various combinations of horizontal floor and vertical cut-off. Instead of the usual aniline dyes used by Dr. Theodore Rehboch, he saturated the subsoil sand with a solution of Potassium Chromate and introduced at selected points a solution of Silver Nitrate which reacted with the Potassium Chromate to form a precipitate along the lines of flow. The lines of flow thus marked out were absolutely clear and distinct and free from the diffusion which cannot be avoided where aniline dyes are used. These stream lines were photographed from the glassfront of the model.

These photographs provided a visual demonstration of the nature of flow in subsoil and definitely confirmed the conclusions of this paper,

(*a*) that the flow of water was along definite stream lines whose shape and distribution was governed by the depth and spacing of vertical cut-offs and

(*b*) that this flow did not hug "musk-rat" fashion the profile of the underside of the weir and its vertical cut-offs. This knocked the bottom out of the creep theory.

The creep theory as commonly understood, therefore was definitely wrong both with regard to the path of flow and to the magnitude of uplift pressures.

This most valuable work of Dr. Mackenzie Taylor would, no doubt, be published in the near future and be available to the profession at large.

APPENDIX I.

Observed Data Right Flank and Junction Groyne.

RIGHT FLANK.

28/9	2/10	5/10	8/10	11/10	14/10	16/10	19/10	20/10	21/10	23/10	25/10	26/10	28/10	3/11	5/11	6/11	12/11	16/11	19/11	20/11	25/11	4/12	9/12	15/12	2/1	6/1	11/1	
37.22	37.00	37.09	37.09	37.22	37.16	38.16	34.37	35.38	35.15	31.54	33.95	33.07	32.98	32.03	30.99	30.99	29.96	29.66	28.63	27.04	25.94	25.80	30.04	33.58	29.05	29.20	25.33	
6.89	25.60	24.41	24.62	23.32	22.38	21.78	21.64	24.43	25.15	23.94	24.71	23.97	24.05	22.81	22.68	22.64	22.45	22.33	22.32	22.27	22.11	21.82	21.26	22.55	21.60	21.55	22.00	REMARKS.
1.22	11.40	12.68	13.67	13.90	14.78	16.38	12.93	10.95	10.60	7.60	9.24	9.10	8.93	9.22	8.31	8.35	7.51	6.73	5.71	4.77	3.83	3.98	8.78	11.03	7.45	7.65	3.33	
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	

VALUES OF P OR HEAD ABOVE DOWNSTREAM WATER-LEVEL.

6.58	10.72	11.98	12.17	12.70	13.33	14.81	12.06	10.07	9.14	4.23	8.61	8.44	8.20	8.39	7.67	7.66	6.91	6.20	5.36	4.87	3.81	3.98	7.62	9.16	7.68	6.94	3.41	
6.87	6.87	7.73	8.10	8.32	8.67	9.19	6.07	5.59	5.01	4.64	5.38	5.84	5.58	6.14	5.83	5.85	5.45	5.08	4.71	4.49	3.66	3.71	4.83	4.65	4.73	4.53	3.36	
6.32	6.45	7.34	7.21	7.94	8.27	8.78	7.58	4.89	4.67	4.67	4.72	5.18	4.83	5.09	4.80	4.74	4.31	3.82	3.38	3.21	2.38	2.86	3.65	4.21	4.12	3.55	2.33	
6.45	5.95	6.83	6.85	7.37	7.84	8.30	7.18	4.84	4.49	4.52	4.64	4.93	4.66	4.93	4.65	4.57	4.12	3.73	3.30	3.10	2.52	2.15	3.59	4.32	3.79	3.46	2.24	
6.42	6.40	7.25	7.43	7.94	7.83	9.19	7.95	5.34	4.98	4.93	5.10	5.46	5.17	5.36	5.01	4.94	4.39	3.94	3.41	3.24	2.56	2.77	3.83	4.60	4.15	3.64	2.29	
5.88	5.93	6.67	6.85	7.29	7.76	8.30	7.24	5.03	4.54	4.56	4.79	5.01	4.74	4.98	4.65	4.59	4.08	3.69	3.22	2.99	2.39	2.31	3.84	4.42	3.68	3.39	2.13	
5.50	5.72	6.46	6.56	7.01	7.51	8.19	6.99	4.64	4.28	4.38	4.47	4.84	4.55	4.79	4.53	4.46	4.01	3.65	3.22	3.05	2.46	2.47	3.57	4.15	3.69	3.36	2.23	
5.64	5.65	6.51	6.57	7.01	7.51	8.27	6.88	4.84	4.35	4.40	4.61	4.83	4.55	4.82	4.50	4.44	3.97	3.59	3.15	2.94	2.36	2.25	3.73	4.26	3.62	3.31	2.29	
5.79	5.79	6.53	6.66	7.09	7.61	8.26	7.15	4.71	4.37	4.50	3.48	4.92	4.61	4.87	4.64	3.55	4.15	3.80	3.39	3.26	2.69	2.53	3.64	4.20	3.89	3.55	2.46	
6.90	6.86	7.54	7.44	6.79	8.42	8.66	8.56	5.54	4.75	5.05	4.66	5.40	5.16	5.93	5.88	5.83	5.54	5.30	5.02	4.95	4.53	4.13	4.34	3.55	4.55	4.22	3.26	
5.98	5.94	6.75	6.83	7.30	6.81	8.43	7.30	4.90	4.53	4.68	4.66	5.12	4.83	5.08	4.83	4.76	4.32	3.92	3.55	3.38	2.80	2.65	3.81	4.42	4.03	3.68	2.57	
3.82	4.24	5.28	5.89	6.32	7.44	8.27	8.19	5.38	4.66	5.87	5.14	5.83	5.75	6.99	7.12	7.16	7.34	7.45	7.46	7.48	7.64	7.85	8.28	6.96	7.86	7.80	7.30	Pipe 45 Unreliable.
5.80	5.88	6.56	6.69	7.10	7.57	8.07	6.95	5.02	4.58	4.69	4.92	5.09	4.88	5.12	4.80	4.76	4.28	3.91	3.47	3.23	2.67	2.61	4.10	4.58	3.91	3.61	2.43	
5.27	5.30	6.00	6.07	6.49	7.30	7.52	6.55	4.19	3.91	4.12	4.08	4.53	4.24	4.50	4.28	4.24	3.80	3.49	3.11	2.98	2.46	2.63	3.39	3.85	3.57	3.25	2.25	
5.40	5.49	5.98	6.26	6.65	7.12	7.80	6.56	4.56	4.15	4.26	4.38	4.65	4.41	4.67	4.41	4.35	3.90	3.57	3.18	3.02	2.47	2.43	3.67	4.10	3.60	3.32	2.23	
5.91	5.86	6.49	6.38	7.04	7.42	7.98	6.82	4.52	4.09	4.42	4.26	4.99	4.80	5.12	4.93	4.96	4.42	4.16	3.69	3.59	3.05	3.06	3.89	3.90	4.37	4.89	2.89	
4.70	4.84	5.37	5.42	5.78	8.02	6.74	5.68	4.01	3.68	3.85	3.98	4.17	3.98	4.22	3.87	3.94	3.57	3.08	2.90	2.76	2.27	2.21	3.38	3.73	3.28	3.04	2.12	
4.65	4.68	5.32	5.40	5.76	6.16	6.68	5.84	3.73	3.43	3.65	3.59	3.95	3.70	3.99	3.78	3.74	3.37	3.12	2.79	2.70	2.26	2.12	3.02	3.30	3.20	4.92	2.08	
4.37	4.64	5.27	5.29	5.70	6.30	6.52	6.55	3.68	3.30	4.56	3.74	4.22	3.80	3.96	3.88	3.79	3.51	3.20	2.88	2.85	2.36	2.37	3.15	2.94	3.31	2.94	2.20	
4.75	4.64	5.31	5.31	5.71	6.03	6.48	5.85	3.51	3.30	3.65	3.54	4.00	3.71	4.00	3.82	3.77	3.42	3.15	2.83	2.73	2.30	2.19	3.03	3.25	3.31	3.00	2.15	
4.08	4.13	4.88	4.71	5.00	5.31	5.78	5.94	3.19	2.97	3.26	3.28	3.64	3.34	3.79	3.41	3.36	3.05	2.81	2.52	2.42	2.03	1.75	2.83	3.06	3.06	2.68	1.93	
3.39	3.41	3.81	3.72	3.92	3.85	4.03	3.56	2.23	2.04	2.33	2.32	2.60	2.39	2.66	2.51	2.48	2.26	2.08	1.85	1.81	1.54	1.50	2.08	2.19	2.36	2.15	1.69	
3.84	3.88	4.34	4.41	4.73	4.93	5.38	4.65	3.12	2.84	3.06	3.06	3.35	3.13	3.35	3.19	3.16	2.88	2.64	2.37	2.29	1.93	1.85	2.66	2.85	2.75	2.52	1.84	
2.59	2.68	2.91	2.93	3.14	2.82	5.02	4.85	3.11	2.86	3.21	3.16	3.48	3.31	3.64	3.47	3.46	3.03	2.84	2.56	2.46	2.05	1.71	2.50	2.87	2.88	2.65	1.92	
4.24	4.09	4.58	4.62	5.00	5.21	2.99	2.38	1.80	1.63	1.94	1.96	2.12	1.96	2.24	2.09	2.05	1.89	1.73	1.64	1.53	1.30	1.27	1.79	1.74	2.05	1.88	1.52	

JUNCTION GROYNE.

