

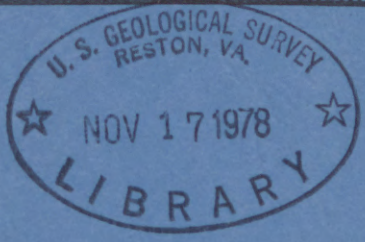
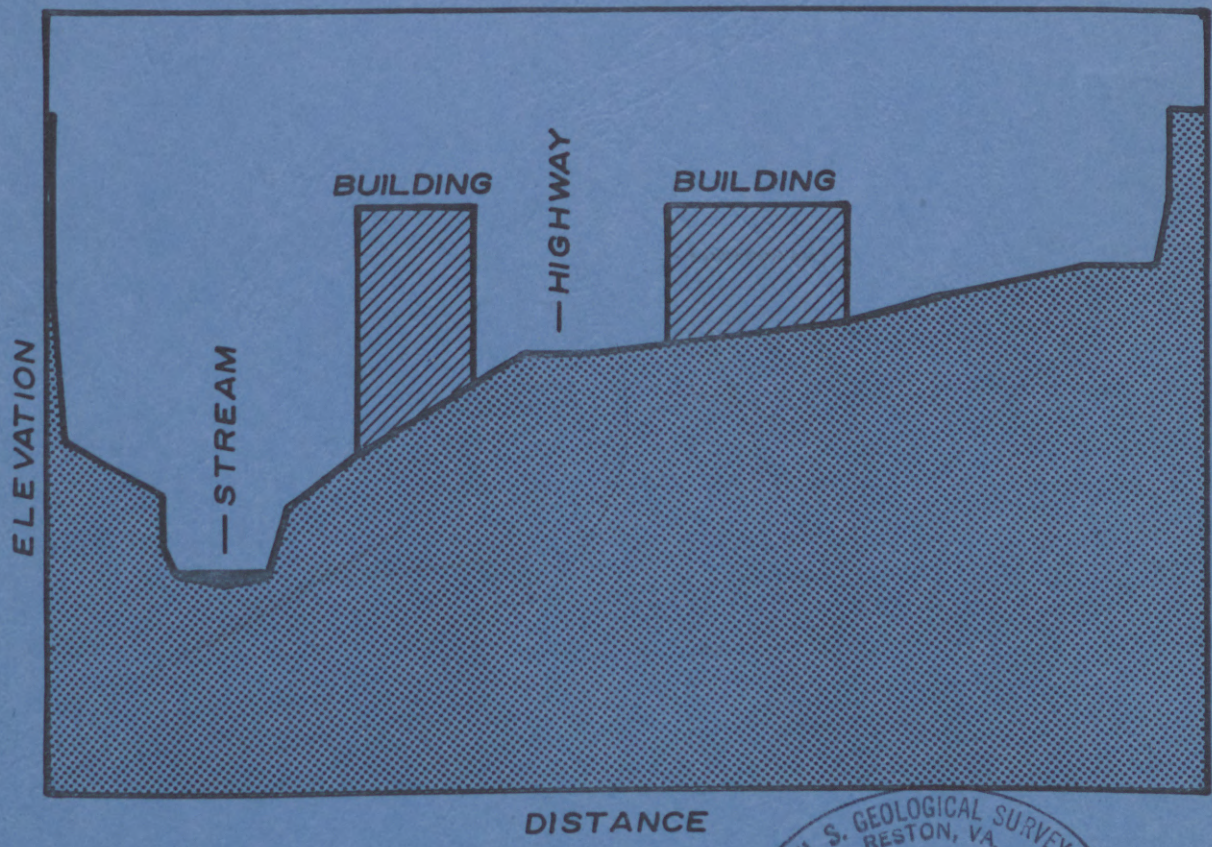
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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CROSS-SECTION DATA FOR
SELECTED PUERTO RICO STREAMS

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Open-File Report 78-882

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(DEPARTMENT OF THE INTERIOR)

GEOLOGICAL SURVEY

Report - Open file series

78-882

Introduction

Explanation of data

Cross-section data for:

CROSS-SECTION DATA FOR SELECTED

PUERTO RICO STREAMS

By Eloy Colón-Dieppa and Ralph González

Open-File Report 78-882

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San Juan, Puerto Rico

293178

August 1978

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ILLUSTRATIONS

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and 28) and plots of typical cross sections (figs. 3, 4, 5, 7, 9, 10, 11, 15, 16, 18, 19, 21, 22, 24, 25, 26, 27, 29, and 30) for each stream are included. Cross sections were located in the upstream direction on 10,000 scale maps. At sites where numbers and letters are used to define cross-section location, the following rule has been followed. Cross sections listed downstream from the first letter-labeled cross section are labeled by letter followed by a letter, the left-hand number indicating the relative order upstream from the lettered cross section. Where cross sections are labeled by number and number, the right-hand number indicates the relative order upstream from the lettered cross section. For example, 3A indicates the third cross section downstream from section A; and A3 indicates the third cross section upstream from section A.

CROSS-SECTION DATA FOR SELECTED PUERTO RICO STREAMS

by

Eloy Colón-Dieppa and Ralph González

INTRODUCTION

The data presented in this report were originally collected for the purpose of delineating the inundation which could be expected by floods of selected magnitudes. As this study progressed, it became apparent that further analysis would be a duplication of effort as the United States Flood Insurance Administration was requiring similar information. Therefore, it was decided to publish the cross-section data that had been obtained and not to go into further analysis with this study.

These cross section data can be used in Flood Insurance Administration studies and in other studies related to the planning, development, and management of flood plains. The data were collected by the Caribbean District of the Water Resources Division of the U.S. Geological Survey in cooperation with the Puerto Rico Department of Natural Resources.

EXPLANATION OF DATA

The contents of this report are a series of tabulations of cross-section data for the following municipalities and streams:

Aguada (Río Culebra), Cayey (Quebrada Santo Domingo), Coamo (Río Coamo and Río Cuyón), Comerío (Río de la Plata), Jayuya (Río Grande de Jayuya and Río Zama), Naranjito (Río Guadiana), Orocovis (Río Orocovis), San Sebastián (Río Culebrinas, Río Guatemala, Quebrada Salada, and tributary to Quebrada Salada), and Utuado (Río Grande de Arecibo and Río Viví). The locations of these communities are shown in figure 1.

Maps indicating cross-section locations (figs. 2, 5, 8, 11, 14, 17, 20, 23, and 28) and plots of typical cross sections (figs. 3, 4, 6, 7, 9, 10, 12, 13, 15, 16, 18, 19, 21, 22, 24, 25, 26, 27, 29, and 30) for each stream are also included. Cross sections are labeled in an upstream direction on 1:20,000 scale maps. At sites where numbers and letters are used to define a cross-section location, the following rule has been followed. Cross sections located downstream from the first letter-labeled cross section are labeled by a number followed by a letter, the left-hand number indicating the relative order downstream from the lettered cross section. Where cross sections are labeled letter and number, the right-hand number indicates the relative order upstream from the lettered cross section. For example, 3A indicates the third cross section downstream from section A; and A3 indicates the third cross section upstream from section A.

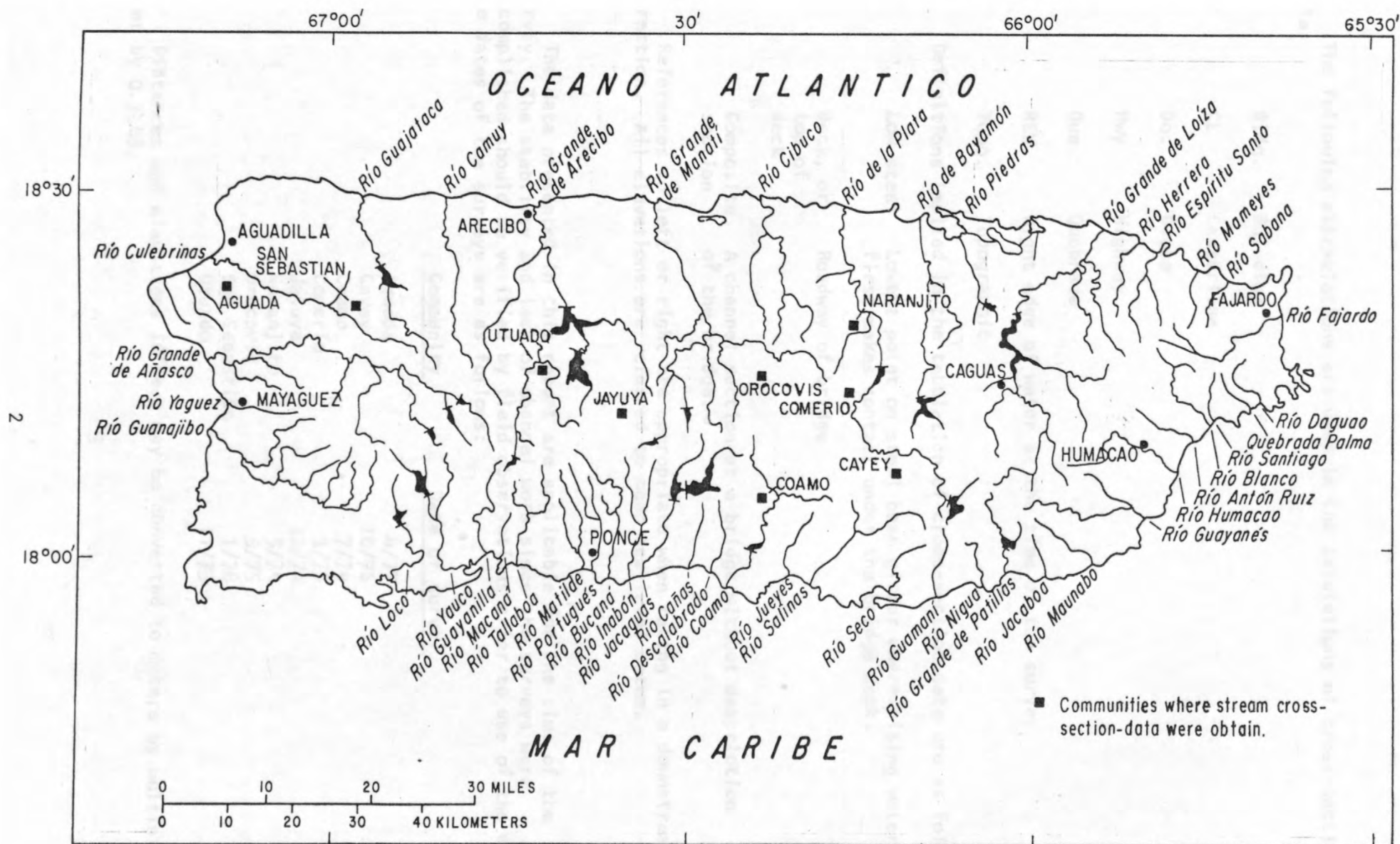


Figure 1.--Location of communities for which stream cross-section data are presented.

The following abbreviations are used in the tabulations of cross-section data:

Bldg.	Building
CL	Centerline
Do.	Ditto
Hwy	Highway
Que.	Quebrada
REW	Right edge of water at the time of the survey
Topo.	Topographic

Definitions implied in the tabulation of cross-section data are as follows:

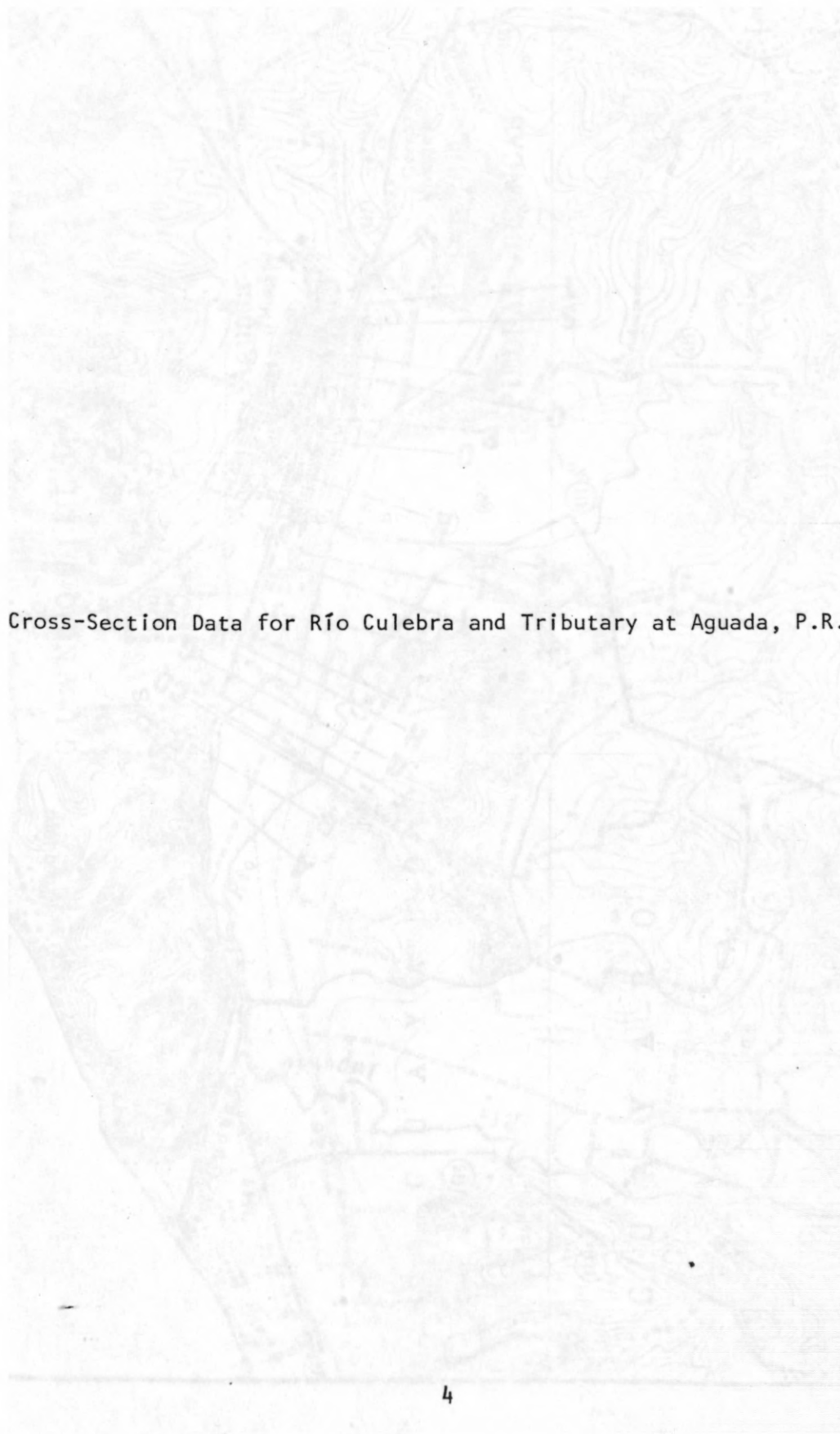
Low steel	Lowest point on steel beam girder where rising water first makes contact under the bridge deck.
Deck, or top of deck	Roadway of bridge
Composite section	A channel section at a bridge without description of the bridge.

References to left or right are appropriate when facing in a downstream direction. All elevations are referred to mean-sea-level datum.

The data presented in this report are applicable for the time of the survey. The stability and lack of channel work since the surveys were accomplished should be verified by field observations prior to use of the data. The dates of the surveys are as follows:

<u>Community</u>	<u>Date of survey</u>
Aguada	4/77
Cayey	10/76
Coamo	7/74
Comerio	3/75
Jayuya	12/74
Naranjito	5/74
Orocovis	5/75
San Sebastián	1/76
Utua	11/73

Distances and elevations in feet may be converted to meters by multiplying feet by 0.3048.



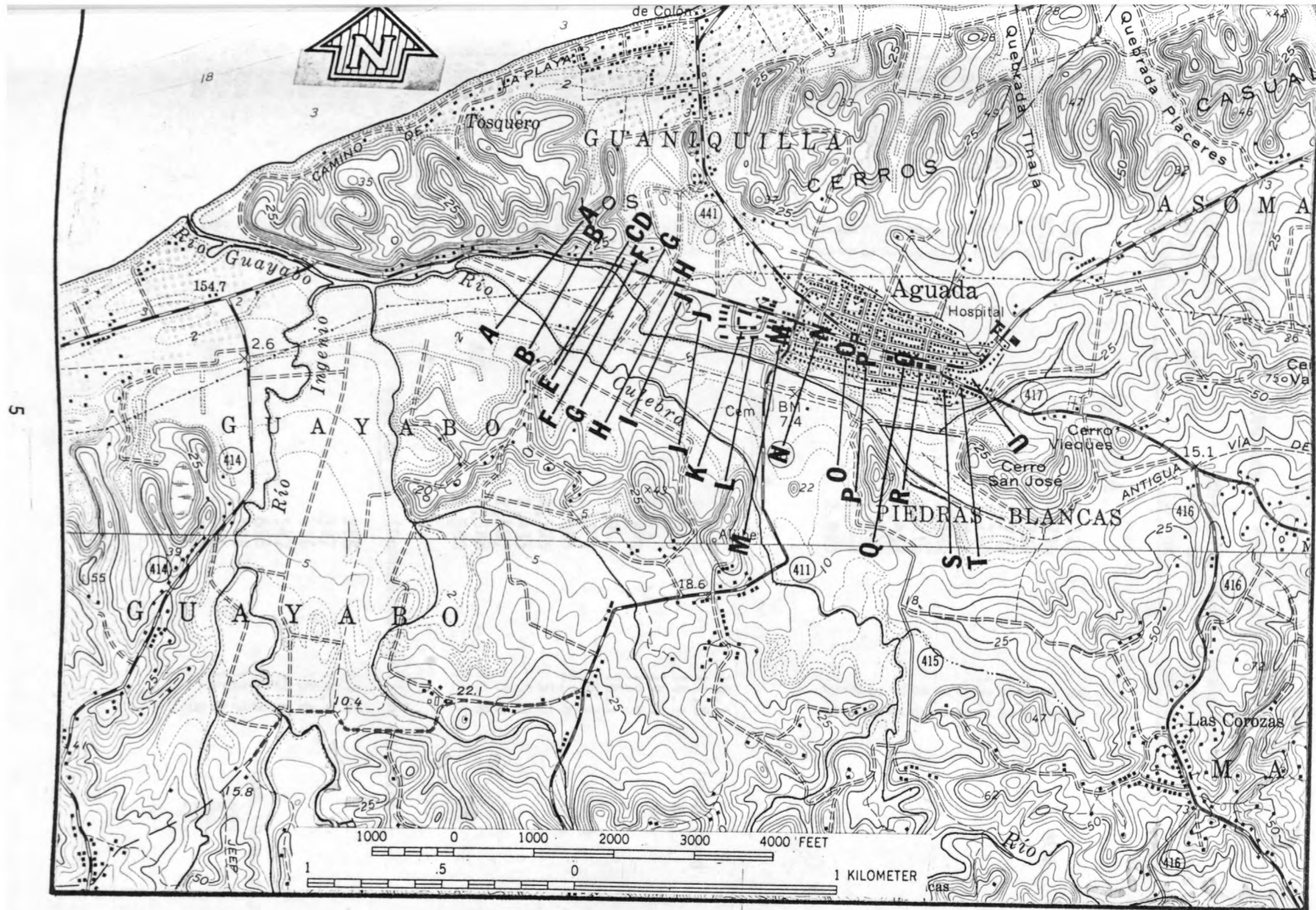


Figure 2.--Location of cross sections on Río Culebra and tributary at Aguada, PR.

Rio Culebra and tributary at Aguada, P.R.

Distance from left bank in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section A</u> (Approach section for bridge)					
0	28.9	From topo. map	1,722	4.0	
131	22.0	REW	1,730	4.3	REW
290	11.0		1,736	4.4	
469	5.9		1,743	13.2	
594	6.0		1,746	13.2	
1,048	8.2		2,082	8.8	
1,417	9.5		2,384	8.7	
1,437	8.2	LEW	2,416	8.9	
1,475	11.1	REW	2,439	7.5	
1,597	10.2		2,442	8.5	
1,709	13.2	LEW	2,468	5.3	
1,720	4.3		2,498	13.9	From topo. map
<u>Section B</u>					
50	32.1	Section F	1,680	14.1	
170	16.4		1,856	11.8	Main road
485	7.0		1,863	14.1	Do.
1,100	13.5		1,875	14.4	Do.
1,254	9.9		1,884	13.9	Do.
1,389	11.0		1,942	14.1	Do.
1,550	12.5		1,971	14.1	House
1,631	14.0		1,971	23.6	Do.
1,637	6.4		2,125	5.9	
1,657	4.9	LEW	2,435	5.9	
1,659	4.3		2,487	5.0	
1,663	4.9	REW	2,528	10.8	House
1,676	14.1	LEW	2,580	15.1	Do.
<u>Section CD</u> (Composite section at bridge)					
0	27.4		285	14.8	
111	20.9		327	14.4	Sidewalk
137	17.6		476	15.6	
238	14.3		547	15.4	
246	6.4	LEW	658	13.9	From topo. map
258	5.7		1,188	12.7	Do.
265	6.4	REW	1,580	16.4	Do.
280	7.5		1,660	32.8	Do.

Rio Culebra and tributary at Aguada, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section E</u> (Approach section for bridge)					
-315	26.6	From topo. map	404	14.9	
0	18.5		480	16.0	
74	16.3		572	15.2	
222	14.4		655	16.1	
236	7.5		706	14.6	
253	10.3		722	15.0	
263	6.8	LEW	736	14.9	
266	6.6		746	15.1	
271	6.8	REW	896	15.0	
297	8.2		1,015	15.8	
305	15.2		1,197	14.5	
316	16.2		1,211	14.5	
345	15.5		1,910	16.4	From topo. map
			1,960	36.3	Do.
<u>Section F</u>					
0	38.6		2,184	13.0	House
114	20.8		2,184	22.3	Do.
180	18.7		2,192	13.0	Do.
302	21.9		2,192	22.3	Do.
417	19.7		2,247	11.7	Street
528	9.8		2,274	11.7	
558	9.3	LEW	2,323	13.6	
710	15.0		2,343	13.6	
1,038	13.3	REW	2,382	16.2	
1,300	12.0		2,389	16.2	
1,394	14.5		2,389	24.0	House
1,401	6.8	LEW	2,413	24.0	Do.
1,410	6.0		2,413	16.2	Do.
1,417	6.8	REW	2,449	16.0	
1,427	16.5		2,477	14.3	
1,508	12.1		2,544	13.8	
1,580	12.6		2,568	14.4	
1,621	12.5		2,574	12.8	Sidewalk
1,633	12.6		2,581	11.9	
1,692	13.5		2,586	11.8	
1,708	13.6		2,593	11.8	Road
1,718	13.1	Street	2,618	11.8	
1,745	13.3	Do.	2,632	13.2	Fence
1,970	15.1		2,632	14.6	Do.
2,155	14.9		2,687	17.4	
2,163	13.4		2,689	26.9	

Rio Culebra and tributary at Aguada, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
		Section G			
0	21.6		1,019	16.5	
38	21.4		1,060	15.8	
68	20.8		1,100	15.9	
112	20.0		1,106	15.8	
146	18.3		1,117	15.6	
184	14.8		1,148	16.7	
212	13.9		1,164	21.5	
247	14.9		1,170	19.7	
253	11.7		1,176	20.9	
259	14.2		1,182	19.1	
282	14.1		1,190	20.7	
310	14.8		1,201	17.4	
339	14.1		1,225	17.2	
346	11.7		1,259	17.1	
352	14.7		1,301	17.0	
393	14.3		1,301	17.2	
441	14.2		1,338	17.5	
483	14.8		1,367	19.6	
525	15.0		1,377	18.9	
537	15.5		1,396	21.4	
572	15.4		1,427	20.8	CL of channel
616	15.7		1,469	21.3	
661	16.1		1,516	19.7	
714	17.3		1,558	19.7	
718	9.2	LEW	1,571	15.7	
726	8.4		1,592	16.0	
732	9.0	REW	1,608	15.8	
734	16.9		1,616	17.4	
743	18.9		1,626	16.8	
746	19.2		1,662	17.4	CL of river
757	22.1		1,687	20.1	
764	19.6		1,695	18.1	
768	21.1		1,708	17.9	
775	18.0		1,731	20.9	
788	17.1		1,749	17.4	
793	11.3		1,773	17.8	
804	10.5		1,803	17.6	
816	9.9		1,812	21.5	
825	14.0		1,831	21.4	
833	17.8		1,844	21.1	
850	17.1		1,881	20.7	
891	16.7		1,920	21.0	
932	16.9		1,947	18.0	
973	16.9		1,959	16.5	

Río Culebra and tributary at Aguada, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section G--Continued</u>					
1,983	16.0	CL of channel	2,169	13.0	
2,018	15.9		2,191	13.2	
2,053	15.1		2,230	13.0	
2,087	13.6		2,267	13.4	
2,121	12.8		2,305	14.0	
2,133	12.6		2,342	14.9	
2,142	12.8		2,384	16.0	Houses
2,151	12.6		2,418	15.7	Do.
2,155	12.3		2,468	16.9	Do.
2,162	13.3		2,502	17.3	
<u>Section H</u>					
0	59.0	CL of street	1,025	8.5	Road
28	49.7		1,032	9.2	
69	37.2		1,046	18.9	
112	27.4		1,058	21.5	
146	25.7		1,063	20.3	
187	22.5		1,085	19.2	LEV
221	20.7		1,099	11.1	CL of channel
259	15.0	LEV	1,105	10.7	LEV
302	14.4		1,112	10.9	REV
308	14.4	REV	1,122	17.8	
371	14.6		1,153	17.6	
437	14.8		1,157	18.7	
503	15.0		1,170	18.7	
569	15.2		1,201	18.5	
575	12.6	CL of ditch	1,212	9.5	
582	15.1		1,217	8.9	CL of river
606	15.2		1,223	8.9	
639	15.5		1,235	19.3	
677	15.4		1,254	19.2	
719	15.7		1,268	17.9	
756	15.7		1,309	18.1	
768	15.9		1,344	17.1	CL of street
802	16.4		1,384	16.8	
832	16.6		1,423	17.2	
874	16.9		1,428	17.1	
921	19.5		1,431	16.1	
958	17.5		1,501	16.6	
988	19.3		1,536	16.2	Top of house
995	22.5		1,569	15.9	Do.
1,003	19.7		1,573	15.7	
1,018	8.4	CL of river	1,584	9.3	

Río Culebra and tributary at Aguada, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
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Section H--Continued

1,586	9.2	CL of channel	1,911	19.0	
1,588	9.2		1,933	19.5	
1,600	15.8		1,961	19.6	
1,603	15.7		1,985	20.1	
1,627	15.7		2,008	20.3	
1,664	15.2		2,031	20.7	
1,713	15.4		2,124	21.4	Houses
1,723	20.0		2,190	21.9	Do.
1,746	19.3		2,410	22.1	Do.
1,780	19.6		2,421	21.7	
1,820	19.7		2,428	16.0	
1,869	19.0		2,439	16.0	
1,876	18.9		2,439	15.3	
1,877	18.5		2,464	15.8	
1,892	18.6	CL of street	2,474	15.7	Road
1,909	18.5				

Section I

0	19.9		565	11.5	LEW
20	20.4		570	9.5	CL of trib- utary
33	7.4	LEW			REW
39	6.9		573	11.5	
44	8.0	REW	575	13.9	
61	20.6		590	13.6	
64	20.9		597	12.0	
78	20.1		606	15.7	
117	19.4	CL of ditch	622	16.4	
157	19.2		656	17.1	
197	18.7		663	19.9	
238	17.8		671	19.7	
283	17.4		679	23.0	
321	17.8		687	24.9	
341	17.5		694	24.8	
381	15.6		695	24.3	
418	14.7		706	24.6	CL of street
451	14.7		721	24.5	
485	12.9		722	24.9	
522	14.4		729	25.2	
530	16.9		734	25.6	
536	15.0		753	25.6	
563	14.3		753	34.8	Top of house
			792	34.8	Do.

Rio Culebra and tributary at Aguada, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
<u>Section I--Continued</u>					
792	25.4		1,078	22.2	
802	25.2		1,080	21.8	
808	22.9		1,093	22.0	
818	22.5		1,108	21.9	
873	22.3		1,110	22.3	
878	21.6		1,139	23.0	
886	21.3		1,160	23.4	
887	21.0		1,183	23.4	
899	21.2		1,219	22.4	
912	20.9		1,254	21.8	
914	21.3		1,291	21.5	
921	21.4		1,300	20.4	
944	22.3		1,310	20.5	
979	22.8		1,310	20.1	
1,011	22.9		1,338	20.4	
1,066	22.7		1,348	20.2	
<u>Section J</u>					
0	45.7		650	11.6	
33	36.6		659	11.7	REW
68	26.3		677	24.0	
97	20.0		693	23.1	
128	18.1		706	22.0	
166	18.2		754	22.0	
202	19.1		782	21.9	
211	15.2	CL of ditch	821	21.4	
219	20.0		860	21.4	
257	19.0		900	21.0	
306	19.0		945	20.5	
345	19.3		985	20.2	
347	20.1		1,024	20.0	
357	20.0		1,062	19.0	
376	20.7		1,104	19.0	
418	20.5		1,144	19.2	
465	20.4		1,183	19.1	
511	20.8		1,202	18.8	Dirt road
554	21.4	LEW	1,218	17.4	
591	22.1	REW	1,265	17.4	
621	23.2		1,299	17.3	
627	21.2		1,338	17.2	
641	12.1	LEW	1,372	17.0	

Río Culebra and tributary at Aguada, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section J--Continued</u>					
1,414	16.9		1,463	12.1	
1,424	18.8		1,477	16.0	
1,434	15.8		1,485	20.0	
1,452	16.1		1,505	22.5	
1,458	12.6		1,529	35.4	
1,461	11.6	CL of trib- utary	1,536	37.0	
			1,537	37.0	
<u>Section K</u>					
0	38.7		1,099	23.9	
35	24.0		1,138	23.1	
59	21.7		1,175	23.1	
108	18.4		1,212	22.6	
169	18.2		1,260	22.6	
219	17.9		1,301	22.4	
250	17.6		1,337	22.2	
291	17.9		1,387	21.7	
328	18.1		1,422	21.5	
371	18.1		1,471	21.7	
411	18.3		1,507	21.5	
464	19.1		1,540	23.7	
509	19.5		1,585	23.9	
554	19.5		1,629	22.6	
598	19.2		1,670	23.0	
640	19.9		1,705	22.6	
688	20.3		1,717	21.2	Dirt road
737	20.2		1,729	20.9	
781	20.4	Dirt road	1,769	18.7	
792	22.2	Do.	1,811	19.5	
803	22.1		1,829	23.9	
835	22.5		1,854	22.4	
877	22.9		1,896	22.4	
918	23.0		1,903	23.9	
960	23.5		1,911	19.2	
997	23.7		1,922	18.0	
1,042	24.3	LCW	1,930	20.1	
1,061	11.8	LEW	1,946	19.2	CL of street
1,065	11.6	REW	1,987	17.4	
1,070	11.5	REW	1,993	13.2	
1,087	24.3		1,997	11.9	CL of trib- utary
1,090	24.5				

Río Culebra and tributary at Aguada, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
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Section K--Continued

2,012	14.0		2,088	40.6	
2,022	22.5		2,116	48.4	
2,046	25.7		2,130	49.0	
2,059	28.4		2,132	49.0	

Section L

0	52.8		1,258	24.8	
55	34.6		1,292	24.7	
94	28.0		1,302	24.3	
136	22.3		1,334	24.0	
179	19.2		1,361	24.2	
228	17.4		1,380	23.9	
259	16.6		1,406	23.9	
305	16.8		1,443	22.9	
349	17.2		1,479	23.3	
396	17.4		1,526	22.6	
449	18.0		1,559	22.3	
497	18.5		1,588	21.8	
547	19.2		1,643	21.7	
594	20.0		1,698	23.3	
639	20.4		1,739	24.3	
688	20.7		1,783	23.8	
737	21.1		1,823	24.0	
779	21.1		1,862	23.3	
826	21.7		1,907	23.2	
862	22.1		1,942	23.0	
910	22.3		1,951	22.8	Dirt road
955	22.5		1,955	22.9	
965	23.7	Dirt road	1,959	25.2	
974	23.8	Do.	1,978	25.8	
985	23.3		2,010	25.8	
1,020	23.8		2,055	26.1	
1,062	23.9		2,095	26.2	
1,105	24.3		2,127	26.0	
1,142	24.7		2,137	26.1	
1,182	24.1		2,137	26.0	
1,198	11.7	LEW	2,151	25.8	
1,202	11.6		2,161	25.6	CL of street
1,207	11.5	REW	2,166	26.0	
1,216	15.4		2,170	26.2	
1,226	25.3		2,206	25.6	
1,234	25.0		2,248	24.9	

Rio Culebra and tributary at Aguada, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank in feet	Ground ele- vation, in feet	Remarks
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Section L--Continued

2,282	24.4		2,343	20.1	
2,306	18.1		2,367	22.8	
2,317	17.4		2,402	36.9	
2,324	14.6		2,424	47.9	
2,329	13.3	CL of tribu- tary	2,427	48.2	
			2,445	48.3	
2,332	13.9				

Section M

0	51.8		740	22.9	
19	41.6		753	24.1	
49	27.2		783	23.7	
75	26.7		810	22.1	
104	27.0		838	22.4	
137	25.0		896	22.6	CL of road 411
154	14.5	LEW	944	22.2	
163	14.7		960	22.2	
179	15.7	REW	985	20.9	
182	18.2		1,002	22.5	
186	18.3		1,033	21.9	
199	27.0		1,069	21.1	
211	26.9		1,073	19.5	CL of ditch
231	26.9		1,076	21.3	
260	26.7		1,094	20.7	
288	26.2		1,134	21.8	
313	26.1		1,168	22.6	
342	26.1		1,180	22.5	
371	26.0		1,211	19.6	
380	28.5		1,243	18.9	
384	28.8		1,280	18.6	
411	27.5		1,315	18.2	
455	27.2		1,353	18.2	
498	26.9		1,390	18.9	
538	26.4		1,405	20.6	
539	24.4		1,420	21.2	
576	23.9		1,445	21.6	
605	23.5		1,464	21.8	CL of road 411
640	23.1		1,482	21.6	
676	23.0		1,490	21.5	
707	25.0		1,490	16.0	
714	26.3		1,494	15.2	
727	23.4		1,498	15.1	CL of ditch

Río Culebra and tributary at Aguada, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
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Section M-Continued

1,504	15.3		1,578	23.6	
1,504	20.4		1,618	24.3	
1,515	21.5		1,663	25.9	
1,547	22.9				

Río Culebra tributary at Aguada, P.R.

Section N

0	23.7		1,137	18.0	
31	23.4		1,159	18.7	
122	23.0		1,173	18.5	
205	22.8		1,177	15.3	LEW
264	22.8		1,180	13.8	
321	22.7		1,182	15.2	REW
354	22.4		1,186	18.8	
392	22.5		1,203	18.6	
448	22.3		1,240	19.7	
484	21.9		1,283	18.8	
528	22.5		1,316	19.2	
589	22.9		1,322	15.3	
651	22.8		1,329	13.9	CL of ditch
738	21.8		1,333	16.3	
792	22.0		1,339	20.8	
829	22.1		1,350	22.6	
969	21.6		1,361	23.2	
903	21.9		1,397	24.3	
929	23.4		1,415	26.4	
942	23.3		1,425	28.6	
976	22.6		1,446	33.2	
1,013	21.7		1,476	42.0	
1,028	18.8		1,486	45.8	
1,043	17.8		1,502	46.5	
1,090	17.9		1,506	46.6	

Rio Culebra tributary at Aguada, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section O</u>					
0	28.2		1,100	11.0	
82	28.5		1,106	13.1	
129	27.2		1,113	19.5	
191	26.2	CL of ditch	1,121	13.5	
241	24.8		1,122	13.3	CL of ditch
296	23.7		1,125	14.6	
355	23.5		1,130	20.0	
403	23.3		1,148	19.8	CL of ditch
448	23.2		1,156	22.0	
502	23.2		1,163	19.7	
561	23.3		1,196	19.1	
605	23.1		1,232	18.8	
641	22.6		1,239	14.7	LEW
692	21.9	CL of ditch	1,241	13.6	CL of ditch
730	22.2		1,245	14.6	REW
771	21.9		1,258	19.6	
816	21.0		1,286	21.4	
855	21.0		1,310	22.5	
873	21.4		1,329	23.3	
878	19.9	CL of ditch	1,341	26.0	
882	21.3		1,354	27.9	
910	22.8	<u>Section P</u>	1,373	31.7	
923	23.1		1,396	37.7	
957	20.7		1,408	39.6	
962	19.1		1,435	44.2	
992	18.8		1,443	47.9	
1,056	18.7		1,447	48.0	
<u>Section P</u>					
0	33.3	LEW	389	19.6	
24	31.9	REW	396	21.9	
67	28.3		405	19.1	
93	24.7		446	18.5	
128	22.0		452	15.2	
149	23.3	Road	455	14.6	
160	23.8		467	14.2	CL of ditch
175	20.7		472	19.5	
226	19.3		507	23.2	
290	18.7		537	24.8	
341	19.0		569	30.3	
356	20.3		603	37.1	
361	14.7	LEW	630	45.6	
365	13.0		660	52.0	
368	14.8	REW	686	58.3	
373	19.8		691	58.3	

Río Culebra tributary at Aguada, P.R.

