'
length 18.2685

Bar #5
length 11.1588

Bar #5
length 7.6802

Bar #5
length 20.0197

Bar #5 VARIES FROM 9.5' TO 16.0833'
length 12.7916

Bar #5
length 7.6802

Bar #5
length 11.1588

Bar #4
length 6.1320

Bar #4
length 6.1320

STA. 50+53.23 TO STA. 50+80.52

Bar #5
length 6.735697

Bar #5 VARIES FROM 21.25' TO 27.7871'
length 24.518550

Bar #5
length 27.099409

Bar #4"
length 6.0197

Bar #4
length 6.0197

STA. 48+55 TO STA. 50+25.95

Bar #5"
length 6.7357

Bar #5
length 21.2754

Bar #5
length 4.9506

Bar #5
length 6.7357

Bar #5
length 4.9506

Bar #5
length 21.2544

Bar #5
length 7.6478

Bar #5
length 11.1121

Bar #5
length 28.0270

Bar #5
length 7.6478

Bar #5
length 11.1121

Bar #4"
length 6.0197

Bar #4
length 6.0197

STA. 50+25.95 TO STA. 50+53.23

Bar #5
length 6.7366

Bar #5
length 21.2559

Bar #4
length 14.6666

Bar #4"
length 6.0197

Bar #4
length 6.0197

Bar #4
length 6.0197

STA. 48+25 TO STA. 48+55

Bar #5
length 14.6666

Bar #5"
length 6.7357

Bar #5
length 21.2754

Bar #5
length 4.9506

Bar #5
length 6.7357

Bar #5
length 4.9506

Bar #5
length 21.2544

Bar #5
length 7.6478

Bar #5
length 11.1121

Bar #5
length 28.0270

Bar #5
length 7.6478

Bar #5
length 11.1121

Bar #4"
length 14.6666

Bar #4
length 6.1030

STA. 47+45 TO STA. 48+25.95

Bar #5
length 14.6666
Bar #5"
length 6.7357

Bar #5
length 21.2754

Bar #5
length 4.9506

Bar #5
length 6.7357

Bar #5
length 4.9506

Bar #5
length 21.2544

Bar #5
length 7.6478

Bar #5
length 11.1121

Bar #5
length 28.0270

Bar #5
length 7.6478

Bar #5
length 11.1121

Bar #5
length 7.0000

Bar #5
length 4.5000

Bar #5
length 7.5000

Bar #6
length 11.0000

Bar #4
length 15.0000

Bar #4
length 6.0197

Bar #4
length 6.1030

STATION 47+30 to 47+45

Bar #5
length 15.0267

Bar #5
length 31.0000

Bar #5
length 7.4975

Bar #5
length 11.1167

Bar #5
length 7.6381

Bar #5
length 20.0197

Bar #5
length 11.1427

Bar #5
length 6.7357

Bar #5
length 21.2548

Bar #5
length 37.2500

Bar #5
length 4.9975

Bar #5
length 6.8190

Bar #5
length 4.9767

Bar #5
length 25.5393

Bar #4
length 6.0197

Per your request, I have compile all the information and breakdown of all quantities including steel bars, concrete, fill, back-fill, areas, dimensions, coordinates and the structural analysis itself. every piece of information has been directed to you and every available file is being printed and placed in the three ring binder that is also available to you.

MATERIALS AND WORK DETAIL BREAKDOWN
BY EDGAR O. MORENO

STATION 47+00 to 47+30

Bar #5
length 6.7357

Bar #5
length 21.2548

Bar #5 VARIES FROM 21.2498' TO 37.25'
length 29.2499

Bar #5
length 4.9975

Bar #5
length 6.8190

Bar #5
length 4.9767

Bar #5
length 15.0267

Bar #5 VARIES FROM 15' TO 31'
length 23.0000

Bar #5
length 7.4975

Bar #5
length 11.1167

Bar #5
length 7.6381

Bar #5
length 20.0197

Bar #5
length 11.1427

Bar #5
length 25.5393

Received from KVH
2/10/93
3PM
Ed R.