28/9	2/10	5/10	8/10	11/10	14/10	16/10	19/10	20/10	21/1	23/10	25/10	26/10	28/10	3/11	5/11	6/11	12/11	16/11	19/11	20/11	25/11	15/12	17/12	20/12	23/12	2/1	6/1	
37.25	36.97	37.07	37.08	37.17	37.18	38.13	34.56	35.31	35.13	31.55	33.99	38.08	32.97	32.02	30.95	31.97	29.96	29.04	28.03	27.02	25.92	33.57	33.36	33.32	33.28	29.05	29.19	
25.90	25.71	24.38	24.00	23.32	22.39	21.28	21.69	24.48	25.15	23.90	24.62	23.78	24.03	22.81	22.68	22.63	22.44	22.39	22.30	22.28	22.09	22.49	22.37	22.45	21.77	21.60	21.57	
11.35	11.26	12.69	13.08	13.85	14.79	16.35	12.87	10.83	9.98	7.65	9.37	14.30	8.94	9.21	8.27	9.34	7.52	6.74	5.73	4.74	3.83	11.08	10.99	10.87	11.51	7.45	7.62	

VALUES OF P.

5.64	5.65	6.50	6.65	6.91	7.42	8.01	6.33	4.00	4.30	4.14	4.80	5.17	4.53	4.97	4.53	4.51	3.97	3.42	2.91	2.58	2.01	4.18	4.46	4.35	4.82	3.36	3.11	
5.61	5.80	6.69	6.81	7.10	7.59	8.81	6.45	4.70	4.42	4.22	4.90	5.33	4.85	5.08	4.83	4.61	3.98	3.53	3.01	2.79	2.06	4.59	4.61	4.41	4.93	3.44	3.19	
5.12	4.84	5.95	5.67	5.93	6.70	7.16	6.44	3.41	3.51	3.37	3.87	5.03	4.02	4.23	4.09	3.97	3.52	3.11	2.68	2.37	1.95	3.73	3.83	3.71	4.18	3.37	2.87	
5.10	5.03	5.90	6.00	6.22	6.44	7.77	5.85	3.99	3.83	3.66	4.21	4.67	4.19	4.49	4.17	4.13	3.65	3.25	2.81	2.55	2.04	4.34	4.08	3.98	4.48	3.27	3.02	
4.34	4.35	5.86	5.54	5.10	5.62	6.36	4.84	2.90	2.96	2.82	3.26	3.89	3.37	3.66	3.64	3.43	3.02	2.71	2.32	2.14	1.73	3.14	3.26	3.10	3.61	2.75	2.49	
4.72	4.13	4.82	4.89	5.05	5.46	6.33	4.88	2.98	3.73	3.15	3.91	3.95	3.38	3.71	3.51	3.45	3.01	2.73	2.37	2.17	1.78	3.17	3.26	3.09	3.61	2.83	2.54	

APPENDIX I.

Observed Data Right Flank and Junction Groyne.

RIGHT FLANK.

	18/4	8/5	15/5	23/5	5/6	10/6	19/6	26/6	1/7	4/7	10/7	17/7	11/9	18/9	25/9	28/9	2/10	5/10	8/10	11/10	14/10	16/10	19/10	20/10	21/10	23/10	25/10	26/10	28/10	3/11	5/11	
Water R. L. 300+	34.16	33.89	35.49	34.65	34.77	34.80	34.25	35.56	35.37	35.35	35.64	35.25	36.38	37.05	37.22	37.22	37.00	37.09	37.69	37.22	37.16	38.16	34.57	35.38	35.15	31.54	33.95	33.07	32.98	32.03	30.99	30
Water R. L. 300+	29.03	29.48	28.74	29.48	30.72	31.70	32.33	31.91	31.77	31.75	31.60	33.36	31.28	30.48	27.21	26.00	25.60	24.41	24.62	23.32	22.38	21.78	21.64	24.43	25.15	23.94	24.71	23.97	24.05	22.81	22.68	22
Head = H	5.13	4.41	6.75	5.17	4.05	3.10	1.92	3.65	3.6	3.6	4.04	1.89	5.10	6.57	10.01	11.22	11.40	12.68	13.47	13.90	14.78	16.38	12.93	10.95	10.00	7.60	9.24	9.10	8.93	9.22	8.31	8
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	3
No.	VALUES OF P OR HEAD ABOVE DOWNSTREAM WATER-LEVEL.																															
34	1.89	4.11	4.02	4.89	1.55	0.73	1.09	3.92	4.11	4.12	4.41	2.61	5.25	6.40	9.57	10.58	10.72	11.98	12.15	12.76	13.33	14.81	12.06	10.07	9.14	4.23	8.01	8.44	8.20	8.39	7.67	7
31	4.42	1.78	2.92	2.11	3.90	3.0	1.60	2.69	3.07	2.83	2.95	1.67	4.14	4.76	6.11	6.87	6.87	7.73	8.10	8.32	8.67	9.19	6.07	5.59	5.01	4.64	5.38	5.84	5.58	6.14	5.83	5
54	0.71	1.84	2.52	2.11	1.64	1.27	0.99	2.00	2.14	1.96	2.15	1.24	3.32	4.30	5.59	6.52	6.45	7.34	7.21	7.94	8.27	8.78	7.58	4.89	4.67	4.67	4.72	5.18	4.83	5.09	4.80	4
53	2.32	1.79	2.20	2.05	1.58	1.25	0.97	1.97	2.05	1.89	2.10	1.21	3.14	3.52	5.89	6.45	5.95	6.83	6.85	7.37	7.84	8.50	7.18	4.84	4.49	4.52	4.61	4.93	4.66	4.93	4.65	4
52	2.35	2.15	2.94	2.35	1.84	1.41	1.05	2.14	2.23	2.06	2.28	1.29	3.45	4.40	5.74	6.42	6.40	7.25	7.43	7.94	7.83	9.19	7.95	5.34	4.98	4.93	5.10	5.46	5.17	5.36	5.00	
51	2.04	1.86	2.70	2.19	1.65	1.28	0.97	1.98	2.01	1.88	2.11	1.21	3.14	3.91	5.28	5.88	5.93	6.67	6.85	7.29	7.76	8.59	7.24	5.03	4.54	4.56	4.79	5.01	4.74	4.98	4.65	
50	1.64	1.65	2.35	1.91	1.48	1.12	1.0	2.00	2.08	1.91	2.11	1.26	3.17	3.85	5.08	5.70	5.72	6.46	6.56	7.01	7.51	8.19	6.99	4.64	4.28	4.38	4.47	4.84	4.55	4.79	4.53	
49	1.87	1.74	2.54	2.09	1.58	1.21	0.94	1.97	1.97	1.82	2.04	1.16	2.98	3.77	5.09	5.64	5.65	6.51	6.57	7.01	7.51	8.27	6.88	4.84	4.35	4.40	4.61	4.83	4.55	4.82	4.50	
48	1.52	1.61	2.20	2.81	1.40	1.05	1.16	2.11	2.20	2.05	2.54	1.43	3.26	3.96	5.19	5.79	5.79	6.53	6.66	7.09	7.61	8.26	7.15	4.71	4.37	4.50	3.48	4.92	4.61	4.87	4.64	
47	1.26	0.69	2.34	1.45	1.30	0.78	1.07	2.06	2.47	2.36	2.41	0.92	5.01	5.19	6.54	6.90	6.86	7.54	7.44	6.79	8.42	8.66	8.56	5.54	4.75	5.65	4.66	5.40	5.16	5.93	5.88	
46	1.69	1.68	2.28	1.90	1.47	1.15	1.32	2.27	2.39	2.20	2.40	1.57	3.48	4.15	5.39	5.98	5.94	6.75	6.83	7.30	6.81	8.43	7.30	4.90	4.53	4.68	4.66	5.12	4.83	5.08	4.83	
45	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2.61	3.82	4.24	5.28	5.80	6.52	7.44	8.27	8.19	5.38	4.66	5.87	5.14	5.83	5.75	6.99	7.12	
24	1.77	0.70	2.46	1.94	2.08	1.73	1.38	2.28	2.30	2.20	2.41	1.58	3.36	4.05	5.25	5.80	5.88	6.56	6.69	7.10	7.57	8.07	6.95	5.02	4.58	4.69	4.92	5.09	4.88	5.12	4.80	
44	1.39	1.51	2.0	1.67	1.29	0.94	1.02	1.91	2.04	1.85	2.02	1.27	3.04	3.65	4.73	5.27	5.30	6.00	6.07	6.49	7.30	7.52	6.55	4.19	3.91	4.12	4.08	4.53	4.24	4.59	4.28	
43	1.62	1.60	2.26	1.82	1.38	1.03	1.10	1.99	2.05	1.90	2.11	1.33	3.03	3.71	4.88	5.40	5.49	5.08	6.26	6.65	7.12	7.80	6.56	4.56	4.15	4.26	4.38	4.65	4.41	4.67	4.41	
21	1.55	1.64	2.42	1.74	2.34	0.99	1.02	1.88	2.28	2.24	2.57	1.30	3.62	4.27	5.30	5.91	5.86	6.49	6.38	7.04	7.42	7.98	6.82	4.52	4.03	4.42	4.26	4.99	4.80	5.12	4.93	
16	1.42	1.41	1.92	1.59	1.17	0.85	1.14	1.92	1.92	1.80	2.78	1.32	2.70	3.35	4.27	4.70	4.81	5.37	5.42	5.78	8.02	6.74	5.08	4.01	3.68	3.85	3.98	4.17	3.98	4.22	3.87	
42	..	1.20	1.59	1.36	1.01	0.71	0.96	1.72	1.82	1.71	1.82	1.21	2.82	3.18	4.20	4.65	4.68	5.32	5.40	5.76	6.16	6.68	5.84	3.73	3.43	3.65	3.59	3.95	3.70	3.99	3.78	
41	1.07	1.20	1.59	1.38	1.02	0.73	0.96	1.67	1.79	1.76	0.84	1.01	4.86	4.55	4.29	4.57	4.64	5.27	5.29	5.70	6.30	6.52	6.55	3.68	3.40	4.56	3.74	4.22	3.80	3.96	3.88	
40	0.36	1.22	1.61	1.32	0.61	0.17	0.40	2.06	1.83	1.70	2.23	0.63	5.03	3.31	4.16	4.75	4.64	5.51	5.31	5.71	6.03	6.48	5.85	3.51	3.30	3.65	3.54	4.00	3.71	4.00	3.82	
39	1.03	1.12	1.50	1.21	0.92	0.58	0.94	1.68	1.65	1.56	1.69	1.14	2.77	2.86	3.71	4.08	4.13	4.88	4.71	5.00	5.31	5.78	5.94	3.19	2.97	3.26	3.28	3.64	3.34	3.79	3.41	
38	0.79	0.85	1.05	0.86	0.61	0.36	1.42	1.41	1.40	1.31	1.39	1.01	1.90	2.41	3.09	3.39	3.41	3.81	3.72	3.92	3.85	4.03	3.56	2.23	2.04	2.33	2.32	2.60	2.39	2.66	2.51	
37	0.90	1.03	1.36	1.13	0.75	0.18	0.92	1.61	1.61	1.51	1.61	1.12	3.79	2.71	3.49	3.84	3.88	4.34	4.41	4.73	4.93	5.38	4.65	3.12	2.84	3.06	3.06	3.35	3.13	3.35	3.19	
10	0.90	0.58	1.02	0.71	0.48	0.22	0.76	1.65	1.58	1.45	1.16	0.97	1.59	1.91	2.41	2.59	2.68	2.91	2.90	3.14	2.82	5.62	4.85	3.11	2.86	3.21	3.16	3.48	3.31	3.64	3.47	
7	0.73	0.68	0.79	1.05	0.75	0.46	0.76	1.16	1.16	1.12	1.61	0.89	2.46	2.94	3.61	4.24	4.00	4.58	4.62	5.00	5.21	2.99	2.58	1.80	1.63	1.94	1.96	2.12	1.96	2.24	2.09	