Distance from left bank, in feet	Ground ele- vation in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
<u>Section Q</u>					
0	25.2		560	19.3	
43	21.1		608	18.5	
50	14.9		658	18.7	LEW
63	13.7	CL of ditch	719	19.7	
76	15.2		751	19.9	REW
76	17.7		760	20.7	
84	17.5		765	18.2	
162	17.6		768	17.7	CL of ditch
212	17.6		770	18.2	CL of ditch
288	17.8		773	21.1	
344	18.2		789	23.5	
421	18.9		852	34.2	
471	19.1		867	37.5	
475	15.8	CL of ditch	889	21.4	
479	15.9		913	43.4	
482	16.2		939	46.8	
486	20.2		971	49.6	
508	20.0		1,002	53.4	
513	19.3		1,012	53.8	
<u>Section R</u>					
0	18.3	CL of ditch	476	21.7	
84	19.0		483	22.8	
128	19.6		489	19.9	CL of ditch
191	19.9		495	23.3	
240	20.6		515	25.8	
248	20.7		556	31.4	
252	16.6	LEW	587	37.1	
254	16.5		614	41.5	
258	16.9	REW	644	44.7	
262	21.7		669	47.3	
289	21.4		708	51.0	
293	19.8		730	53.9	
332	20.1		752	56.2	
384	20.2		773	57.1	CL of ditch
440	20.9	CL of ditch	799	57.1	

Río Culebra tributary at Aguada, P.R.

Distance from left bank, in feet	Ground ele- vation in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
<u>Section S</u>					
0	35.0		291	26.0	
			330	26.2	
21	23.0		337	24.8	LEW
50	23.0		341	24.5	
76	23.1		344	24.7	REW
104	23.4		359	27.5	
138	23.3		401	30.0	
165	24.5		405	27.1	
169	21.6		406	27.0	CL of ditch
171	21.0	CL of ditch	408	27.5	
174	21.1		412	30.6	
178	24.4		436	35.7	
181	24.7		457	40.4	
198	25.2		482	45.7	
249	25.1				
<u>Section T</u>					
0	60.3		288	29.6	
4	49.0		331	30.6	
27	42.5		356	30.5	
46	29.2		390	31.5	
61	28.4		410	29.5	
67	22.0	CL of ditch	417	24.5	
74	25.4		421	23.0	
97	25.7		424	22.9	CL of ditch
127	26.7		429	29.3	
145	26.8		459	36.8	
160	26.7		484	41.9	
203	27.6		511	46.6	
246	28.8				
<u>Section U</u>					
0	70.1		667	43.9	
25	59.3		699	42.1	
85	39.2		719	29.3	
146	29.8		730	27.5	CL of ditch
167	29.0		737	27.7	
174	23.4	CL of ditch	743	36.9	
183	27.4		749	38.9	
271	26.7		754	39.3	
374	30.1		771	37.6	
480	38.1		791	41.2	
565	46.9		798	42.2	
605	46.1		845	43.4	
636	44.0		927	47.2	
652	44.2		977	49.5	

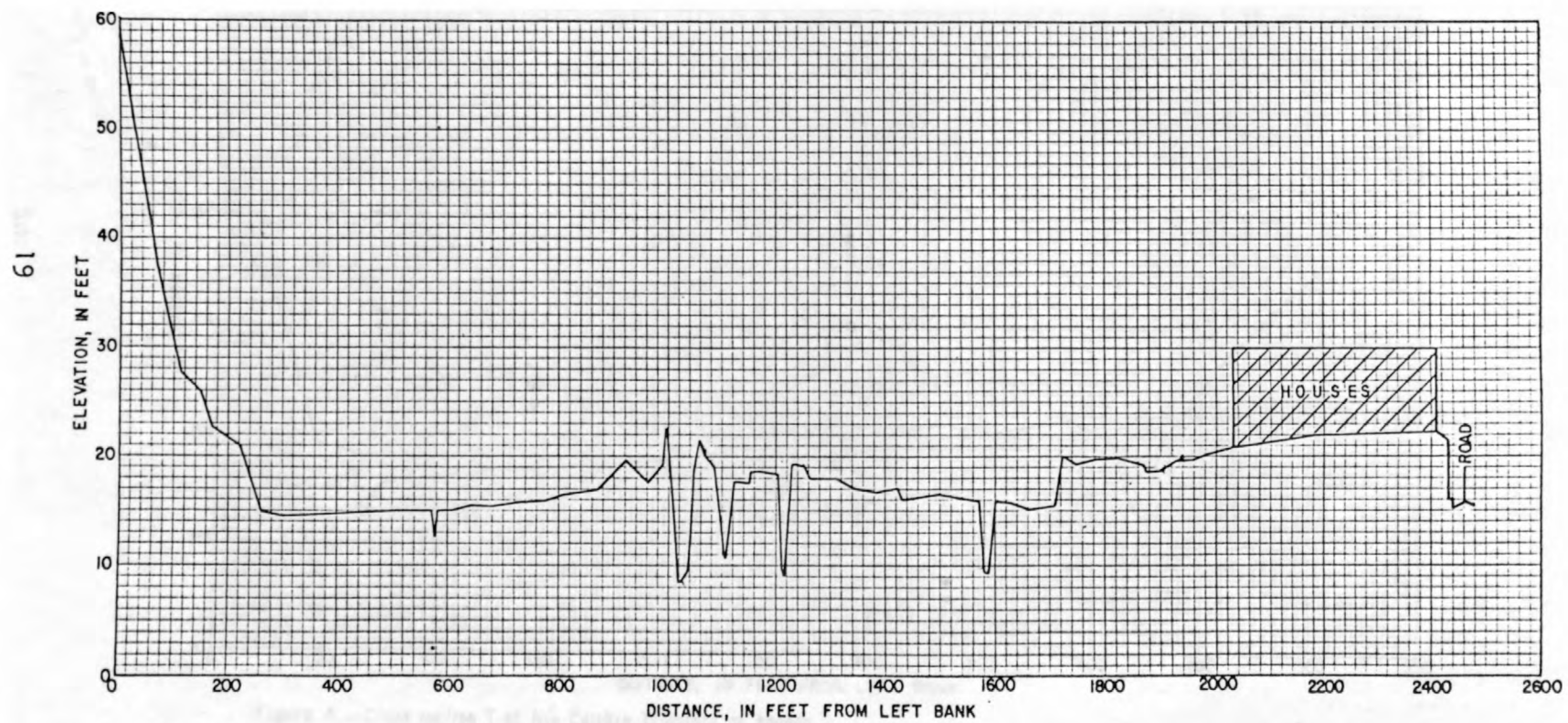


Figure 3.--Cross section H of Río Culebra and tributary at Aguada.

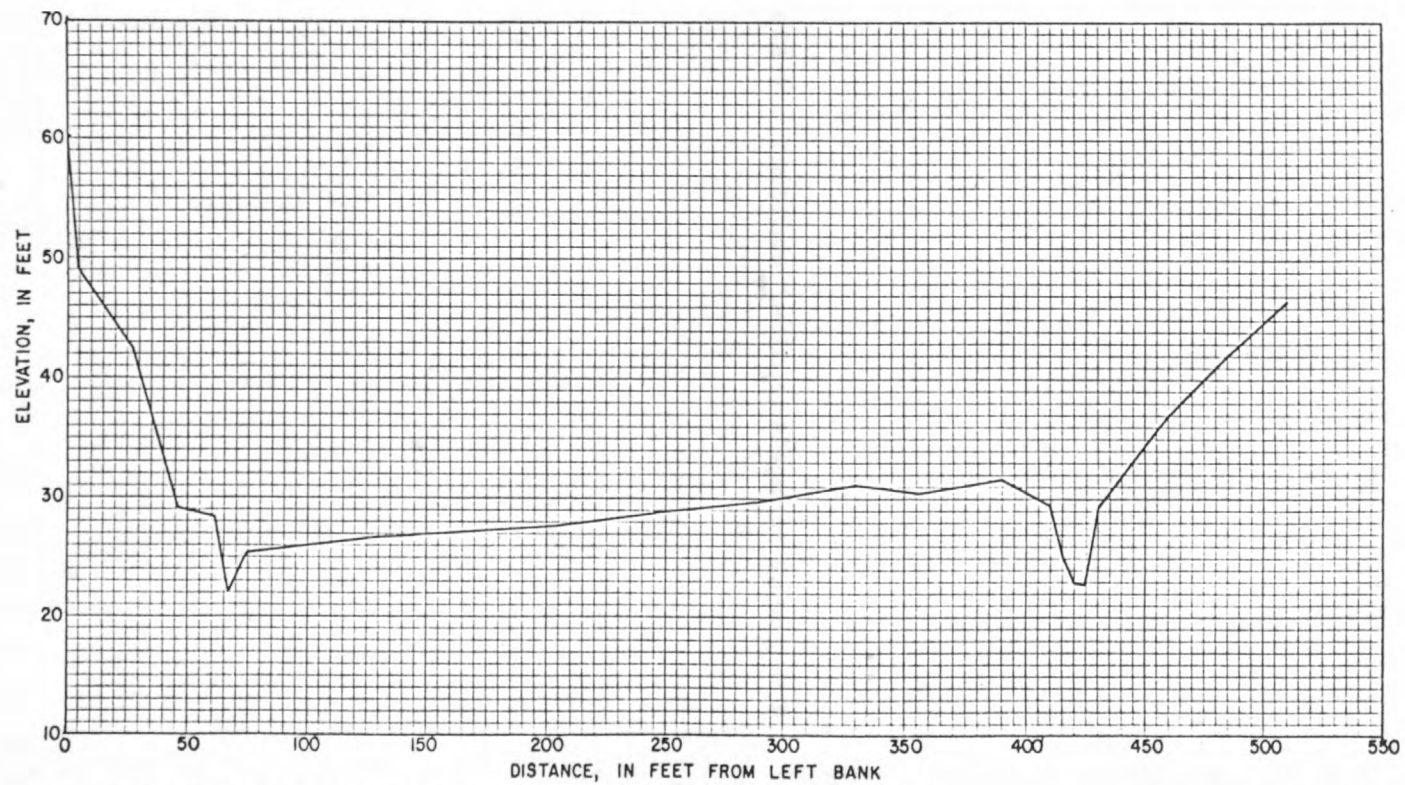
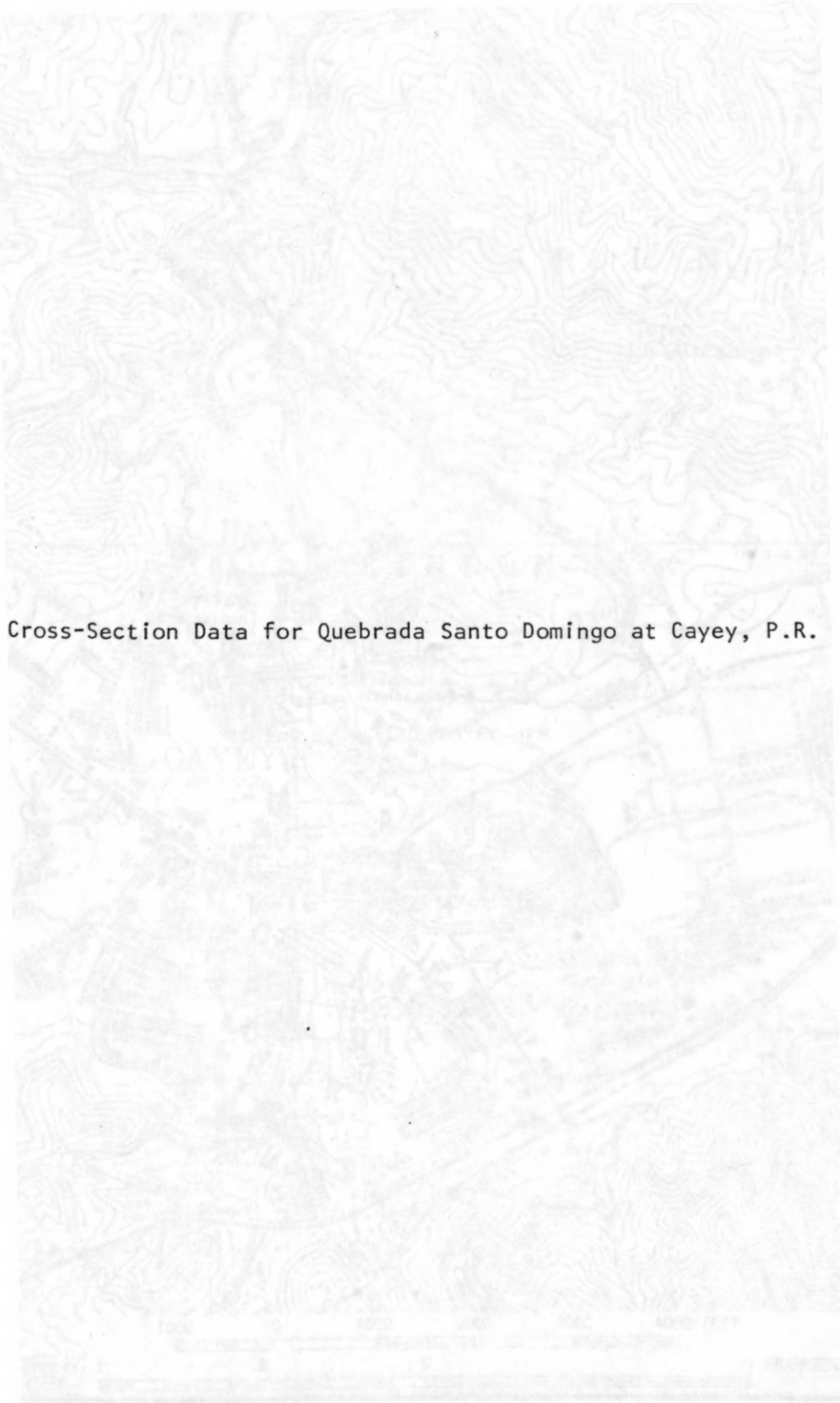


Figure 4.--Cross section T of Río Culebra Tributary at Aguada.



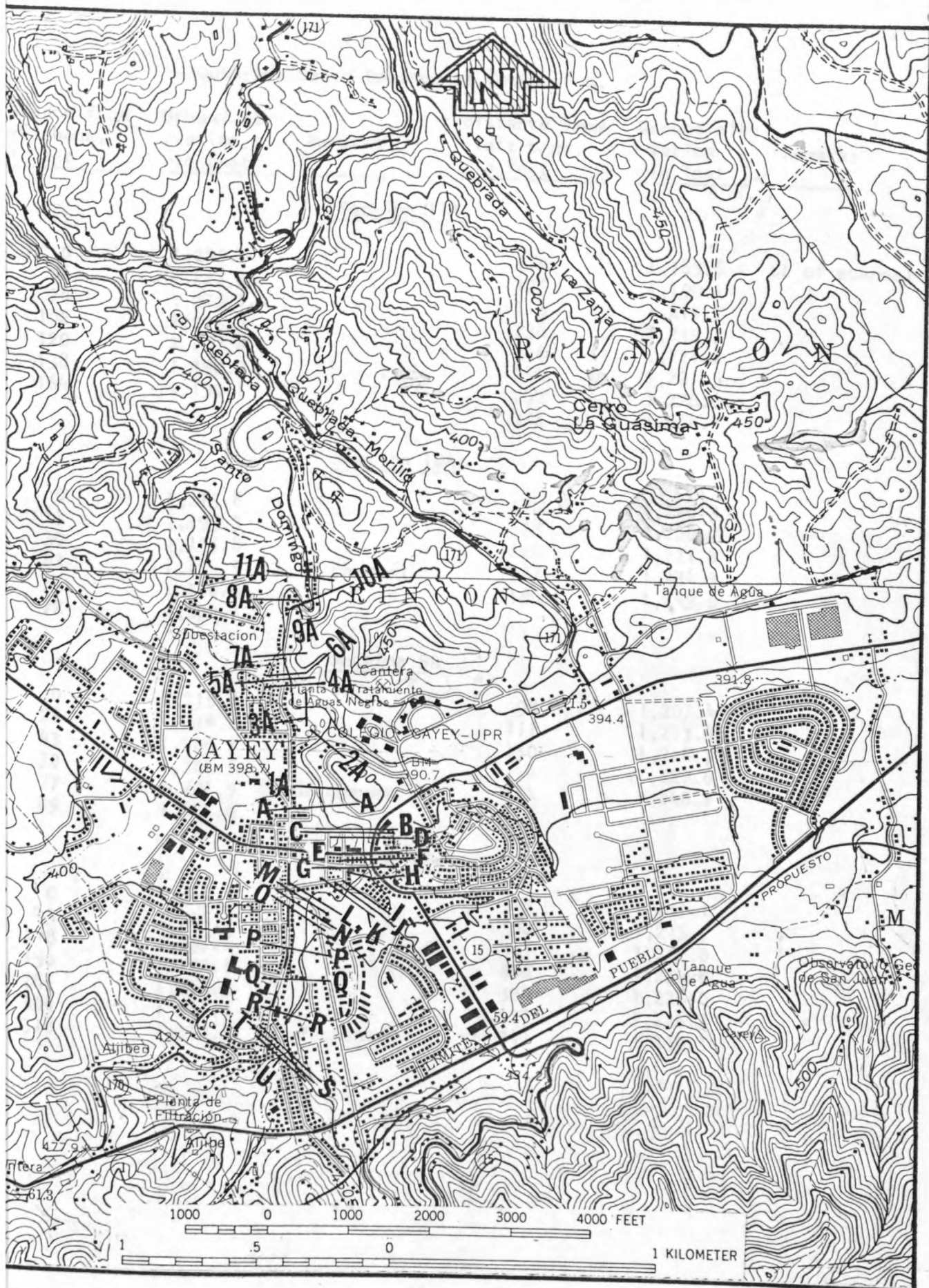


Figure 5.--Location of cross sections on Quebrada Santo Domingo at Cayey, PR.

Quebrada Santo Domingo at Cayey, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
<u>Section 11A</u>					
0	1,226.0		170	1,189.6	CL of channel
66	1,227.4		177	1,190.1	
74	1,222.1		213	1,211.7	
102	1,216.7		236	1,219.7	
120	1,207.4		246	1,221.2	
138	1,190.9		254	1,221.5	
164	1,190.1		262	1,226.6	
			353	1,260.4	
<u>Section 10A</u>					
0	1,215.8		110	1,220.3	
23	1,199.3		118	1,220.7	
30	1,195.8		128	1,221.8	
43	1,195.5	CL of channel	147	1,234.3	
54	1,196.0		180	1,249.6	
72	1,200.1				
<u>Section 9A</u>					
0	1,215.8		98	1,207.4	
28	1,214.6		111	1,213.4	
43	1,206.3		130	1,214.7	
70	1,202.5		134	1,227.6	
77	1,201.9	CL of channel	164	1,246.2	
89	1,202.6				
<u>Section 8A</u>					
0	1,248.7		335	1,211.1	
43	1,244.0		348	1,215.7	
118	1,237.6		361	1,222.0	
190	1,232.1		368	1,224.8	
285	1,219.3		394	1,226.0	
304	1,211.1		427	1,226.3	
318	1,210.6	CL of channel	541	1,230.3	

Quebrada Santo Domingo at Cayey, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
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Section 7A

0	1,260.1		368	1,216.9	
85	1,251.4		377	1,216.9	
152	1,244.6		391	1,220.4	
220	1,238.1		400	1,227.5	
231	1,238.1		406	1,229.8	
279	1,234.3		417	1,233.1	
315	1,230.3		427	1,234.5	
325	1,226.1		432	1,239.0	
343	1,220.7		469	1,250.5	
358	1,216.5	CL of channel	505	1,261.5	

Section 6A

0	1,247.0		259	1,223.6	
42	1,243.5		266	1,223.7	
121	1,236.7		271	1,223.7	
196	1,231.2		284	1,233.4	
212	1,229.9		294	1,235.8	
220	1,228.5		306	1,241.0	
227	1,227.1		324	1,245.0	
239	1,224.2		360	1,248.2	
252	1,223.6	CL of channel			

Section 5A

0	1,247.0		252	1,236.6	
42	1,243.5		266	1,223.7	CL of channel
121	1,236.7		270	1,235.0	
204	1,230.6		284	1,233.4	
228	1,234.8		294	1,235.8	
228	1,227.1		306	1,241.0	
239	1,224.1		324	1,245.0	
248	1,225.2		360	1,248.2	

Section 4A

177	1,250.0		228	1,225.2	
177	1,234.1		228	1,238.0	
177	1,227.2		244	1,238.4	
187	1,226.2		270	1,249.4	
197	1,224.3		301	1,254.3	
200	1,224.0	CL of channel	339	1,261.1	
204	1,224.3				

Quebrada Santo Domingo at Cayey, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section 3A</u>					
0	1,265.4		310	1,231.4	
94	1,245.0		315	1,231.0	
118	1,242.1		321	1,230.6	CL of channel
151	1,241.2		339	1,248.1	
184	1,241.3		384	1,250.5	
243	1,239.5		466	1,255.4	
269	1,239.0		512	1,263.8	
277	1,233.1		571	1,273.2	
292	1,232.2				
<u>Section 2A</u>					
0	1,252.8		220	1,236.3	
45	1,253.7		231	1,240.1	
118	1,250.6		251	1,242.2	
140	1,250.8		323	1,243.0	
169	1,248.9		374	1,253.5	
181	1,241.3		434	1,253.6	
195	1,236.3		451	1,262.4	
209	1,235.8	CL of channel			
<u>Section 1A</u>					
0	1,280.7		383	1,258.0	
23	1,275.3		391	1,251.9	
56	1,265.1		399	1,251.6	CL of channel
98	1,258.3		410	1,252.3	
156	1,257.2		422	1,257.5	
272	1,259.7		492	1,266.6	
326	1,262.7		505	1,270.0	
367	1,260.8		520	1,276.0	
374	1,256.5		535	1,281.7	

quebrada Santo Domingo at Cayey, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
<u>Section A</u> (at end of concrete channel)					
0	1,282.3		284	1,257.2	Base of left channel wall
45	1,279.7				CL of channe
86	1,277.5		300	1,256.7	Base of right channel wall
119	1,275.7		318	1,257.2	Top of right channel wall
152	1,276.6				
188	1,274.2		318	1,262.1	Top of pier
232	1,272.8				3 ft wide
241	1,267.8		319	1,263.7	Base of pier
261	1,264.2		335	1,267.3	
284	1,262.1	Top of left channel wall	335	1,287.3	
<u>Section B</u> (Exit section for new Hwy 14 bridge)					
0	1,280.9	Intersection with bridge profile sec- tion	240	1,262.8	Base of right channel wall
			240	1,267.7	Top of right channel wall
39	1,281.8		244	1,269.9	
77	1,282.0		249	1,270.1	End of bridge
97	1,281.8		254	1,273.3	
119	1,280.5		257	1,277.3	
126	1,279.4		263	1,280.0	
149	1,276.0		264	1,282.5	
171	1,271.8		271	1,285.7	Edge of ver- tical moun- tain side
194	1,270.2				
210	1,267.7	Top of left channel wall	271	1,315.7	
210	1,263.1	Base of left channel wall			
225	1,262.9	CL of channel			

Quebrada Santo Domingo at Cayey, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
<u>Section C</u> (New Hwy 14 bridge geometry and road profile)					
0	1,288.3		813	1,264.4	CL of channel
64	1,286.5	Edge of road	830	1,265.6	Base of chan- nel wall
105	1,285.7	CL of road			
168	1,284.6	Edge of road	830	1,269.3	Top of channel wall
235	1,283.1				
313	1,281.6		834	1,283.9	Top of deck
430	1,280.5	Hwy 14	834	1,281.3	Top of pier 2 ft wide
562	1,280.6	Do.			
667	1,281.4	Do.	834	1,269.3	Base of pier
730	1,282.4	End of bridge	841	1,272.3	
			847	1,275.1	
767	1,282.6	Top of deck	855	1,278.9	
767	1,281.2	Top of left abutment, also low steel	862	1,284.2	Top of deck
			862	1,280.8	Base of right abutment
767	1,279.4	Base of left abutment	862	1,282.4	Top of right abutment
776	1,276.4		867	1,282.5	
781	1,278.5		874	1,283.8	
787	1,270.4		879	1,285.2	End of bridge
794	1,283.3	Top of deck	890	1,285.7	
794	1,275.6	Top of left pier, also low steel	917	1,286.6	Edge of Hwy 14
			935	1,287.7	CL of Hwy 14
794	1,269.8		952	1,287.9	Edge of Hwy 14
799	1,269.4	Top of left abutment			
799	1,264.5	Base of left abutment	970	1,289.5	Base of 50-ft high building

Quebrada Santo Domingo at Cayey, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section D</u> (Approach section for new Hwy 14 bridge, also exit section for old Hwy 14 bridge)					
0	1,287.7		479	1,265.4	CL of channel
0	1,286.7		493	1,265.5	Base of right end of chan- nel wall
5	1,286.1	Edge of road			
17	1,286.7	CL of road			
29	1,286.4	Edge of road	493	1,270.3	Top of right end of chan- nel wall
45	1,285.9				
60	1,284.4				
104	1,282.8		498	1,272.6	
149	1,281.4		507	1,273.9	
165	1,281.0	On parking lot	524	1,274.9	
231	1,281.0	Do.	547	1,277.9	
292	1,281.2	Do.	557	1,280.1	
344	1,281.5	Do.	562	1,283.7	
414	1,282.7	On sidewalk	567	1,285.4	
420	1,283.7		579	1,284.8	Edge of Hwy 15
437	1,283.7		598	1,285.1	CL of Hwy
445	1,276.0		617	1,285.0	Edge of Hwy 15
460	1,272.5		617	1,287.1	
464	1,270.4	Top of chan- nel wall	624	1,287.4	Base of bldg. 50-ft high
464	1,265.4	Bottom of channel; also left edge			

Section E (Hwy 14 bridge geometry and road profile)

0	1,294.8		450	1,272.7	Top of pier
82	1,290.7		450	1,265.9	Base of pier; also CL of channel
152	1,287.3				
255	1,282.8				
305	1,281.1		459	1,275.3	Center of arch
378	1,279.4		467	1,273.6	Top of right abutment
433	1,279.1	Top of deck; left end of bridge	467	1,270.7	Top of right channel wall
436	1,272.6	Top of left abutment; al- so low steel	467	1,266.0	Base of right channel wall
436	1,270.8	Toe of left channel wall	472	1,279.4	Right end of bridge; also top of deck
436	1,267.6	Top of abut- ment	508	1,279.9	
436	1,265.5	Base of chan- nel wall	537	1,280.7	Edge of Hwy 14
444	1,275.2	Low steel at center of arch	554	1,281.3	CL of Hwy
			577	1,281.0	Edge of Hwy 14
			614	1,286.8	
			634	1,290.6	
			659	1,295.2	

Quebrada Santo Domingo at Cayey, P.R.

Distance from left bank, in feet	Ground elevation, in feet	Remarks	Distance from left bank, in feet	Ground elevation, in feet	Remarks
<u>Section F</u> (Approach section for Hwy 14 bridge; also exit for Nuñez Romeu Street bridge)					
0	1,275.0	Base of 2-story building 40 ft high	34	1,266.9	CL of channel
6	1,274.9		48	1,267.0	Base of right channel wall
10	1,273.9		52	1,271.8	
14	1,273.5		54	1,272.7	
18	1,273.3		54	1,273.2	
21	1,271.8	Top of left channel wall	54	1,275.6	
21	1,266.9	Base of left channel wall	63	1,277.6	
			65	1,279.4	
			70	1,280.7	For extension from here use Hwy 14 profile
<u>Section G</u> (Nuñez Romeu Street bridge geometry and road profile)					
0	1,292.7	Bank about 12 ft high; slope 3:1	357	1,282.6	Top of deck
54	1,287.1		357	1,268.9	
106	1,283.3		368	1,268.8	CL of channel
170	1,281.1		382	1,268.9	
228	1,279.3		394	1,269.0	Base of right abutment and right edge of channel
287	1,278.7				
320	1,280.0		394	1,281.0	Top of abutment and low beam
347	1,281.5	Left end of bridge and top of deck	394	1,284.7	Right end of bridge and top of deck
347	1,273.6	Top of left channel wall	426	1,286.4	Edge of Hwy 14
347	1,268.9	Base of abutment	447	1,287.7	CL of Hwy 14
347	1,278.1	Top of left abutment; also low beam and left side of channel	460	1,287.3	Edge of Hwy 14
			461	1,287.7	
			461	1,287.8	Base of wall; mountain 40 ft high

Quebrada Santo Domingo at Cayey, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
<u>Section H</u> (Approach section for Nuñez Romeu Street bridge)					
0	1,277.6	Base of 2-	44	1,276.8	Top of deck
22	1,275.1	Corner of house	50	1,279.3	Base of right
			56	1,285.2	channel wall
26	1,275.1	Top of left side of	60	1,286.4	Top of wall
		channel	67	1,287.4	Left edge of Hwy 14
26	1,269.5	Bottom of left side	79	1,288.0	CL of Hwy 14
		of channel	93	1,287.3	Right edge of Hwy 14
39	1,269.6	Bottom of right side	96	1,287.7	Top of deck
		of channel	99	1,287.8	Base of wall, 7.5 ft high
39	1,275.0	Top of right side of channel			

<u>Section I</u> (Exit section for Carrión Maduro Street bridge)					
0	1,287.3	Top of re- taining wall and base of house	28	1,282.7	Base of right channel wall
			41	1,285.6	Top of right channel wall
			48	1,287.4	
			64	1,288.5	
0	1,273.4	Left base of channel wall	79	1,290.2	
			97	1,292.1	
12	1,275.1	CL of channel			
24	1,275.9	Base of wall			
24	1,280.3	Top of wall			

Quebrada Santo Domingo at Cayey, P.R.

<u>Distance from left bank, in feet</u>	<u>Ground ele- vation, in feet</u>	<u>Remarks</u>	<u>Distance from left bank, in feet</u>	<u>Ground ele- vation in feet</u>	<u>Remarks</u>
<u>Section J</u> (Carrión Maduro Street bridge geometry and road profile)					
0	1,285.9	Base of 2- story build- ing	43	1,285.6	Top of deck
22	1,300.6		51	1,276.3	Base of right channel wall
3	1,285.5	Edge of road	51	1,280.7	Top of wall
12	1,285.5	CL of road	51	1,284.2	Top of abut- ment and low steel
20	1,285.3	Edge of road			
26	1,285.2	Left end of bridge	51	1,286.2	Right end of bridge and top of deck
26	1,283.6	Top of abut- ment; also low beam	84	1,287.6	
26	1,276.1	Base of abut- ment	119	1,291.2	
			144	1,294.0	
43	1,275.7	CL of channel	163	1,296.8	
			205	1,300.9	
<u>Section K</u> (Approach section for Carrión Maduro Street bridge)					
0	1,289.5	Base of house	160	1,276.8	Base of right channel wall
39	1,288.1				
73	1,286.7	Edge of house	160	1,281.5	Top of right channel wall
121	1,285.1	Do.			
137	1,285.3	Top of left channel wall	165	1,283.1	
			171	1,284.9	
137	1,276.6	Base of left channel wall	177	1,285.4	
			181	1,285.7	Fence
150	1,276.7	CL of channel	197	1,286.9	Base of house
<u>Section L</u> (Exit section for Fernández García Avenue bridge)					
0	1,297.2	Top of house	33	1,288.6	Top of right channel wall
0	1,290.5	Base of house			
5	1,288.5	Top of left channel wall	40	1,293.7	Top of bank
			48	1,293.7	
5	1,283.7	Base of left channel wall	67	1,292.6	
			80	1,292.5	Base of building
19	1,283.8	CL of channel			
33	1,283.1	Base of right channel wall			

Quebrada Santo Domingo at Cayey, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section M</u> (Fernández García Avenue bridge geometry and road profile)					
0	1,302.6	Base of con- crete wall	73	1,296.2	Top of deck
22	1,300.6		86	1,284.6	Base of right abutment
42	1,298.8		86	1,291.6	Low steel
60	1,295.8	Top of left abutment	86	1,293.6	Top of abutment
60	1,292.1	Low-steel	86	1,295.4	Top of deck
60	1,283.8	Base of left abutment	121	1,294.4	
			174	1,294.0	
60	1,296.9		209	1,296.2	
73	1,283.8	Base of 1-ft wide pier;	257	1,296.6	
		also CL of	291	1,300.1	
		channel	362	1,300.7	
			372	1,303.0	
<u>Section N</u> (Approach section for Fernández García Avenue bridge)					
0	1,300.0	Bank 10 ft high; slope 5:1	47	1,286.9	REW
			52	1,288.0	
			58	1,291.2	
2	1,297.9		68	1,293.6	
21	1,293.0		72	1,296.2	
29	1,288.6		81	1,296.3	
39	1,287.8		93	1,296.7	
41	1,286.9	LEW	95	1,292.7	Base of house
44	1,286.6				
<u>Section O</u>					
0	1,306.2		84	1,291.2	LEW
24	1,303.5		85	1,291.1	
42	1,301.2		88	1,291.2	REW
54	1,299.9	Edge of house	93	1,292.6	
71	1,298.6	Do.	112	1,295.8	
74	1,301.9	Top of wall	122	1,298.1	
74	1,291.9	Base of wall	140	1,308.6	
79	1,291.7				

Quebrada Santo Domingo at Cayey, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
<u>Section P</u>					
0	1,313.6	Base of house	67	1,298.3	REW
15	1,310.9		71	1,300.2	
32	1,309.0		91	1,303.4	LEW
36	1,308.2		106	1,305.2	
44	1,302.7		131	1,309.7	
45	1,298.5		162	1,316.9	Top of wall
47	1,298.3	LEW	179	1,320.3	Top of wall
51	1,298.2		187	1,321.2	Top of wall
<u>Section Q</u>					
0	1,320.4		140	1,306.9	
9	1,318.1		160	1,305.0	
26	1,314.2		162	1,304.2	LEW
49	1,311.9		164	1,304.0	
69	1,311.5		168	1,304.3	REW
85	1,310.6		172	1,305.1	
110	1,309.6		184	1,319.5	
135	1,308.3		192	1,322.0	Bank from here up about 20 ft; slope 4:1
<u>Section R</u>					
0	1,329.5		50	1,313.3	REW
12	1,327.8		61	1,314.4	
14	1,326.9		69	1,319.0	
22	1,321.4		89	1,321.3	
28	1,315.2		98	1,325.0	
42	1,314.2		107	1,326.9	
46	1,313.3	LEW	126	1,328.4	
48	1,312.8		146	1,331.0	

Quebrada Santo Domingo at Cayey, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section S</u> (Exit section for Narciso Collazo Street bridge)					
0	1,325.0	Base of house	16	1,321.8	
2	1,323.3		17	1,321.6	LEW
4	1,323.3		19	1,321.4	
6	1,323.1		20	1,321.6	REW;
8	1,322.9				base of wall
10	1,322.5		20	1,330.6	Top of wall
12	1,322.3		28	1,330.3	
14	1,1321.9		35	1,330.2	Base of bldg.
<u>Section T</u> (Narciso Collazo Street bridge geometry and road profile)					
0	1,336.7		99	1,327.4	Low steel
25	1,333.2		99	1,321.9	CL of channel
57	1,330.6		101	1,329.6	Right end of
79	1,330.2				bridge and
84	1,329.7	Top of deck			top of deck
		and left end	101	1,327.4	Low steel
		of bridge	101	1,321.7	Bottom right
91	1,329.5				side of
91	1,327.4	Low steel			channel
91	1,322.7	Bottom left	128	1,330.6	
		side of	152	1,332.0	
		channel	169	1,332.8	
99	1,329.8	Top of deck	191	1,334.1	
			226	1,337.0	
<u>Section U</u> (Approach section for Narciso Collazo Street bridge)					
0	1,326.8	Top of wall;	14	1,324.6	
		part of 2-	16	1,324.7	
		story building	18	1,324.9	
0	1,322.6	Base of wall;	20	1,326.6	Base of wall
		also LEW	20	1,329.2	Top of wall
1	1,322.2		22	1,326.0	
2	1,322.6	REW	24	1,326.0	
4	1,322.8		26	1,326.1	
6	1,323.1		28	1,326.2	
8	1,323.2		30	1,326.4	
10	1,323.5		33	1,327.0	Base of 2-
12	1,324.1				story house

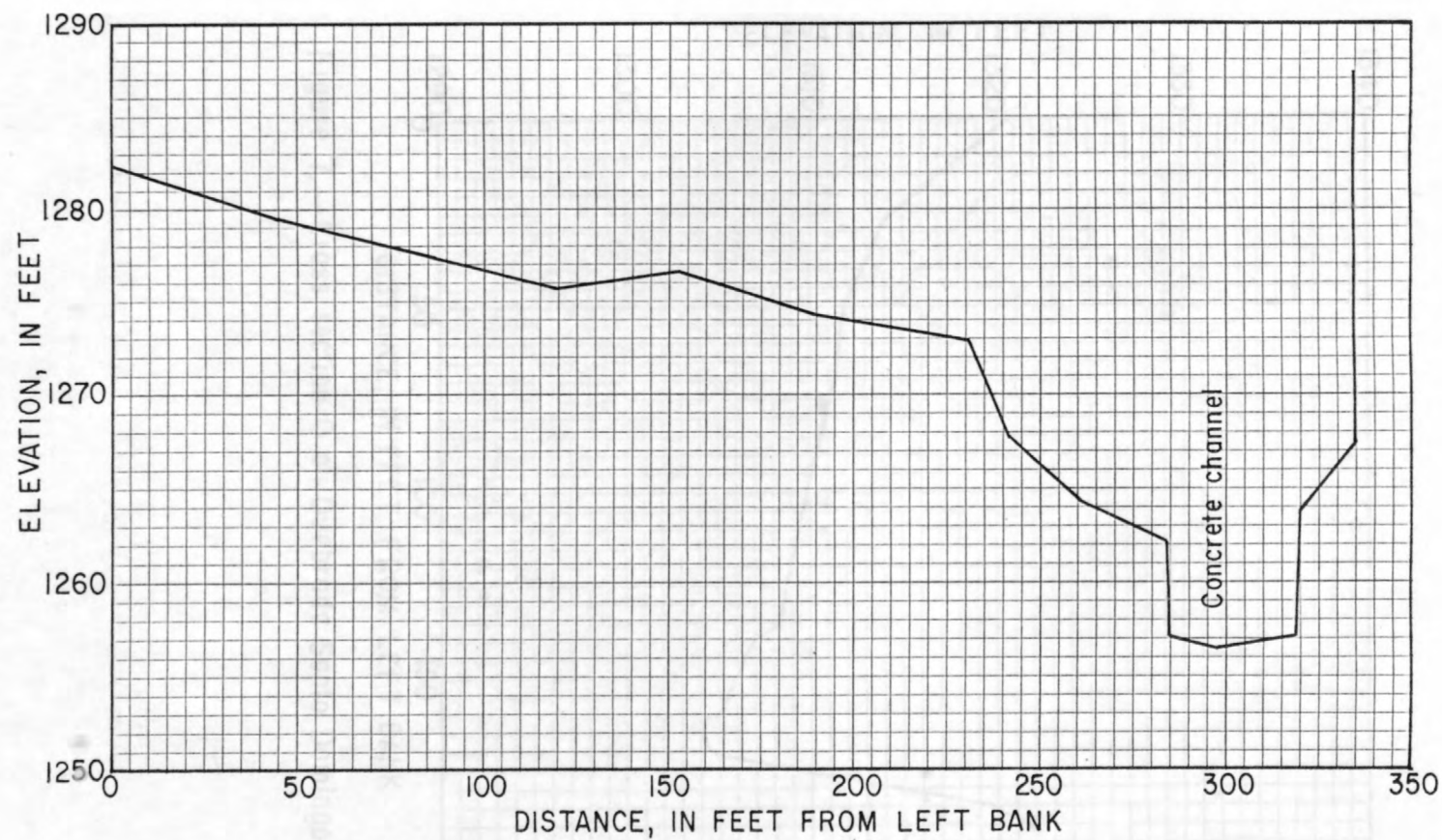


Figure 6.--Cross section A of Quebrada Santo Domingo at Cayey.

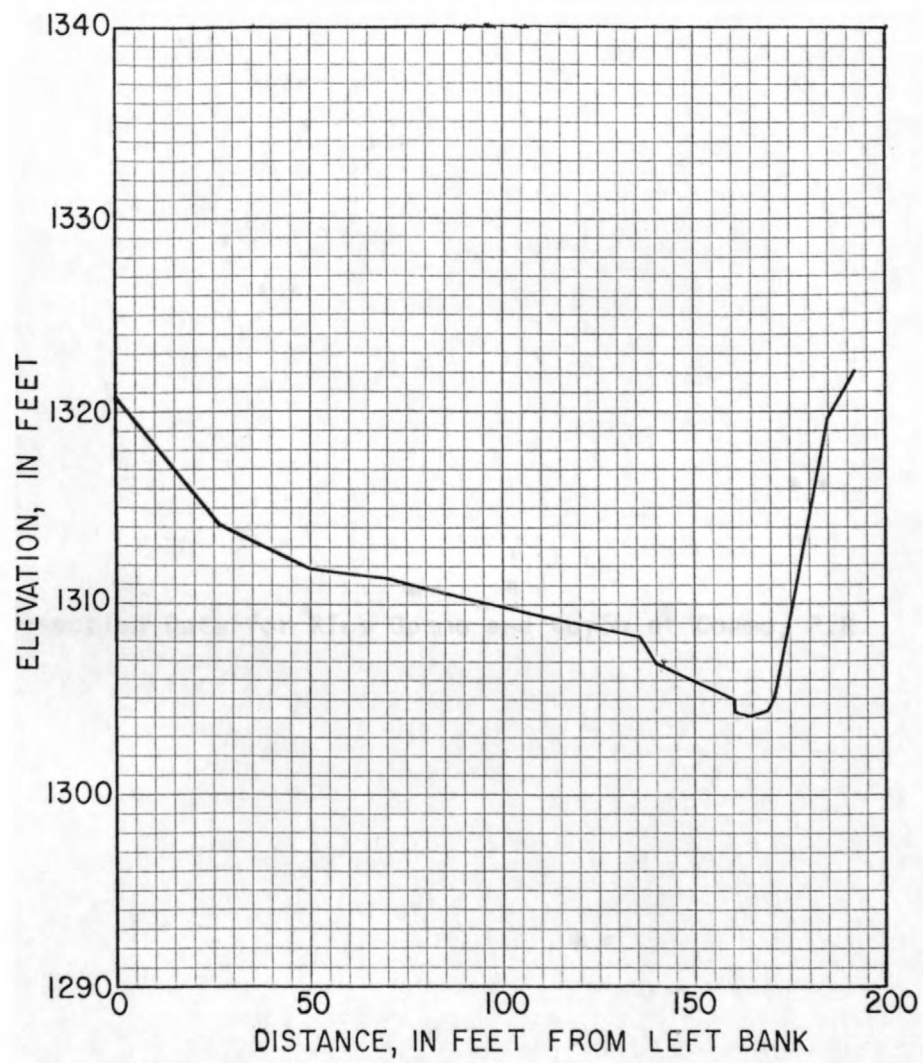


Figure 7.--Cross section Q of Quebrada Santo Domingo at Cayey.

Cross-section Data for Ríos Coamo and Cuyón at Coamo, P.R.





Figure 8.--Location of cross sections on Ríos Coamo and Cuyón at Coamo, PR.

Río Coamo at Coamo, P.R.

Distance from left bank, in feet	Ground ele- vation in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section A</u>					
0	287.0	From topo. map	271	257.3	
0	281.0	Do.	286	254.4	
50	269.1		313	251.5	
81	262.0		334	251.1	
151	264.3		364	251.1	CL of channel
220	265.2		417	260.3	
259	261.4		435	268.8	
			750	295.3	From topo. map
<u>Section B</u>					
20	290.0	From topo. map	282	252.5	CL of channel
109	265.8		311	252.6	REW
146	265.8		351	257.1	
168	263.8		390	259.2	
229	260.5		407	263.6	
254	255.3		413	272.2	From topo. map
261	253.6		550	291.0	Do.
263	252.7	LEW			
<u>Section C (Exit section for Hwy 153 bridge)</u>					
0	295.3	From topo. map	311	254.8	CL of channel
150	275.7		328	254.8	REW
182	273.9		345	258.1	
235	267.3		365	258.7	
249	272.0		378	258.6	
254	260.8		407	257.3	
280	258.5		412	269.4	
287	255.8		484	276.1	
298	254.9	LEW	584	283.7	
			653	290.0	From topo. map

Río Coamo at Coamo, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
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Section D (Hwy 153 bridge geometry and road profile)

0	296.0		313	269.4	Low steel
170	274.0		329	254.8	
250	272.1	Top of deck	345	258.0	
250	269.5	Low steel	345	269.4	From topo. map
250	266.0		347	258.2	Ground
255	260.7	Ground	347	269.4	Low steel
280	258.5	Ground at pier	368	258.6	
280	269.4	Low steel at pier	378	286.6	Ground
283	269.4	Low steel	378	269.4	Low steel
283	258.2		380	258.4	Ground
289	255.7		380	269.4	Low steel
299	254.9		408	257.0	Ground
310	254.6	Ground	414	269.4	Low steel
310	269.4	Low steel	414	272.0	Top of deck
313	254.3	Ground	490	276.0	
			557	281.3	
			650	295.2	

Section E (Approach section for Hwy 153 bridge)

0	295.3	From topo. map	225	256.8	
50	277.2		253	259.0	
73	272.4		270	259.0	
123	267.2		280	258.8	
137	261.2		290	256.9	
160	258.8		300	258.0	
178	255.8		318	261.0	
195	254.5	CL of channel	327	268.0	
215	256.8		343	273.8	
			550	295.2	From topo. map

Section F

24	308.0	From topo. map	140	267.6	
50	300.3		146	267.1	CL of channel
85	289.8		214	268.9	
106	280.2		264	276.3	
137	271.2		304	280.7	
140	268.3		324	288.1	
			347	308.0	From topo. map

Río Coamo at Coamo, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
<u>Section G</u>					
5	318.0	From topo.	218	286.0	
		map	268	292.5	
50	293.4		310	301.7	
60	283.7	CL of channel	354	301.9	
182	283.7		382	318.0	From topo. map
<u>Section H</u> (Section downstream from natural contraction)					
-8	321.0	From topo.	202	292.6	
		map	218	292.6	
0	318.0		224	294.4	
63	296.2		240	306.4	
103	295.0		259	301.5	
140	293.0		274	303.7	
163	292.4	CL of channel	293	302.4	
188	293.1		420	321.0	From topo. map
<u>Section I</u> (Natural contraction)					
16	365.0	From topo.	237	340.8	
		map	241	341.1	
100	348.0		250	338.0	
131	331.5		260	336.5	
136	325.4		270	336.2	
146	321.9		290	331.6	
156	319.1		300	328.0	
167	317.6		310	325.0	
175	318.4		320	328.5	
185	291.8	CL of channel	340	331.6	
206	292.6		350	336.2	
207	324.7		360	339.3	
212	333.2		404	365.0	From topo. map
223	337.8				
233	337.5				

Río Coamo at Coamo, P.R.

<u>Distance from left bank, in feet</u>	<u>Ground ele- vation, in feet</u>	<u>Remarks</u>	<u>Distance from left bank, in feet</u>	<u>Ground ele- vation, in feet</u>	<u>Remarks</u>
<u>Section J</u> (Section upstream from natural contraction)					
25	361.0	From topo. map	229	297.8	
125	328.2		236	295.7	CL of channel
150	312.5		261	296.0	
156	308.0		281	303.6	
172	299.8		314	308.6	
196	296.5		350	314.3	
			386	320.0	From topo. map
			650	361.0	
<u>Section K</u>					
-23	364.0	From topo. map	650	307.0	
300	320.0	Do.	666	308.8	
570	320.0		691	310.0	
600	312.8		700	313.7	
618	306.7		715	326.6	
631	306.4	CL of channel	785	358.0	
			800	364.0	From topo. map
<u>Section L</u>					
0	362.0	From topo. map	452	314.0	
50	329.0	Do.	458	312.0	CL of channel
300	329.0		503	312.1	
317	325.2		506	314.1	
342	324.6		518	317.6	
372	318.6		530	328.0	
407	315.9		632	362.0	From topo. map
<u>Section M</u> (Exit section for Hwy 14 bridge)					
0	378.0	From topo. map	303	326.9	CL of channel
0	368.2	Do.	336	328.6	
180	344.0		356	337.3	
219	328.1		376	339.2	
268	328.9		680	365.3	From topo. map
			680	378.0	Do.

Río Coamo at Coamo, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section N</u> (Hwy 14 bridge geometry and road profile)					
0	379.8	From topo. map	609	349.4	Low steel at pier
350	362.4		609	328.7	Base of pier
520	352.3	Top of deck	614	328.3	
520	349.4	Low steel	677	329.3	
520	339.8	Base of abutment	685	335.4	Base of abutment
543	331.3		685	349.4	Low steel
559	329.7		685	351.0	Top of deck
600	328.3	Base of pier	700	351.0	
600	349.4	Low steel at pier	906	360.8	
			970	380.0	From topo. map
<u>Section O</u> (Approach section for Hwy 14 bridge)					
40	390.8	From topo. map	853	330.8	
			897	329.0	
735	360.8		910	328.5	CL of channel
800	346.7		935	328.5	
803	342.1		963	336.8	
803	342.1		984	342.9	
820	340.3		998	346.0	
			1,173	394.0	From topo map
<u>Section P</u>					
0	380.0	From topo. map	375	337.0	
			391	336.7	CL of channel
95	361.0		403	336.8	
230	361.0		409	338.0	
300	355.5		415	341.6	
300	354.5		422	343.1	
321	348.8		488	361.2	
341	346.1		563	383.8	From topo. map
363	338.6				

Río Coamo at Coamo, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section Q</u> (Exit section for Hwy 556 bridge)					
0	396.0	From topo. map	506	342.2	
150	360.9	Do.	522	341.9	CL of channel
400	360.9	Do.	523	344.8	
401	354.9		530	347.8	
410	352.8		538	349.8	
444	344.5		542	352.0	
476	343.7		543	354.6	
488	342.3		565	360.8	
			630	396.0	From topo. map

Section R (Hwy 556 culvert opening)

0	382.6	From topo. map	502	354.0	Top of deck
100	361.0		509	343.2	CL of bottom of 3rd cul- vert
220	361.0				
243	357.6				
361	353.8		509	348.4	CL of top of 3rd culvert
415	353.0				
493	343.2	CL of bot- tom of 5.2- ft culvert	509	354.2	Top of deck
493	348.4	CL of top of culvert	518	343.2	CL of bottom of 4th culvert
493	353.7	Top of deck	518	348.4	CL of top of 4th culvert
502	343.2	CL of bot- tom of 2nd culvert	518	354.6	Top of deck
502	348.4	CL of top of 2nd culvert	535	355.6	Ground
			582	358.0	
			625	362.0	
			661	393.6	From topo. map

Note: Culvert opening consists of 4, 5-ft diameter pipes encased in concrete.

Section S (Approach section for Hwy 556 bridge)

0	394.0		224	345.8	CL of channel
50	360.9		257	348.7	
150	360.9		277	346	
200	357.4		297	348.0	
211	355.0		305	353.0	
219	346.8		305	361.0	
			380	394.0	

Río Coamo at Coamo, P.R.

<u>Distance from left bank, in feet</u>	<u>Ground ele- vation, in feet</u>	<u>Remarks</u>	<u>Distance from left bank, in feet</u>	<u>Ground ele- vation in feet</u>	<u>Remarks</u>
<u>Section T</u>					
25	396.0	From topo. map	163	352.6	CL of channel
			184	354.0	
100	365.0	Do.	210	359.4	
118	360.4		293	360.5	
132	353.8		342	359.2	
150	353.0		360	364.6	
182	348.1		383	396.0	From topo. map

Río Cuyón at Coamo, P.R.

Section A (At mouth of Río Cuyón)

0	370.0	From topo. map	504	330.2	CL of channel
			516	330.2	
0	360.0	Do.	520	332.0	
350	339.6		520	360.0	From topo. map
404	338.0		800	360.0	Do.
427	332.8		800	370.0	Do.
460	332.0				

Section B

0	374.0	From topo. map	240	335.0	
			265	336.0	
130	360.0	Do.	300	343.8	
150	348.0		354	353.6	
196	337.2		441	348.7	
211	334.8	CL of channel	650	360.0	
			707	374.0	

Section C

16	384.0	From topo. map	285	343.8	
			324	351.4	
100	360.0	Do.	358	354.6	
150	359.0		370	354.2	
164	353.2		402	353.4	
178	341.2		450	359.2	
222	340.9	CL of channel	550	360.0	From topo. map
			733	384.0	Do.

Río Cuyón at Coamo, P.R.

<u>Distance from left bank, in feet</u>	<u>Ground ele- vation, in feet</u>	<u>Remarks</u>	<u>Distance from left bank, in feet</u>	<u>Ground ele- vation, in feet</u>	<u>Remarks</u>
<u>Section D</u>					
0	390.0	From topo. map	198	348.6	CL of channel
0	384.0	Do.	215	349.0	
90	360.0		244	352.8	
150	360.8		268	356.4	
167	353.5		307	357.5	
182	349.1		400	361.0	
			532	390.0	From topo. map

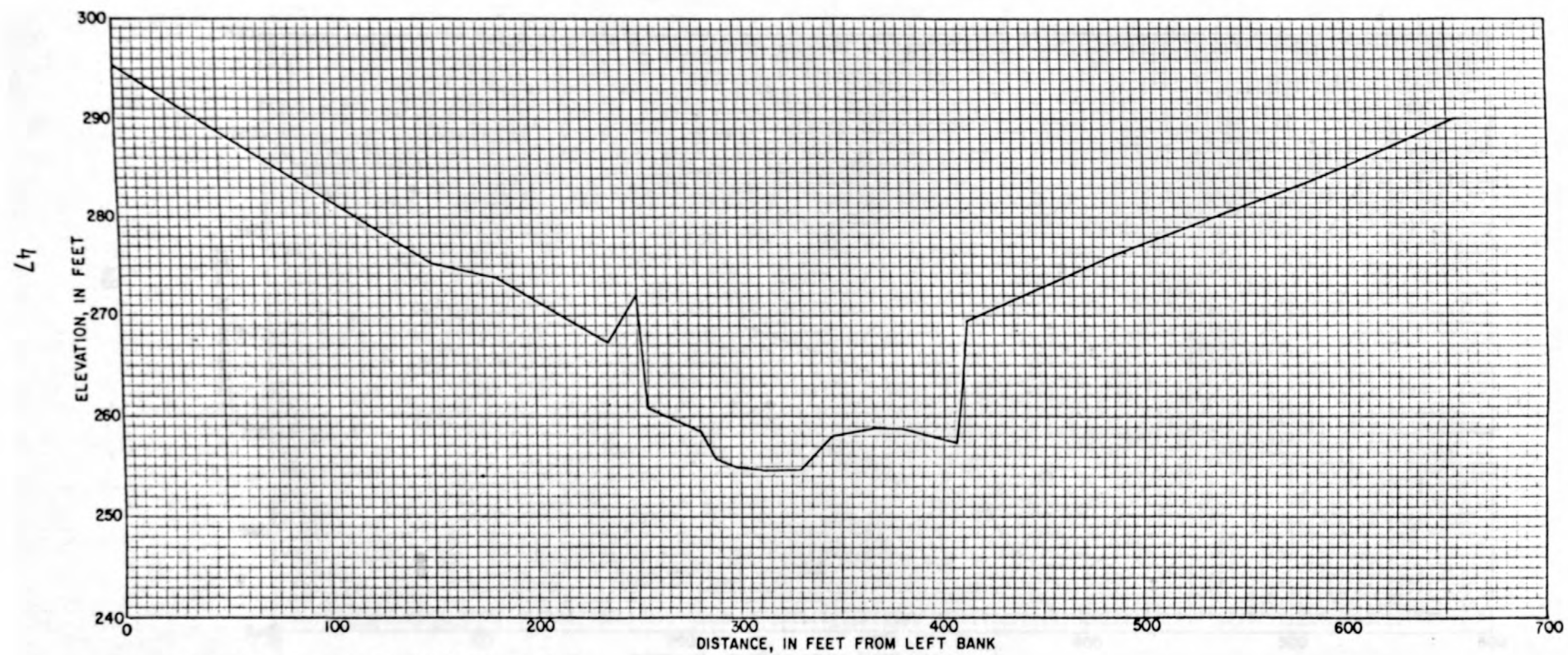


Figure 9.--Cross section C of Río Coamo at Coamo.

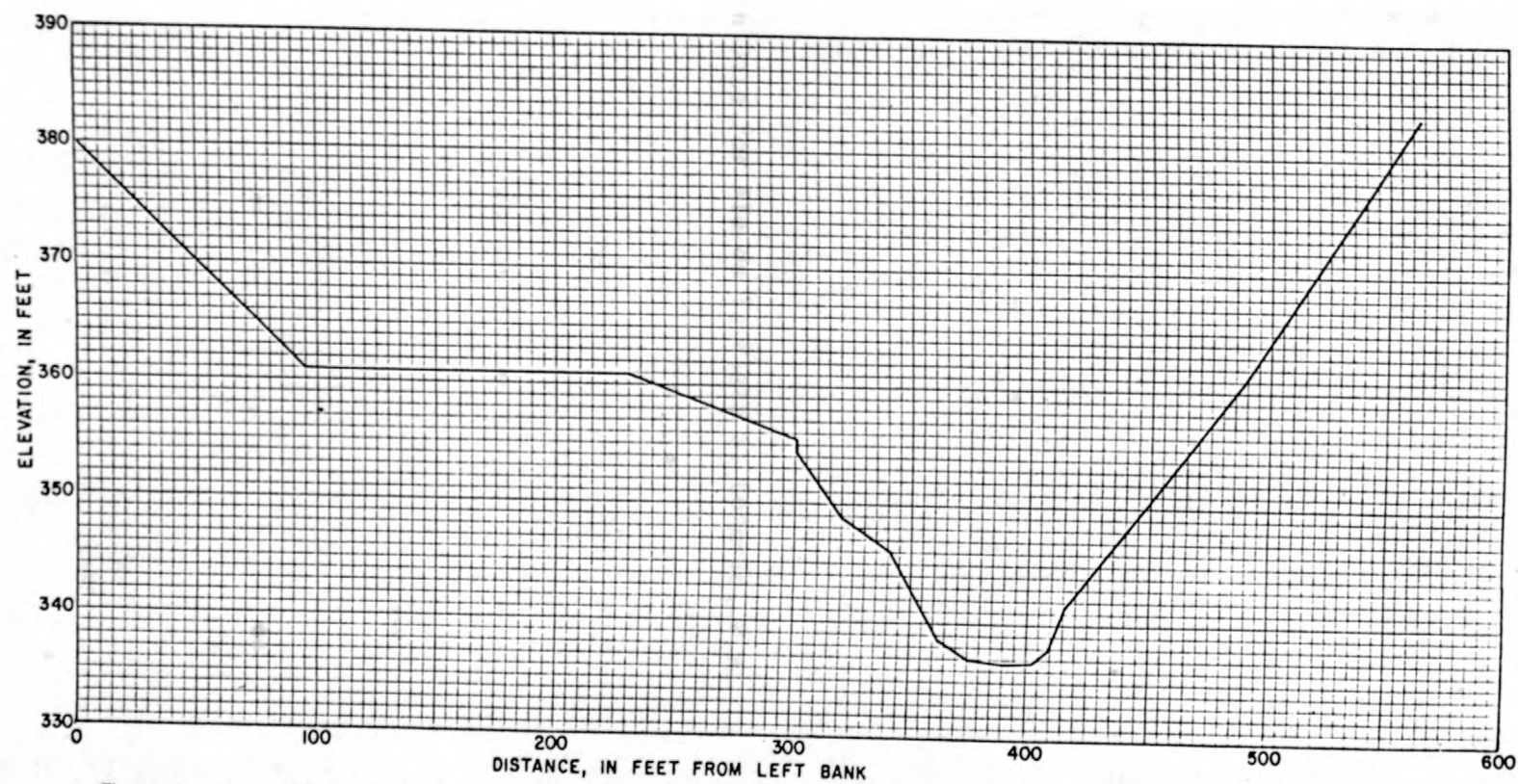


Figure 10.--Cross section P of Río Coamo at Coamo.

Cross-Section Data for Río de la Plata at Comerío, P.R.



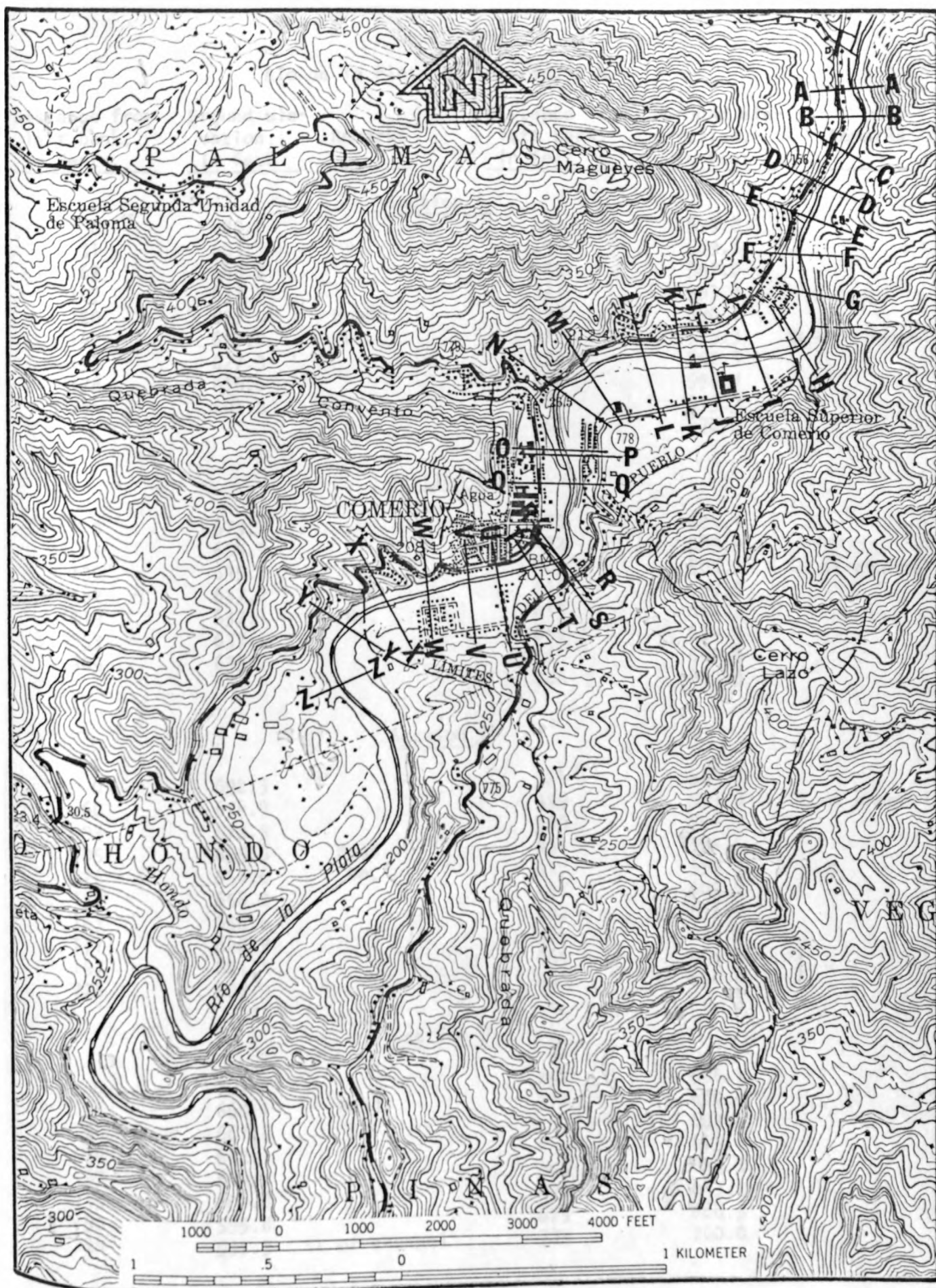


Figure 11.--Location of cross sections on Río de la Plata at Comerío, PR.

Río de la Plata at Comerío, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section A</u>					
0	670.0		263	593.8	
31	653.3		294	589.6	
63	648.2		329	587.0	
107	637.9		371	593.4	
120	627.0	Road	394	590.2	
142	627.0	Do.	412	575.3	CL of channel
153	627.3		433	590.3	
178	616.6		452	596.7	
244	601.6		481	619.7	
			550	670.0	
<u>Section B</u>					
0	673.7		370	604.3	
81	654.9		402	589.9	
135	645.7		485	585.2	CL of channel
182	637.2	Road	535	590.3	
219	637.1	Do.	613	612.7	
253	637.1		646	634.2	
309	635.7		655	640.0	
			708	680.0	
<u>Section C</u>					
0	692.3		324	594.8	
60	674.9		339	593.0	CL of channel
93	672.5		360	594.7	
105	655.6	Road	436	594.5	
126	656.6	Do.	437	597.9	
136	656.2		481	605.5	
167	656.6		507	615.0	
171	640.9		565	641.6	
197	621.4		663	676.4	
226	608.9		699	690.0	
<u>Section D</u>					
0	701.2		251	596.1	
36	660.1	Road	378	600.8	
64	661.0	Do.	382	603.0	
74	662.1		433	613.1	
97	644.2		456	629.3	
145	609.8		574	653.2	
190	595.8		673	688.5	
224	592.3	CL of channel	703	700.0	

Río de la Plata at Comerío, P.R.

<u>Distance from left bank, in feet</u>	<u>Ground ele- vation, in feet</u>	<u>Remarks</u>	<u>Distance from left bank, in feet</u>	<u>Ground ele- vation, in feet</u>	<u>Remarks</u>
<u>Section E</u>					
0	715.7		321	606.8	
127	665.1		391	597.6	
148	664.0	Road	426	595.1	CL of channel
169	663.5	Do.	455	597.5	
172	663.4	Wall	546	605.1	
172	645.1	Do.	617	622.1	
216	643.3	Do.	711	648.7	
216	633.3	Do.	892	679.3	
			1,013	720.0	
<u>Section F</u>					
0	697.1		308	599.2	CL of channel
41	682.2		323	600.4	
74	669.6		341	601.7	
96	668.9	Road	360	600.1	
107	668.8	Do.	380	599.1	
112	666.2		405	600.4	
134	653.6		488	606.9	
208	621.9		530	616.9	
271	602.2		621	658.1	
283	600.1		689	683.0	
			730	700.0	
<u>Section G</u>					
0	691.3		356	628.1	
66	683.7		399	616.8	
81	676.4	Road	460	603.6	
109	676.0	Do.	510	600.9	
120	675.2		552	599.7	CL of channel
142	664.4		604	601.0	
161	660.7		661	612.9	
203	654.1		695	613.3	
275	644.0		750	655.2	
303	639.7	Street	835	692.3	
329	640.0	Do.	854	700.0	

Río de la Plata at Comerío, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section H</u>					
0	680.1	From topo. map	580	611.9	
38	678.2		621	610.5	
61	676.8		662	607.1	Houses
99	672.8		696	606.4	Do.
143	669.5		734	604.1	Do.
171	664.7		740	603.4	Do.
201	660.5		774	602.5	CL of channel
211	658.2		817	603.3	
238	653.7		823	604.7	
272	648.0	CL of channel	829	608.6	
298	644.9		849	612.8	
325	639.4		869	617.4	
341	635.1		893	620.1	
371	628.8		912	621.5	
415	624.6		936	621.4	
453	622.8		975	622.6	
475	620.7		1,024	623.6	
506	617.2		1,150	653.5	From topo. map
548	614.7				
<u>Section I</u>					
-40	660.0		399	631.5	Houses
0	635.5		441	630.8	Do.
16	630.1		459	629.9	
36	625.1	From topo. map	466	629.9	
73	619.7		475	629.9	
128	613.1		485	630.6	
154	611.3		506	631.1	Houses
181	607.7		552	631.9	Do.
247	606.5		583	634.1	
277	604.9		621	633.7	Houses
312	603.7	CL of channel	662	632.8	Do.
338	604.9	CL of channel	687	631.9	
346	606.8		699	632.2	
353	614.3		709	632.1	
359	619.4		711	631.7	
368	628.8		713	634.8	
374	630.9		770	660.0	

Río de la Plata at Comerío, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
<u>Section J</u>					
-35	656.0	From topo. map	344	627.3	
0	628.9		386	628.2	
12	624.7		420	628.8	Houses
23	618.8		468	631.2	Do.
36	611.8		519	634.1	Do.
47	607.5		575	637.2	Do.
90	605.1		638	638.5	Do.
111	604.6		663	639.4	
130	603.8	CL of channel	664	639.3	Houses
162	607.5		676	640.0	Do.
166	608.4		686	639.2	
183	608.9	CL of channel	695	641.6	Houses
202	610.7		698	642.2	Do.
216	613.2		735	643.6	Do.
226	618.1		761	648.0	Do.
231	620.2		786	651.1	Do.
238	624.3		788	653.2	
246	626.1		804	655.4	
259	626.1		810	656.9	
303	624.7		824	661.3	
331	623.6		830	670.0	

Section K

-55	650.0	From topo. map	387	634.8	
0	626.4		410	636.2	
23	614.6		418	636.2	
54	609.5		526	640.0	Houses
77	610.1		550	640.2	Do.
91	613.0		560	640.3	Do.
106	607.0	CL of channel	595	640.4	Do.
123	601.3	CL of channel	654	642.8	
186	607.8		690	645.8	Houses
188	609.7		690	660.0	Do.
263	627.6		743	660.0	Do.
333	627.9		743	652.7	Do.
			758	654.2	
			780	654.2	

Río de la Plata at Comerío, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section L</u>					
-36	650.0	From topo. map	234	628.4	
0	633.8		239	630.7	
5	628.3		249	639.3	
10	624.5		256	645.1	
14	622.0		261	648.8	
19	619.4		269	650.1	
22	617.6		275	649.8	
29	615.9		300	650.4	
39	614.3		325	650.7	Houses
47	612.7		382	648.5	Do.
55	611.7		409	648.5	
99	609.3	CL of channel	427	648.6	Houses
121	611.1		546	649.3	Do.
147	612.8		667	649.8	Do.
176	613.2		727	650.3	Do.
198	613.7		825	650.9	Do.
219	616.4		844	651.0	
225	621.9		860	651.3	
229	625.3	CL of channel	870	651.4	
			1,040	652.0	
			1,040	670.0	
<u>Section M</u>					
0	680.0		279	632.5	
			293	634.5	
0	635.0		327	636.8	
3	624.0		336	639.6	
8	621.2		350	644.8	
17	619.6		373	646.2	
35	616.3		408	646.1	
42	614.9	From topo. map	413	648.5	Houses
52	613.5		420	651.4	
77	611.3	CL of channel	425	653.7	
102	611.4	Houses	450	658.1	Houses
127	611.4	Do.	525	658.2	Do.
152	613.6	Wall	629	658.2	Do.
162	614.7	Do.	643	658.2	
192	616.4		647	661.6	
205	618.3	May 196	656	665.6	
227	620.1	Do.	664	669.1	
239	624.3	Houses	694	670.8	
251	626.7	Do.	716	670.8	
256	629.1	Do.	773	670.8	
262	630.3	Do.	780	680.0	From topo. map

Río de la Plata at Comerío, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section N</u>					
0	670.7	CL of channel	287	623.8	
0	652.4		304	626.5	
5	652.8		350	628.4	
12	652.7		398	630.1	
22	652.2		416	629.3	
44	652.2		443	630.2	
47	650.5		473	631.9	
51	646.4		496	632.7	Houses
54	642.0		507	634.7	Do.
58	636.9		526	636.4	Do.
65	633.4		540	639.5	Do.
68	629.7		560	644.5	
76	627.5		592	646.2	
80	625.5		611	648.6	
94	621.7		624	651.6	
108	617.6		630	655.2	
109	615.1		641	655.2	
110	613.9	Low steel	657	656.4	
133	608.1	CL of channel	680	657.6	
156	609.4		693	659.4	
179	611.7		703	659.8	
202	613.8		733	661.4	
222	616.4		750	663.9	
258	620.5		765	665.8	
			781	667.7	
			803	670.7	
<u>Section O</u> (Exit section for Pasarell and Piñas bridge)					
-115	656.0	From topo. map	227	637.1	Houses
0	648.7		234	635.4	
43	648.4	Houses	250	633.6	
103	647.5	Do.	268	632.8	
133	646.9	Wall	274	626.7	
133	649.7	Do.	283	622.5	
140	646.9		290	621.6	
151	647.4	Hwy 156	292	622.6	
163	647.1	Do.	298	622.9	
170	647.4	Houses	318	624.1	
171	640.6	Do.	342	622.9	
178	639.1	Do.	364	621.3	
209	638.4	Do.	419	620.3	
			427	618.2	

Río de la Plata at Comerío, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
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Section O--Continued (Exit section for Pasarell
and Piñas bridge)

443	616.6	CL of channel	697	636.4	
459	618.2		718	640.0	
468	619.1		729	643.2	
485	619.5	Houses	733	645.0	
511	622.5	Do.	737	646.1	
529	623.3	Do.	742	647.6	
543	624.3	Do.	766	649.7	Houses
574	628.3		778	652.0	Do.
588	628.3		792	653.9	Do.
621	630.5		809	655.1	Do.
632	630.8		823	656.3	
643	632.0		828	656.3	
658	632.4		836	656.4	
			875	661.4	

Section P (Pasarell and Piñas bridge geometry)

340	640.1	Low steel	610	618.7	
340	636.9		611	620.7	
363	632.1		637	623.4	
386	629.9		660	624.3	
423	625.2	Left edge of row of houses	683	625.9	
439	618.7	13 ft long and	688	627.7	
460	616.9	14 ft high	703	734.5	
485	617.2		707	639.5	
525	616.5	CL of channel	709	644.3	
535	616.5		723	650.8	
567	617.5		729	650.8	
609	619.2		729	753.0	Low steel

Note: Low steel not horizontal.

Río de la Plata at Comerío, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section P</u> (Road profile at Pasarell and Piñas bridge)					
0	651.3	Public square	550	651.7	
32	650.4	Do.	676	655.7	
118	648.8	Houses	728	657.6	Right end of bridge
162	647.6	Do. court	749	658.5	
189	653.0	Do. Do.	766	659.3	
191	647.5	Do.	796	661.1	
238	652.0	Do.	842	664.1	
238	647.3	Do.	881	666.6	
242	646.9	Hwy 156	928	670.1	
253	647.6	Houses	965	672.8	
266	647.0	Do.	991	675.1	
298	645.5	Do.	1,002	676.1	
338	644.5	Left end of bridge	1,025	675.8	
460	648.8		1,054	676.5	
533	651.2		1,100	678.3	
			1,160	680.7	
<u>Section Q</u> (Approach section for Pasarell bridge)					
-164	651.3	Left edge of row of houses	338	637.5	
		13 ft long and	365	634.8	
		14 ft high	382	632.7	
67	651.3	Base of pier	398	630.6	
125	650.7	Do.	420	627.8	
128	650.7	Do.	434	625.8	
122	652.8		440	623.3	
134	653.7		446	624.1	
142	651.4		448	622.2	
142	650.3		488	620.2	CL of channel
152	649.8		539	622.2	
162	650.0	Hwy 156	542	625.1	
177	649.8	Do.	562	625.2	
185	650.1	Houses	572	624.4	
208	647.3	Do.	589	623.8	
234	645.3	Do.	638	623.8	
247	644.3	Do.	652	624.2	
275	643.0	Right end of bridge	663	625.8	
288	642.9		680	631.4	
328	641.7		702	636.9	
328	645.4		713	643.3	
			728	647.9	
			770	670.0	

Río de la Plata at Comerío, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
<u>Section R</u> (Exit section for Hwy 775 bridge)					
0	670.0		627	635.0	
33	667.2	Public square	656	631.9	
156	667.0	Do.	760	626.7	
156	658.8	Wall	785	624.4	
172	657.8	Church basket- ball court	837	625.5	
			884	609.4	
274	657.7	Do.	916	606.0	CL of channel
286	653.4	House	1,004	622.8	
310	653.1	Do.	1,006	626.1	
340	652.3	Do.	1,015	630.6	
371	651.8	Hwy 156	1,027	635.4	
403	651.0	Houses	1,034	641.9	
462	651.2	Do.	1,043	647.2	
494	642.3	Do.	1,051	648.0	
556	639.4	Do.	1,114	649.6	
568	638.0		1,160	650.0	From topo. map
592	637.5		1,210	670.0	Do.