JUNCTION GROYNE.

	18/4	8/5	15/5	23/5	5/6	10/6	19/6	26/6	1/7	4/7	10/7	17/7	11/9	18/9	25/9	28/9	2/10	5/10	8/10	11/10	14/10	16/10	19/10	20/10	21/10	23/10	25/10	26/10	28/10	3/11	5/11	
Water R. L. 300+	34.16	33.89	35.40	34.64	34.77	34.80	34.10	35.67	35.40	35.35	35.64	35.22	36.40	37.02	37.18	37.25	36.97	37.07	37.08	37.17	37.18	38.13	34.56	35.31	35.13	31.55	33.99	38.08	32.97	32.02	30.95	
Water R. L. 300+	29.02	29.48	29.07	29.50	30.72	31.70	32.40	31.81	31.77	31.82	31.60	33.55	31.18	30.38	26.95	25.90	25.71	24.38	24.00	23.32	22.39	21.28	21.69	24.48	25.15	23.90	24.62	23.78	24.03	22.81	22.68	
Head = H	5.1	4.41	6.33	5.14	4.05	3.10	1.70	3.86	3.63	3.53	4.04	1.67	5.22	6.64	10.23	11.35	11.26	12.69	13.08	13.85	14.79	16.35	12.87	10.83	9.98	7.65	9.37	14.30	8.94	9.21	8.27	
No.	VALUES OF P.																															
55	2.86	2.67	3.52	3.12	2.41	1.8	2.42	2.28	2.11	2.37	1.02	3.24	4.01	5.18	5.64	5.65	6.50	6.65	6.91	7.42	8.61	6.33	4.60	4.39	4.13	4.80	5.17	4.13	4.97	4.53		
56	2.96	2.72	3.63	3.18	2.46	1.8	2.49	3.34	2.19	2.45	1.06	3.34	4.15	5.33	5.61	5.80	6.69	6.81	7.10	7.59	8.81	6.45	4.70	4.42	4.22	4.90	5.30	4.85	5.08	4.63		
57	2.57	2.20	2.78	2.55	1.99	1.5	2.36	2.21	2.00	2.72	4.49	8.03	3.83	8.70	5.12	4.84	5.95	5.67	5.93	6.70	7.16	6.44	3.41	3.53	3.37	3.87	5.03	4.02	4.23	4.09		
58	2.30	2.33	2.97	2.70	2.12	1.5	2.45	3.33	2.13	2.36	1.21	3.04	3.74	4.99	5.10	5.03	5.90	6.00	6.22	6.44	7.77	5.85	3.99	3.83	3.66	4.21	4.67	4.19	4.49	4.17		
59	1.31	1.60	2.89	2.63	2.76	1	1.98	2.06	2.12	2.48	0.91	4.28	3.50	6.25	4.34	4.35	5.86	5.54	5.10	5.62	6.36	4.84	2.90	2.99	2.82	3.26	3.89	3.37	3.66	3.04		
60	1.90	1.93	2.45	2.11	1.67	1	2.11	2.06	1.83	2.01	1.08	3.05	3.11	5.48	4.72	4.13	4.82	4.89	5.05	5.46	6.33	4.88	2.93	3.71	3.15	3.91	3.95	3.38	3.71	3.51		

APPENDIX I.

Observed Data. Bay No. 25, 30.

Series	FIRST SERIES 18-4-32—28-8-32.																	
Date	18/4	8/5	10/5	16/5	2/6	6/6	19/6	16/6	1/7	4/7	10/7	17/7	24/7	31/7	7/8	14/8	21/8	28/8
U-S Water R. L. 300+	34.2	34.0	35.45	34.75	34.85	34.96	35.05	36.62	37.40	35.5	35.76	35.55	37.60	39.12	29.62	37.69	37.18	37.75
D-S Water R. L. 300+	29.0	29.78	29.33	29.60	31.16	32.2	31.95	32.95	32.32	31.76	31.5	33.87	36.95	38.26	38.39	37.46	36.98	36.95
Head=H	5.2	4.22	6.12	5.15	3.69	2.76	3.1	2.67	3.08	3.74	4.24	1.68	.65	.86	.63	.23	.2	.8
Serial No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Pipe No.	VALUES OF P OR HEAD ABOVE D. S. WATER LEVEL.																	
BAY No. 25.																		
A B C	2.91	1.77	2.66	2.41	1.96	1.58	1.37	1.00	1.46	1.84	2.17	·7	.25	.29	.51	.15	.15	.44
BAY No. 30.																		
A B C	2.51	2.02	2.95	[illegible]	2.18	1.26	1.52	1.18	1.60	1.99	2.26	0.8	.13	.22	.4	17	.22	.47

Series	FIRST SERIES 4-9-32—19-10-32.							SECOND SERIES 20-10-32—28-10-32.										
Date	4/9	11/9	18/9	25/9	28/9	2/10	5/10	8/10	11/10	14/10	16/10	19/10	20/10	21/10	23/10	25/10	26/10	28/10
U-S Water R. L. 300+	35.80	36.35	36.99	37.13	37.2	36.98	36.98	36.92	37.11	37.15	38.10	34.30	35.25	35.08	31.50	33.92	33 04	32.93
D-S Water R. L. 300+	35.81	33.46	29.95	26.20	31.22	24.52	23.82	23.42	21.70	21.63	20.38	20.28	23.18	23.08	23.23	23.17	23,02	23.05
Head=H	.49	5.89	7.04	10.93	11.98	12.46	13.16	13.5	15.41	16.12	17.72	14.02	12.07	11.70	8.27	10.75	10.02	9.88
Serial No.	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Pipe No.	VALUES OF P OR HEAD ABOVE D. S. WATER LEVEL.																	
BAY No. 25.																		
A B C	.22	3.18	3.51	4.59	4.96	5.82	6.0	6.19 3.97	7.31 5.45	7.53 5.66	8.02 6.15 4.81	6.62 5.04	5.33 4.02 3.12	5.10 3.87 3.12	3.66 2.72 2.19	4.71 3.52 2.85	4.24 3.21 2.57	4.17 3.14 2.54
BAY No. 30.																		
A B C	.43	3.42	3.84	4.87	5.16	5.62	5.78	5.97 3.45	7.11 4.95	7.37 5.15	8.02 5.65 4.63	6.61 4.64	5.19 3.52 2.75	5.13 3.46 3.25	3.69 2.42 1.69	4.74 3.20 2.29	4.34 2.94 2.05	4.28 2.86 2.40

Series	SECOND SERIES 3-11-32—25-11-32.							THIRD SERIES 15-12-32—11-1-33.										
Date	3/11	5/11	6/11	16/11	19/11	20/11	25/11	15/12	17/12	20/12	28/12	2/1	6/1	11/1				
U-S Water R. L. 300+	32.00	30.90	30.92	29.00	27.94	26.97	25.86	33.54	33.32	33.30	30.98	29.0	29,11	25.46				
D-S Water R. L. 300+	22.75	22.67	22.58	22.30	22.18	22.22	22.02	20.78	21.05	21.22	21.67	21.44	21.31	21.35				
Head=H	9.25	8.23	8.34	6.70	5.76	4.75	3.84	12.76	12.27	12.08	9.31	7.56	7.80	4.11				
Serial No	37	38	39	40	41	42	43	44	45	46	47	48	49	50				
Pipe No.	VALUES OF P OR HEAD ABOVE D. S. WATER LEVEL.																	
BAY No. 25.																		
A B C	3.71 2.77 2.20	3.33 2.47 1.98	3.37 2.52 1.99	2.59 1.95 1.54	2.33 1.75 1.37	1.98 1.50 1.16	1.65 1.23 0.95	4.79 3.74 2.84	4.59 3.50 2.65	4.42 3.33 2.57	3.28 2.42 1.99	2.[illegible] 2.02 1.65	2.74 2.01 1.65	1.62 1.20 1.04				
BAY No. 30.																		
A B C	3.81 2.50 1.75	3.41 2.16 1.55	3.46 2.26 1.52	2.60 1.86 1.19	2.37 1.70 1.08	2.06 1.64 0.93	1.70 1.07 0.78	5.08 3.31 2.37	4.41 3.0 2.21	4.82 2.91 2.07	3.44 2.12 1·26	2·89 1.76 1.07	2.66 1.76 1.17	1.77 1.08 0.74				

APPENDIX I.