Section S (Hwy 775 bridge geometry)

506	634.0	Low steel	663	618.4	Base of pier
531	630.4	Base of pier	687	614.7	Do.
544	627.8		701	613.8	CL of channel
557	628.1	Base of pier	713	614.3	Base of pier
570	623.9		741	616.4	Do.
582	622.8	Base of pier	768	625.7	Do.
610	622.8	Do.	779	623.0	
636	618.7	Do.	791	629.3	
			791	634.0	Low steel

Section S (Road profile at Hwy 775 bridge)

0	662.8		933	641.3	
249	650.8		949	648.4	
294	650.1		961	648.5	
367	644.8		977	646.7	
429	639.0		990	647.7	
506	635.4	Left end of bridge	1,001	647.5	
			1,007	648.4	
791	635.6	Right end of bridge	1,008	651.5	
			1,040	656.0	From topo. map
893	639.3		1,060	667.0	Do.

Río de la Plata at Comerío, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section T</u> (Approach section for Hwy 775 bridge)					
270	662.0	From topo. map	730	624.8	Basabell port
			747	624.8	concrete wall
450	640.0		800	642.6	Do.
503	631.6		890	648.3	
531	629.4	Basabell	905	648.7	
566	628.3	park	997	647.7	
594	628.0	Do.	1,010	647.2	
609	625.6	Do.	1,073	648.3	
647	613.4	CL of channel	1,180	656.0	From topo. map
717	618.4	Do.	1,220	666.6	Do.
719	622.1	Do.			

Section U

-150	666.6	From topo. map	279	642.9	
0	635.2		294	643.9	
11	631.8	From topo. map	309	644.1	
21	628.1		324	646.3	
59	626.1		333	651.9	
87	627.7		335	653.0	
106	624.2		410	653.1	
135	624.9		478	652.9	
154	624.6		544	651.3	
168	624.1		605	649.5	
173	722.7		672	647.3	
207	620.3	CL of channel	707	646.4	
229	622.6		722	646.0	
234	628.6		737	645.7	
244	634.2	CL of channel	779	648.0	
253	638.5		785	653.3	
267	641.6		1,050	656.0	From topo. map
273	642.6		1,120	675.0	Do.

Section V

-188	667.0		98	624.7	
0	645.0		122	624.9	
2	641.0		132	625.4	
10	636.2		143	624.7	
22	631.0		172	624.1	CL of channel
38	626.4		201	624.2	
57	625.4		210	628.1	
77	624.9		217	631.2	

Río de la Plata at Comerío, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section V--Continued</u>					
224	636.7	From topo.	695	652.6	Baseball park;
232	638.6	map			concrete fence
238	640.1		695	660.6	Do.
243	643.2		713	652.4	
265	646.9	Baseball	729	652.5	
		park	746	652.5	
317	647.9	Do.	761	654.0	House
373	649.1	Do.	802	659.7	Do.
395	649.7	Do. of channel	814	663.8	
414	650.0	Do.	827	667.8	
471	650.6	Do.	836	671.1	
555	651.3	Do.	854	675.2	
627	651.9	Do.	870	694.0	

Section W

-90	667.0	From topo. map	270	643.2	
0	649.8		286	644.3	
3	646.8		300	646.1	Houses
8	643.4		317	646.8	Do.
12	640.7		330	647.6	Do.
17	631.9	From topo. map	349	648.9	Do.
31	629.2		370	650.6	
42	626.4		392	650.6	
54	625.6		394	650.8	
73	625.3		396	651.3	
108	625.3		436	652.9	
122	625.1		470	653.9	
151	623.9	CL of channel	519	655.3	
178	625.1		569	657.0	
185	626.7		631	659.3	
198	630.7		687	663.3	
211	633.4		713	665.9	
216	636.7		733	668.4	
223	640.2		750	670.4	
238	642.2		771	672.0	

Río de la Plata at Comerío, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section X</u>					
-85	667.0	From topo. map	294	660.0	House
0	648.8		317	658.3	
3	643.7		329	658.8	
20	635.2		340	658.4	
33	633.7		364	660.0	House
50	630.3		398	661.0	Do.
62	625.4		426	665.6	
104	620.8	CL of channel	455	666.3	House
130	623.4		507	665.5	Do.
150	625.4		525	663.4	
163	627.7		538	663.7	
169	630.0		549	663.2	
184	633.2		590	666.1	House
235	659.4		630	665.7	Do.
242	661.4		650	666.8	
260	661.5	House	660	677.3	
			685	676.9	
			690	680.0	
<u>Section Y</u>					
-65	667.0	From topo. map	216	638.4	
0	642.6		220	642.6	
8	639.4		228	645.2	
17	635.9		233	647.0	
26	633.9		245	651.6	
35	633.2		255	656.1	
43	635.5		263	660.6	
57	634.4		272	664.2	
65	631.2		280	667.4	
79	628.6		288	667.4	
84	627.7		332	667.7	
104	627.7		345	666.2	
115	628.2		357	666.5	
129	627.4		378	666.2	
139	625.1	CL of channel	391	668.0	House
149	627.3		426	668.1	Do.
167	629.4		458	669.3	
189	630.8		477	671.1	
200	633.9		510	669.7	House
			516	669.7	Do.
			536	669.5	Do.

Río de la Plata at Comerío, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
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Section Y--Continued

563	666.1		702	671.1	
576	666.5		702	677.5	
587	666.1		708	677.6	
613	667.1	Houses	797	677.1	
693	669.6	Do.	797	694.0	

Section Z

-70	682.0	From topo. map	442	661.8	
0	664.6		450	666.2	
13	661.3		456	669.9	
23	656.0		465	674.0	
30	651.9		492	674.4	
34	648.6		526	673.3	
42	646.7		533	673.2	
42	641.5		552	672.0	
46	639.0		574	671.9	
63	638.0		596	673.6	
74	635.0		629	673.7	
88	633.0		681	673.0	
105	631.0	CL of channel	711	672.3	House
142	633.0		757	671.8	Do.
158	634.9		786	670.0	
189	640.1		809	669.9	
226	643.5		813	671.6	
273	639.2		900	675.3	House
299	641.7		951	678.6	Do.
325	639.6		951	680.6	
364	638.2		983	679.9	
405	643.0		993	682.0	
422	649.7		1,020	681.6	
432	655.5		1,080	685.8	
437	659.0		1,080	694.0	

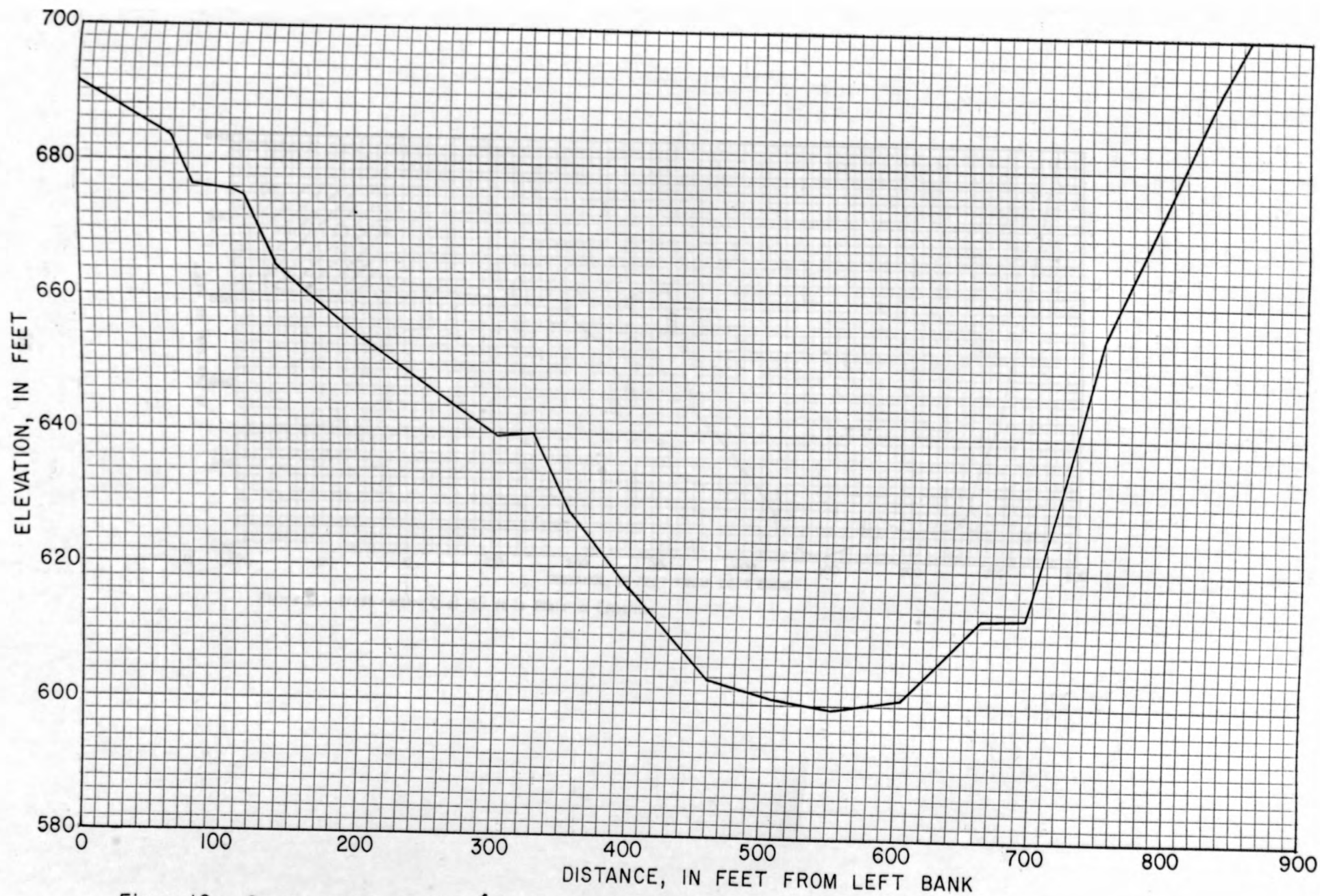


Figure 12.--Cross section G of Río de la Plata at Comerio.

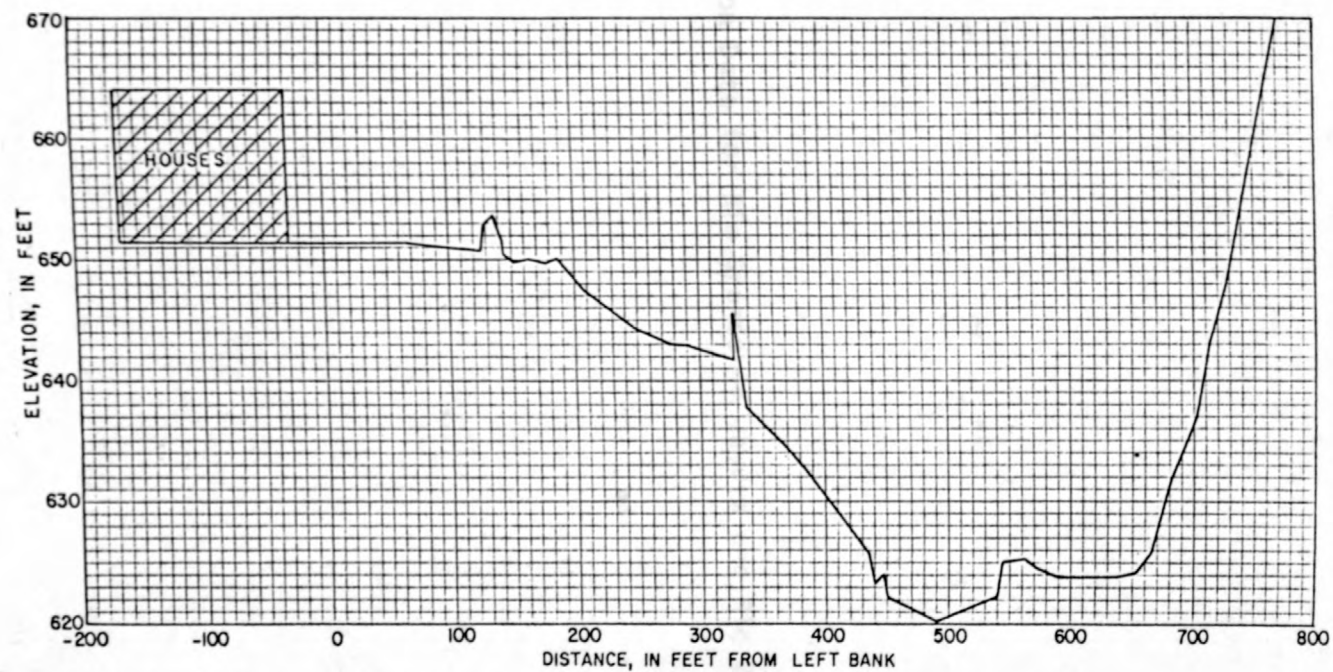
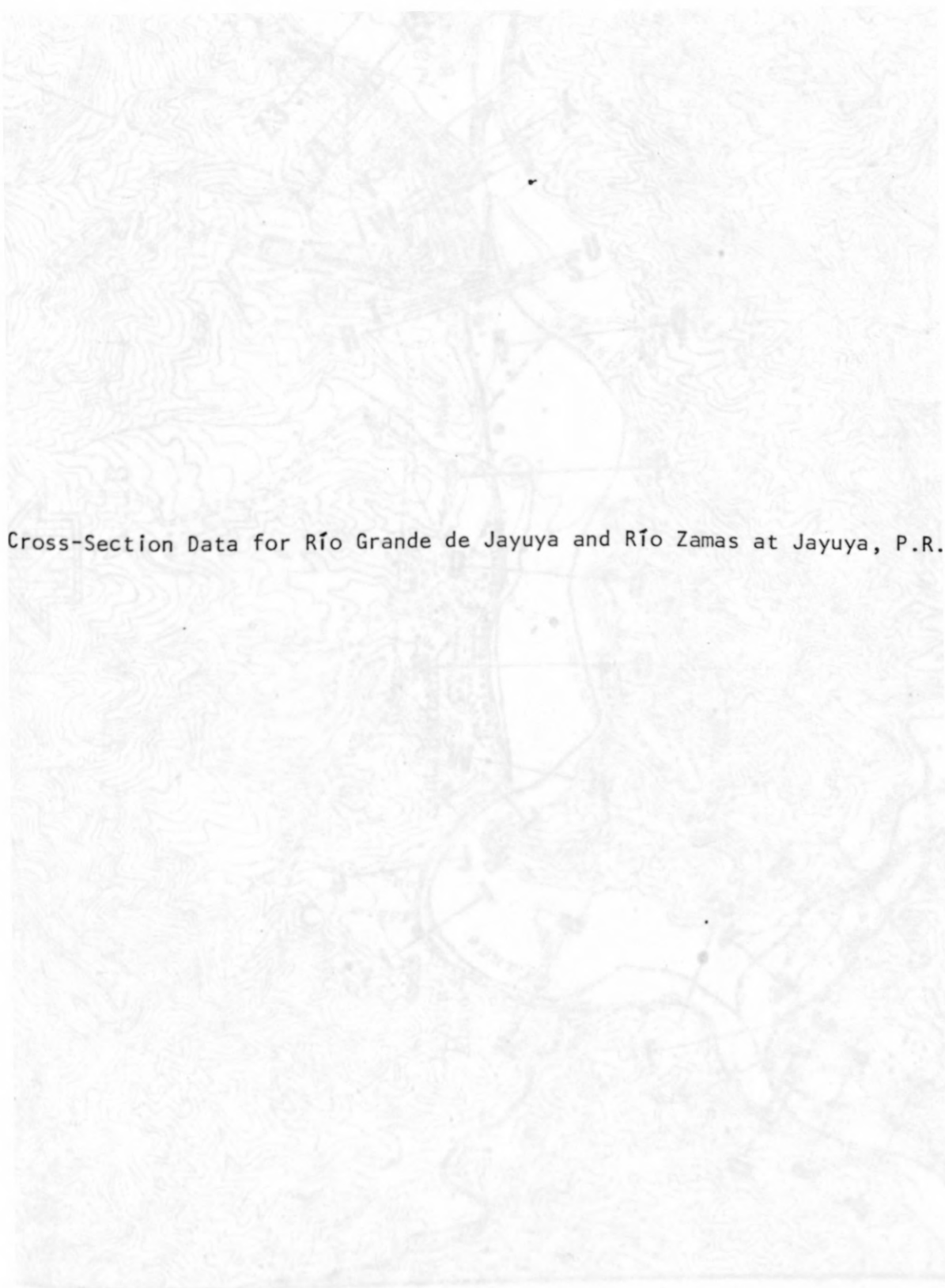


Figure 13.--Cross section Q of Río de la Plata at Comerio.



Cross-Section Data for Río Grande de Jayuya and Río Zamas at Jayuya, P.R.

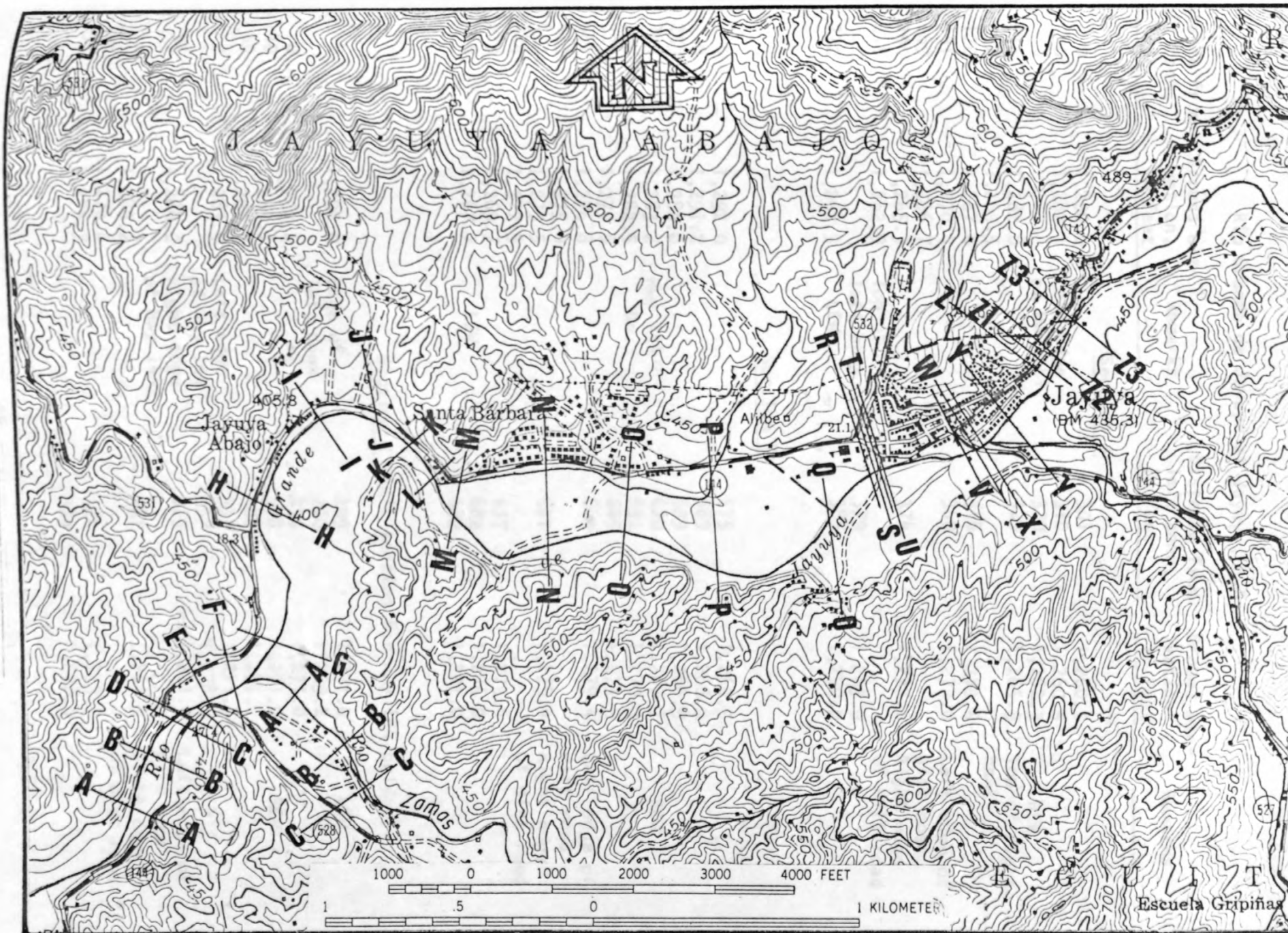


Figure 14.--Location of cross sections on Río Grande de Jayuya and Río Zamas at Jayuya, PR.

Río Grande de Jayuya at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
<u>Section A</u>					
0	1,290.0		301	1,260.5	
0	1,282.1	Left edge of Hwy 141	310	1,260.5	
18	1,282.8		320	1,262.3	REW
52	1,269.5		329	1,265.9	Top of righ bank
120	1,267.4		348	1,270.6	
141	1,270.4		360	1,277.0	Left edge of dirt road
169	1,266.7		374	1,277.6	Right edge of dirt road
200	1,265.3	Top of left bank	379	1,283.0	
248	1,262.9	LEW	385	1,290.0	
272	1,262.3				
<u>Section B</u>					
0	1,292.0		575	1,266.5	
0	1,291.2		589	1,266.4	
259	1,284.0		609	1,266.9	
283	1,283.2	Hwy 144	620	1,267.7	REW
305	1,282.5	Do.	631	1,270.2	
323	1,279.6		645	1,273.9	
361	1,276.8		661	1,279.4	Left edge of dirt road
413	1,275.4		671	1,279.4	Right edge of dirt road
457	1,275.5		677	1,279.4	
484	1,272.3		682	1,284.0	
523	1,269.7		682	1,292.0	
559	1,267.7	LEW			
<u>Section C (Exit section for Hwy 144 bridge)</u>					
0	1,290.0	Edge of left bank	209	1,271.0	LEW
0	1,287.4		220	1,269.2	
40	1,285.1		236	1,271.0	
65	1,286.5		278	1,271.0	REW
73	1,283.9	Left edge of Hwy 144	306	1,271.1	
96	1,284.0	Right edge of Hwy 144	337	1,271.7	
138	1,280.2		357	1,278.5	
168	1,276.8		373	1,281.4	Left edge of dirt road
193	1,275.7		381	1,281.3	Right edge of dirt road
			384	1,283.7	
			384	1,290.0	

Río Grande de Jayuya at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section D</u> (Hwy 144 bridge geometry and road profile)					
79	1,297.7		264	1,271.6	
83	1,290.0		283	1,273.7	CL of pier
83	1,286.5		288	1,275.2	
94	1,284.3		299	1,273.7	
123	1,282.8		308	1,271.9	
166	1,280.9		313	1,273.3	CL of pier
200	1,280.7	Left edge of bridge	316	1,280.8	CL of bridge
200	1,277.8	Low beam and top of abutment	322	1,275.5	
			336	1,273.9	
			342	1,271.5	
			345	1,271.9	CL of pier
203	1,276.0		353	1,274.4	
208	1,275.5		361	1,272.9	
216	1,272.9		378	1,274.4	
225	1,271.5	LEW	379	1,280.9	Right edge of bridge
230	1,271.5				Base of abutment
238	1,271.3	REW	379	1,274.4	
241	1,271.6	CL of pier			Low beam
243	1,272.9		379	1,277.8	
247	1,274.6		510	1,287.7	
257	1,273.0		526	1,288.3	
			526	1,300.0	

Section E (Approach section for Hwy 144 bridge)

0	1,310.0		211	1,280.0	
0	1,302.0		233	1,280.1	
9	1,288.5		248	1,279.6	
14	1,289.3	Hwy 528	274	1,281.2	
37	1,289.3	Do.	313	1,282.8	
57	1,282.9	Do.	340	1,283.8	
67	1,281.8		362	1,284.0	
78	1,278.6		380	1,283.9	
97	1,276.7		422	1,285.7	
112	1,274.9	LEW	440	1,288.9	
126	1,274.2		454	1,290.5	
147	1,274.9	REW	472	1,300.8	Edge of house
169	1,275.2				Do.
193	1,276.2		511	1,299.2	
			536	1,299.9	
			543	1,302.1	
			543	1,310.0	

Río Grande de Jayuya at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section F</u>					
0	1,310.0	Hwy 528	318	1,279.4	
0	1,307.7	Do.	364	1,284.7	
32	1,307.0	Do.	427	1,286.7	
74	1,289.5		482	1,288.3	
126	1,287.1		494	1,292.5	
202	1,287.8		541	1,296.2	
264	1,288.5		714	1,300.2	Hwy 144
304	1,279.6		743	1,301.3	Do.
314	1,278.8	CL of channel	743	1,310.0	
<u>Section G</u>					
0	1,320.0		651	1,293.9	
0	1,308.0		680	1,295.8	
40	1,300.5		690	1,300.6	
54	1,299.1		706	1,298.8	
117	1,299.6		730	1,299.7	
258	1,299.9		781	1,299.0	
464	1,302.8		794	1,303.3	
473	1,294.5				
484	1,291.4	LEW	817	1,302.2	Left edge of Hwy 144
494	1,290.6				Right edge of Hwy 144
503	1,291.2	REW	824	1,307.1	
524	1,292.5		824	1,320.0	
560	1,293.3				
578	1,292.4				
<u>Section H</u>					
0	1,332.0		730	1,318.6	
0	1,327.7		795	1,316.2	
6	1,321.7		867	1,316.1	
98	1,316.6		996	1,316.0	
180	1,320.2		1,057	1,313.8	
230	1,317.5		1,068	1,317.2	
288	1,318.6		1,098	1,313.5	CL of channel
312	1,317.6		1,117	1,315.6	
378	1,316.1		1,177	1,315.4	
426	1,314.2		1,203	1,323.1	Boundary of 1970 flood
506	1,316.2				
560	1,316.1		1,210	1,323.3	
607	1,316.9		1,242	1,323.2	Hwy 144
623	1,318.9		1,269	1,323.8	Do.
674	1,319.5		1,272	1,327.5	
			1,272	1,332.0	

Río Grande de Jayuya at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section I</u>					
0	1,335.0		457	1,317.1	
0	1,334.9		462	1,318.2	REW
14	1,328.8		493	1,321.3	
22	1,322.3		534	1,322.1	
112	1,322.5		590	1,326.3	
160	1,321.8		681	1,325.7	
174	1,331.1		799	1,326.2	
190	1,329.4		925	1,323.6	
214	1,321.9		961	1,324.7	
230	1,325.0		968	1,320.4	
355	1,321.7		1,021	1,322.1	
373	1,320.7		1,096	1,324.5	
404	1,321.3		1,140	1,330.7	Hwy 144
426	1,319.9		1,166	1,331.5	Do.
449	1,319.1		1,182	1,333.6	
451	1,318.2	LEW	1,182	1,335.0	

Section J (Exit section for natural contraction)

0	1,345.0		373	1,322.4	LEW
0	1,337.8		375	1,321.2	
14	1,322.5		380	1,322.4	REW
30	1,324.2		388	1,324.3	
60	1,325.7		403	1,332.5	
105	1,326.1		483	1,330.0	
140	1,328.0		507	1,326.8	
176	1,326.8		543	1,326.2	
198	1,328.3		554	1,325.2	
319	1,324.9		590	1,330.9	
331	1,322.5		594	1,339.4	Hwy 144
343	1,321.7		626	1,339.1	Do.
360	1,322.4		665	1,341.1	
			848	1,343.1	
			888	1,343.0	
			888	1,345.0	

Río Grande de Jayuya at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section K</u> (Downstream of natural contraction)					
0	1,360.0		164	1,325.9	
0	1,348.2		209	1,329.5	
22	1,341.9		227	1,334.0	
38	1,334.6		247	1,347.7	
57	1,329.6		256	1,346.6	Hwy 144
67	1,324.8	LEW	275	1,346.2	Do.
139	1,323.1		283	1,350.1	
153	1,322.8	CL of channel	283	1,360.0	
<u>Section L</u> (Upstream from natural contraction)					
0	1,366.0		162	1,338.7	
0	1,351.4		185	1,338.4	
19	1,343.9		205	1,336.7	
30	1,339.7		214	1,337.4	
40	1,339.7		226	1,340.8	
58	1,339.4		262	1,340.9	
67	1,336.9		302	1,346.7	
88	1,338.8		349	1,362.8	
104	1,337.5		366	1,363.3	Edge of house
117	1,340.3				Do.
134	1,335.5		408	1,360.9	
150	1,334.2	CL of channel	408	1,366.0	
<u>Section M</u> (Approach for natural contraction)					
0	1,370.0		422	1,347.8	
0	1,365.0		431	1,345.3	
15	1,350.1		445	1,345.2	
22	1,345.8	LEW	453	1,349.9	
34	1,344.1		562	1,350.5	
46	1,345.6	REW	641	1,348.6	
79	1,346.2		666	1,344.2	
117	1,347.1		680	1,348.8	
189	1,346.6		697	1,347.7	
219	1,344.5		709	1,343.6	
222	1,344.3		726	1,344.0	
253	1,349.5		747	1,349.1	
280	1,350.9		767	1,359.0	Hwy 144
394	1,350.3		796	1,358.6	Do.
405	1,353.0		810	1,370.0	

Río Grande de Jayuya at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section N</u>					
0	1,370.0		642	1,361.6	
2	1,368.1		751	1,361.4	
34	1,357.8		813	1,362.0	
69	1,357.4		833	1,358.9	
84	1,352.8	LEW	851	1,362.4	
101	1,352.6		878	1,360.5	
129	1,353.3	REW	990	1,361.9	
213	1,355.0		1,063	1,362.1	
218	1,354.8		1,151	1,361.4	
228	1,353.2		1,211	1,362.3	
242	1,355.0		1,248	1,363.7	
260	1,355.7		1,258	1,363.4	Hwy 144
327	1,360.6		1,298	1,364.2	Do.
461	1,359.2		1,491	1,366.3	
			1,491	1,370.0	

<u>Section O</u>					
0	1,382.2		430	1,370.1	
0	1,376.4		454	1,372.7	
10	1,368.9		482	1,368.0	
48	1,366.2		624	1,366.8	
125	1,365.9		769	1,366.8	
157	1,364.3	LEW	832	1,367.0	
169	1,1363.5		855	1,370.4	
182	1,364.2	REW	910	1,374.1	Hwy 144
204	1,369.9		944	1,373.5	Do.
255	1,372.7		1,056	1,373.3	
379	1,370.8		1,150	1,382.2	

<u>Section P</u>					
0	1,404.3		118	1,376.8	REW
0	1,402.4		126	1,378.7	
10	1,399.0		160	1,383.0	
18	1,397.2		238	1,384.8	
24	1,391.0		362	1,385.4	
33	1,384.2		430	1,385.7	
62	1,379.1	Bottom of bank	506	1,382.2	
		LEW	560	1,385.4	
74	1,376.7		639	1,385.5	
100	1,376.4		720	1,384.4	

Río Grande de Jayuya at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section P--Continued</u>					
785	1,383.7		1,432	1,391.9	CL of culvert
847	1,383.9		1,432	1,397.0	Top of deck
911	1,384.6		1,435	1,392.0	CL of base of pier
958	1,382.7				
985	1,389.0		1,435	1,396.8	Low steel
1,069	1,389.2		1,440	1,391.8	CL of culvert
1,185	1,390.0		1,440	1,396.8	Low steel
1,295	1,391.7		1,445	1,397.2	Top of culvert and abutment
1,382	1,393.8				
1,429	1,397.3	Top of abutment	1,473	1,399.8	
			1,488	1,401.4	
1,429	1,391.7	Base of abutment	1,510	1,403.7	Hwy 141
			1,519	1,404.1	CL of Hwy
			1,533	1,404.3	Hwy 141

Section Q

0	1,421.0		1,090	1,394.5	REW
0	1,407.4		1,093	1,395.0	Bottom of right bank
150	1,407.1				
190	1,406.3		1,117	1,399.4	
209	1,406.2	Barrio Arenas road	1,126	1,409.4	Top of right bank
221	1,405.9	Do.	1,175	1,411.0	
230	1,405.5		1,205	1,411.6	
270	1,403.2		1,297	1,410.9	
354	1,401.1		1,372	1,410.5	
483	1,401.6		1,458	1,412.2	Ballpark fence
579	1,400.5				
706	1,400.1		1,533	1,413.7	
803	1,399.2		1,624	1,415.2	
813	1,397.5		1,747	1,415.9	
873	1,397.7		1,799	1,417.1	
940	1,396.5		1,814	1,418.2	
1,001	1,396.5		1,833	1,420.7	Edge of Hwy 141
1,033	1,395.3				
1,048	1,394.6	LEW	1,848	1,421.0	CL of Hwy
1,071	1,394.0		1,863	1,420.8	Edge of Hwy 141

Río Grande de Jayuya at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section R</u> (Exit section for footbridge)					
0	1,428.0		945	1,405.9	
0	1,427.4		970	1,407.7	
56	1,424.3		989	1,405.5	
104	1,420.1		1,013	1,406.0	
243	1,414.4		1,050	1,403.1	
462	1,411.9		1,086	1,400.9	LEW
519	1,411.4		1,096	1,399.6	
540	1,405.7		1,120	1,400.5	REW
572	1,404.2		1,130	1,400.9	
828	1,407.0		1,141	1,400.4	
866	1,407.3		1,154	1,402.0	
868	1,408.8		1,170	1,405.5	
924	1,408.0		1,183	1,424.6	
925	1,408.0		1,190	1,424.6	
			1,190	1,428.6	

Section S (Section at footbridge)

26	1,438.0		1,109	1,415.7	Right pier;
53	1,424.0				top of deck
131	1,418.3		1,109	1,402.9	Right edge;
250	1,414.2				base of pier
315	1,412.2		1,121	1,401.5	
562	1,413.5		1,123	1,401.5	LEW
589	1,405.5		1,138	1,401.1	
751	1,409.2		1,146	1,401.3	REW
884	1,410.4		1,167	1,401.5	
975	1,410.0		1,173	1,402.8	
984	1,412.0		1,210	1,414.9	Top of deck
1,009	1,411.1				and right
1,050	1,407.8	Top of ramp			edge of pier
1,050	1,406.4	Base of ramp	1,210	1,403.8	Base of pier
1,103	1,414.1	Left pier and	1,215	1,405.6	
		top of ramp	1,221	1,405.8	
1,103	1,403.5	Left edge	1,224	1,410.8	
		base of pier	1,233	1,413.0	
			1,278	1,415.3	
			1,300	1,425.3	

Río Grande de Jayuya at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section T</u> (Section at overflow bridge used as approach to footbridge)					
22	1,430.0	Top of abutment	1,075	1,395.8	Base of abutment
54	1,472.0	Low beam	1,075	1,392.0	Do.
132	1,408.2	Top of deck	1,090	1,392.0	Do.
250	1,404.2	Base of abutment	1,090	1,395.8	Low beam; top of abutment
315	1,402.1	Do.	1,125	1,395.8	Top of deck
556	1,403.5	Do.	1,210	1,399.2	Do.
589	1,395.5		1,265	1,405.3	Edge of house
751	1,399.9		1,349	1,411.8	Do.
839	1,400.1		1,364	1,412.1	
909	1,398.4		1,430	1,420.0	
910	1,399.8		1,470	1,420.0	Edge of house
930	1,399.8		1,530	1,422.7	Do.
1,045	1,395.8	Edge of house	1,580	1,430.0	
<u>Section U</u>					
0	1,430.0		1,010	1,406.1	
0	1,426.0		1,055	1,403.8	
76	1,419.9		1,085	1,402.7	LEW
262	1,413.2		1,102	1,401.8	
507	1,413.7		1,129	1,402.6	REW
534	1,405.6		1,146	1,406.4	
696	1,408.9		1,148	1,414.5	
829	1,410.1		1,164	1,421.3	
921	1,409.8		1,176	1,422.3	
930	1,411.6	Edge of house	1,193	1,426.5	
955	1,410.7	Do.	1,207	1,430.0	
<u>Section V</u> (Exit section for Hwy 144 bridge)					
36	1,440.0	Edge of house	313	1,414.4	REW
50	1,430.0	Do.	330	1,416.0	
80	1,429.5	Edge of house	382	1,417.1	
124	1,428.8	Do.	415	1,418.4	
140	1,428.6		439	1,421.4	
170	1,428.6		461	1,421.1	
185	1,429.3	Edge of house	505	1,421.6	
230	1,431.3	Do.	513	1,421.1	Building
250	1,432.2		649	1,428.6	Do.
253	1,427.1		655	1,428.9	Edge of Hwy
255	1,422.5		685	1,429.0	Do.
263	1,415.5		690	1,429.6	Building
277	1,414.4	LEW	740	1,432.6	Do.
294	1,413.2		802	1,440.0	

Río Grande de Jayuyya at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section W</u> (Hwy 144 bridge geometry)					
353	1,420.3	Top of abutment; low beam	379	1,415.8	Base of abutment
			390	1,415.8	Do.
353	1,421.0	Top of deck	402	1,415.8	Do.
353	1,416.4	Base of abutment	402	1,420.3	Low beam; top of abutment
365	1,415.1	Do.	402	1,421.0	Top of deck
<u>Section W</u> (Hwy 144 road profile)					
49	1,440.0		456	1,420.9	
50	1,431.5		538	1,420.8	
80	1,431.0	Edge of house	606	1,421.8	
125	1,430.2	Do.	625	1,421.8	
171	1,430.2	Do.	666	1,423.6	
184	1,430.8	Do.	709	1,426.9	
230	1,433.0		731	1,428.8	
250	1,434.0		765	1,428.8	
250	1,426.9		815	1,430.7	
320	1,423.2		815	1,440.0	
<u>Section X</u> (Approach section for Hwy 144 bridge)					
29	1,440.0	LEW	364	1,417.3	LEW
40	1,432.0		371	1,416.5	
70	1,431.5	Edge of house	390	1,417.2	REW
115	1,431.5	Do.	413	1,417.8	
130	1,430.6		447	1,420.9	
165	1,430.6		447	1,422.1	
175	1,431.0	Edge of house	454	1,424.2	
215	1,433.2	Do.	465	1,426.6	
240	1,434.2		527	1,424.6	
240	1,426.8		588	1,423.8	Edge of house
284	1,426.7		662	1,425.8	Do.
300	1,427.2		662	1,433.4	Hwy
327	1,426.9		685	1,433.4	Do.
335	1,423.7		695	1,433.4	Hwy and edge of house
348	1,421.9		730	1,433.5	Edge of house
356	1,419.1		805	1,440.0	

Río Grande de Jayuya at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section Y</u>					
0	1,440.0	Retaining wall	495	1,421.5	Bridge
0	1,434.7	Do.	506	1,422.0	REW
20	1,434.5		519	1,423.4	
30	1,430.5		532	1,427.2	
62	1,430.0		540	1,429.9	
78	1,430.5	Bridge	546	1,427.1	
100	1,428.8		620	1,428.9	
108	1,430.5		620	1,433.6	Top of fence
122	1,431.5		634	1,430.3	
188	1,432.8		714	1,429.5	Building
414	1,432.2		714	1,460.0	Top of building
428	1,428.7		795	1,460.0	Do.
445	1,424.9		795	1,447.4	Ground eleva- tion of building
451	1,423.4				
483	1,422.0	LEW			

Section Z (Exit section for Hwy 141 bridge)

23	1,460.0		479	1,434.5	
300	1,450.0		492	1,436.7	
339	1,450.4		510	1,434.2	House
368	1,436.9		555	1,436.2	Do.
385	1,432.0		599	1,438.2	
392	1,430.8		622	1,438.6	Hwy 141
417	1,427.6	LEW	644	1,438.8	
440	1,427.2		676	1,439.7	
451	1,427.7	REW	688	1,442.2	
463	1,429.4		696	1,447.1	
			749	1,460.0	

Section Z1 (Hwy 141 bridge geometry)

408	1,440.0				
422	1,439.4		545	1,430.0	Base of pier
441	1,435.3		552	1,429.6	
465	1,431.3		567	1,430.2	
474	1,430.7	Base of left pier	587	1,430.5	
			606	1,439.6	Top of pier
474	1,440.6	Top of left pier and low beam	606	1,431.3	Base of pier
			621	1,431.9	
			643	1,434.4	
511	1,430.2		662	1,438.0	Base of abut- ment
545	1,440.0	Top of pier			
			662	1,439.4	Low beam
			662	1,440.0	

Rio Grande de Jayuya at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remark
<u>Section Z1</u> (Road profile at Hwy 141 bridge)					
47	1,460.0		662	1,444.0	Bridge
200	1,451.3		693	1,443.8	
258	1,438.1		744	1,442.3	
328	1,436.7		812	1,444.0	
388	1,435.7		898	1,451.0	
408	1,445.6	Bridge	898	1,460.0	
<u>Section Z2</u> (Approach section for Hwy 141 bridge)					
40	1,470.0		586	1,436.2	
400	1,455.0		614	1,438.0	House
434	1,455.8		627	1,441.2	Do.
442	1,445.1		652	1,440.8	
453	1,439.2		654	1,443.5	
461	1,436.8		678	1,445.1	
484	1,430.8	LEW	686	1,446.7	Right and
522	1,430.7		703	1,454.4	culvert
532	1,431.2	REW	732	1,459.2	Hwy 141
550	1,432.8		765	1,460.0	Left end of
560	1,435.3		765	1,470.0	culvert
<u>Section Z3</u>					
35	1,475.0		639	1,437.8	LEW
400	1,459.5		656	1,437.1	
446	1,456.8		670	1,437.8	REW
471	1,455.3		674	1,440.4	
491	1,454.3		684	1,444.5	
524	1,451.9		694	1,449.6	
565	1,449.4		701	1,453.2	
577	1,446.4		733	1,466.0	Hwy 141
589	1,444.8	Cl of dirt road	770	1,466.0	Do.
		Road	795	1,475.0	
607	1,444.6				
618	1,444.1				

Río Zama at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section A</u> (Above mouth of Río Zama and exit (edge) section for bridge)					
0	1,311.1	Top of retaining wall	196	1,300.9	Bottom of right bank
39	1,309.1		212	1,299.1	
116	1,302.9	Bottom of left bank	223	1,301.9	
147	1,302.9		252	1,302.7	
160	1,306.4		279	1,304.9	
174	1,299.8	CL of channel	346	1,301.3	
178	1,298.8		400	1,303.0	Edge of road
181	1,298.6		420	1,303.0	Do.
182	1,298.7		455	1,303.4	
191	1,299.1		491	1,304.9	

<u>Section B</u> (Río Zama bridge geometry and road profile)					
0	1,304.0	CL of road	205	1,300.8	Right end of culvert
36	1,303.3				
97	1,305.9		207	1,304.4	Top of deck
158	1,304.8	Left end of bridge	207	1,300.6	Left end of culvert
190	1,304.3	Top of deck	210	1,300.7	Right end of culvert
190	1,303.4	Low steel			
190	1,300.6	Left end of culvert	210	1,303.2	Low steel
			210	1,304.4	Top of deck
194	1,300.6	Right end of culvert	212	1,300.6	Left end of culvert
194	1,303.3	Low steel	212	1,304.4	Top of deck
194	1,304.3	Top of deck	215	1,300.7	Right end of culvert
197	1,300.9	Left end of culvert	215	1,303.2	Low steel
197	1,304.3	Top of deck	215	1,304.5	Top of deck
199	1,300.6	Right end of culvert	218	1,302.9	Ground
			218	1,304.6	Top of deck
199	1,303.3	Low steel	238	1,304.9	Right end of bridge
199	1,304.3	Top of deck			
202	1,300.8	Left end of culvert	281	1,303.9	
			342	1,306.9	Road
202	1,304.4	Top of deck	366	1,309.5	Do.
205	1,304.4	Do.			

Río Zama at Jayuya, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section C</u> (Approach section for Río Zama bridge)					
0	1,309.9	Top of re- taining wall	57	1,302.7	Bottom of right bank
10	1,306.5		64	1,306.8	
17	1,302.7	Bottom of left bank	71	1,307.6	
			80	1,308.1	
33	1,302.4		81	1,304.8	
43	1,300.3	CL of channel	126	1,307.8	
51	1,302.7		173	1,310.3	

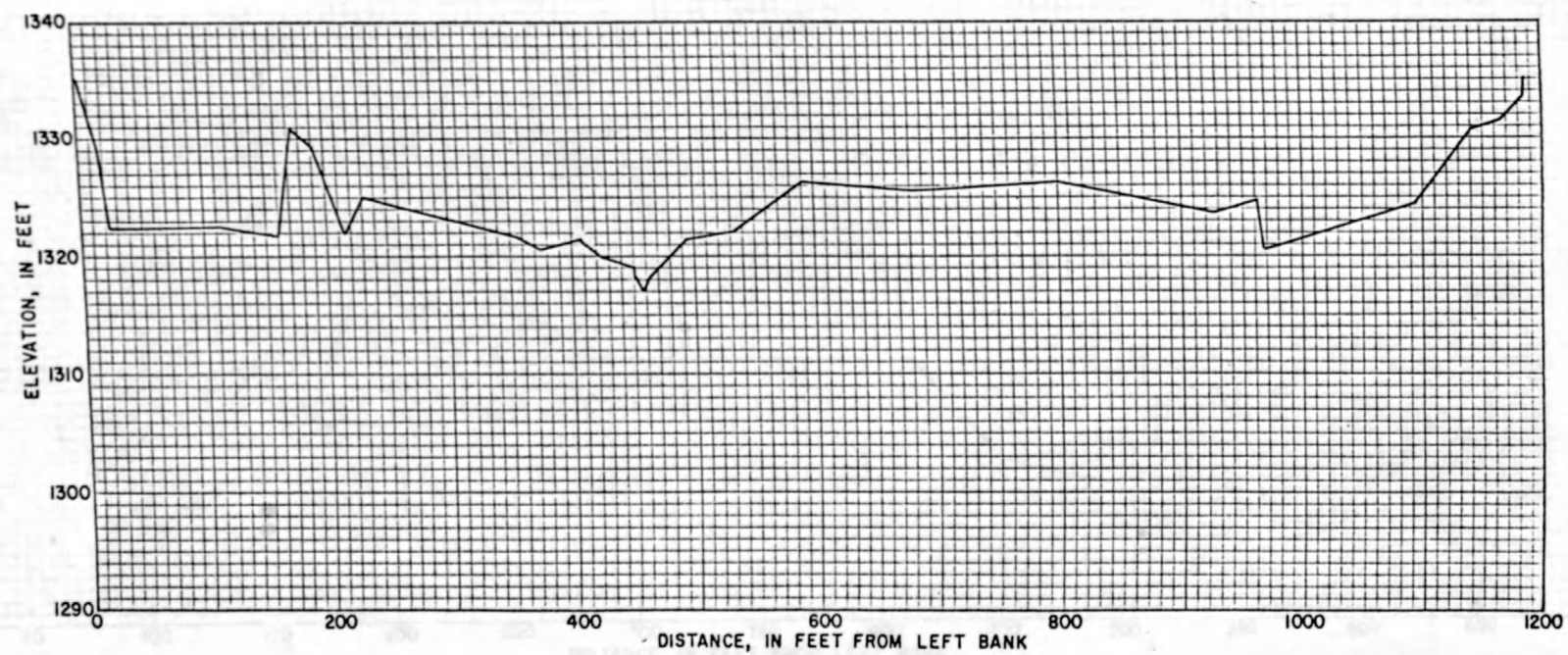


Figure 15.--Cross section I of Río Grande de Jayuya at Jayuya.

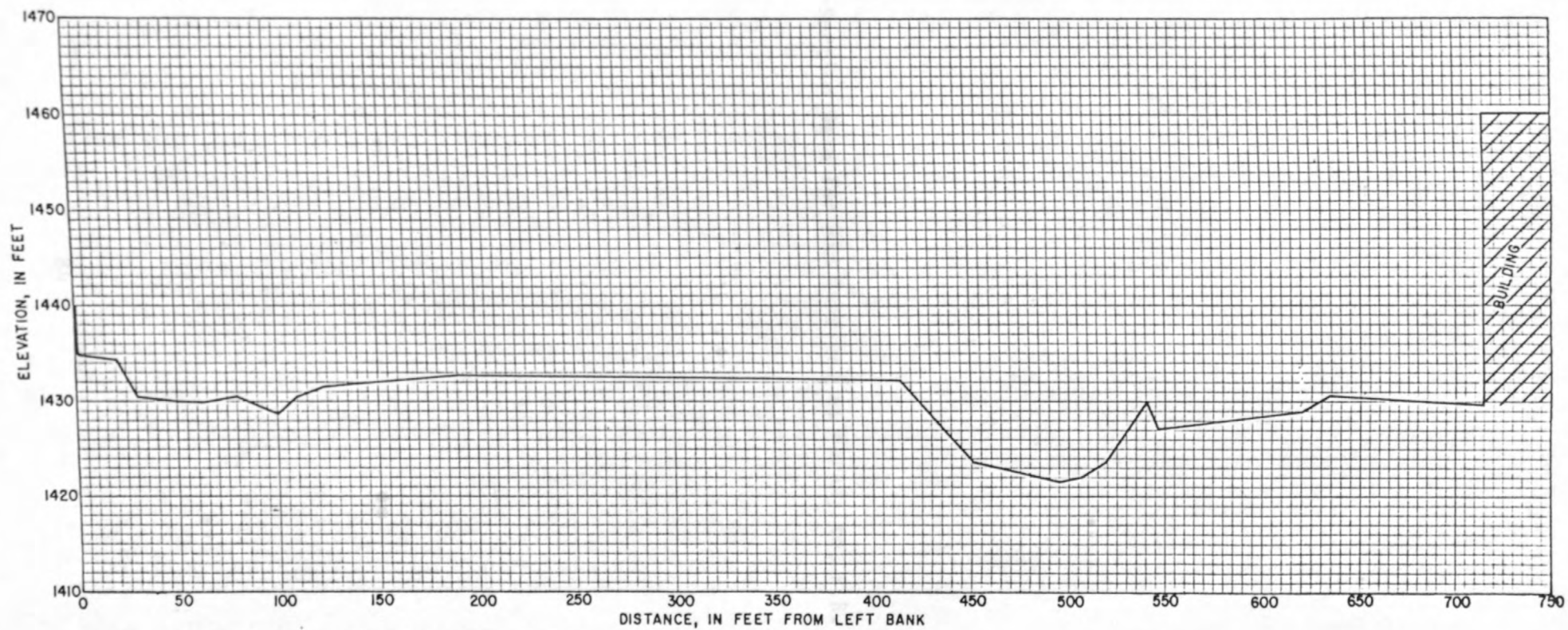


Figure 16.--Cross section Y of Río Grande de Jayuya at Jayuya.

Cross-Section Data for Río Guadiana at Naranjito, P.R.

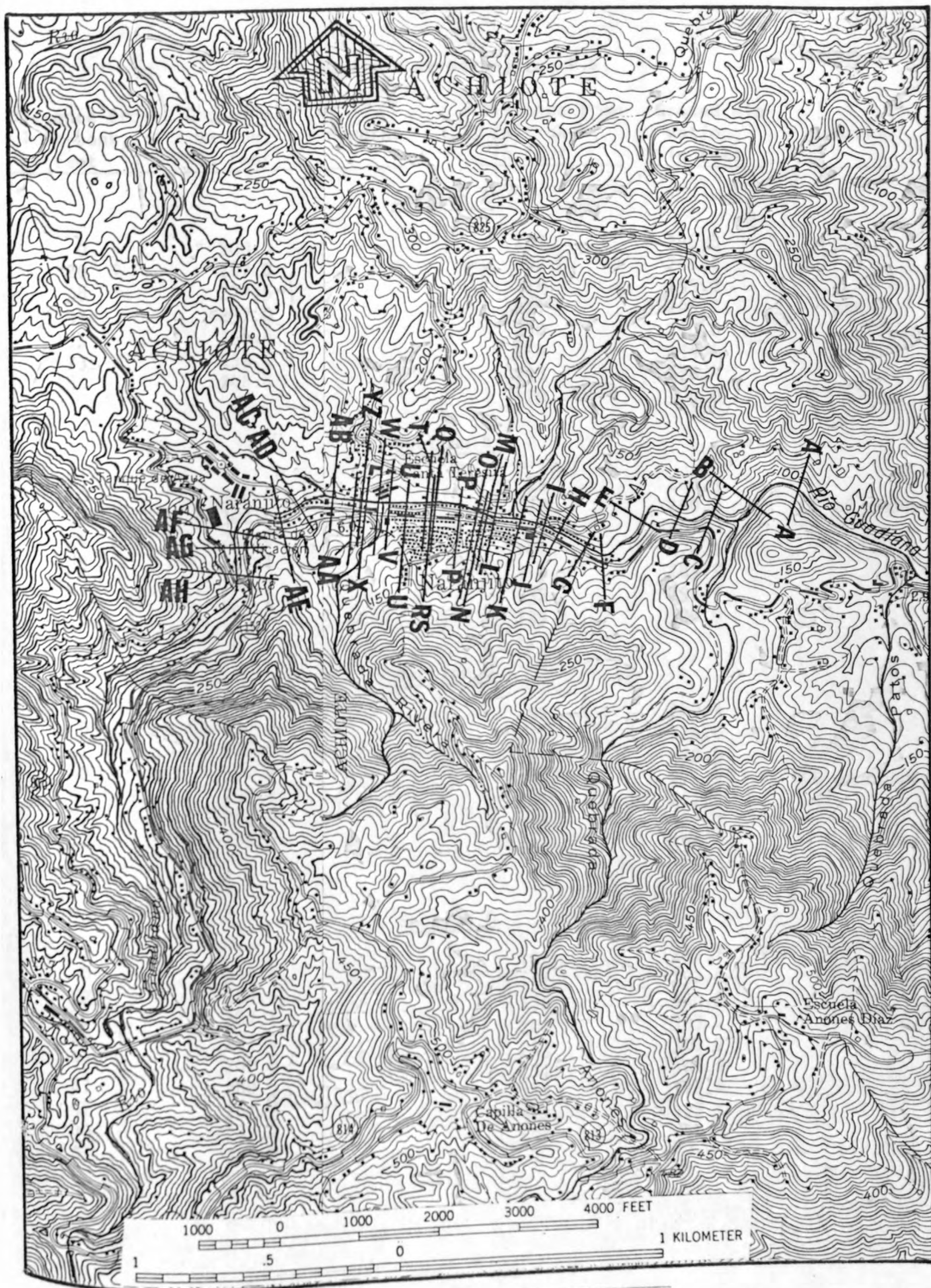


Figure 17.--Location of cross sections on Río Guadiana at Naranjito, PR.

Río Guadiana at Naranjito, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section A</u>					
0	300.0		202	246.8	LEW
20	287.0		207	246.4	
58	274.5		214	245.2	
93	257.0		221	246.7	REW
133	254.4		230	250.0	
173	252.2		254	254.4	
186	248.8		298	276.4	
			320	300.0	
<u>Section B</u>					
0	300.0		72	260.3	
1	302.4		77	260.0	CL of channel
24	280.6		85	261.0	
38	267.1		101	270.2	
47	264.7		110	283.5	
62	263.4		132	296.3	
			135	300.0	
<u>Section C</u>					
0	330.0		92	280.3	
1	325.9		112	274.0	
40	302.1		123	272.9	
53	293.2		133	271.4	CL of channel
70	287.0		141	272.5	
77	283.0		152	302.2	
			183	330.0	
<u>Section D</u>					
0	344.4		125	287.1	
52	288.5		151	292.0	
60	282.1		176	300.6	
67	281.2		204	303.2	
78	280.3	CL of channel	243	300.2	
87	280.5		271	301.1	
92	281.7		315	318.4	
100	283.2		348	328.5	
101	284.3		382	344.4	

Río Guadiana at Naranjito, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section E</u>					
0	360.0	CL of Hwy 164	130	302.4	Top of house
40	328.5	Hwy 164	148	307.1	Base of house
76	302.3	Base of house	164	309.9	
87	300.1	Top of house	208	317.5	
97	298.2		249	324.1	
102	296.3		282	335.0	
111	298.2		289	339.9	
118	294.7	CL of channel	310	353.9	
			320	360.0	Top of house
<u>Section F</u>					
0	340.0		145	309.5	Hwy 164
0	329.9		158	311.0	Base of house
4	324.3	Right end	171	313.4	
50	318.2	of bridge	174	319.4	
95	318.0	Base of house	181	324.5	Base of house
119	315.4	Top of house	188	325.2	
123	310.1		201	325.6	Hwy 164
124	309.8		237	326.4	
130	309.4	CL of channel	237	340.0	
<u>Section G</u>					
0	340.0		87	313.1	
0	327.8		94	315.6	Base of house
19	322.3	LEW	101	320.2	Top of house
42	319.9		106	323.8	
53	315.5		120	323.9	Hwy 164
67	314.4		131	323.9	
80	313.1	Base of bldg.	137	326.5	
82	312.6	CL of channel	137	340.0	
<u>Section H</u>					
0	345.0		54	319.8	
0	333.2		69	321.0	REW
11	332.2		83	321.8	
18	328.2		87	322.8	Base of house
26	322.2		87	340.0	Top of house
47	321.0	LEW	115	340.0	Do.
49	319.7		115	329.1	Base of house
51	319.2		122	330.2	Hwy 164

Río Guadiana at Naranjito, P.R.

Distance from left bank, in feet	Ground elevation, in feet	Remarks	Distance from left bank, in feet	Ground elevation, in feet	Remarks
Section H--Continued					
136	330.4	CL of Hwy 164	185	340.0	Top of house
148	330.1	Hwy 164	185	333.0	Base of house
156	330.1	Base of house	203	334.7	
156	340.0	Top of house	219	340.0	
0	333.8		121	337.1	Base of house
13	333.2	Base of house	121	344.0	Top of house
13	344.0	Top of house	132	341.0	Do.
37	344.0	Do.	152	336.5	Base of house
0	340.0	Base of house	118	340.0	Top of house
0	334.4	Fence	118	331.3	Base of house
7	327.1	Left end of bridge	126	333.0	Hwy 164
38	324.4		136	333.0	CL of Hwy 164
47	324.5	LEW	151	332.7	Hwy 164
60	324.7	Right end of bridge	170	333.2	Base of house
87	327.0	Base of house	170	340.0	
87	340.0	Top of house	216	340.0	
			216	334.4	Base of house
			283	336.0	
Section J					
20	343.0	Estimate	120	337.6	Base of house
0	344.4		120	344.0	Top of house
0	345.0		110	331.2	Base of bldg.
0	335.1		115	331.7	Base of house
4	328.0		122	332.6	Hwy 164
29	325.5	LEW	141	332.4	Do.
29	322.6		159	332.9	Base of house
33	321.3	LEW	159	340.0	Top of house
46	320.9	Base of fence	206	340.0	Do.
57	321.3	REW	206	334.1	Base of house
61	324.9		230	335.4	
80	327.6	Base of bldg.	267	336.9	
80	340.0	Top of bldg.	287	337.1	
110	340.0	Do.	290	340.0	
			290	345.0	Base of house
30	347.0	From top of house			
0	337.6		110	340.0	Base of house
33	332.3		122	332.6	CL of Hwy 164
41	331.4	LEW	141	332.4	Do.
46	331.3		159	332.9	Base of house
57	331.3		206	334.1	Base of house
61	331.5		230	335.4	

Río Guadiana at Naranjito, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section K</u>					
-75	340.0	From topo. map	99	326.9	REW
0	333.8		101	327.4	
13	333.2	Base of house	121	331.1	Base of house
13	344.0	Top of house	121	344.0	Top of house
37	344.0	Do.	152	344.0	Do.
37	332.5	Base of house	152	334.6	Base of house
58	332.1	Fence	168	335.1	CL of Hwy 164
60	330.5		179	335.2	
75	329.5		197	336.1	Base of house
90	327.4		197	344.0	Top of house
94	326.9	LEW	252	344.0	Do.
96	326.4		252	340.4	Base of house
			272	342.6	
<u>Section L</u>					
-20	348.0	Estimate	120	337.6	Base of house
0	344.4		120	344.0	Top of house
42	337.2		143	344.0	Do.
47	336.1		143	339.6	Base of house
82	332.4		169	339.7	
88	330.0	LEW	206	340.6	CL of Hwy 164
101	329.6		221	340.9	
102	329.9	REW	221	350.0	House
115	331.9	Base of fence			
115	337.6	Top of fence			
<u>Section M</u>					
-50	347.0	From topo. map	72	335.2	Base of house
0	337.6		72	349.0	Top of house
33	332.3		112	349.0	Do.
42	331.4	LEW	112	340.0	Base of house
48	331.2		126	339.7	CL of Hwy 164
54	331.5	REW	136	340.5	House
			136	355.0	

Río Guadiana at Naranjito, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section N</u>					
0	355.0	Top of house	76	349.0	Top of house
0	336.5	Base of house	125	349.0	Do.
29	333.7		125	340.2	Base of house
46	333.7		128	340.4	
63	334.0		136	340.3	
76	335.1	Base of house	174	342.0	
			174	355.0	House
<u>Section O</u>					
-30	350.0	From topo. map	94	332.3	REW
0	344.5		105	333.6	Base of fence
12	340.3		111	338.2	Base of house
25	338.8		111	349.0	Top of house
59	338.2		160	349.0	Do.
76	332.7		160	341.2	Base of house
88	332.2	LEW	173	340.9	CL of Hwy 164
91	331.9		189	341.7	
			300	350.0	From topo. map
<u>Section P</u>					
-40	350.0	From topo. map	58	340.0	Base of fence
0	339.5		61	343.0	Base of house
14	337.2		61	349.0	Top of house
18	336.8	LEW	137	349.0	Do.
27	336.5		137	344.4	Base of house
42	336.9	REW	158	344.7	CL of Hwy 164
			175	344.8	
			240	350.0	From topo. map
<u>Section Q</u> (Exit section for footbridge by City Hall)					
0	360.0	Porch of building	75	343.6	Base of wall
0	345.8		75	350.3	Top of wall
20	343.9		76	350.3	Do.
30	340.2	LEW	76	347.7	Base of wall
42	340.0		92	348.0	
54	340.0	REW	143	348.9	
66	341.7		158	349.2	
			240	350.3	Base of bldg.
			240	360.0	Top of bldg.

Río Guadiana at Naranjito, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section R</u> (Footbridge geometry)					
0	347.2		49	340.2	
22	349.8	Top of deck	57	340.7	REW
22	348.3	Low steel	60	349.6	Top of pier
22	345.4	Top of abut- ment	60	341.7	Base of pier
			78	349.7	Top of deck
22	341.8	Base of abut- ment	78	348.2	Low steel
			78	348.0	Top of abut- ment
39	349.7	Top of pier			
39	341.2	Base of pier	78	342.1	Base of abut- ment
46	340.8	LEW			
<u>Section S</u> (Footbridge walkway profile)					
0	360.0		22	349.8	
0	347.2		78	348.3	
10	346.4		78	360.0	
<u>Section T</u> (Approach section for footbridge)					
0	360.0		88	342.2	LEW
0	352.9		88	341.4	
18	350.9		98	341.2	REW
38	348.6		104	341.5	
60	347.4		125	342.6	
70	345.0		126	344.0	
82	342.2		180	354.0	From topo. map
<u>Section U</u>					
0	360.0		153	345.4	
0	357.5		163	346.3	Base of bldg.
19	357.6	School fence	163	359.9	Top of bldg.
58	356.1		210	359.9	Do.
100	354.2	School fence	210	355.9	Base of bldg.
104	352.8		219	355.7	CL of Hwy
116	346.6		232	356.5	Base of bldg.
131	344.1	LEW	232	359.9	Top of bldg.
135	343.6		282	359.9	Do.
138	344.1	REW	282	357.5	Base of bldg.
145	344.6		306	358.8	
			306	360.0	

Río Guadiana at Naranjito, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section V</u>					
0	370.0	Top of bldg	134	347.1	
0	359.7	Base of bldg.	146	346.5	LEW
27	356.2	Do.	159	346.7	
27	269.9	Top of bldg.	169	346.7	REW
62	369.9	Do.	187	350.6	
62	354.9	Base of bldg.	191	353.2	
112	353.2	Top of left bank	205	359.9	
			215	363.9	
119	349.5	Bottom of left bank	299	365.6	CL of Hwy 164
			327	366.8	Base of bldg.
			327	370.0	Top of bldg.
<u>Section W</u>					
0	375.0		96	352.6	
0	363.3		111	352.9	REW
28	360.0	Base of bldg.	132	355.1	Bottom of right bank
28	374.9	Top of bldg.			
65	374.9	Do.	156	362.7	
65	359.3	Base of bldg.	166	370.7	Top of right bank
71	358.6	Top of left bank	177	371.1	
74	353.1	Bottom of left bank	261	371.8	CL of Hwy 164
81	352.7	LEW	282	373.9	
			282	375.0	
<u>Section X (Exit section for Hwy 825 bridge)</u>					
0	380.0	Hwy 825	192	352.7	
10	376.6		192	352.0	LEW
50	367.1		201	351.0	
80	361.0		206	352.0	REW
150	358.6		236	352.2	
165	356.0	Top of left bank	249	364.1	
			256	371.1	
171	353.1	Bottom of left bank	262	371.9	
			268	371.9	Edge of wall

Río Guadiana at Naranjito, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section Y-Z</u> (Hwy 825 bridge geometry and road profile)					
0	380.0		155	358.2	Top of open-
27	368.9				ing on left
30	363.9				side
54	362.3	CL of Hwy 825	155	353.5	Bottom of
101	359.3	Left end of			opening
		bridge and	155	359.1	Top of deck
		corner of house	155	357.8	Low beam
131	357.8	Top of abut-	163	358.2	Top of open-
		ment			ing on right
131	354.1	Base of abut-			side
		ment	163	353.4	Bottom
131	357.8	Low steel	166	358.2	Top of open-
139	357.8	Top of abut-			ing, left side
		ment	166	353.4	Bottom
139	353.9	Base of abut-	174	358.2	Top of side
		ment			of opening
139	359.1	Top of deck	174	353.5	Bottom
147	358.2		174	357.8	Low steel
147	353.3	Base of abut-	174	359.2	Top of deck
		ment	213	359.9	Right end of
147	357.8	Low steel			bridge
150	358.2	Top of opening	259	366.2	
150	353.3	Top of opening	302	373.2	
		on right side	332	377.9	CL of Hwy 644
			332	380.0	

Section AA (Approach section for Hwy 825 bridge)

0	380.0		129	355.6	
0	374.7		135	354.6	
21	368.6	Hwy	141	354.4	CL of channel
30	364.5		147	354.6	
62	363.3	Base of structure	157	355.8	
62	379.9	Top of structure	163	360.0	
106	379.9	Do.	168	363.1	
106	359.5	Base of structure	182	373.8	
119	359.1		278	377.6	
			278	380.0	

Río Guadiana at Naranjito, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section AB</u> (Caserío Candelario Torres bridge road profile)					
0	410.0		178	358.0	CL of channel
32	387.8		200	359.3	Top of pier
45	387.9	Top of left abutment	212	367.9	and low steel
56	375.4		262	370.4	LEW
83	372.0	and low steel	267	372.6	
91	373.8		298	375.3	REW
93	370.0		313	377.7	Base of pier
121	365.9		322	381.9	Top of pier
150	366.0		419	382.2	and low steel
166	358.4		419	410.0	
<u>Section AC</u> (Exit section for Candelario bridge)					
0	398.9		121	366.6	Base of pier
8	394.7	Base of pier	124	369.7	Low steel, top
14	392.1		133	375.5	of abutment on
21	387.8		138	382.0	Irregular spac-
28	383.6				ing of houses
35	380.3		152	383.7	Do.
48	377.5		177	384.8	Do.
56	376.3		196	386.3	Do.
58	373.1		199	389.0	Do.
59	371.0		204	392.0	CL of channel
64	366.3		209	392.0	
69	364.2		213	392.0	Edge of Hwy 152
78	364.1		224	392.3	CL of Hwy
83	362.9	LEW	234	391.9	Edge of Hwy 152
88	362.6		239	392.5	Bottom of bank
95	363.0	REW			about 50-ft
110	364.5				high; slope 2:1
<u>Section AD</u> (Caserío Candelario Torres bridge road profile)					
0	406.3		221	392.1	Left edge of
34	404.3				Hwy 152
61	402.4		242	392.7	CL of Hwy 152
96	400.3		248	392.3	Right edge of
137	397.6				Hwy 152
181	394.7		250	399.3	
			254	402.5	

Río Guadiana at Naranjito, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section AD</u> (Caserío Candelario Torres bridge geometry)					
0	398.0		69	397.2	Top of pier
0	402.2	Top of left			and low steel
		abutment;	84	363.0	LEW
		and low steel	92	362.9	
17	394.7		97	363.2	REW
17	391.2		111	363.9	Base of pier
24	386.6		111	394.9	Top of pier
24	386.2	Ground			and low steel
31	383.6	Base of pier	126	366.1	
31	399.8	Top of pier	128	368.7	
		and low steel	130	372.9	
56	376.7		138	380.8	
60	371.3	Ground	144	384.4	
64	368.8	Do.	148	384.7	Base of pier
69	365.4	Base of pier	150	392.3	Low steel, top
					of abutment, and
					top of pier
<u>Section AE</u> (Approach section for Candelario bridge)					
0	445.4		226	367.3	
63	413.7		246	366.9	CL of channel
64	407.0		256	370.0	
118	403.5		263	378.5	
118	398.5		285	378.6	
144	398.9		333	387.0	
156	398.2		388	388.9	
178	389.0		447	393.7	
185	375.5		473	398.4	
204	369.6		502	409.2	
			507	413.5	

Río Guadiana at Naranjito, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section AF</u>					
0	438.0		193	379.5	CL of channel
12	428.5		209	383.7	
20	428.7		229	387.7	
23	418.5		294	296.3	
54	419.0		302	389.3	
73	414.0		307	389.8	
73	411.6		324	395.5	
125	408.0		346	400.5	
169	387.2		352	415.5	
			383	422.7	

<u>Section AG</u>					
0	458.4		145	392.0	CL of channel
21	431.3		150	391.5	
55	431.3		155	391.7	
94	403.1		170	394.0	
111	405.4		231	413.0	
123	392.9		269	437.0	
			297	458.3	

<u>Section AH</u>					
0	451.1		156	415.5	
24	451.1		203	447.0	
66	448.7		230	448.8	
97	448.9		240	448.9	
128	418.5		245	449.6	
128	414.6	CL of channel	246	451.1	

Figure 18. -- Cross-section C of Río Guadiana at Naranjito.

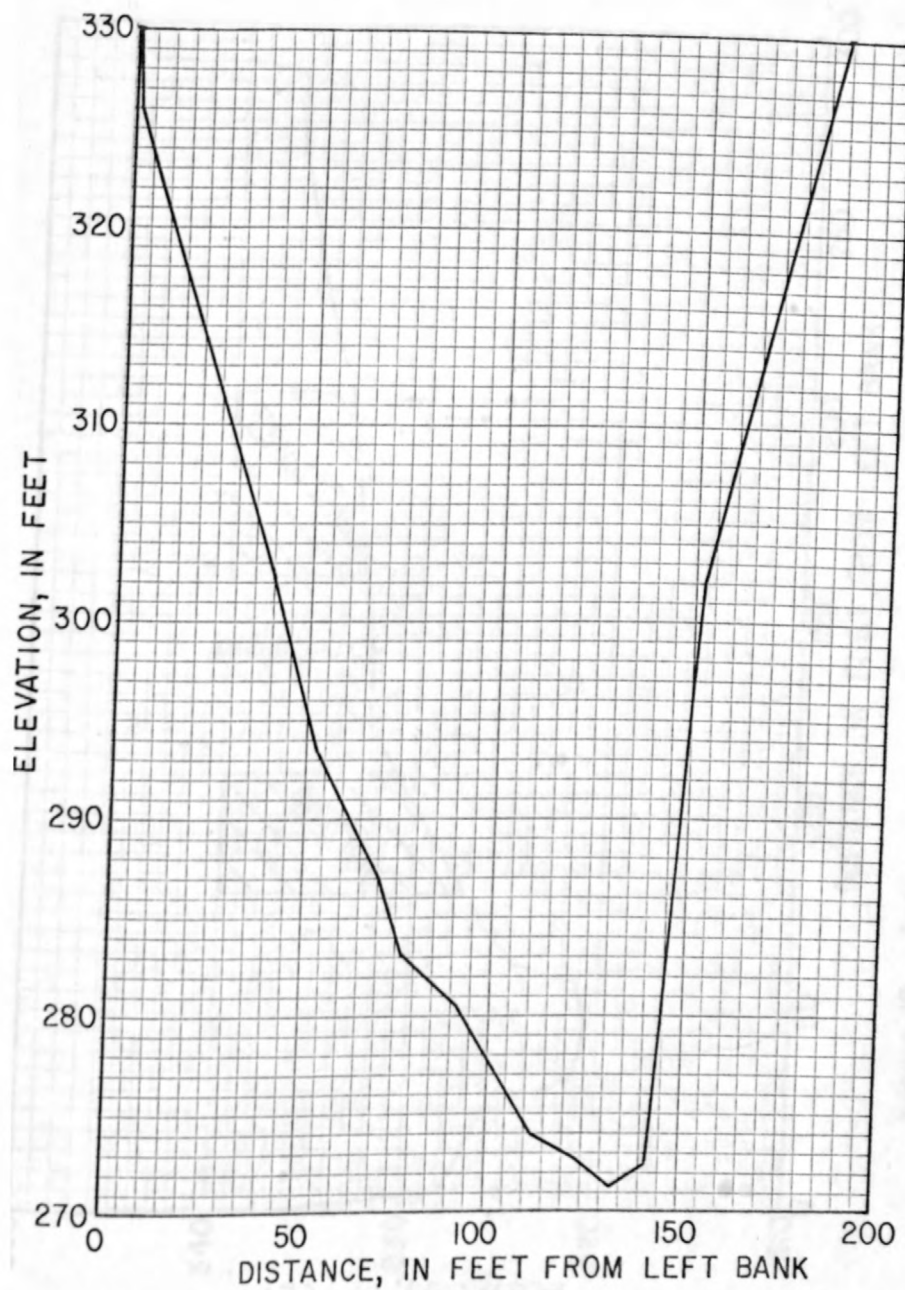


Figure 18.--Cross section C of Río Guadiana at Naranjito.