Observed Data *Pier No. 44.*

S (18-4-32—19.10.32).												
17/7	31/7	11/9	18/9	25/9	28/9	2/10	5/10	8.10	11/10	14.10	16.10	19/10
35.24	38.31	36.38	37.03	37.22	37.21	36.99	37.08	37.08	37.21	37.16	38.18	34.73
33.37	37.34	31.12	30.46	27.19	26.00	25.58	24.40	24.01	23.32	22.38	21.78	21.73
1.87	0.77	5.26	6.57	10.03	11.21	11.41	12.68	13.07	13.89	14.78	16.40	13.0
13	14	15	16	17	18	19	20	21	22	23	24	25
DOWNSTREAM WATER-LEVEL.												
1.60	0.64	4.78	5.79	7.85	8.87	9.12	10.03	9.26	10.79	11.32	12.49	10.12
1.29	0.36	4.08	4.32	5.74	6.39	6.56	7.19	7.34	7.63	8.19	9.12	7.24
1.19	..	3.33	4.00	5.00	5.44	5.63	6.20	6.27	6.67	7.18	7.93	6.45
1.11	0.13	3.48	3.82	4.93	5.36	5.66	6.28	6.25	6.69	7.28	8.70	6.47
1.10	0.48	3.28	3.96	4.90	5.37	5.57	6.16	6.28	5.91	7.09	7.83	6.31
1.06	0.44	3.32	3.88	5.12	5.69	5.77	6.35	6.47	6.71	7.32	7.75	6.23
1.09	0.47	3.57	4.35	5.26	5.73	5.96	6.45	6.48	6.90	7.38	7.96	6.48
1.09	0.48	3.16	3.81	4.70	5.23	5.37	5.95	6.06	6.40	6.85	7.60	6.13
1.05	0.48	3.15	3.80	4.62	5.20	5.31	5.91	6.03	6.36	6.78	7.54	6.09
0.84	0.38	2.67	3.11	3.91	4.36	4.49	5.00	5.15	5.43	5.81	6.48	5.27
1.00	0.41	3.15	3.04	4.87	5.41	5.32	5.96	5.92	6.36	6.76	7.34	5.94
1.09	0.48	4.59	4.26	5.36	6.09	6.33	7.09	6.74	7.25	7.87	8.10	6.68
0.93	..	3.22	3.41	4.47	4.86	5.06	5.59	5.59	6.10	6.28	7.00	5.74
0.93	0.39	2.84	3.36	4.22	4.66	4.77	5.33	5.39	5.74	6.16	6.84	5.52
0.89	0.23	2.65	3.19	4.00	4.45	4.57	5.13	5.21	5.50	5.91	6.57	5.29
0.88	0.39	2.63	3.15	3.96	4.36	4.45	5.08	5.13	5.42	5.79	6.46	6.20
0.82	0.31	2.53	2.99	3.80	4.15	4.31	4.79	4.91	5.20	5.58	6.23	5.00
0.68	0.49	2.72	3.01	3.60	4.11	4.27	4.86	4.90	5.22	5.53	5.99	4.80
3.25	0.23	3.25	3.15	4.62	5.17	4.97	6.07	6.44	7.33	8.19	7.33	6.22
0.74	0.37	2.41	2.88	3.67	4.01	4.07	4.61	4.72	5.03	5.37	5.99	4.81
0.75	0.36	2.32	2.79	3.58	3.94	3.97	4.44	4.54	4.89	5.22	5.81	4.70
0.71	0.35	1.97	2.35	2.98	3.29	3.43	3.82	3.89	4.14	4.35	4.91	3.99
0.69	0.33	2.01	1.37	3.07	3.31	3.49	3.94	3.93	4.23	4.54	5.03	4.04
0.65	..	1.69	1.65	3.37	3.98	3.75	4.23	4.31	4.59	4.64	4.88	4.20
0.61	0.26	1.76	1.95	2.72	2.88	2.86	3.28	3.12	3.40	3.73	4.13	3.24
0.60	0.07	1.71	2.00	2.59	2.85	2.97	3.22	3.32	3.47	3.77	4.18	3.40
0.49	0.27	2.03	2.42	3.03	3.48	3.47	3.87	3.85	4.05	4.35	4.78	3.95
0.45	0.11	1.43	1.64	2.13	2.30	2.46	2.67	2.67	2.88	3.08	3.44	2.78
0.30	0.07	0.89	1.02	1.18	1.42	1.57	1.68	1.61	1.78	1.88	2.13	1.67
0.25	0.13	0.77	0.84	1.00	1.18	1.19	1.22	1.22	1.28	1.35	1.56	1.15
0.18	0.12	0.52	0.63	0.83	0.81	1.01	1.02	0.95	0.98	1.01	1.20	0.93
0.22	0.18	0.79	0.89	1.16	1.22	1.37	1.48	1.42	1.52	1.64	1.86	1.48
0.54	0.14	1.64	1.67	2.38	2.47	2.37	2.69	2.82	3.03	3.16	3.57	3.02
0.67	0.32	2.04	2.20	3.26	3.09	3.23	3.51	3.65	3.33	3.36	3.56	3.23
0.31	0.01	1.63	1.18	1.76	1.73	1.63	1.82	1.70	1.96	1.85	2.21	2.10
..	0.03	0.58	0.75	0.95	0.86	1.02	1.07	1.02	1.14	1.19	1.36	0.98

SECOND SERIES (20-10-32—25-11-32).												
20/10	21/10	23/10	25/10	26/10	2/11	6/11	16/11	19/11	20/11	25/11		
35.34	35.15	31.57	33.97	32.98	31.98	30.99	29.04	28.03	27.08	25.94		
24.49	25.15	23.90	24.69	24.05	22.94	22.64	22.32	22.21	22.24	22.11		
10.85	10.0	7.67	9.28	8.93	9.04	8.35	6.72	5.82	4.84	3.83		
26	27	28	29	30	31	32	33	34	35	36		
8.29	7.60	7.05	8.48	8.17	8.18	7.62	6.13	5.35	4.36	3.35		
5.51	5.09	5.44	6.25	5.98	6.14	5.65	4.45	3.88	3.28	2.39		
4.76	4.33	4.77	5.29	5.09	5.27	4.91	3.94	3.48	2.97	2.37		
4.59	4.42	3.79	5.37	5.22	5.38	4.96	3.99	3.40	2.92	2.11		
4.63	4.21	4.59	5.21	4.96	5.13	4.73	3.71	3.28	2.82	2.08		
4.55	4.13	4.53	5.08	4.89	5.02	4.55	3.66	3.22	2.79	2.11		
4.53	4.15	4.56	5.05	5.04	5.09	5.07	3.96	3.77	3.29	2.45		
4.52	4.08	4.47	5.01	4.87	4.99	4.61	3.60	3.18	2.77	2.01		
4.43	4.05	4.40	4.96	4.73	4.86	4.53	3.54	3.15	2.72	1.97		
3.79	3.40	3.78	4.10	3.92	4.10	3.82	2.99	2.64	2.31	1.72		
4.33	3.93	4.33	4.80	4.60	4.78	4.64	3.65	3.13	2.94	2.30		
4.50	3.96	4.73	4.74	5.22	5.65	5.51	4.77	4.51	4.21	3.46		
4.07	3.76	4.11	4.52	4.52	4.63	4.40	3.58	3.26	2.76	2.33		
4.01	3.62	3.97	4.40	4.23	4.41	4.07	3.50	2.82	2.46	1.82		
3.80	3.44	3.79	4.22	4.05	4.20	3.89	3.04	2.70	2.34	1.74		
3.74	3.38	3.70	4.11	3.93	4.10	3.80	2.98	2.64	2.30	1.72		
3.57	3.27	3.57	3.95	3.75	3.93	3.66	2.87	2.54	2.22	1.66		
3.13	3.13	3.18	3.74	3.72	3.83	3.62	2.86	2.60	2.23	1.75		
4.03	3.62	4.77	4.64	5.19	6.20	6.55	4.11	4.29	4.20	4.37		
3.46	3.12	3.41	3.77	3.64	3.78	3.51	2.74	2.44	2.13	1.60		
3.34	3.03	3.31	3.62	3.51	3.64	3.38	2.65	2.35	2.06	1.55		
2.80	2.52	2.80	3.09	2.95	3.12	2.90	2.28	2.05	1.80	1.35		
2.89	2.58	2.87	3.12	3.03	3.16	2.98	2.34	2.08	1.84	1.39		
2.22	2.54	2.75	2.70	3.04	2.12	2.98	2.30	2.05	1.82	1.36		
2.19	2.05	2.27	2.48	2.38	2.56	2.39	1.94	1.70	1.51	1.15		
2.37	2.14	2.44	2.66	2.51	2.62	2.48	1.95	1.75	1.55	1.16		
2.08	2.41	2.74	2.90	2.99	3.06	3.07	2.55	2.30	2.08	1.55		
1.91	1.71	1.96	2.17	2.07	2.19	2.04	1.61	1.44	1.27	0.96		
1.12	0.98	1.29	1.43	1.39	1.52	1.43	1.12	1.00	0.88	0.66		
0.72	0.73	1.01	1.17	1.15	1.26	1.23	0.96	0.85	0.74	0.56		
0.48	0.40	0.78	0.86	0.89	0.99	1.00	0.76	0.68	0.58	0.42		
0.96	0.84	1.14	1.23	1.19	1.30	1.28	0.98	0.88	0.77	0.56		
1.76	1.83	2.11	2.06	2.16	2.44	2.35	2.02	1.80	1.69	1.32		
1.78	2.05	2.17	2.47	2.73	3.07	2.90	2.32	2.05	1.84	1.35		
0.98	1.04	1.20	1.23	1.16	1.46	1.51	1.31	1.19	1.05	0.84		
0.44	0.37	0.58	0.72	0.73	0.78	0.78	0.67	0.63	0.57	0.46		

THIRD SERIES (15-12-32—11-1-33).							REMARKS.
15/12	20/12	25/12	28/12	2/1	6/1	11/1	
33.58	33.33	33.32	31.04	29.05	29.20	25.34	
22.51	22.48	21.70	21.80	21.90	21.56	22.00	
11.07	10.85	11.62	9.24	7.45	7.64	3.34	
37	38	39	40	41	42	43	
9.58	9.03	9.36	7.55	6.70	6.71	3.03	
6.17	5.69	6.05	4.92	4.33	4.17	2.11	
4.91	4.58	4.90	4.00	3.51	3.35	1.85	
5.11	4.75	5.06	4.17	3.56	3.45	1.86	
4.84	4.52	4.81	3.98	3.50	3.29	1.82	
4.74	4.41	4.73	3.93	3.47	3.27	1.81	
4.72	4.39	4.71	3.88	3.41	3.21	1.90	
4.69	4.33	4.66	3.85	3.39	3.18	1.77	
4.64	4.32	4.61	3.77	3.32	3.13	1.76	
3.89	3.66	4.00	3.29	2.88	2.71	1.55	
4.48	4.16	5.47	3.98	3.60	3.30	2.15	
4.49	4.30	4.89	4.52	4.13	3.87	2.66	
4.27	4.14	4.51	3.86	3.52	3.31	2.20	
4.09	3.82	4.11	3.42	3.01	2.80	1.60	
3.88	3.62	4.91	3.24	2.87	2.64	1.55	
3.77	3.54	4.83	3.19	2.83	2.62	1.50	
3.61	3.37	3.66	3.09	2.70	2.48	1.47	
3.48	3.25	3.59	3.10	2.80	2.51	1.51	Pipe 20 unreliable.
4.06	4.25	5.11	4.93	5.16	5.29	2.25	
3.45	3.21	3.53	2.95	2.58	2.39	1.41	
3.34	3.12	3.40	2.[illegible]45	2.51	2.31	1.36	
2.80	2.65	2.92	2.[illegible]43	2.19	2.01	1.22	
2.88	2.67	2.98	2.[illegible]52	2.24	2.05	1.25	
2.82	2.61	2.92	3.2[illegible]	2.21	1.99	1.22	
2.31	2.16	2.43	2.0[illegible]	1.82	1.65	1.04	
2.39	2.23	2.50	2.1[illegible]	1.87	1.73	1.05	
2.66	2.53	2.86	2.47	2.24	2.08	1.46	
2.00	1.88	2.13	1.78	1.60	1.46	0.92	
1.36	1.24	1.45	1.[illegible]24	1.16	1.00	0.71	
1.15	1.06	1.27	1.[illegible]38	1.04	0.89	0.72	
0.94	0.88	1.02	0.[illegible]47	0.83	0.69	0.58	
1.18	1.12	1.31	1.1[illegible]	1.04	0.87	0.64	
2.33	2.26	2.49	2.19	2.09	1.91	1.19	
2.73	2.71	2.97	2.51	2.25	1.99	1.17	
1.85	1.77	2.07	1.78	1.74	1.46	0.92	
0.79	0.78	0.94	0.81	0.71	0.63	0.45	

APPENDIX I.

Observed Data *Pier No.* 44.