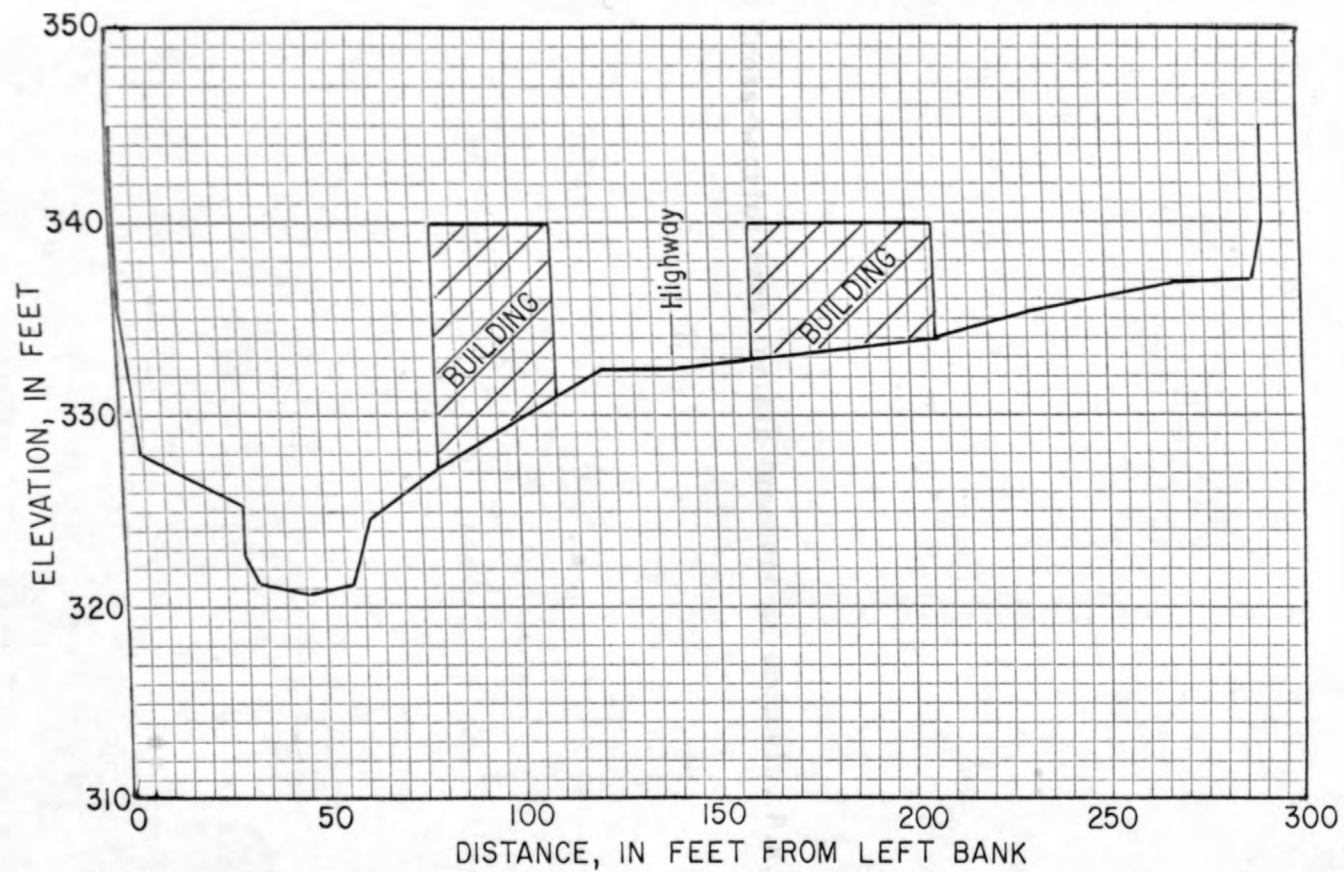
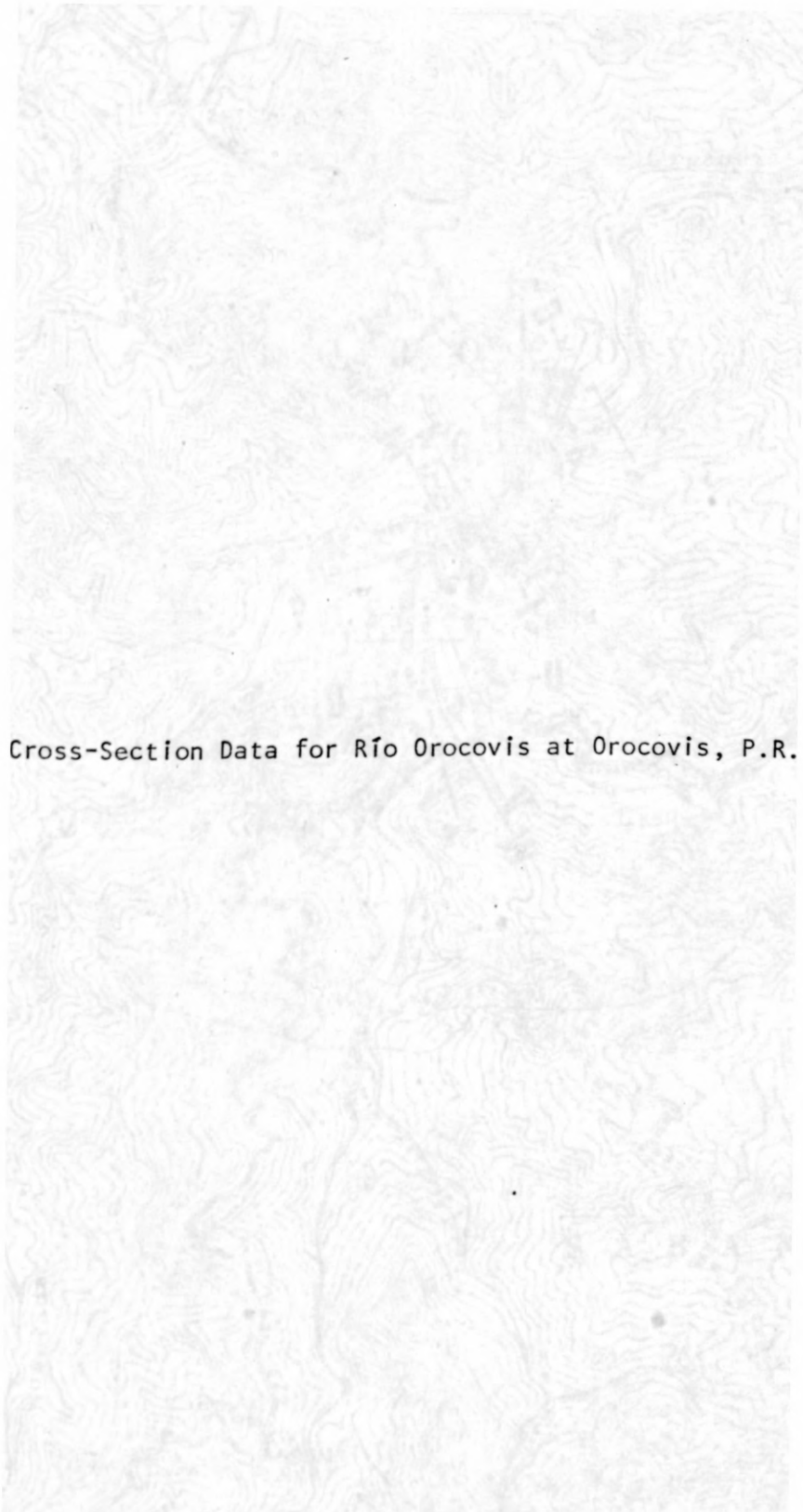


Figure 19.--Cross section J of Río Guadiana at Naranjito.



Cross-Section Data for Río Orocovis at Orocovis, P.R.

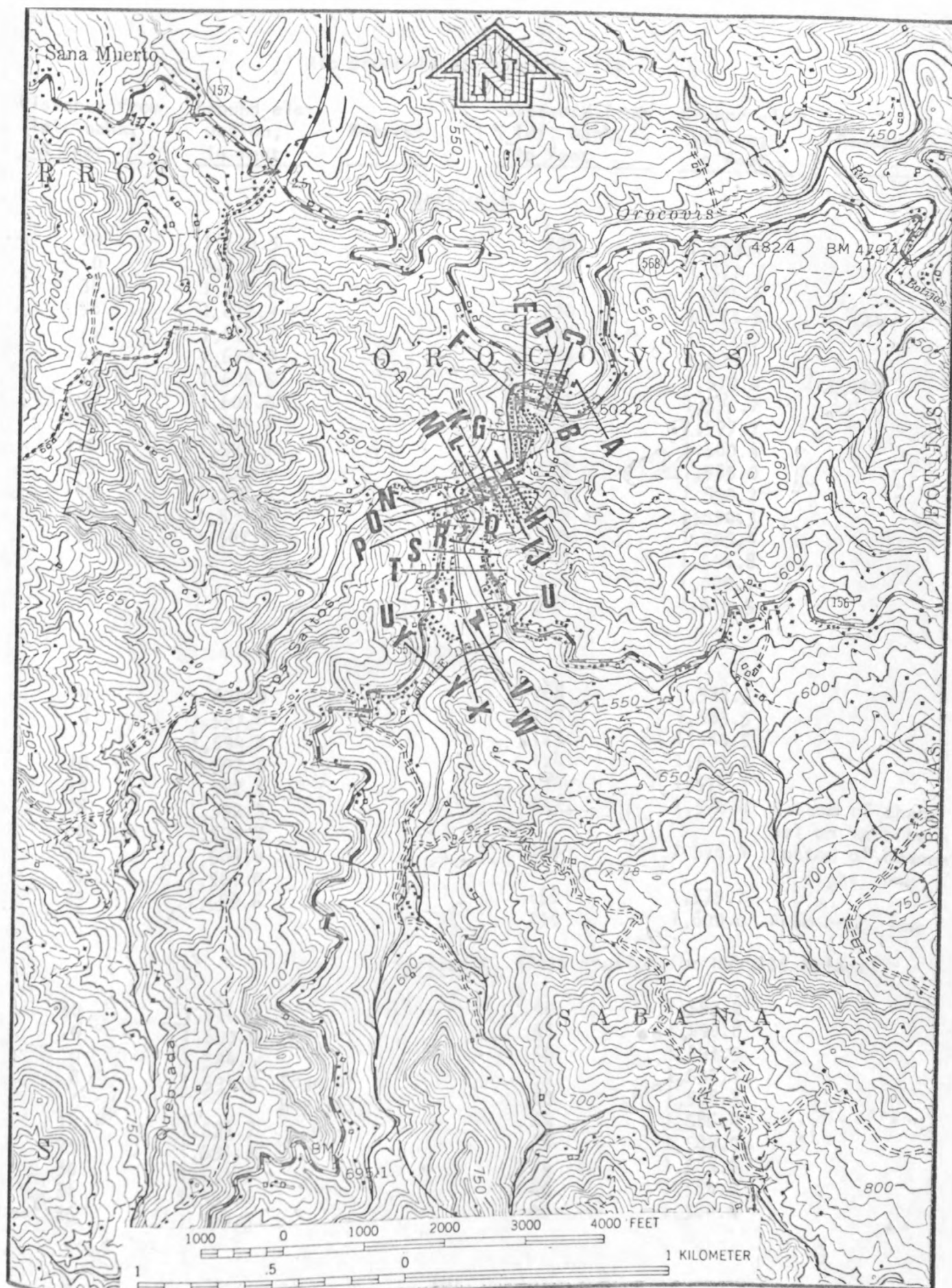


Figure 20.--Location of cross sections on Río Orocovis at Orocovis, PR.

Río Orocovis at Orocovis, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section A</u>					
-20	1,619.5		208	1,583.1	
0	1,614.3		218	1,577.7	
38	1,612.9		225	1,575.6	
56	1,612.4		230	1,573.5	LEW
75	1,611.2		242	1,572.7	
89	1,610.0		249	1,575.1	Base of wall
99	1,605.5		261	1,573.6	Top of
109	1,602.9		267	1,575.2	REW
116	1,599.2		268	1,577.7	
122	1,596.1		276	1,580.4	
139	1,595.0		283	1,585.0	
149	1,592.6		291	1,590.2	
175	1,590.8		305	1,590.3	
199	1,587.9		306	1,595.4	Bottom of culvert
			310	1,596.8	Top of culvert
			314	1,600.1	Low beam
			327	1,619.5	Bottom of culvert
					Top of culvert
					Low beam
					Bottom of deck
					Top of deck
					Low beam
					Bottom of deck
					Top of deck
					Low beam
					Bottom of channel on left bank
					Bottom of channel on right bank
					From topo. map
<u>Section B</u>					
0	1,620.0		108	1,582.5	
0	1,597.0		120	1,583.5	
2	1,594.7		123	1,580.5	
10	1,592.2		124	1,579.3	
18	1,592.5		130	1,578.3	
28	1,592.3		137	1,576.4	
60	1,592.2				
70	1,585.4		146	1,576.4	
91	1,581.0		155	1,579.7	
99	1,580.6		215	1,600.0	
<u>Section C</u> (Exit section for Hwy 155 bridge)					
-30	1,614.0		40	1,593.2	
0	1,600.0		46	1,590.8	
0	1,594.5		50	1,591.9	
8	1,591.9	Edge of Hwy 153	54	1,592.1	
		Do.	60	1,588.3	
18	1,591.7		64	1,586.4	
25	1,591.4		68	1,588.0	
30	1,591.5		74	1,584.5	
34	1,593.6		80	1,584.0	
36	1,594.5		90	1,584.4	

Río Orocovis at Orocovis, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section C</u> (Exit section for Hwy 155 bridge)-- Continued					
100	1,584.3		140	1,580.8	REW
105	1,583.2		144	1,581.5	
115	1,583.6		151	1,587.2	
120	1,583.5		155	1,588.5	
125	1,580.8	LEW	158	1,590.2	Base of wall
133	1,580.5		158	1,600.0	Top of wall
			170	1,614.0	
<u>Section D</u> (Bridge geometry, culverts under Hwy 155)					
0	1,614.0		70	1,583.2	Bottom of culvert
10	1,588.8		70	1,587.6	Top of culvert
42	1,587.7	Top of deck; left end of bridge	70	1,586.2	Low beam
42	1,585.9	Low beam	78	1,583.3	Bottom of culvert
42	1,583.9	Bottom of chan- nel; LEW	78	1,587.6	Top of culvert
42	1,587.4	Top of deck	78	1,586.0	Low beam
42	1,586.2	Low beam	85	1,583.9	Bottom of deck
53	1,583.5	Bottom of culvert	85	1,587.6	Top of deck
53	1,587.6	Top of deck	85	1,586.0	Low beam
53	1,586.0	Low beam	91	1,583.4	Bottom of deck
61	1,583.8	Bottom of culvert	97	1,583.4	Do.
61	1,587.4	Top of deck	97	1,586.0	Low beam
61	1,586.1	Low beam	97	1,587.6	
			120	1,587.7	
			130	1,588.3	
			150	1,614.0	
<u>Section D</u> (Hwy 155 bridge road profile)					
0	1,592.7		138	1,587.6	
30	1,591.5		145	1,587.6	
50	1,590.3		151	1,587.6	
60	1,589.6		155	1,587.7	
70	1,588.7		175	1,587.8	Right end of bridge
80	1,587.8		180	1,587.8	
90	1,587.5		190	1,588.3	
103	1,587.7	Left end of bridge	200	1,589.1	
104	1,587.5		215	1,590.4	
113	1,587.4		230	1,591.5	
121	1,587.6		245	1,592.5	
130	1,587.4		260	1,593.1	
			275	1,593.9	

Río Orocovis at Orocovis, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section E</u> (Approach section for Hwy 155 bridge)					
0	1,630.0		75	1,587.0	
0	1,600.0	Top of left bank	82	1,589.4	CL of Hwy
10	1,596.0	Do.	92	1,591.7	REW
11	1,590.5	Do.	92	1,594.3	REW
18	1,589.0	Do.	96	1,593.9	
28	1,588.4	Do.	105	1,593.4	Edge of Hwy 155
36	1,587.1	Do.	116	1,593.2	CL of Hwy
39	1,585.3	LEW	124	1,592.8	Edge of Hwy 155
46	1,584.6	Do.	139	1,598.7	Edge of Hwy 155
61	1,585.3	REW	140	1,620.0	
72	1,586.0	Do.	150	1,630.0	Edge of Hwy 155
496	1,621.4	Do.	614	1,618.3	CL of Hwy 155
306	1,621.3	Top of left bank	624	1,618.3	CL of Hwy 155
307	1,617.3		635	1,618.3	CL of Hwy 155
<u>Section F</u>					
-12	1,630.0		98	1,592.8	Back of Hwy
0	1,614.9		116	1,593.5	
21	1,608.5		134	1,596.2	
36	1,605.2		144	1,601.8	
48	1,597.8		153	1,605.1	
57	1,594.0		161	1,609.5	
65	1,592.8		164	1,611.3	
68	1,591.5	LEW	173	1,614.7	
76	1,590.1	Front top of	176	1,614.9	
94	1,591.4	REW	176	1,630.0	
<u>Section G</u>					
0	1,640.0	CL of channel	209	1,602.6	
0	1,619.9		228	1,602.6	
43	1,620.2		238	1,598.8	LEW
105	1,619.4		255	1,596.7	CL of flow
133	1,618.9		271	1,598.8	REW
166	1,617.5		277	1,601.5	
179	1,616.0		284	1,606.1	
185	1,612.8		295	1,611.1	
196	1,609.4		317	1,616.1	
203	1,603.8		326	1,619.2	
			356	1,640.0	

Río Orocovis at Orocovis, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section H</u>					
0	1,640.0		316	1,608.0	
0	1,625.8	Bottom of bank	318	1,602.1	LEW
8	1,619.2	On parking area	329	1,599.7	
49	1,620.9	Do.	363	1,601.1	REW
86	1,621.3	Do.	365	1,603.5	
132	1,622.3	Do.	370	1,606.5	
168	1,623.2	Do.	383	1,606.7	
203	1,622.9	Do.	402	1,610.9	
254	1,621.1	Do.	408	1,612.3	Edge of bldg.
296	1,621.4	Do.	438	1,616.9	
306	1,621.3	Top of left bank	608	1,619.6	Edge of bldg.
307	1,617.2		614	1,618.9	Hwy 156
310	1,610.4		624	1,619.4	CL of Hwy
			635	1,618.8	Hwy 156
			636	1,619.5	Front of bldg.
			691	1,620.0	Back of bldg.
			695	1,631.2	
			705	1,633.6	
			713	1,638.9	
			715	1,640.0	
<u>Section I</u>					
-10	1,622.0	From topo. map	57	1,609.2	
0	1,612.0		75	1,614.1	
2	1,608.4		90	1,615.6	
5	1,605.8		110	1,617.8	
8	1,604.3		128	1,619.6	
15	1,603.0	CL of channel	159	1,619.9	
24	1,604.4		165	1,619.4	
29	1,605.7		178	1,619.9	
36	1,607.9		188	1,619.5	
			198	1,620.5	Left edge of bldg.
			218	1,622.0	From topo. map

Río Orocovis at Orocovis, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section J</u> (Ramal Hwy 155 bridge geometry)					
146	1,619.8	Left end of bridge opening	190	1,619.4	Top of deck
		and top of deck	190	1,615.4	Low steel
146	1,615.6	Low beam	190	1,606.6	Base of pier
146	1,614.0	Ground	196	1,607.0	
151	1,610.5		215	1,606.9	
156	1,606.6		220	1,608.3	
164	1,605.3	LEW	228	1,609.4	Ground eleva- tion at abut- ment
176	1,604.4	CL of channel			
183	1,605.2	REW	228	1,615.3	Low beam
<u>Section J</u> (Road profile at Ramal Hwy 155 bridge)					
0	1,640.0		235	1,619.1	On Hwy
0	1,627.6	Right edge of bdg.	250	1,618.8	
10	1,626.4		265	1,618.5	Right end of bridge
30	1,624.1				
50	1,622.1		280	1,618.8	
70	1,620.9		295	1,619.1	
90	1,620.1		310	1,619.4	Left edge of bdg.
100	1,620.1		325	1,619.8	
109	1,620.0	Left end of bridge	340	1,620.2	
			350	1,620.2	Edge of Hwy 568
120	1,619.9				CL of Hwy
130	1,619.9		360	1,620.5	Edge of Hwy 568
146	1,619.8	Bridge opening	370	1,620.0	
156	1,619.7				
164	1,619.6		425	1,628.8	
190	1,619.4		429	1,631.0	
228	1,619.3	Bridge opening	439	1,633.6	
			450	1,640.0	
<u>Section K</u> (Approach section for Ramal Hwy 155 bridge)					
-10	1,640.0	Top of wall	46	1,609.8	LEW
0	1,617.5	Base of wall	61	1,609.8	REW
0	1,610.5	Paving area	68	1,614.5	
13	1,610.3	LEW	75	1,618.4	
21	1,610.3	REW	80	1,619.8	
36	1,612.6	Hump	93	1,620.3	
			93	1,640.0	

Río Orocovis at Orocovis, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section L</u> (Exit section for Hwy 155 bridge to Uvey) - Continued					
-14	1,631.0	From topo. map	68	1,612.0	
0	1,617.5	CL of Hwy 155-156 intersection	72	1,615.8	
4	1,612.3		80	1,618.0	
18	1,612.0		90	1,617.2	Edge of church
30	1,614.1		98	1,616.4	
48	1,613.0		101	1,615.4	
50	1,612.2	Edge of channel	110	1,614.4	
58	1,610.2	CL of channel	126	1,614.2	
			139	1,619.5	Left edge of bldg.
			172	1,631.0	From topo. map
<u>Section M</u>					
0	1,633.0	Right edge of bldg.	55	1,616.0	
			65	1,619.5	
			80	1,621.9	
0	1,624.5		85	1,624.7	
1	1,624.5		90	1,627.9	
1	1,618.9		94	1,629.8	Left edge of bldg.;
15	1,617.5				
20	1,615.9		94	1,633.0	
35	1,614.2	CL of channel			
<u>Section N</u> (Exit section for Hwy 155 bridge to Coamo)					
0	1,660.0		100	1,638.3	
0	1,655.1		104	1,633.9	
3	1,652.6		108	1,627.4	
12	1,651.5	Edge of road	112	1,625.4	
20	1,651.6	CL of road	121	1,623.8	
25	1,651.2	Edge of road	123	1,622.3	LEW
28	1,650.9		133	1,620.8	
31	1,652.5	Top of wall	143	1,622.3	REW
31	1,644.4	Base of wall	150	1,623.3	Bottom of bank
51	1,644.2	Parking area on bank	163	1,624.8	
66	1,643.6	Edge of bank; building	182	1,625.3	
			191	1,626.5	
88	1,643.5		207	1,629.2	
93	1,642.7	Top of left bank	216	1,629.7	Edge of bldg.
			237	1,632.2	

Río Orocovis at Orocovis, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section N</u> (Exit section for Hwy 155 bridge to Cayey)--Continued					
268	1,633.5		524	1,639.3	
298	1,634.3	CL of Hwy 155-156 in- tersection	561	1,640.6	
			582	1,640.8	Edge of church
			600	1,640.2	
348	1,635.4		603	1,640.7	
381	1,635.8	Hwy 156	618	1,642.5	
429	1,636.8	Edge of channel	635	1,643.0	
476	1,638.0		654	1,645.4	
			654	1,660.0	
<u>Section O</u> (Hwy 155 bridge geometry)					
0	1,634.3	Low beam	42	1,624.7	Base of pier
0	1,633.8	Ground	47	1,624.4	
5	1,631.7		58	1,624.2	
13	1,625.9		69	1,626.3	
14	1,625.4		81	1,626.2	
17	1,622.7	LEW	92	1,626.8	
26	1,622.6		105	1,626.8	
35	1,622.6	REW	105	1,633.8	Low beam
			105	1,636.8	Top of deck
<u>Section O</u> (Road profile at Hwy 155 bridge)					
0	1,660.0		234	1,636.8	
0	1,642.4		251	1,636.9	Right end of bridge and top of deck
20	1,641.0				
40	1,640.0				
60	1,638.8		274	1,635.9	
80	1,638.0		281	1,635.0	
100	1,637.2		303	1,635.3	
110	1,637.4		348	1,635.4	
111	1,636.8	Left end of bridge and top of deck	381	1,635.8	
			419	1,636.8	
			561	1,640.6	
129	1,636.8	Bridge opening begins here	582	1,640.8	
			600	1,640.2	
143	1,636.8		618	1,642.6	
164	1,636.8		635	1,643.0	
176	1,636.8		654	1,645.3	
210	1,636.8		654	1,658.0	
			661	1,660.0	

Río Orocovis at Orocovis, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section P</u> (Approach section for Hwy 155 bridge)					
0	1,667.0		263	1,629.1	
0	1,660.6		265	1,626.1	LEW
2	1,657.7		284	1,624.7	
12	1,655.6	Hwy 155	287	1,626.2	REW
20	1,656.2	CL of Hwy	289	1,629.3	Bottom of
31	1,656.4	Hwy 155			right bank
37	1,656.7		296	1,632.3	Edge of bldg.
49	1,656.0	CL of channel	297	1,636.5	
52	1,652.6		301	1,637.1	
57	1,650.1		302	1,643.1	Top of wall
63	1,647.7		308	1,645.0	
71	1,646.0		313	1,648.2	
79	1,645.7		329	1,650.7	
93	1,643.1	Edge of house	354	1,651.9	Edge of bldg.
105	1,642.0		363	1,651.4	Hwy 156
129	1,638.4		372	1,651.5	CL of Hwy
146	1,636.6		381	1,651.4	Hwy 156
159	1,635.2		403	1,653.8	
189	1,634.9		424	1,657.3	Edge of house
192	1,634.8	CL of channel	446	1,660.6	
210	1,634.8		459	1,662.6	
230	1,635.2		470	1,664.3	
244	1,634.2		486	1,667.0	Bottom of
259	1,629.4				wall about
					14 ft high
<u>Section Q</u>					
0	1,670.0		61	1,633.2	
0	1,647.2		79	1,635.5	
7	1,645.0		79	1,644.8	
12	1,640.8		86	1,643.4	
20	1,636.9		105	1,642.4	
23	1,633.6		128	1,641.5	
24	1,630.5	LEW	160	1,641.3	
36	1,628.8		210	1,642.4	Building
48	1,630.4	REW	235	1,642.4	Do.
52	1,632.6		250	1,655.0	
			250	1,670.0	

Río Orocovis at Orocovis, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section R</u>					
0	1,652.0		79	1,634.0	
13	1,647.2		95	1,636.1	
20	1,643.4		110	1,642.0	Base of re- taining wall
24	1,641.3				7.5 ft high
30	1,636.7				
39	1,634.9		177	1,643.4	
51	1,632.1		257	1,644.1	
57	1,629.9	CL of channel	302	1,651.0	
65	1,631.1		304	1,652.0	
<u>Section S</u>					
0	1,656.6		120	1,637.6	
14	1,650.5		132	1,641.0	
27	1,645.4		138	1,644.5	Base of re- taining wall
43	1,643.4				5.3 ft high
53	1,637.9				
78	1,636.0		240	1,644.4	
90	1,634.6	CL of channel	295	1,647.6	
102	1,636.0		322	1,652.0	
			322	1,656.6	
<u>Section T</u>					
-12	1,670.0		155	1,639.2	LEW
-1	1,661.2		165	1,638.8	
0	1,658.5		175	1,639.2	REW
10	1,654.1		192	1,641.2	
18	1,651.7		202	1,648.1	
41	1,650.4		225	1,652.1	
55	1,647.6		240	1,655.0	
84	1,647.2		240	1,658.8	
111	1,647.0		265	1,658.8	
133	1,643.7		282	1,666.0	
141	1,640.4		290	1,670.0	
147	1,640.0				

Río Orocovis at Orocovis, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section U</u> (Contracted section for bridge up- stream from baseball park)					
-12	1,680.0		100	1,650.0	
0	1,672.2	Top of deck	111	1,650.9	Base REW
14	1,667.5	and left	112	1,651.0	low beam
33	1,669.9	abutment	126	1,652.2	Top of deck
42	1,667.7	Low beam	159	1,652.2	REW
47	1,669.9	Base of abut-	176	1,653.5	
54	1,665.8	ment	187	1,658.2	
65	1,658.8	Low beam	202	1,660.8	
76	1,654.0	Ground	217	1,665.1	Base of r
83	1,651.8		230	1,668.0	abutment
87	1,650.7	LEW	240	1,672.3	Low beam
120	1,649.2		260	1,680.0	Top of deck

<u>Section V</u> (Exit section of bridge upstream from baseball park)					
-15	1,700.0		326	1,665.6	Top LEW
0	1,686.0	Edge of road	333	1,664.5	Base
6	1,679.2		339	1,665.6	REW
16	1,675.4		347	1,666.7	Right end
25	1,673.9		361	1,668.4	of bridge
73	1,675.1		373	1,670.1	
176	1,673.0		385	1,672.1	
184	1,675.1		398	1,671.5	
243	1,675.4	Left end of	407	1,671.5	
294	1,675.0	bridge and	414	1,674.2	
302	1,676.6	top of deck	420	1,681.1	
310	1,674.0	Top of left	426	1,681.5	
316	1,668.3	abutment	437	1,682.0	
321	1,666.3		442	1,686.2	
			442	1,700.0	

Río Orocovis at Orocovis, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section W</u> (Contracted section for bridge up- stream from baseball park)					
94	1,682.3	Top of deck and left abutment	128	1,670.2	Base of pier
94	1,679.6	Low beam	128	1,679.4	Low beam
94	1,677.0	Base of abut- ment	128	1,682.2	Top of deck
105	1,679.6	Low beam	131	1,670.4	REW
105	1,672.3	Ground	135	1,671.1	Edge of house
109	1,671.9		139	1,670.5	Base of house
111	1,670.3	LEW	152	1,670.6	Top of house
120	1,669.2		160	1,671.6	Base of right abutment
			160	1,679.4	Low beam
			160	1,682.2	Top of deck

<u>Section W</u> (Road profile for bridge upstream from baseball park)					
-12	1,700.0		105	1,682.3	Top of deck
0	1,690.3	Edge of road	128	1,682.2	Do.
21	1,690.5		160	1,682.2	Do.
27	1,689.5		166	1,682.0	Right end of bridge
33	1,688.2				
44	1,686.5		186	1,681.3	
61	1,684.6		206	1,678.2	
79	1,682.8		226	1,677.8	
89	1,682.3	Left end of bridge and top of deck	246	1,678.1	
			266	1,679.3	
			286	1,681.4	
94	1,682.3	Top of left abutment	306	1,684.8	
			326	1,688.4	
			346	1,691.9	

Río Orocovis at Orocovis, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section X</u> (Approach section for bridge upstream from ballpark)					
-10	1,710.0		83	1,671.4	
0	1,689.5		95	1,673.6	
13	1,684.4		100	1,674.2	
24	1,683.5		113	1,675.6	
26	1,682.8		125	1,676.9	Edge of house
34	1,677.3		125	1,683.5	Base of house
42	1,672.8		125	1,692.8	Top of house
51	1,672.1		150	1,676.9	
60	1,670.7	LEW	150	1,684.0	
67	1,669.6		160	1,684.0	
75	1,670.7	REW	190	1,710.0	

<u>Section Y</u>					
-15	1,715.0		59	1,675.2	
0	1,697.7		62	1,676.5	
5	1,694.4		75	1,678.9	
8	1,690.8		87	1,679.8	
14	1,689.0		98	1,685.6	
19	1,686.3		115	1,686.8	
28	1,682.5		125	1,689.8	
34	1,681.4		135	1,693.3	
37	1,683.1		141	1,695.7	
40	1,680.8		144	1,696.7	
48	1,677.3		155	1,699.7	
56	1,676.5	LEW	161	1,701.1	
			200	1,715.0	
					REW

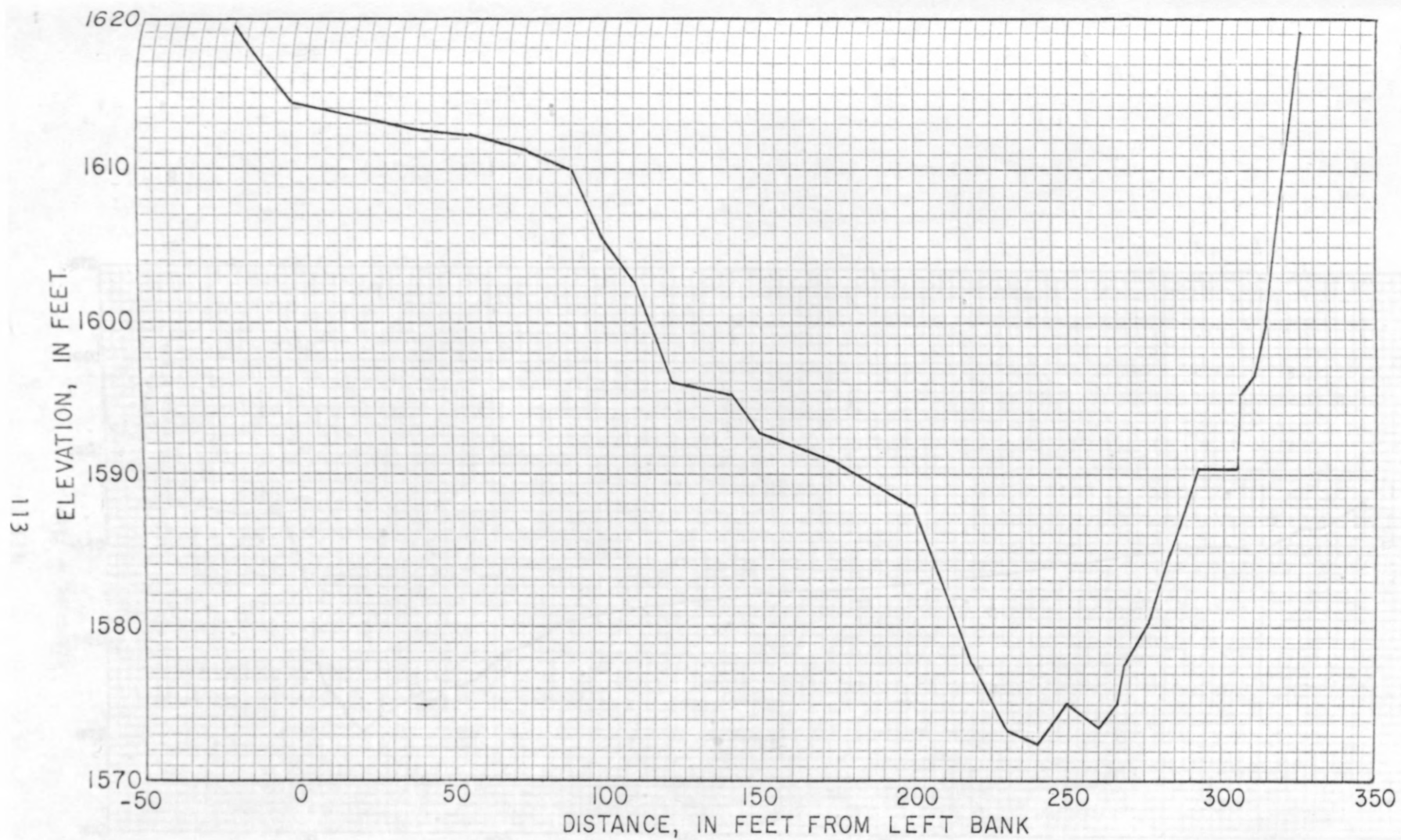


Figure 21.--Cross section A of Río Orocovis at Orocovis.

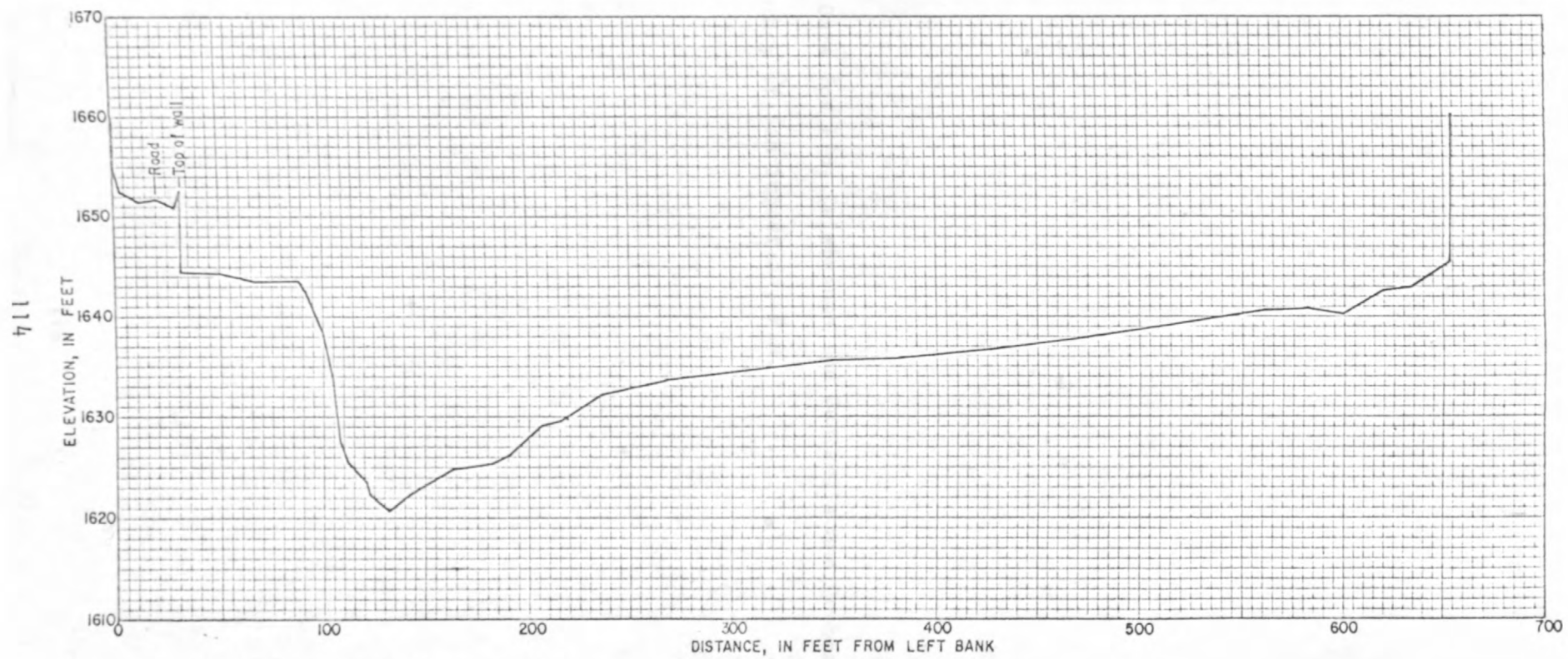


Figure 22.--Cross section N of Rio Orocovis at Orocovis.

Cross-Section Data for Ríos Culebrinas and Guatemala and Quebrada Salada
and Tributary at San Sebastián, P.R.

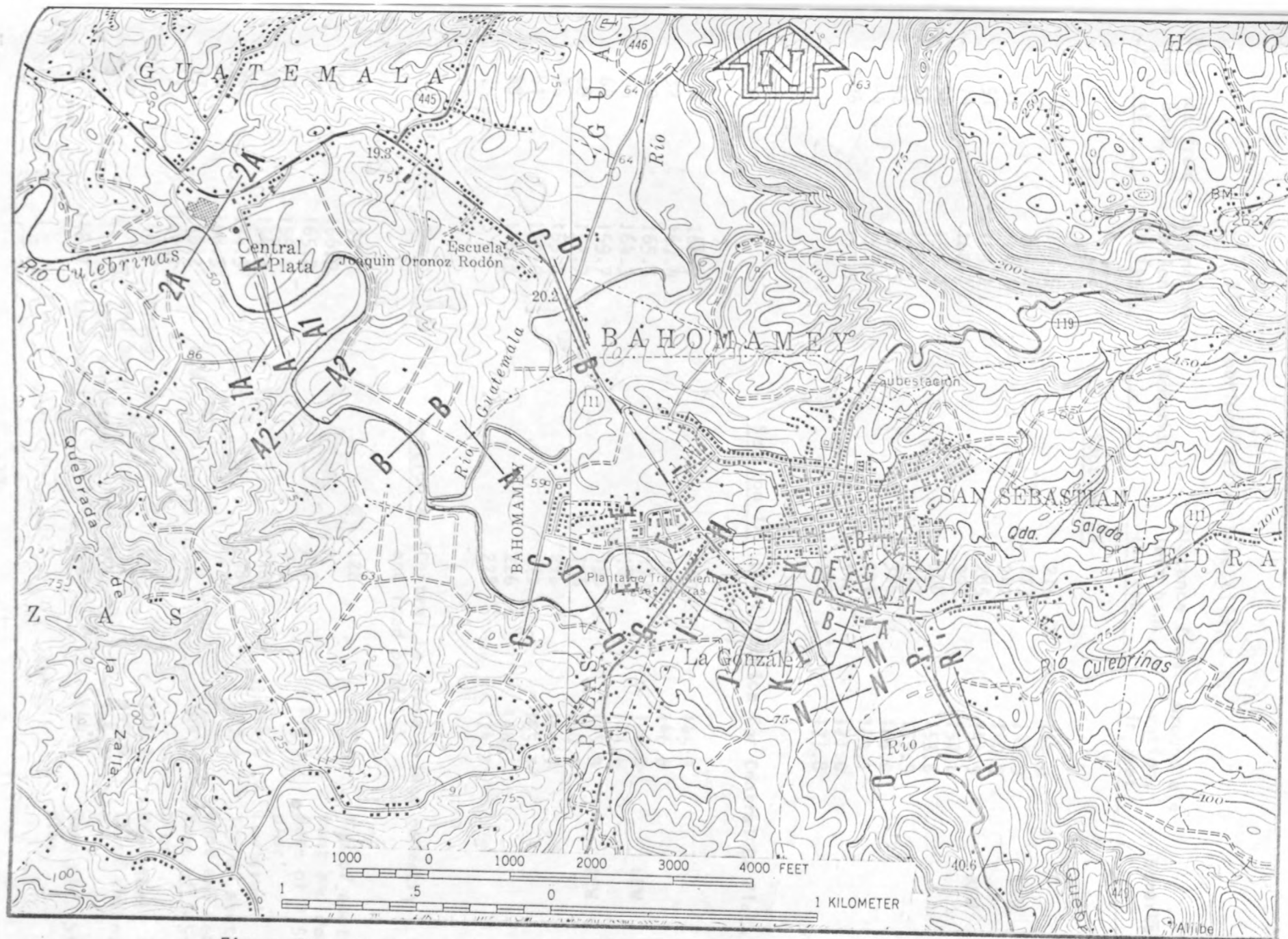


Figure 23.--Location of cross sections on Ríos Culebrinas and Guatemala and Quebrada Salada and tributary at San Sebastián, PR.

Río Culebrinas at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section 2A</u> (Central La Plata bridge geometry and road profile) - Continued					
0	173.5		216	149.0	
16	168.6	Low steel	223	144.9	LEW
31	165.1	Top of deck and	242	140.9	
51	163.2	pier	285	144.9	REW
74	160.7	Base of 2.5-ft	295	150.1	
99	158.0	pier	308	153.6	
126	155.9	Low steel	317	159.9	Top of wall
162	154.9	Deck	326	165.0	
194	155.0	Right bridge	331	169.1	
206	153.7	opening; base	342	171.0	
		of abutment	385	171.8	
190	147.6	Low steel			
<u>Section 1A</u> (Exit section for Central La Plata bridge)					
0	168.7		110	145.8	
32	167.4		145	146.8	
50	165.5		173	146.0	LEW
58	164.3		183	145.4	
64	159.7		195	145.9	REW
68	157.7		198	150.3	
76	153.3		216	160.5	
81	149.0		222	165.7	
88	146.3		226	168.7	
			228	174.7	
<u>Section A</u> (Central La Plata bridge geometry and road profile)					
0	170.4		128	149.6	Top of abut- ment and deck
18	166.9		138	144.5	Base of 1.5-ft pier
51	165.2		138	148.6	Low steel
63	159.9		138	149.4	Top of abut- ment and deck
78	154.3		152	144.9	Base of 1.5-ft pier
90	154.3		152	148.7	Low steel
95	148.5		152	149.6	CL of channel
97	146.2	LEW	156	144.1	
113	143.1		166	144.4	Base of 2.5-ft pier
128	144.7	Bridge opening and base of left abutment			
128	148.7	Low steel			

Río Culebrinas at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section A</u> (Central La Plata bridge geometry and road profile)--Continued					
166	146.6	Low steel	190	149.1	Right end of
166	149.3	Top of deck and			bridge; top
		pier			of deck
177	144.6	Base of 2.5-ft	200	145.3	
		pier	204	146.2	REW
177	146.3	Low steel	204	150.7	Top of wall
177	149.1	Deck	235	153.7	
190	144.2	Right bridge	264	155.8	
		opening; base	286	159.0	
		of abutment	307	162.6	
190	147.6	Low steel	323	167.3	
			338	169.4	
			357	172.7	

Note: Repairs were being made to bridge at the time of the survey which may require additional surveys for future studies.

<u>Section A1</u> (Approach section for Central La Plata bridge)					
0	159.1		86	154.9	
8	159.7		98	157.6	
16	156.3		118	158.0	
24	153.0		133	161.1	
30	146.7	LEW	165	162.1	
52	144.9		234	162.3	
77	146.8	REW	274	165.2	
80	151.2		368	167.5	

<u>Section A2</u>					
0	184.7		77	154.0	REW
0	179.0		89	159.3	
8	173.8		93	163.5	
14	169.0		135	164.5	
20	164.4		167	168.5	
25	162.3		200	172.2	
30	157.3		225	176.3	
35	154.1	LEW	244	180.0	
59	152.4		266	183.7	
			285	184.7	

Río Culebrinas at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section B</u>					
0	189.0		844	171.4	CL of street
17	187.2		853	169.4	Street
40	183.1		856	165.7	
83	178.4		860	162.5	Street
155	175.7		863	160.1	
243	172.5		865	155.9	LEW
344	170.5		887	154.4	
384	169.7		907	155.9	REW
503	168.1	Street	912	159.2	
570	170.6		919	163.1	
590	171.1	Dirt road	934	167.2	
602	169.4		1,034	168.7	
693	169.9		1,154	169.6	
774	170.8		1,188	176.1	
834	173.9	Edge of Hwy 109	1,196	178.4	
			1,218	189.0	
	194.8	CL of Hwy			
	194.8	Edge of Hwy 109			
<u>Section C</u>					
0	184.8		236	178.4	LEW
11	181.3		258	180.3	
28	173.5		347	180.4	REW
40	166.5		440	179.8	
49	163.8	LEW	479	180.0	
72	161.1		584	180.2	
92	163.8	REW	695	180.8	
109	166.6		793	180.5	
122	169.7		876	180.8	
152	172.2		945	182.1	Edge of road
195	175.9		1,051	186.0	CL of road
					Edge of road
<u>Section D</u>					
0	195.2		191	181.8	109 bridge
34	191.4		200	182.3	
48	189.6	Bottom edge of house	235	180.0	
48	187.2		237	177.0	
64	186.4		244	170.7	LEW
81	183.0		248	167.0	LEW
121	177.6		262	166.0	REW
143	176.3		277	167.0	
168	178.4		282	169.5	

RIO Culebrinas at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
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Section D--Continued

290	174.0		620	181.5	CL of stree
298	180.1		631	181.6	Street
343	179.9		641	182.7	
396	180.2		703	183.9	Street
439	180.1		712	184.9	
490	181.4		722	184.5	Street
528	181.0		814	187.3	
593	181.6		871	189.0	Base of c
611	181.4	Street	931	190.3	crete fence
			1,003	192.3	3 ft high

Section E

0	194.7	Edge of	779	184.3	LEW
		Hwy 109	808	182.8	
8	194.8	CL of Hwy	824	181.1	Low steel
18	194.8	Edge of	842	179.0	Top of deck
		Hwy 109	856	178.0	REW
45	197.2		863	172.5	
63	199.1		868	169.8	LEW
97	199.9	Left end of	884	168.7	abutment
157	198.3	bridge	899	169.7	REW
235	196.8	On stream	903	173.8	Top of right
310	193.0	bank	909	176.9	abutment
377	188.5		914	181.4	Top of deck
454	185.8		920	184.2	
536	185.7	Base of left	926	190.4	
564	186.1	abutment	934	197.8	
614	185.9	Low steel	942	198.2	Edge of road
659	186.1	Top of abut	956	198.6	CL of road
718	185.9	ment	967	198.9	Edge of road
744	184.9	On the deck	971	199.2	

Section F (Exit section for Hwy 109 bridge)

0	190.5	Bottom edge	166	178.9	
		of house	175	174.4	
22	188.2		180	170.6	LEW
78	187.0		191	169.7	
112	186.5		202	170.6	REW
124	184.8		211	171.0	
155	183.3		220	173.8	

Río Culebrinas at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section F</u> (Exit section for Hwy 109 bridge)-- Continued					
231	172.9		387	189.2	LEW
251	176.5		445	192.5	
260	181.8		470	195.2	REW
272	180.9		490	197.1	
281	182.9	Edge of house	521	197.9	
282	185.5	Do.	556	197.8	
289	185.9		584	199.2	Base of con- crete fence
327	187.2				3 ft high
166	182.7	Top of bank	303	187.8	
189	179.3		321	188.0	Edge of house
208	177.4				
<u>Section G</u> (Hwy 109 bridge geometry and road profile)					
0	197.6	Hwy	698	170.7	LEW
73	196.6	Do.	714	169.8	
162	195.8	Do.	714	191.3	Low steel
276	194.7	Do.	714	194.9	Top of deck
419	194.6	Do.	726	170.3	REW
505	194.8		736	176.9	
634	194.7		743	180.3	Base of right abutment
651	194.7	Left end of bridge	743	191.3	Low steel
657	191.0	On stream bank	743	194.1	Top of right abutment
667	182.6		743	194.9	Top of deck
675	180.0		754	183.7	
686	176.5	Base of left abutment	768	187.1	
686	191.3	Low steel	775	190.6	
686	194.2	Top of abut- ment	775	194.9	Right end of bridge
686	194.8	On the deck	824	195.1	
690	175.1		909	196.8	
			980	198.9	
21	187.7				
39	177.7				
37	175.3				
54	175.2				
73	175.9				
17	181.8				
26	182.6				
91	184.0				

Río Culebrinas at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section H</u> (Approach section for Hwy 109 bridge)					
0	200.6		218	172.8	
23	199.4		224	170.8	LEW
43	196.7		233	169.5	
58	193.4		242	170.8	REW
87	190.4		244	172.2	
114	188.3	Edge of house	247	175.4	
135	188.0	Do.	255	179.9	
145	186.7		269	183.0	
157	184.4		284	186.5	
166	182.7	Top of bank	303	187.8	
189	179.3		321	188.0	Edge of house
208	177.4		357	188.9	Do.
<u>Section I</u>					
0	189.7		67	173.0	
7	189.5	Edge of house	86	172.7	
29	188.6	Do.	107	173.1	
44	185.7		108	174.9	
54	181.7		112	178.2	
61	179.1		119	183.5	Top of bank
65	174.9		130	185.6	
			139	188.8	
<u>Section J</u>					
0	212.0		132	184.8	
0	192.1		168	186.8	
4	189.1		186	187.9	
8	185.2		217	189.3	
13	186.4		249	192.4	
21	181.1		284	194.2	
29	177.7		304	196.7	
37	175.3	LEW	315	200.0	Edge of con- crete fence, 6 ft high
54	175.0				
73	175.4	REW			
77	178.9		327	202.6	
86	180.6		335	204.1	
91	184.0		366	208.9	

RIO Culebrinas at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remark
<u>Section K</u>					
0	216.9	Base of house	620	177.8	
22	212.8		622	178.8	
39	209.5	Top of left	626	179.0	Edge of bank
65	204.8	bank	630	178.9	
119	201.6		638	177.1	Edge of bank
189	199.8		648	178.8	
248	197.8		656	181.2	Edge of bank
293	194.2		681	186.2	Top of bank
324	191.0	LEW	701	189.6	
361	189.5		725	193.5	
410	190.6	REW	737	195.7	
466	191.7		745	199.5	
498	190.7		751	203.9	
514	188.9		758	205.5	
538	188.4	Top of right	766	204.7	
565	187.4	bank	784	205.4	
576	184.6		798	205.6	
591	182.8		808	205.7	
598	178.8	LEW	831	207.1	
			848	210.3	
<u>Section L</u>					
0	196.3	Bank from here up about 40 ft high; slope 2:1	227	192.2	Top of right bank
130			265	193.3	
160			300	193.6	
9	191.9		349	194.0	
17	187.3		394	194.8	
21	184.0		438	194.3	
25	181.8	LEW	488	194.5	
32	181.0		525	195.6	
38	181.9	REW	573	196.1	
58	182.9		632	196.1	
79	181.9		666	195.5	
93	180.9		747	193.7	
102	183.3	LEW	812	192.8	
107	191.5	Top of channel	872	193.8	
128	191.8	REW	908	193.4	
152	192.2		923	198.8	
176	192.2		936	200.7	
202	192.5		952	200.6	
			969	200.7	

Rio Culebrinas at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section M</u> (Cross section on detoured channel)					
0	214.5	Base of house	142	202.0	
18	214.4		173	202.4	
29	213.8	Top of left bank	192	202.4	Edge of house
34	209.5		202	202.4	
41	202.8	Top of left bank	222	202.5	Edge of house
49	195.4		248	201.3	
52	189.0		291	202.0	Edge of house
57	186.0	LEW	331	201.6	Do.
71	185.2		399	200.6	
89	185.8	REW	453	201.0	
92	189.2		462	200.6	
96	192.0		485	199.6	
119	196.7		563	198.1	
125	200.9	Top of right bank	690	196.8	
			777	195.9	Edge of road
			883	196.9	
			1,005	201.4	

433	199.4		<u>Section N</u> (Cross section on detoured channel)		
463	196.5				
478	194.3				
482	201.0				
490	201.2				
0	217.6		403	192.7	
46	215.6		411	196.5	
110	213.8	Edge of house	422	196.4	Top of right bank
136	213.8	Do.			
160	213.2		471	201.4	
175	211.3		479	197.2	
220	208.4		495	192.9	
273	206.1		574	193.1	
318	203.8		626	194.6	
334	203.4		655	197.1	
347	205.5	Top of left bank	739	195.3	
			843	193.2	
356	199.8		927	194.2	
362	193.3		957	192.2	
372	189.4	LEW	986	192.8	
382	188.2	CL of channel	1,018	199.2	
390	189.5	REW	1,087	196.2	
			1,175	193.3	
439	202.2	Top of left bank			
443	196.8				
455	193.3				
459	192.9	LEW			
463	192.9				

Rio Culebrinas at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section O</u> (Cross section on detoured channel)					
0	204.8		804	200.8	
49	200.4		904	198.0	
111	199.5		961	196.6	
204	199.3		1,069	198.0	
273	199.8		1,215	196.5	
330	201.6	Top of left bank	1,225	193.3	
333	198.2		1,255	189.8	
340	195.8		1,288	191.6	
344	192.2	LEW	1,369	192.4	
363	187.9		1,496	188.7	
381	192.2	REW	1,514	194.0	
382	192.5		1,531	191.3	
387	197.5		1,562	193.5	
399	199.5	Top of right bank	1,586	195.6	
433	199.4		1,599	200.2	Edge of road
463	196.5		1,605	200.7	
478	194.3		1,636	201.0	
482	201.0		1,663	200.6	
490	201.2		1,679	196.4	
541	201.0		1,701	190.4	
636	201.0		1,728	191.8	
706	202.7		1,757	194.4	
761	202.3		1,777	200.9	
			1,791	205.2	
			1,801	212.2	Base of building
<u>Section P</u> (Exit section for Hwy 119 bridge)					
0	222.4		469	193.4	REW
23	217.7		479	194.3	Island
61	214.6		486	193.3	LEW
117	212.5		499	190.7	
200	209.9		512	193.2	REW
263	208.6		517	196.3	
327	208.0		528	200.1	
371	207.3		533	203.3	
393	204.0		567	204.6	
421	202.8		594	209.2	
439	202.2	Top of left bank	630	208.7	
443	196.9		691	209.3	
455	193.9		721	212.4	
459	193.4	LEW	736	213.6	
463	192.9		774	216.4	
			803	217.7	

Rio Culebrinas at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
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Section Q (Hwy 119 bridge geometry and road profile)

0	217.9		444	208.7	On road
37	215.7		461	193.5	REW
86	213.2		468	197.3	Base of
133	211.5				abutment
195	208.9		468	204.9	Low steel
268	206.3		468	208.8	Road
316	205.9		473	208.9	Right end
358	206.2				of bridge
395	207.8		521	210.1	Road
414	208.5		635	210.7	Do.
417	195.3		759	212.2	
421	194.6	Base of	824	212.8	
		abutment	925	210.8	
421	205.2	Low steel	1,017	211.2	
421	208.7	On road	1,117	212.5	
425	193.5	LEW	1,196	216.0	
444	189.4		1,218	217.0	
			1,232	220.3	

Section R (Approach section for Hwy 119 bridge)

0	217.5		496	197.8	
125	214.4		504	193.7	LEW
166	213.0		512	193.5	
219	210.5		522	193.7	
281	208.0		532	193.7	REW
350	206.0		542	195.8	Bank from here
425	204.5				for about 30 ft
482	203.2				is vertical
489	202.0				

Rio Guatemala at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
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Section A

0	191.4		154	162.3	
0	186.8		160	166.8	
8	184.4		167	169.9	
11	180.2		175	172.4	
16	176.4		234	172.9	
28	173.3		384	172.6	
55	172.0		519	173.7	
77	173.7		667	172.5	
91	169.9		750	175.3	
98	162.7		815	182.6	
103	160.0	LEW	850	188.6	
126	159.5		864	191.0	
147	159.9	REW	896	191.4	

Section B (Exit section for Hwy 111 bridge)

0	191.7		1,651	170.4	
366	188.1		1,657	173.3	
383	187.0		1,665	178.3	
412	185.9		1,672	183.3	
433	185.7		1,681	187.2	
460	180.1		1,689	188.7	
505	178.7		1,701	192.0	
568	177.1		1,755	190.6	
751	185.9		1,797	187.6	
969	183.2		1,884	185.9	
1,091	191.1		1,961	182.6	
1,160	181.2		2,014	181.8	
1,187	187.3		2,025	178.9	
1,290	189.0		2,030	177.9	
1,471	190.1		2,031	177.8	
1,550	190.0		2,034	177.9	
1,570	189.7		2,041	179.5	
1,591	188.9		2,049	183.5	
1,603	177.5		2,063	189.6	
1,606	171.9	LEW	2,075	193.4	
1,618	170.8		2,081	197.5	
1,627	172.0	REW	2,091	196.9	
1,638	172.8		2,125	196.9	

Rio Guatemala at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section C</u> (Hwy 111 bridge geometry and road profile)					
0	196.3		344	170.9	
26	193.3		358	166.4	Base of right abutment
37	191.4				
82	191.4	Top of left bank	358	175.3	Top of right abutment
148	190.5				REW
218	190.5		358	172.0	
304	191.2		365	176.7	Base of right abutment
309	191.3				Low steel
310	187.9		365	187.6	Deck
314	181.5		365	191.1	
320	175.2	Base of left abutment	395	190.9	
			536	190.5	
320	187.5	Low steel	680	191.5	
320	190.9	Deck	795	191.7	On creek at bridge
325	172.0	LEW			
			825	191.7	
<u>Section D</u> (Approach section for Hwy 111 bridge)					
0	194.2		604	191.4	
27	193.5		672	191.6	
39	191.5		692	191.5	
111	191.3		701	187.9	Left end bridge on Hwy 111
195	190.8	Edge of house			
218	191.1	Do.	707	185.0	
279	190.9	Do.	712	182.9	Base of abut- ment
305	191.1				Low steel
307	191.0		712	188.3	On the deck
309	192.4	Top of wall	712	191.8	
310	187.1	Base of wall	718	182.4	
317	181.5		722	178.8	LEW
323	177.0		724	177.7	
327	172.0	LEW	729	178.8	REW
337	171.2		734	182.3	Base of abut- ment
349	171.3				Top of abutment and low steel
356	170.0		734	188.3	Deck
368	171.9	REW			
383	175.6		734	191.9	
387	176.5	Base of wall	741	185.4	
387	185.2	Top of wall	751	191.7	
392	188.8		891	192.2	
407	191.3		1,033	193.0	
442	191.0		1,071	193.8	
460	189.1	Edge of Hwy 446	1,093	196.7	
490	188.9	CL of Hwy	1,144	199.0	
518	188.7	Edge of Hwy 446	1,186	199.8	
559	186.7		1,217	200.2	
572	189.9		1,272	202.4	
			1,323	204.3	

quebrada Salada at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section A</u>					
0	202.0		61	186.5	
27	201.7		73	185.0	
34	201.4	Top of left bank	78	182.6	LEW
			82	181.3	
37	199.1		88	182.6	REW
43	195.4		100	186.5	
50	193.4		106	191.4	
55	191.7		151	192.3	
<u>Section B</u>					
0	198.8	Base of house	157	186.4	
48	198.3		161	183.0	LEW
79	196.7		168	181.9	
135	196.6		177	183.0	REW
141	197.6	Top of left bank	177	185.4	
			188	188.1	
145	196.1		193	191.0	
149	188.6		198	194.6	
			208	195.0	
<u>Section C</u> (Exit section for Hwy 111 bridge)					
0	208.0		415	183.3	
48	205.8		432	185.0	REW
112	203.0		437	194.4	
185	200.4		462	194.2	
231	199.8		486	193.8	
290	200.9		499	196.2	
378	199.8		515	200.2	
385	198.2		533	202.0	
391	193.1		558	202.1	
396	191.1		569	203.4	
400	185.1	LEW	580	204.8	

Quebrada Salada at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section D</u> (Hwy 111 bridge geometry and road profile)					
0	204.8		234	197.0	Low steel
43	203.4		234	199.0	Top of wing-wall
97	201.9				
134	201.1		245	184.3	Base of right abutment
170	200.2				
193	199.9		245	185.4	REW
226	184.3	Base of left abutment	245	197.0	Low steel
			245	199.0	Wingwall
226	197.0	Low steel	245	200.1	Top of deck
226	199.0	Top of wing-wall	258	200.0	
			339	200.4	
226	200.4	Top of deck	349	200.9	
226	185.4	LEW	546	200.7	
234	184.2		750	199.7	
			956	200.8	
<u>Section E</u> (Exit section of Hostos street bridge and approach to Hwy 111 bridge)					
0	200.2	Base of building	164	186.3	LEW
			169	184.4	
19	198.9		172	185.3	REW
36	199.7		176	187.0	
38	201.2		183	187.6	
38	200.5		190	192.1	
46	201.2		190	195.5	
92	200.8		206	198.4	
114	201.2	Edge of Hwy 111	213	200.1	
123	201.2	CL of Hwy	228	198.4	Edge of road
140	200.8	Hwy 111	239	198.5	CL of road
145	200.2		251	198.2	Road
153	199.4	Top of wall	276	199.0	
153	189.4	Base of wall	305	199.4	
159	187.8		325	199.5	
163	186.6		327	199.3	Base of house

Quebrada Salada at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section F</u> (Hostos street bridge geometry and road profile)					
0	201.4	Base of bldg. 40 ft high	163	185.4	LEW
37	200.5		174	182.7	
72	200.0		174	199.4	Top of deck
90	201.7		174	181.6	Base of abut- ment
98	202.0		174	199.0	Top of abut- ment
99	202.0	Edge of Hwy 111			
114	202.0	CL of Hwy	174	199.2	Top of deck
130	201.7	Edge of Hwy 111	198	185.4	REW
143	201.0	Left end of bridge	201	188.0	
153	199.8	Top of abut- ment	202	197.1	Low steel
153	200.3	Top of deck	202	198.8	Top of deck
153	197.9	Low steel	202	198.8	Right end of bridge
153	191.7	Base of abut- ment	219	198.4	Road
158	188.7		286	198.3	Do.
			353	199.6	Do.
			414	201.7	Do.
			518	206.8	Do.

Section G (Approach section for Hostos street bridge)

0	205.0	Base of bldg. 40 ft high	181	193.2	
11	204.9		187	188.4	
11	202.4		190	185.4	LEW
54	201.4		196	184.7	
93	201.9		204	185.4	REW
134	203.1	Edge of Hwy 111	209	188.2	
149	203.1	CL of Hwy	215	189.6	
162	202.7	Edge of Hwy 111	222	192.3	
167	202.5		236	194.0	
173	201.6		244	194.3	Base of 2- story bldg.
178	199.9	Top of left bank	449	205.6	

Quebrada Salada at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section H</u>					
0	211.9	Bottom of	86	187.6	LEW
24	210.3	150-ft long	90	186.4	
33	208.4	4:1 slope	94	187.6	REW
44	207.4		103	189.1	
57	206.8		110	194.1	
57	209.6	Top of con- crete fence	129	196.9	
			207	196.2	
57	206.5	Base of con- crete fence	281	196.3	
			361	198.5	
65	202.4		390	198.3	
71	199.4		398	201.4	
76	194.7		438	204.0	
82	190.7		464	207.2	
			494	209.9	

Ditch above confluence with Quebrada Salada at San Sebastián

<u>Section I</u>					
0	208.4	Bottom of ver- tical 15-ft bank	69	197.8	
			74	199.4	Top of right bank
1	206.5		137	197.9	
10	202.7		182	200.3	
20	199.8		212	202.9	
32	191.6		234	204.1	
48	189.2	LEW	252	204.1	
55	188.5		274	205.8	
57	199.2	REW	288	208.2	

<u>Section J</u>					
0	212.3	Base of house	121	197.1	
46	210.6		130	198.9	Edge of house
80	208.7	Top of left bank	170	200.3	Do.
			203	200.6	Edge of road
83	193.2		220	201.0	CL of road
87	192.2	LEW	236	200.7	Edge of road
93	191.5		281	202.1	
100	192.2	REW	343	204.4	
108	194.6		386	207.3	
			426	212.5	

Quebrada Salada at San Sebastián, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section K</u>					
0	213.4	Bottom of 150-ft long 4:1 slope	63	195.2	
			69	199.4	
			84	204.4	Top of right bank
12	211.7				
20	210.1		119	204.9	
23	206.7		194	207.3	
34	202.2		266	209.3	
38	198.8		298	210.6	
41	194.5	LEW	338	212.1	
49	192.4		414	214.8	
56	194.5	REW			

Ditch above confluence with Quebrada Salada at San Sebastián

<u>Section A</u>					
0	208.6		296	190.8	
99	206.3		300	190.9	REW
139	204.5		303	192.9	
171	203.2		309	198.0	
205	201.6		376	199.3	
258	199.3		456	190.4	
274	198.4		492	198.3	This section in- tercepts section I of Quebrada Salada
280	196.4				
281	194.0				
287	192.1				
293	190.9	LEW			

<u>Section B</u>					
0	204.1	Intersection with Section A	181	194.0	
			186	194.2	REW
27	204.8	Edge of house	195	198.3	
68	203.2	Do.	210	203.0	
101	200.4		217	204.3	
125	198.2		218	207.2	
149	197.6		234	210.5	
170	195.7		239	212.4	
176	194.3	LEW	255	216.0	

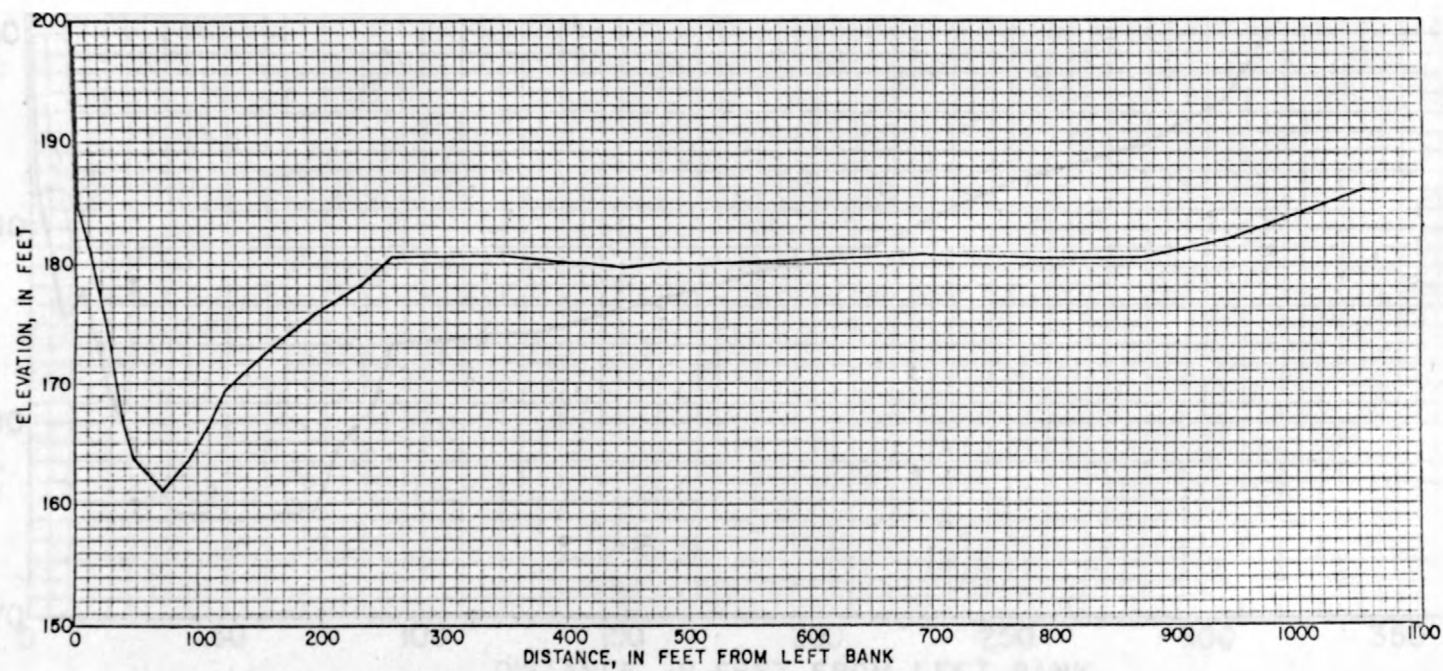


Figure 24.--Cross section C of Río Culebrinas at San Sebastian.

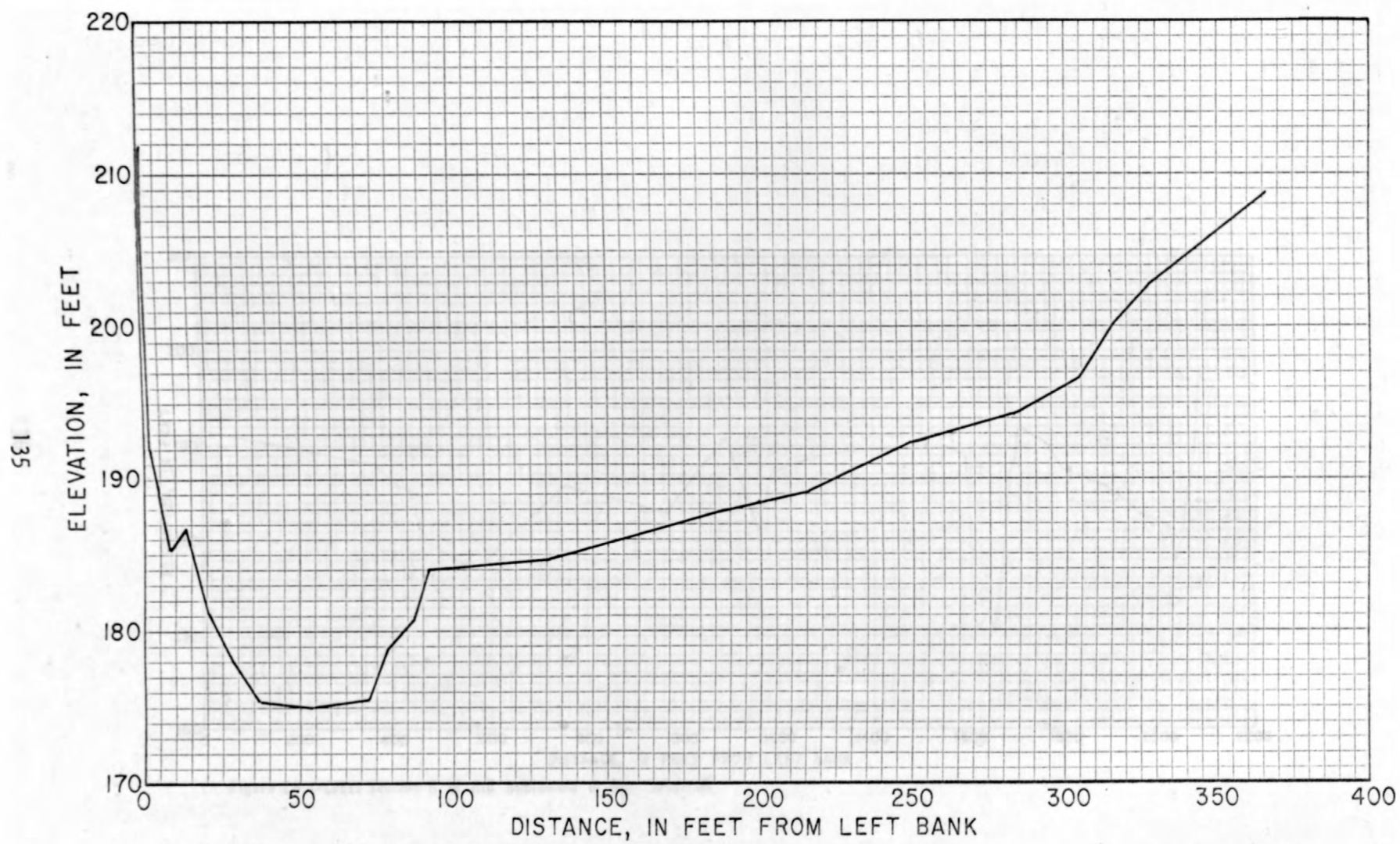


Figure 25.--Cross section J of Río Culebrinas at San Sebastian.

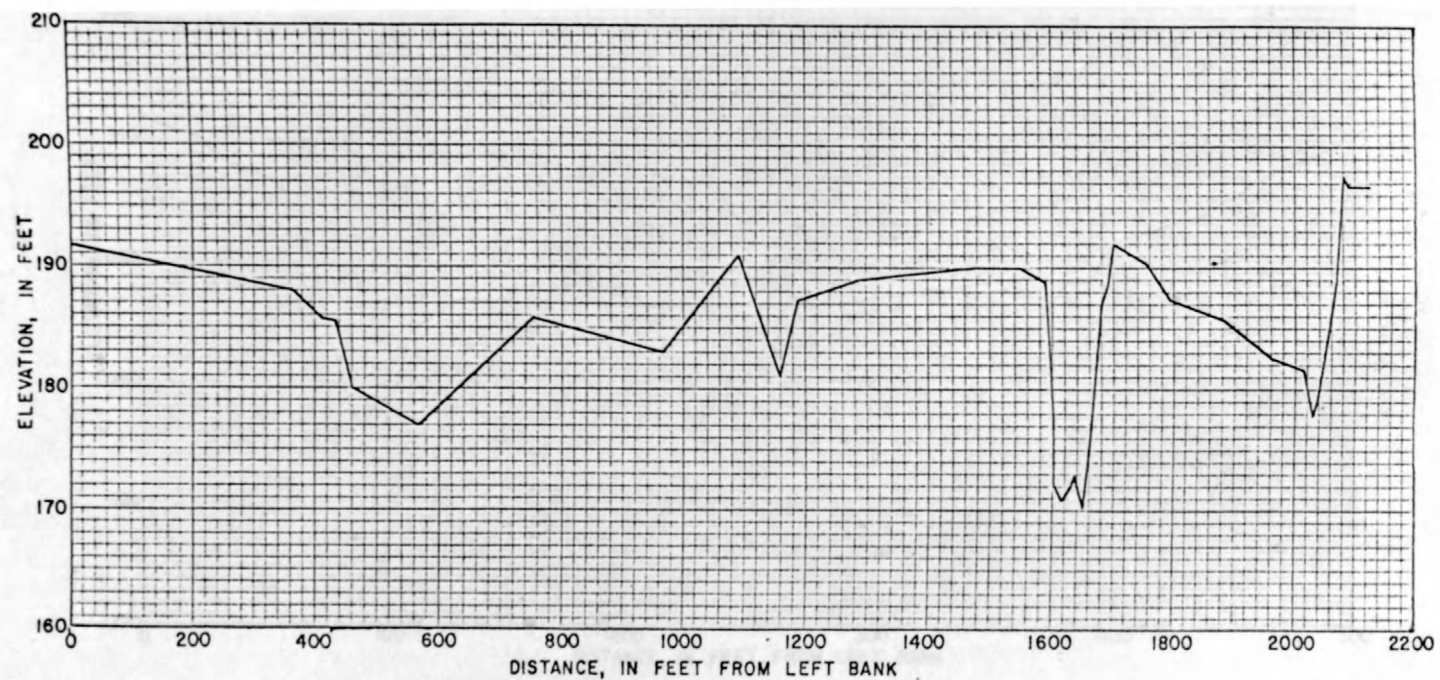


Figure 26.--Cross section B of Río Guatemala at San Sebastián.