.. ..	FIRST SERIES (18-4-32—19.10.32).																								SECOND SERIES (20-10-32—25-1
.. ..	18/4	8/5	15/5	25/5	5/6.	10/6	19/6	26/6	2 8/6	1/7	4/7	10/7	17/7	31/7	11/9	18/9	25/9	28/9	2/10	5/10	8.10	11/10	14.10	16.10	19.10	20.10	21/10	23.10	25.10	26.10	2,11	6.11	1
L. 300 † ..	34.16	33.89	35.46	34.71	34.77	34.80	34.35	35·64	35.62	35.38	35.35	35.04	35.24	38.31	36.38	37.03	37.22	37.21	36.99	37.08	37.08	37.21	37.16	38.18	34.73	35.34	35.15	31.57	33.97	32.98	31.98	30.99	2
L. 300 † ..	29.03	29.48	28.90	29.39	30.72	31.70	32.34	31.80	32.45	31.74	31.76	31.60	33.37	37.54	31.12	30.46	27.19	26.08	25.58	24.40	24.01	23.32	22.38	21.78	21.73	24.49	25.15	23.90	24.69	24.05	22.94	22.04	2
H	5.13	4.41	6.56	5.32	4.05	3.10	2.01	3.84	3.17	3.04	3.59	4.04	1.87	0.77	5.26	6.57	10.03	11.21	11.41	12.68	13.07	13.89	14.78	16.40	13.0	10.85	10.0	7.67	9.28	8.93	9.04	8.35	6
.. ..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	3
	VALUES OF P OR HEAD ABOVE DOWNSTREAM WATER-LEVEL.																																
34	5.28	3.66	5.52	3.91	3.20	2.33	1.66	3.26	2.62	3.07	2.97	3.29	1.60	0.64	4.78	5.79	7.85	8.87	9.12	10.03	9.26	10.79	11.32	12.49	10.12	8.29	7.60	7.05	8.48	8.17	8.18	7.62	6
35	2.76	2.58	3.85	2.95	2.42	1.69	1.31	2.42	2.00	2.29	2.22	2.41	1.29	0.36	4.08	4.32	5.74	6.39	6.56	7.19	7.34	7.63	8.19	9.12	7.24	5.51	5.09	5.44	6.25	5.98	6.14	5.65	4
36	4.30	2.18	3.18	2.54	2.21	1.44	1.11	2.16	1.80	2.09	2.02	2.30	1.19	..	3.33	4.00	5.60	5.44	5.63	6.20	6.27	6.67	7.18	7.93	6.45	4.76	4.33	4.77	5.29	5.09	5.27	4.91	3
33	2.39	2.18	2.97	2.60	1.89	1.47	1.00	1.95	1.62	2.07	1.91	2.22	1.11	0.13	3.48	3.82	4.93	5.36	5.66	6.28	6.25	6.69	7.28	8.70	6.47	4.59	4.42	3.79	5.37	5.22	5.38	4.96	3
32	2.37	2.12	3.06	2.45	1.89	1.45	1.03	2.05	1.69	2.01	1.91	2.09	1.10	0.48	3.28	3.96	4.90	5.37	5.57	6.16	6.28	5.91	7.09	7.83	6.31	4.63	4.21	4.59	5.21	4.96	5.13	4.73	3
31	2.26	2.02	2.91	2.43	1.82	1.36	1.01	1.98	1.63	1.94	1.84	2.09	1.06	0.44	3.32	3.88	5.12	5.69	5.77	6.35	6.47	6.71	7.32	7.75	6.23	4.55	4.13	4.53	5.08	4.89	5.02	4.55	3
30	2.28	2.16	2.93	2.45	1.82	1.36	1.0	2.03	1.65	2.03	1.97	2.17	1.09	0.47	3.57	4.35	5.26	5.73	5.95	6.45	6.48	6.90	7.38	7.96	6.48	4.53	4.15	4.56	5.05	5.04	5.09	5.07	3
29	2.28	2.04	2.97	2.40	1.82	1.36	1.0	1.99	1.63	1.92	1.82	2.07	1.09	0.48	3.16	3.81	4.70	5.23	5.37	5.95	6.06	6.40	6.85	7.60	6.13	4.52	4.08	4.47	5.01	4.87	4.99	4.61	3
28	2.34	2.0	2.93	2.32	1.79	1.32	1.94	1.95	1.59	1.87	1.80	2.07	1.05	0.48	3.15	3.80	4.62	5.20	5.31	5.91	6.03	6.36	6.78	7.54	6.09	4.43	4.05	4.40	4.96	4.73	4.86	4.53	3
27	1.97	1.64	2.35	1.93	1.42	1.03	0.75	1.62	1.32	1.54	1.47	1.62	0.84	0.38	2.67	3.11	3.91	4.36	4.49	5.00	5.15	5.43	5.81	6.48	5.27	3.79	3.40	3.78	4.10	3.92	4.10	3.82	2
24	1.59	1.87	2.81	2.25	1.72	1.24	1.94	1.87	1.55	1.92	1.76	1.92	1.00	0.41	3.15	3.04	4.87	5.41	5.32	5.96	5.92	6.36	6.76	7.34	5.94	4.33	3.93	4.33	4.80	4.60	4.78	4.64	3
25	2.30	2.36	2.99	2.21	1.69	1.25	1.94	1.99	1.53	2.20	2.13	2.30	1.09	0.48	4.59	4.26	5.36	6.09	6.33	7.09	6.74	7.25	7.87	8.10	6.68	4.50	3.96	4.73	4.74	5.22	5.05	5.51	4
26	1.89	1.89	2.02	2.14	1.39	1.11	0.81	1.82	1.46	1.90	1.93	2.16	0.93	..	3.22	3.41	4.47	4.86	5.06	5.59	5.59	6.10	6.28	7.09	5.74	4.07	3.76	4.11	4.52	4.52	4.63	4.40	3
23	1.97	1.79	2.60	2.08	1.57	1.47	1.85	1.76	1.42	1.69	1.61	1.77	0 93	0.39	2.84	3.36	4.22	4.66	4.77	5.33	5.39	5.74	6.16	6.84	5.52	4.01	3.62	3.97	4.40	4.23	4.41	4.07	3
22	1.97	1.70	2.45	1.97	1.46	1.06	1.81	1.68	1.36	1.59	1.48	1.70	0.89	0.23	2.65	3.19	4.00	4.45	4.57	5.13	5.21	5.50	5.91	6.57	5.29	3.86	3.44	3.79	4.22	4.05	4.20	3.89	3
21	1.84	1.66	2.39	1.89	1.43	1.01	0.79	1.60	1.34	1.55	1.49	1.65	0.88	0.39	2.63	3.15	3.96	4.36	4.45	5.08	5.13	5.42	5.79	6.46	6.20	3.74	3.38	3.70	4.11	3.93	4.10	3.80	2
18	1.67	1.52	2.24	1.83	1.35	0.95	0.67	1.53	1.26	1.49	1.39	1.58	0.82	0.31	2.53	2.99	3.80	4.15	4.31	4.79	4.91	5.20	5.58	6.23	5.00	3.57	3.27	3.57	3.95	3.75	3.93	3.66	2
19	1.33	0.83	2.08	3.19	1.44	0.86	0.46	1.53	1.15	1.55	1.41	1.62	0.68	0.49	2.72	3.04	3.60	4.11	4.27	4.86	4.90	5.22	5.53	5.99	4.80	3.13	3.13	3.18	3.74	3.72	3.83	3.62	2
20	0.34	..	1.02	1.75	4.43	0.80	2.0	3.03	2.65	2.53	2.61	3.15	3.25	0.23	3.25	3.15	4.02	5.17	4.97	6.07	6.44	7.33	8.19	7.33	6.22	4.03	3.62	4.77	4.64	5.19	6.20	6.55	4
17	1.55	1.52	2.16	1.77	1.39	0.87	0.69	1.47	1.21	1.42	1.34	1.46	0.74	0.37	2.41	2.88	3.67	4.01	4.07	4.61	4.72	5.03	5.37	5.99	4.81	3.46	3.12	3.41	3.77	3.64	3.78	3.51	2
0	1.51	1.77	2.10	1.73	1.23	0.88	0.65	1.41	1.18	1.35	1.30	1.44	0.75	0.36	2.32	2.79	3.58	3.94	3.97	4.44	4.54	4.89	5.22	5.81	4.70	3.34	3.03	3.31	3.62	3.51	3.64	3.38	2
3	1.49	1.30	1.83	1.50	1.05	0.71	0.69	1.25	1.04	1.16	1.06	1.24	0.71	0.35	1.97	2.35	2.98	3.29	3.43	3.82	3.89	4.14	4.35	4.91	3.99	2.80	2.52	2.89	3.09	2.95	3.12	2.90	2
4	1.53	1.30	1.83	1.52	1.08	0.73	0.69	1.27	1.05	1.19	1.14	1.28	0.69	0.33	2.01	1.37	3.07	3.31	3.49	3.94	3.93	4.23	4.54	5.03	4.04	2.89	2.58	2.87	3.12	3.03	3.16	2.96	2
5	1.37	1.30	1013	1.48	..	..	..	..	0.45	1.08	1.07	0.75	0.65	..	1.69	1.65	3.37	3.98	3.76	4.23	4.31	4.59	4.64	4.88	4.20	2.22	2.54	2.75	2.79	3.04	2.12	2.93	2
0	1.12	1.0	1.42	1.23	0.79	0.48	0.47	1.04	1.87	0.91	0.89	1.0	0.61	0.26	1.76	1.95	2.72	2.88	2.86	3.28	3.12	3.49	3.73	4.13	3.24	2.19	2.05	2.27	2.48	2.38	2.56	2.39	1
1	0.91	1.02	1.58	1.23	1.30	0.17	0.49	1.05	0.91	0.97	0.95	1.10	0.60	0.07	1.71	2.00	2.59	2.85	2.97	3.22	3.32	3.47	3.77	4.18	3.40	2.37	2.14	2.44	2.66	2.51	2.62	2.48	1
2	1.31	1.25	1.82	1.36	0.96	0.54	0.59	1.12	0.91	1.11	1.10	1.38	0.49	0.27	2.03	2.42	3.03	3.48	3.47	3.87	3.85	4.05	4.35	4.78	3.95	2.68	2.41	2.74	2.90	2.99	3.06	3.07	2
3	0.95	0.82	1.23	1.0	0.76	0.31	0.36	0.83	0.70	0.75	0.75	1.36	0.45	0.11	1.43	1.64	2.13	2.30	2.46	2.67	2.67	2.88	3.08	3.44	2.78	1.91	1.71	1.96	2.17	2.07	2.19	2.04	1
8	..	0.38	0.67	0.58	0.35	..	0.24	0.48	0.41	0.43	0.43	0.45	0.30	0.07	0.89	1.02	1.18	1.42	1.57	1.68	1.61	1.78	1.88	2.13	1.67	1.12	0.98	1.29	1.43	1.39	1.52	1.43	1
7	0.61	0.23	0.46	0.47	0.21	..	0.21	0.41	0.36	0.28	0.33	0.30	0.25	0.13	0.77	0.84	1.00	1.18	1.19	1.22	1.22	1.28	1.35	1.56	1.15	0.72	0.73	1.01	1.17	1.15	1.26	1.23	0
4	0.54	0.17	0.26	0.28	0.13	..	0.12	0.21	0.20	0.08	0.17	0.20	0.18	0.12	0.52	0.63	0.83	0.81	1.01	1.02	0.95	0.98	1.01	1.20	0.93	0.48	0.40	0.78	0.86	0.89	0.99	1.00	0
5	0.66	0.43	0.65	0.55	0.17	0.02	0.22	0.42	0.37	0.35	0.35	0.38	0.22	0.18	0.79	0.89	1.16	1.22	1.37	1.48	1.42	1.52	1.64	1.86	1.48	0.96	0.84	1.14	1.23	1.19	1.30	1.28	0
6	1.38	1.28	1.01	1.01	0.81	0.50	0.45	0.98	0.40	0.94	0.90	1.00	0.54	0.14	1.64	1.67	2.38	2.47	2.37	2.69	2.82	3.03	3.16	3.57	3.02	1.76	1.83	2.11	2.06	2.16	2.44	2.35	2
3	1.25	1.38	1.05	1.51	1.08	0.76	0.91	1.29	0.98	1.46	1.14	1.31	0.67	0.32	2.04	2.20	3.20	3.09	3.23	3.51	3.05	3.33	3.36	3.56	3.23	1.78	2.05	2.17	2.47	2.73	3.07	2.90	2
2	0.83	0.78	0.72	0.73	0.47	0.22	0.26	0.65	0.50	0.81	0.49	0.65	0.31	0.01	1.63	1.18	1.76	1.73	1.63	1.82	1.70	1.66	1.85	2.21	2.10	0.98	1.04	1.20	1.23	1.16	1.46	1.51	1
1	0.16	0.43	0.44	0.26	0.08	..	..	0.27	0.23	0.21	0.27	0.36	..	0.03	0.58	0.75	0.95	0.86	1.02	1.07	1.02	1.14	1.19	1.36	0.98	0.44	0.37	0.58	0.72	0.73	0.78	0.78	0

APPENDIX I.

Observed Data *Piers No. 43, 45, 46 & Bay 46.*

SECOND SERIES 20-10-32—25-11-32. THIRD SERIES 15-12-32—11-1-33.