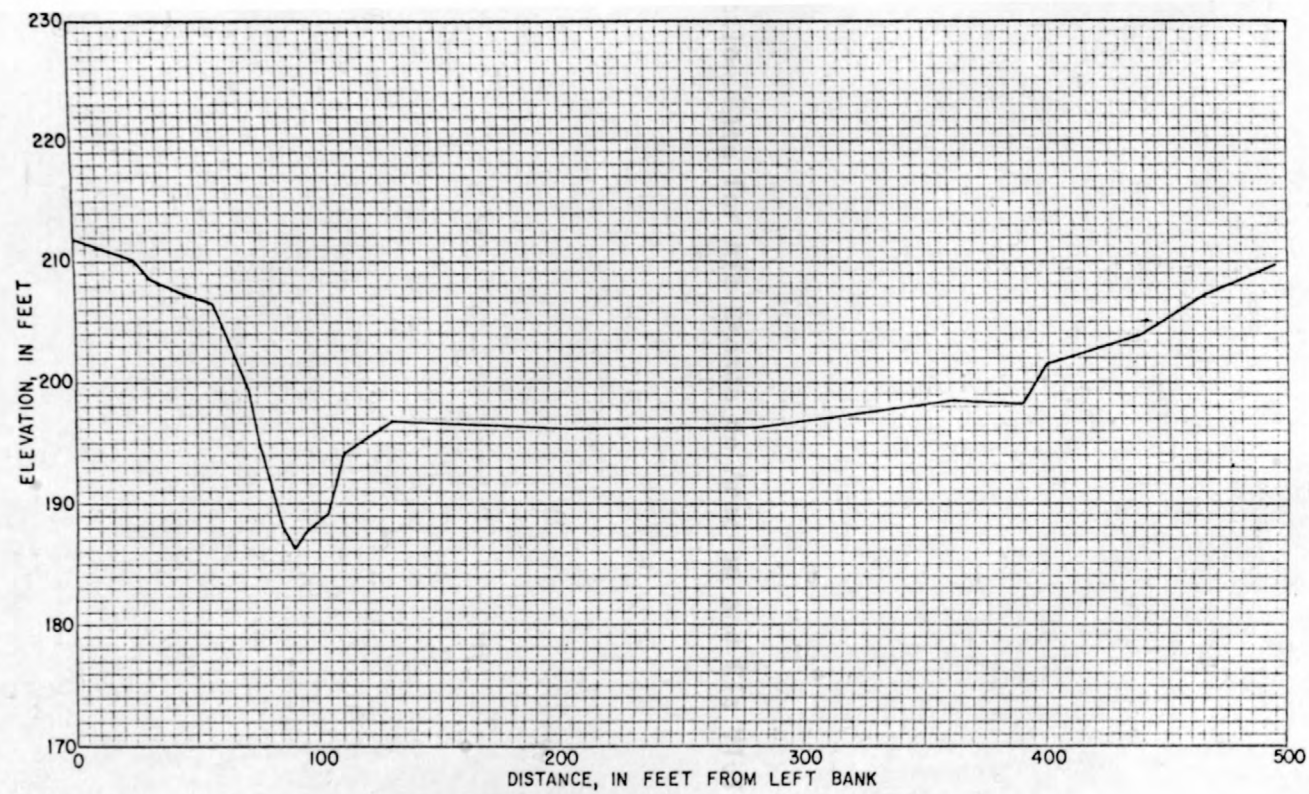
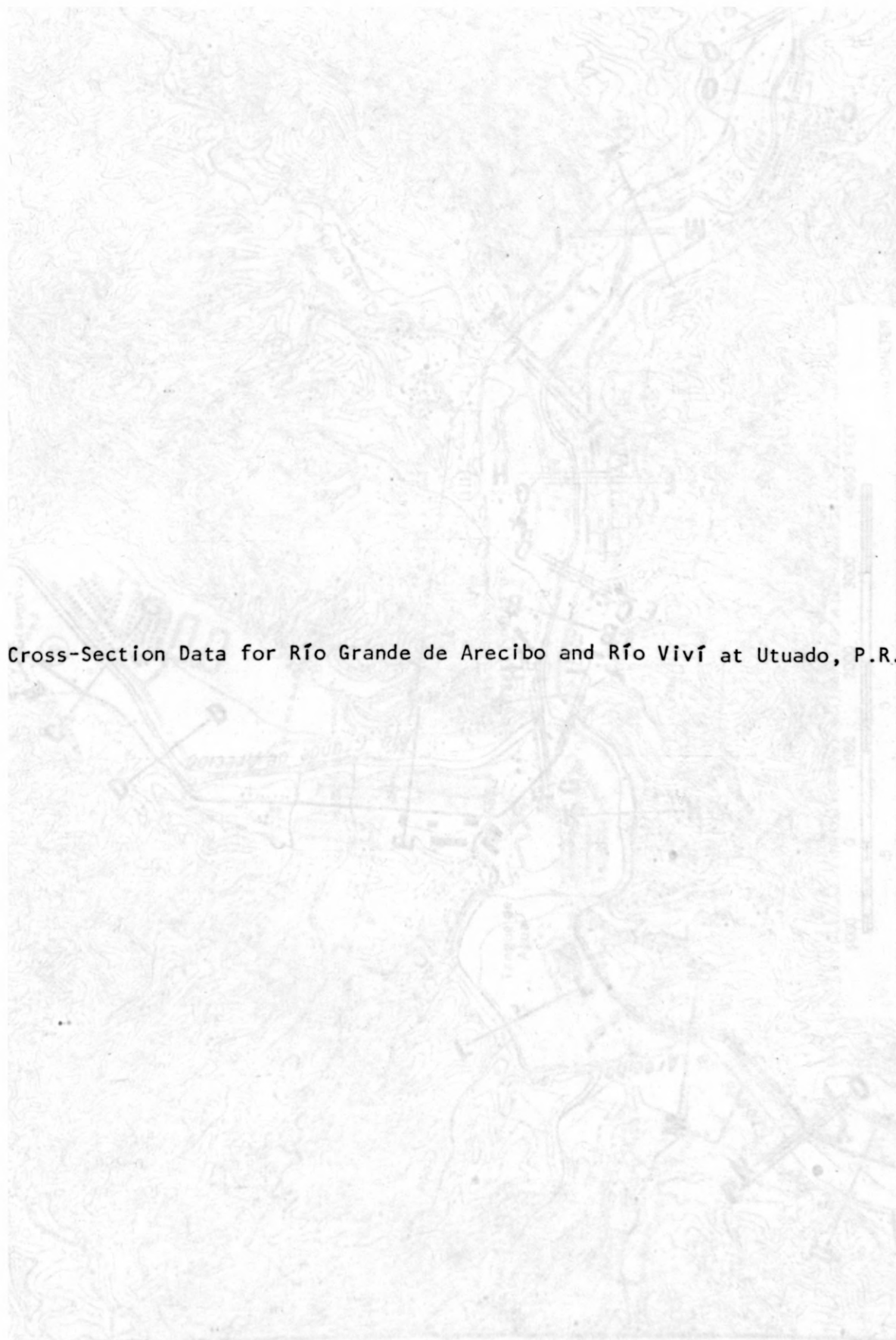


Figure 27.--Cross section H at Quebrada Salada at San Sebastián.



Cross-Section Data for Río Grande de Arecibo and Río Viví at Utuado, P.R.

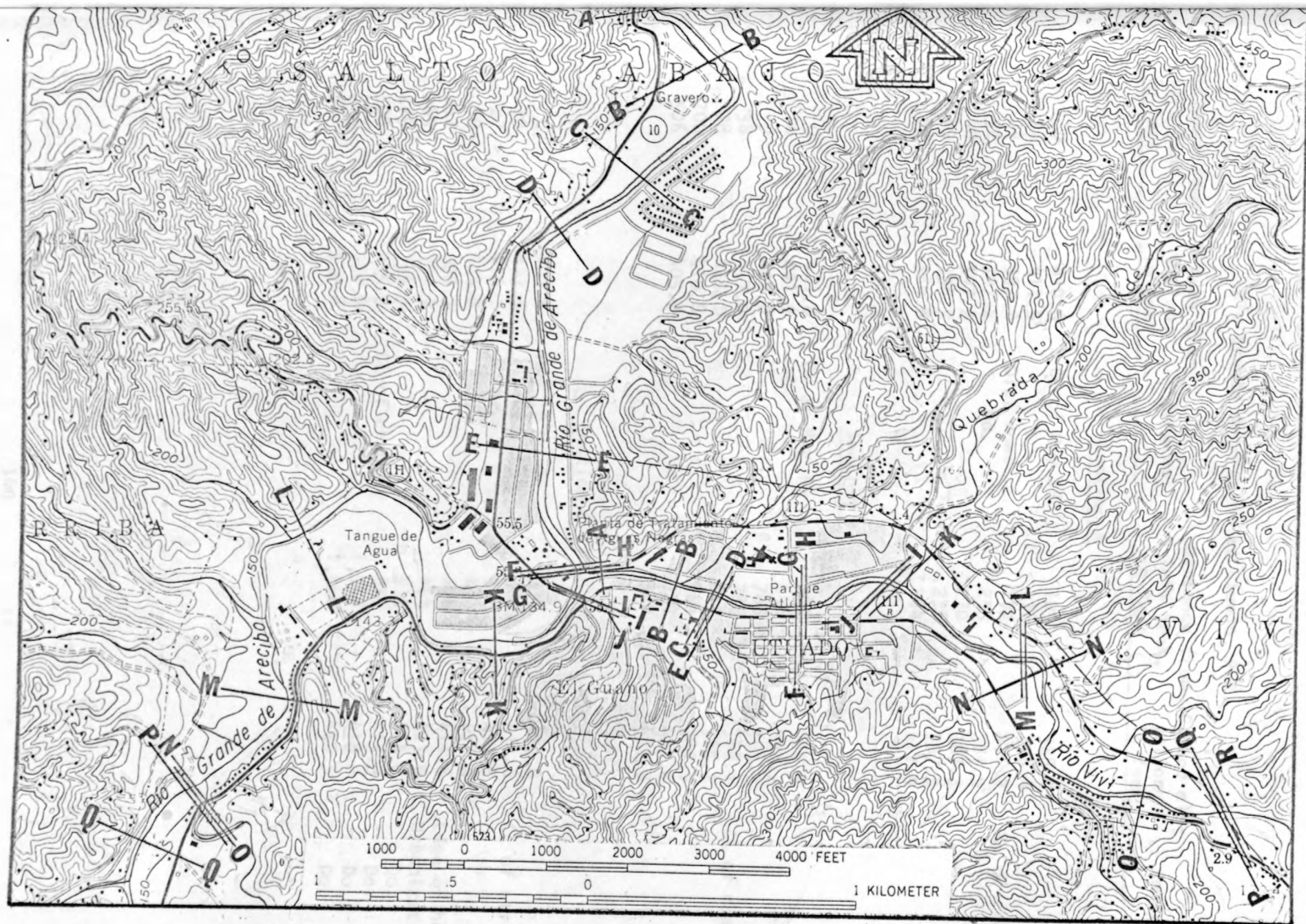


Figure 28.--Location of cross sections on Río Grande de Arecibo and Río Viví at Utuado, PR.

Río Grande de Arecibo at Utuado, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section A</u>					
0	410.6	CL of Hwy 10	104	388.5	
12	411.5	Hwy 10	116	376.4	
24	397.2	Dirt road	172	376.3	CL of channel
32	397.2	Do.	255	381.9	CL of road
40	397.2	Do.	270	387.3	
49	394.5		276	397.3	
57	389.8		284	411.5	
84	394.6	CL of channel	1,202	424.3	
102	406.0		1,180	427.7	
<u>Section B</u>					
0	421.8	CL of Hwy 10	609	400.9	
14	421.7		646	392.7	
19	422.0		766	385.3	
38	417.0		786	384.1	CL of channel
78	415.1	CL of Hwy 10	815	385.3	
200	410.8		864	386.5	
506	405.7		924	407.6	
587	431.5		929	421.8	
605	430.2		1,039	427.1	
636	420.6		1,102	427.4	
748	414.6		1,201	435.1	
<u>Section C</u>					
0	421.6	Hwy 10	338	410.8	
13	421.5	Do.	388	411.8	CL of street
27	416.1		395	411.8	
80	404.8		404	411.8	
252	400.7	Housing area	428	411.8	Edge of house
269	397.7	Do.	464	413.0	Urbanization
279	396.5	Do.	515	414.8	Do.
300	395.5	CL of channel	810	413.9	Do.
323	396.6	Do.	1,158	418.0	Do. channel
327	399.8	Do.	1,460	423.5	Do.
1,179	430.7	Do.	1,908	419.4	
1,500	433.5	Do.	1,902	422.5	
1,835	435.5	Do.	1,911	427.6	
1,635	432.3	Do.	1,920	435.3	
1,671	429.0	Do.	1,926	439.7	
1,748	425.8		1,926	440.9	
1,785	427.0				

Río Grande de Arecibo at Utuado, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section D</u>					
0	428.2		111	404.6	
0	423.4	Hwy 10	205	413.5	
17	423.4	Do.	284	416.1	
30	423.4	Do.	294	416.1	CL of road
35	423.1	Do.	310	416.1	
56	404.5		506	417.3	
62	399.6		786	422.0	
84	398.6	CL of channel	1,002	424.3	
102	400.0		1,160	427.7	
<u>Section E</u>					
0	442.2		754	413.4	
192	437.5		779	412.4	CL of channel
220	437.4	CL of Hwy 10	793	413.3	
235	437.4		804	420.9	
433	432.0		963	421.9	
587	431.5		1,019	427.3	
605	430.2		1,039	427.1	
636	420.6		1,107	427.4	
748	414.6		1,201	435.1	
			1,203	442.2	
<u>Section F</u> (Exit section for Hwy 611 bridge)					
0	460.0	Housing area	1,814	424.4	
182	456.0	Do.	1,819	421.4	
401	447.8	Do.	1,828	419.1	
565	443.4	Do.	1,834	418.3	
976	439.8	Do.	1,843	417.8	CL of channel
1,061	439.4	Do.	1,877	418.5	
1,379	438.7	Do.	1,888	419.2	
1,500	433.5	Do.	1,902	422.5	
1,635	435.5	Do.	1,911	427.6	
1,635	432.3	Do.	1,920	435.3	
1,671	429.0		1,926	439.7	
1,745	425.8				
1,785	427.0		1,926	460.0	

Río Grande de Arecibo at Utuado, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section G</u> (Hwy 611 bridge geometry)					
66	434.3	Low steel and	265	420.0	
92	436.0	ground; bridge	297	420.1	
401	436.0	blocked by dirt	332	421.2	CL of pier
96	431.9	CL of pier	348	420.4	
126	427.9		357	423.6	CL of channel
155	423.5		371	428.1	
175	422.6	CL of pier	399	430.9	
195	423.3		405	434.1	
201	420.7		409	434.2	Base of
207	419.1	CL of channel			abutment
251	419.3	CL of pier	409	437.4	Low steel

Section G (Road profile at Hwy 611 bridge)

0	460.0	Top of deck	1,566	438.8	
92	456.0	Low beam	1,910	441.8	Top of deck
401	447.8	Base of left			on right end
565	443.4	abutment			of bridge
976	439.8		1,957	444.1	
1,061	439.4		2,186	445.0	Top of deck
1,379	438.7		2,186	460.0	
1,500	438.8	Top of deck			
		on left end			
		of bridge			

Río Grande de Arecibo at Utuado, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section H</u> (Approach section for Hwy 611 bridge; and exit section for Hwy 10 bridge)					
0	460.0	Housing area	1,612	425.9	
92	456.0	Do.	1,666	427.0	
401	447.8	Do.	1,728	422.8	
565	443.4	Do.	1,739	421.1	
976	439.8	Do.	1,772	419.1	CL of channel
1,061	439.4	Do.	1,827	421.1	
1,379	438.7	Do.	1,864	427.5	
1,380	438.7	Do.	1,910	431.8	
1,500	442.7	Do.	1,942	441.3	
1,548	433.9	Do.	1,950	450.0	
1,567	431.6		1,950	460.0	

<u>Section I</u> (Hwy 10 bridge geometry)					
65	450.5	Top of deck	129	419.9	CL of channel
65	447.4	Low beam	151	420.5	Do.
65	426.2	Base of left abutment	177	420.1	
			201	425.2	Base of right abutment
114	427.2				
129	421.9		201	447.4	Low beam
			201	450.5	Top of deck

<u>Section I</u> (Road profile at Hwy 10 bridge)					
0	460.3		1,379	438.7	
92	456.0		1,577	435.9	
401	447.8		1,653	450.3	Left end of bridge
565	443.4				
976	439.8		1,890	450.3	Right end of bridge
1,061	439.4				

Río Grande de Arecibo at Utuado, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation in feet	Remarks
<u>Section J</u> (Approach section for Hwy 10 bridge)					
0	460.3	Housing area	1,732	430.1	
92	456.0	Do.	1,752	426.2	CL of channel
401	447.8	Do.	1,799	427.2	
565	443.4	Do.	1,814	421.9	
976	439.8	Do.	1,814	419.9	CL of channel
1,061	439.4	Do.	1,836	420.5	
1,379	438.7	Do.	1,862	420.1	Hwy 10
1,577	435.9	Do.	1,884	425.2	Do.
1,685	439.7	Do.	1,905	428.7	
1,713	437.9	Do.	1,914	429.7	
1,719	433.7	Do.	1,914	442.2	CL of channel
<u>Section K</u>					
0	450.0	Housing area	1,222	441.1	Housing area
0	446.0	Do.	1,282	441.2	Do.
40	444.6	Do.	1,318	439.2	Do.
263	441.8	Do.	1,402	432.0	
437	442.4	Do.	1,427	427.4	CL of channel
511	442.0	Do.	1,458	430.9	
634	438.9	Do.	1,489	430.4	
846	437.6	Do.	1,514	430.9	
1,034	438.3	Do.	1,514	450.0	
<u>Section L</u>					
0	468.6		492	461.3	
12	451.9	Low steel	857	457.0	Base of ceme- tary fence
77	452.0	Base of			
91	451.1	abutment	857	467.0	Top of fence
124	450.3	CL of pier	956	457.9	
139	442.3		1,294	460.0	Base of ceme- tary fence
156	442.0	CL of channel			
179	442.2		1,294	467.8	Top of fence
204	455.9		1,344	468.6	
213	459.6		1,358	468.6	CL of Hwy 10
214	458.7		1,376	468.6	

Río Grande de Arecibo at Utuado, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section M</u> (Road profile at Hwy 603 bridge)					
0	492.0	From topo. map	1,040	458.5	
100	477.9		1,057	458.3	CL of channel
246	473.2		1,085	458.5	
444	473.4		1,094	468.3	
809	465.6		1,129	479.0	
1,016	465.3		1,147	488.7	
1,031	458.9		1,187	492.0	Hwy 10
			1,199	492.0	Do.
<u>Section N</u> (Exit section for Hwy 603 bridge)					
<u>Section P</u> (Approach section for Hwy 603 bridge)					
0	530.0		619	468.3	
0	495.0		641	469.2	
200	485.6		642	474.7	
304	481.1		702	474.6	
364	497.7		762	478.0	
396	477.0		790	478.0	
502	474.0		805	476.5	
502	467.3		813	471.5	
518	465.8		836	469.2	
521	465.8	CL of channel	859	468.4	
550	466.7		1,000	499.0	
553	468.1		1,000	530.0	
<u>Section O</u> (Hwy 603 bridge geometry)					
502	472.5	Low steel	587	468.1	CL of pier
502	467.3	Base of abutment	604	467.8	
519	465.8	CL of pier	620	468.3	CL of pier
550	466.7		641	469.2	Base of abutment
552	470.0	CL of pier	641	472.5	Low steel

Río Grande de Arecibo at Utuado, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section O</u> (Road profile at Hwy 603 bridge)					
0	530.0		641	474.2	Top of deck
0	495.0				at right edge
200	485.6				of bridge
304	481.1		702	474.6	
364	497.7		762	478.0	
396	477.0		790	478.0	
502	474.0	Top of deck at left edge of bridge	906	478.0	
			1,000	499.0	

<u>Section P</u> (Approach section for Hwy 603 bridge)					
0	530.0		587	468.1	
0	495.0		604	467.8	
200	485.6		620	468.3	
304	481.1		702	474.6	
364	497.7		762	478.0	
396	477.0		790	478.0	
502	467.3		906	478.0	
519	465.8	CL of channel	1,000	499.0	
552	466.7		1,000	530.0	

<u>Section Q</u>					
0	495.5		179	481.4	
13	485.6		273	483.7	
39	481.0		296	490.2	
53	474.6		368	494.9	
67	473.8		539	497.4	
82	474.5		545	495.0	
134	473.3	CL of channel	558	495.0	
			573	495.5	

155	481.5	Low spur	197	480.2	CL of channel
155	480.1		207	480.5	
164	479.2		225	482.4	
169	478.6		239	483.4	
178	478.1		250	485.7	
184	477.6		254	486.3	
188	477.3		256	486.6	
			256	481.3	Low spur

Río Viví at Utuado, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section A</u> (Road profile at urbanization bridge)					
0	443.0		78	420.7	
0	437.2	CL of Hwy 111	93	420.4	CL of channel
25	428.8	Corner of bldg.	111	420.6	
68	424.3	Left end of	143	428.4	
78	420.8	bridge	155	432.8	
250	444.2	Right end of	185	443.0	
		bridge			
<u>Section B</u> (Approach section for urbanization bridge)					
0	454.0	Edge of Antonio de Jesus school	320	426.2	
83	448.1	Edge of bldg.	336	429.7	
99	446.6	CL of Hwy 111	386	441.4	
136	445.8		466	444.5	CL of entrance road to Mavi L. Gómez school
232	443.4		555	446.1	
236	442.7		636	450.3	
286	430.5	CL of channel	767	453.8	
288	426.6		836	454.8	
304	425.7	CL of channel			
<u>Section C</u> (Exit section for urbanization bridge)					
0	446.6		76	431.3	
0	440.7		83	430.9	
6	440.1		93	429.6	CL of channel
42	440.3		107	429.5	CL of channel
42	435.7		119	429.7	
55	435.9		129	431.7	
63	431.8		140	435.2	
			140	444.6	
<u>Section D</u> (Contracted section at urbanization bridge)					
155	441.9	Low beam	197	430.2	CL of channel
155	440.1		207	450.5	
164	439.2	Low beam	225	432.4	
169	436.6	Base of left abutment	239	433.4	
178	432.1		250	436.7	CL of pier
184	431.6		254	440.3	
188	430.5		256	438.6	Base of right abutment
			256	441.3	Low beam

Río Viví at Utuado, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section D</u> (Road profile at urbanization bridge)					
0	449.1	CL of Hwy 111	377	444.1	Left edge of bridge
104	444.2	Corner of bldg.	392	443.5	
155	444.2	Left end of bridge	486	444.2	Right edge of bridge
256	444.2	Right end of bridge	486	449.1	
<u>Section E</u> (Approach section for urbanization bridge)					
0	448.0	Edge of bldg.	103	438.6	
25	447.6		115	438.7	
27	430.4		123	441.2	
27	430.8		128	442.0	
32	430.7		132	442.9	
42	430.2	CL of channel	141	443.8	
59	433.4		161	443.4	
81	434.0		180	443.5	
100	439.6		186	443.9	Edge of bldg.
			186	448.0	
<u>Section F</u> (Exit section for caserío bridge)					
473	466.9		538	436.4	CL of channel
473	457.1		560	438.9	
490	447.5		575	441.8	
500	442.7		578	441.8	
502	438.7		604	443.6	
507	438.0		618	445.2	
514	437.4		635	453.2	
518	438.0		654	455.0	
537	436.4		654	464.0	
<u>Section G</u> (Contracted section at caserío bridge)					
502	454.0	Low beam	541	438.5	
502	438.6	Base of left abutment	552	439.9	
			570	442.0	CL of pier
510	438.3		585	442.1	
523	435.2		605	443.4	Base of right abutment
532	438.3	CL of pier	605	454.0	Low beam

Río Viví at Utuado, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section G</u> (Road profile at caserío bridge)					
0	466.7	Low steel	473	457.1	Low steel
68	465.2	Intersection of López and Palmer streets	502	457.9	Left edge of bridge
			605	457.7	Right edge of bridge
120	462.6		618	445.2	
150	462.3	Intersection of López and Betances streets	635	453.2	
			654	455.0	Base of pier
343	458.3	Intersection of López and Barceló streets	747	457.7	Low steel
			840	455.0	and ground
			1,013	459.8	
416	457.8	Intersection of López and Cueto streets	1,121	458.1	
			1,395	461.3	
			1,395	466.7	
<u>Section H</u> (Approach section for caserío bridge)					
0	452.0	Edge of bldg.	65	441.9	
0	440.4		76	445.8	
20	440.2		96	445.7	
25	439.7		153	446.0	Edge of bldg.
40	438.4	CL of channel	195	447.3	
50	439.0		211	448.2	
56	439.7		233	448.9	
			235	452.1	
<u>Section I</u> (Exit section for Hwy 611 bridge)					
215	460.6	CL of channel	658	446.0	
379	458.4		668	445.7	
516	454.3		682	445.5	CL of channel
612	451.3		686	451.9	
636	452.5		694	445.8	
638	447.6		714	448.5	
658	446.5		714	460.6	

Río Viví at Utuado, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section J</u> (Hwy 611 bridge geometry)					
0	450.5	Low steel	50	452.0	Low steel
0	447.7	Base of abutment	51	452.0	Do.
9	447.8		51	445.0	Base of pier
16	446.3	Base of pier	68	446.6	CL of channel
16	450.9	Low steel	85	448.3	Base of pier
27	451.1	Do.	85	454.2	Low steel
27	445.1	Base of pier	86	454.2	Do.
38	446.4		86	451.2	Base of pier
50	445.5	Base of pier	118	454.5	Low steel and ground

Section J (Road profile at Hwy 611 bridge)

0	468.2	636	452.5	Left end of bridge
32	466.4			
127	463.2	754	456.5	Right end of bridge
215	460.6			
379	458.4	873	458.8	
516	454.3	988	465.3	
612	451.3	1,075	469.9	
		1,093	469.6	

Section K (Approach section for Hwy 611 bridge)

0	461.7	98	447.0	
12	453.8	102	448.4	
30	453.3	112	452.9	
39	448.2	132	453.2	
47	446.7	147	458.1	CL of channel
67	447.9	167	457.4	
79	446.9	182	458.3	
86	446.5	182	461.7	

Río Viví at Utuado, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section L</u> (50 ft downstream from abandoned dam)					
0	490.0		150	461.1	
75	483.5		155	458.6	
93	480.3		179	458.2	CL of channel
115	479.6		186	457.7	CL of channel
126	478.4		208	458.7	
130	467.9		229	458.6	
134	462.5		240	466.8	
143	464.4		240	506.0	

<u>Section M</u> (At abandoned dam)					
0	492.0		278	478.0	
50	489.4		286	478.2	
70	488.2		296	478.3	
104	486.8		296	479.6	
122	485.4		302	479.4	
138	484.0		310	458.4	CL of channel
157	482.8		318	465.4	
190	480.6		318	468.1	
218	479.0		322	469.4	
248	477.4		327	472.8	
267	478.0		327	477.5	
			330	500.0	

<u>Section N</u> (50 ft upstream from abandoned dam)					
0	489.0		193	484.0	
56	486.0		244	482.6	
60	484.1		279	482.4	
66	484.2		287	479.1	
72	484.1		299	477.3	
84	484.2		304	476.6	
84	496.0		308	472.6	
117	496.0		310	471.1	LEW
117	484.5		316	470.4	
136	484.4		326	470.1	
136	496.0		340	469.9	
165	496.0		345	471.0	REW
165	484.6		351	472.5	
171	484.4		351	496.0	

Río Viví at Utuado, P.R.

Distance from left bank, in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
<u>Section O</u>					
0	520.0		191	491.3	
0	517.1		197	489.9	
11	516.8		206	489.2	CL of channel
30	514.0		219	489.9	
84	510.8		225	492.6	
111	508.3		256	495.9	
129	500.6		264	509.9	
166	496.1		275	520.0	

<u>Section P</u> (Exit section for Ramal Hwy 111 bridge)					
21	529.0		75	497.2	CL of channel
30	521.5		87	498.4	
38	516.9		95	500.7	
44	513.5		107	503.2	
49	511.0		124	505.9	
54	508.7		126	505.9	
57	499.6		136	512.5	
64	498.5		151	518.2	
66	498.5		164	519.7	
			183	526.4	

<u>Section Q</u> (Contracted section at Ramal Hwy 111 bridge)					
24	525.9		75	497.2	CL of channel
30	521.5		87	498.4	
38	516.9		95	500.7	
44	513.5		107	503.2	
49	511.0		125	505.9	CL of pier
54	508.7		136	512.5	
57	499.6		151	518.2	
65	498.5	CL of pier	164	519.7	
			174	523.3	

Río Viví at Utuado, P.R

Distance from left bank in feet	Ground ele- vation, in feet	Remarks	Distance from left bank, in feet	Ground ele- vation, in feet	Remarks
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Section Q (Road profile at Ramal Hwy 111 bridge)

0	543.2		354	528.2	
54	540.3		426	527.3	
114	537.1		500	527.1	CL of channel
180	533.8		584	527.8	
280	529.8		658	529.2	
			754	531.6	

Section R (Approach section for Ramal Hwy 111 bridge)

0	530.0		79	499.4	
1	514.1		90	499.2	
39	506.7		106	510.4	
61	504.0		117	516.8	
69	498.8		137	517.6	
69	499.5		141	522.3	
			141	530.0	

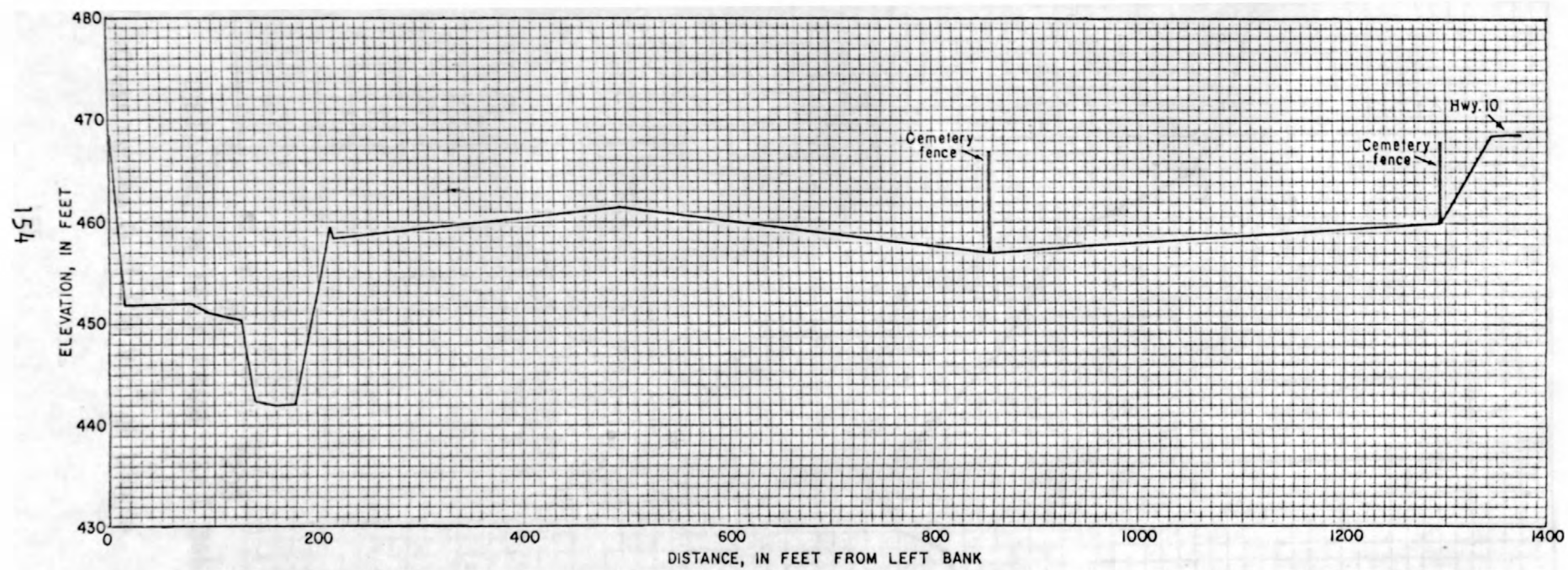


Figure 29.--Cross section L of Río Grande de Arecibo at Utuado.

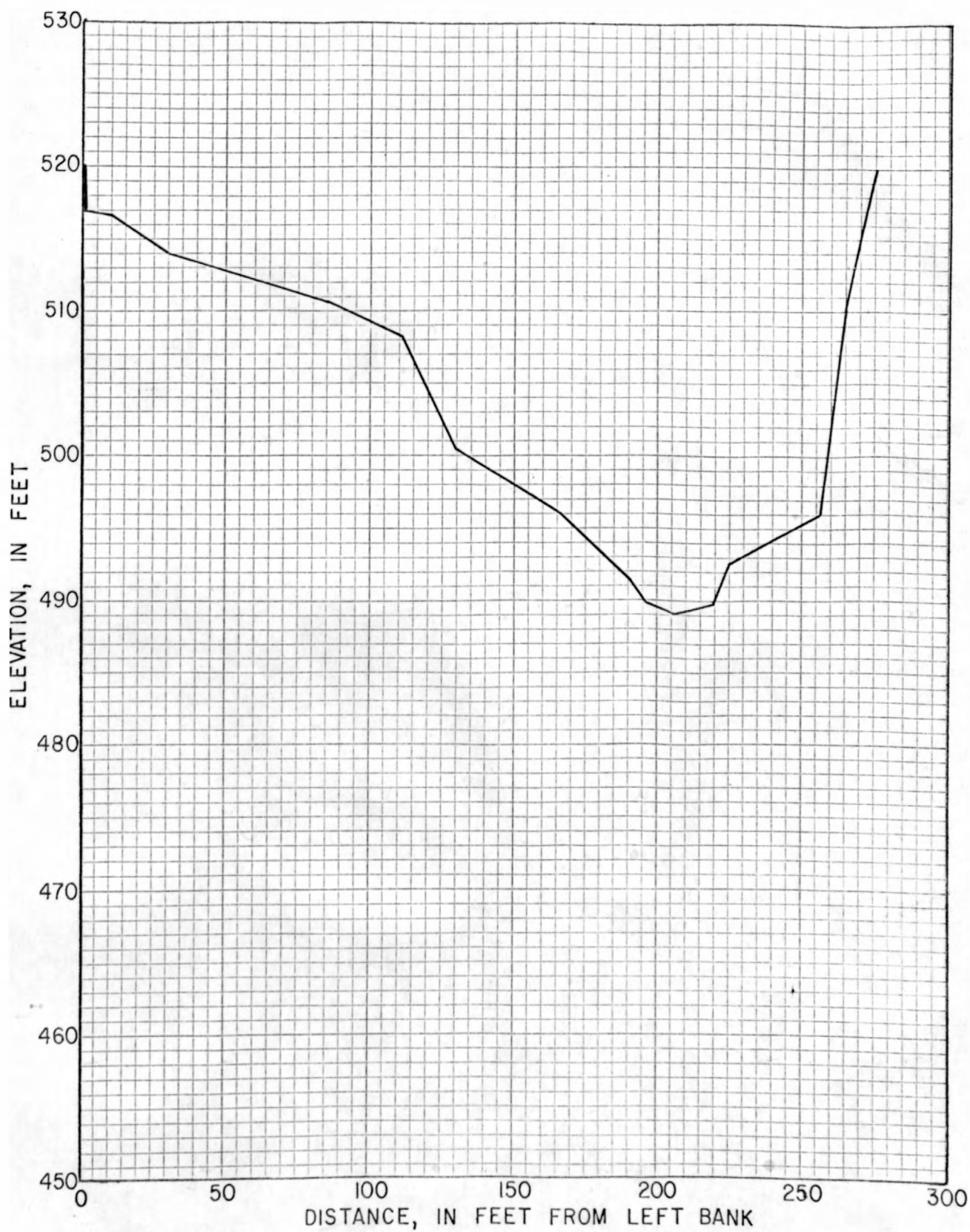
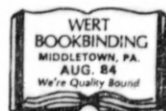


Figure 30.--Cross section 0 of Río Viví at Utuado.

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