18/9	2-9	28/9	2/10	5/10	8/10	11/10	14/10	16/10	19/10	20/10	21/10	23/10	25/10	26/10	27/10	28/10	29/10	3/11	5/11	12/11	15/11	19/11	20/11	23/11	15/12	16/12	20/12	21/12	28/12	2/1	6/1	11/1
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
PIER No. 43.																																
37.02	37.22	37.21	36.99	37.08	37.08	37.21	37.16	38.16	34.77	35.32	35.13	31.57*	34.0	33.08	32.98	32.98	32.94	32.03	30.99	29.96	28.99	28.03	27.07	25.94	33.58	33.50	33.33	33.33	31.04	29.05	29.20	25.33
30.44	27.19	26.0	25.58	24.40	24.01	23.32	22.38	21.78	21.77	24.51	25.15	23.90	24.65	23.78	24.07	24.05	23.06	22.81	22.67	22.45	22.37	22.21	22.24	22.11	22.50	22.41	22.48	21.79	21.80	21.60	21.57	22.00
6.58	10.03	11.21	11.41	12.68	13.07	13.89	14.78	16.38	13.0	10.81	9.98	7.67	9.35	9.3	8.91	8.93	9.88	9.22	8.32	7.51	6.62	5.82	4.83	3.83	11.08	11.09	10.85	11.54	9.24	7.45	7.63	3.33
VALUES OF P OR HEAD ABOVE DOWNSTREAM WATER LEVEL.																																
4.02	4.89	5.24	5.45	6.0	5.96	6.37	6.67	7.44	6.02	4.32	3.93	4.56	4.90	5.44	5.05	4.94	5.62	5.24	4.82	4.17	3.73	3.32	2.86	..	4.83	4.82	4.46	4.79	3.73	3.29	3.19	..
3.96	4.49	4.90	5.06	5.66	5.76	6.08	6.49	7.2	5.75	4.23	3.87	4.33	3.95	5.08	4.78	4.73	5.31	4.95	4.54	3.95	3.47	3.08	2.65	1.9	4.60	4.59	4.21	4.70	4.06	3.71	3.20	2.19
3.21	3.90	4.08	4.46	4.93	5.04	5.29	5.67	6.31	5.01	3.67	3.28	3.80	3.96	4.39	4.05	4.02	4.54	4.21	3.89	3.37	2.97	2.65	2.3	1.7	3.83	3.81	3.53	3.93	3.16	2.79	2.59	1.50
2.07	2.55	2.77	3.04	3.28	3.31	0.54	3.81	4.25	3.39	2.39	2.14	2.40	2.67	2.79	2.62	2.60	2.89	2.75	2.56	2.21	1.93	1.74	1.51	1.12	2.43	2.45	2.24	2.57	2.09	1.85	1.68	0.99
1.68	1.98	2.19	2.47	5.64	2.63	2.83	2.91	3.36	2.72	1.86	1.66	1.92	2.02	2.21	2.05	2.06	2.38	2.23	2.1	1.87	1.87	2.0	1.95	2.1	2.09	2.80	2.85	3.45	3.43	2.59	2.59	2.25
0.87	1.64	1.49	1.86	1.95	1.54	1.63	1.53	1.78	1.75	0.5	0.42	0.69	0.71	0.79	0.74	0.75	1.21	0.89	0.94	1.16	1.24	1.24	1.16	1.09	0.95	1.04	1.07	1.63	1.62	1.73	1.63	1.40
PIER No. 45.																										24-12	26-12	28-12				
37.04	37.32	37.22	37.0	37.09	37.09	37.22	37.16	38.16	34.70	33.35	35.15	31.57	34.0	33.08	32.98	32.98	32.94	32.03	30.99	29.96	28.99	28.03	27.06	25.94	33.58	33.32	33.31	..	31.04	29.05	29.20	..
30.47	27.20	26.0	25.59	24.41	24.02	23.32	22.38	21.78	21.70	24.47	25.15	23.90	24.65	23.77	24.07	24.05	23.06	22.81	22.67	22.45	22.37	22.31	22.24	22.11	22.52	21.70	21.80	..	21.80	21.60	21.55	..
6.57	10.02	11.22	11.41	12.68	13.07	13.90	14.78	16.38	13	10.88	10.0	7.67	9.35	9.31	8.91	8.93	9.88	9.22	8.32	7.51	6.62	5.72	4.82	3.83	11.06	11.62	11.51	..	9.24	7.45	7.65	..
4.21	4.79	5.29	5.84	6.63	6.83	6.38	7.41	8.11	7.10	4.85	4.19	4.61	4.78	5.38	4.92	5.03	5.70	5.36	4.91	4.57	4.09	3.58	3.44	2.49	4.54	5.12	5.0	..	4.62	3.81	3.62	..
3.52	4.59	5.05	5.12	5.82	5.88	5.28	6.73	7.45	6.04	4.33	4.91	4.2	4.49	4.77	4.43	4.39	4.02	4.66	4.30	3.75	3.32	2.87	2.6	1.93	4.22	4.40	4.28	..	3.64	3.20	2.98	..
3.06	4.01	4.38	5.46	5.06	5.18	5.52	5.93	6.56	5.34	3.79	3.42	3.64	3.96	4.2	3.88	3.84	4.41	4.09	3.78	3.28	2.92	2.52	2.31	1.74	3.65	3.85	3.74	..	3.21	2.85	2.64	..
2.11	3.33	3.12	3.28	4.04	3.71	3.93	4.5	4.78	4.19	2.51	2.39	2.49	2.35	3.06	2.68	2.67	3.23	2.85	2.73	2.31	2.06	1.77	1.77	1.28	2.49	2.80	3.04	..	2.53	2.31	1.85	..
1.71	2.11	2.23	2.31	2.72	2.58	2.93	3.05	3.44	2.91	1.80	1.63	1.93	2.05	2.51	2.21	2.10	2.67	2.78	2.85	2.71	2.64	2.61	2.65	2.33	1.98	2.87	2.72	..	2.53	2.63	2.37	..
0.94	0.64	1.17	2.09	2.68	1.56	1.88	2.20	2.46	2.0	0.45	0.20	1.76	0.92	1.5	0.96	0.90	1.26	1.01	1.13	0.83	0.68	0.53	0.59	0.37	0.86	0.97	0.87	..	0.78	0.90	0.65	..
PIER No. 46.																										17-1		28-12				
37.05	37.22	37.22	37.0	37.09	37.09	37.22	37.16	38.16	34.60	35.37	35.15	31.56	34.0	33.08	32.98	32.98	32.94	32.03	30.99	29.96	28.98	28.03	27.06	25.94	33.58	33.38	33.32	31.04	..	29.05	29.20	25.33
30.47	27.21	26.0	25.60	24.41	24.02	23.32	22.38	21.78	21.60	24.45	25.15	23.91	24.66	23.82	24.07	24.05	23.07	22.81	22.67	22.45	22.36	22.31	22.24	22.11	22.53	22.37	22.47	21.80	..	21.60	21.55	22.00
6.58	10.01	11.22	11.40	12.68	13.07	13.90	14.78	16.38	13.0	10.82	10.0	7.65	9.34	9.26	8.91	8.93	9.87	9.22	8.32	7.51	6.62	5.72	4.82	3.83	11.05	11.1	10.85	9.24	..	7.45	7.65	3.33
4.25	6.0	6.63	5.94	7.76	6.73	7.36	7.71	7.41	7.46	4.90	4.36	4.95	4.77	5.64	5.42	4.44	6.18	5.99	5.62	5.03	4.66	4.18	4.19	3.08	4.42	4.46	4.38	5.04	..	4.68	4.25	3.04
3.49	4.61	5.09	5.29	5.88	5.98	5.38	6.83	7.55	6.28	4.36	3.92	4.35	4.37	4.59	4.28	4.22	4.88	4.31	4.18	3.65	3.27	2.84	2.63	2.01	4.02	4.08	3.92	3.92	..	3.20	2.96	1.76
3.11	4.09	4.58	4.68	5.29	5.38	6.74	6.15	6.81	4.67	3.86	3.50	3.68	3.94	4.15	3.87	3.78	4.37	4.08	3.79	3.31	2.97	2.58	2.41	1.85	3.56	3.63	3.52	3.28	..	2.90	2.69	1.04
2.11	2.83	3.13	3.18	3.64	3.67	3.93	4.19	4.67	3.88	2.59	2.30	2.55	2.70	2.96	2.69	4.97	3.09	3.89	2.68	2.31	2.09	1.79	1.17	1.31	2.45	2.51	2.41	3.09	..	2.10	1.91	1.29
1.73	2.3	2.54	2.60	2.96	2.94	3.17	3.32	3.70	3.11	1.96	1.65	2.11	1.93	2.41	2.19	2.20	2.58	2.4	1.26	1.98	1.79	1.54	1.49	1.18	2.07	2.13	2.07	2.03	..	1.93	1.75	1.23
1.49	3.47	4.18	4.12	4.71	4.04	4.39	4.68	4.99	4.54	2.26	2.16	2.82	2.81	3.41	3.06	2.99	3.51	3.32	3.11	2.69	2.42	2.06	1.94	1.49	2.76	2.84	2.72	2.63	..	2.38	2.14	1.34
BAY No. 46.																																
3.93	4.85	5.54	6.38	6.48	6.4	6.71	7.09	7.71	6.41	4.35	3.99	4.10	4.53	5.08	4.62	4.54	5.24	4.77	4.53	4.14	3.62	3.19	3.07	2.31	4.14	4.20	4.04	4.11	..	3.65	3.25	2.13
3.25	4.03	4.62	4.65	5.25	5.25	5.75	6.1	6.73	5.52	3.81	3.42	3.68	3.94	4.13	3.89	3.84	4.41	4.08	3.80	3.33	2.98	2.59	2.39	1.83	3.65	3.66	3.51	3.26	..	2.89	2.67	1.60
1.66	5.55	5.41	4.55	7.70	6.10	6.6	6.59	7.35	6.98	3.68	3.27	4.15	3.96	4.38	4.37	4.44	5.31	4.95	4.54	3.99	3.56	3.61	3.04	2.67	3·26	3.40	3.56	4.27	..	3.74	3.76	2.62
3.21	4.2	4.67	4.19	5.39	5.29	5.70	6.14	6.59	5.77	3.59	3.17	3.75	3.76	4.14	3.87	3.82	4.44	4.26	4.04	3.52	3.17	2.69	2.63	2.09	3.32	3.42	3.32	3.41	..	3.21	2.82	1.87
2.82	3.7	4.04	4.63	5.74	4.78	5.15	5.49	6.08	5.06	3.43	3.11	3.36	3.56	3.75	3.54	3.50	4.03	3.73	4.46	3.03	2.69	2.32	2.18	1.66	3.29	3.33	3.21	2.98	..	2.65	2.45	1.48

APPENDIX I.

Observed Data — *Piers No. 43, 45, 46 & Bay 46.*

FIRST SERIES 18-4-32—19-10-32.

	18/4	8/5	1-6/6	25/5	5/6	10/6	19/6	26/6	1/7	4/7	10/7	17/7	31/7	14/8	28/8	11/9	18/9	25/9	28.9	2/10	5/10	8/10	11/10	14/10	16/10	19/10	20/10	21/10	23/10	25/10	26/10	27/10
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
PIER No. 43.																																
r R. L. 300+	34.16	33.89	35.48	34.71	34.77	34.80	34.25	35.66	35.38	35.36	35.64	35.24	38.39	37.72	37.47	36.38	37.02	37.22	37.21	36.99	37.08	37.08	37.21	37.16	38.16	34.77	35.32	35.13	31.57*	34.0	33.08	32.98
r R. L. 300+	29.03	29.48	28.88	29.39	30.72	31.70	32.31	31.81	31.72	31.79	31.69	33.37	37.52	37.39	37.12	31.02	30.44	27.19	26.0	25.58	24.40	24.01	23.32	22.38	21.78	21.77	24.51	25.15	23.90	24.65	23.78	24.07
t=H	5.13	4.41	6.6	5.32	4.05	3.10	1.91	3.85	3.06	3.66	4.04	1.87	0.78	0.33	0.35	5.36	6.58	10.03	11.21	11.41	12.68	13.07	13.89	14.78	16.38	13.0	10.81	9.98	7.67	9.35	9.3	8.91
																				VALUES OF P OR HEAD ABOVE DOWNSTREAM WATER LEVEL.											
	2.53	2.14	3.18	2.58	1.95	1.35	0.78	1.96	1.94	1.84	2.06	0.95	0.46	0.21	0.24	3.49	4.02	4.89	5.24	5.45	6.0	5.96	6.37	6.67	7.44	6.02	4.32	3.93	4.56	4.91	5.44	5.02
	2.22	2.04	2.99	2.41	1.81	1.35	1.00	1.94	1.88	1.86	2.02	1.05	0.46	0.45	0.18	3.46	3.96	4.49	4.90	5.06	5.66	5.76	6.08	6.49	7.2	5.75	4.23	3.87	4.33	3.95	5.08	4.78
	1.89	1.58	2.58	2.04	1.55	1.50	0.77	1.65	1.61	1.53	1.70	0.91	0.41	0.2	0.15	2.75	3.21	3.99	4.08	4.46	4.93	5.04	5.29	5.67	6.31	5.01	3.67	3.28	3.80	3.96	4.39	4.05
	1.22	1.21	1.79	1.35	0.95	1.56	0.48	1.09	1.06	1.02	1.14	0.59	0.29	0.65	0.10	1.98	2.07	2.55	2.77	3.04	3.28	3.31	0.34	3.81	4.25	3.39	2.39	2.14	2.40	2.67	2.79	2.62
	1.09	0.96	1.37	1.10	0.66	0.21	0.31	0.71	0.70	0.65	1.72	0.36	0.21	1.07	0.11	1.66	1.68	1.98	2.19	2.47	5.64	2.63	2.83	2.91	3.36	2.72	1.86	1.66	1.92	2.02	2.21	2.06
	0.35	0.17	0.29	0.23	0.07	..	0.13	0.17	0.26	0.24	0.22	0.25	0.17	0.1	0.16	1.08	0.87	1.64	1.49	1.86	1.95	1.54	1.63	1.53	1.78	1.75	0.5	0.42	0.69	0.71	0.79	0.74
PIER No. 45.																																
R. L. 300+	34.16	33.89	35.48	34.71	34.77	34.80	34.25	35.62	35.37	35.36	35.64	35.25	38.36	37.71	37.48	36.38	37.04	37.32	37.22	37.0	37.09	37.09	37.22	37.16	38.16	34.70	33.35	35.15	31.57	34.0	33.08	32.98
R. L. 300+	29.03	29.48	28.88	29.39	30.72	31.70	32.34	31.77	31.76	31.72	31.6	33.37	37.56	37.39	37.14	31.25	30.47	27.20	26.0	25.59	24.41	24.02	23.32	22.38	21.78	21.70	24.47	25.15	23.90	24.65	23.77	24.07
t=H	5.13	4.41	6.6	5.32	4.05	3.1	1.91	3.85	3.61	3.64	4.04	1.88	0.80	0.32	0.34	5.13	6.57	10.02	11.22	11.41	12.68	13.07	13.90	14.78	16.38	13	10.88	10.0	7.67	9.35	9.31	8.91
	1.74	1.81	2.24	2.27	1.70	1.15	1.09	1.94	1.99	2.12	2.11	1.15	0.43	0.17	0.08	2.96	4.21	4.79	5.29	5.84	6.63	6.83	6.38	7.41	8.11	7.10	4.85	4.19	4.61	4.78	5.38	4.93
	1.45	1.81	2.6	2.16	1.55	1.11	0.85	1.83	1.74	1.65	1.84	0.94	0.43	0.16	0.15	2.82	3.52	4.59	5.05	5.12	5.82	5.88	5.28	6.73	7.45	6.04	4.33	4.91	4.2	4.49	4.77	4.43
	1.76	1.56	2.22	1.83	1.32	0.96	0.69	1.58	1.5	1.42	1.57	0.83	0.40	0.15	0.11	2.43	3.06	4.01	4.38	5.46	5.06	5.18	5.52	5.93	6.56	5.34	3.79	3.42	3.64	3.96	4.2	3.88
	1.13	1.04	1.52	1.27	0.91	0.59	0.40	1.21	1.59	1.58	1.57	0.72	0.27	0.07	0.07	2.29	2.11	3.33	3.12	3.28	4.04	3.71	3.93	4.5	4.78	4.19	2.51	2.29	2.49	2.55	3.06	2.68
	0.99	0.81	1.12	0.96	0.70	0.40	0.61	1.01	1.93	1.34	1.32	0.67	0.15	1.21	1.06	1.71	1.71	2.11	2.23	2.31	2.72	2.58	2.93	3.05	3.44	2.91	1.80	1.63	1.93	2.05	2.51	2.21
	0.41	0.23	0.47	0.19	0.03	..	..	0.33	0.14	0.09	0.08	0.11	0.15	0.49	0.14	0.47	0.94	0.64	1.17	2.09	2.68	1.56	1.88	2.20	2.46	2.0	0.45	0.20	1.76	0.92	1.5	0.59
PIER No. 46.																																
R. L. 300+	34.16	33.89	35.48	34.71	34.77	34.80	34.25	35.62	35.37	35.36	35.64	35.25	38.39	37.71	37.48	36.38	37.05	37.22	37.22	37.0	37.09	37.09	37.22	37.16	38.16	34.60	35.37	35.15	31.56	34.0	33.08	32.9
R. L. 300+	29.03	29.48	28.88	29.39	30.72	31.7	32.34	31.74	31.79	31.74	31.60	33.37	37.58	37.39	37.14	31.27	30.47	27.21	26.0	25.60	24.41	24.02	23.32	22.38	21.78	21.60	24.45	25.15	23.91	24.66	23.82	24.0
t=H	5.13	4.41	6.6	5.32	4.05	3.1	1.91	3.91	3.58	3.62	4.04	1.88	0.81	0.32	0.34	5.11	6.58	10.01	11.22	11.40	12.68	13.07	13.90	14.78	16.38	13.0	10.82	10.0	7.65	9.34	9.26	8.9
	2.47	1.98	2.68	1.85	1.31	1.1	0.75	1.93	1.75	1.69	1.86	1.0	0.4	0.21	0.24	3.13	4.25	6.0	6.63	5.94	7.76	6.73	7.26	7.71	7.41	7.46	4.90	4.36	4.95	4.77	5.64	5.4
	1.78	1.70	2.39	2.10	1.51	1.1	0.81	1.72	1.69	1.6	1.86	0.94	0.39	0.2	0.14	2.76	3.49	4.61	5.09	5.29	5.88	5.98	5.38	6.83	7.55	6.28	4.36	3.92	4.35	4.37	4.59	4.2
	1.57	1.54	2.10	2.29	1.33	0.9	0.71	1.66	1.5	1.44	1.59	0.87	0.38	0.18	0.15	2.48	3.11	4.09	4.58	4.68	5.29	5.38	6.74	6.15	6.81	4.67	3.86	3.50	3.68	3.94	4.15	3.8
	1.07	1.06	1.43	1.31	0.87	0.54	0.44	1.11	1.01	1.95	1.06	0.59	0.26	0.15	0.08	1.65	2.11	2.83	3.13	3.18	3.64	3.67	3.93	4.19	4.67	3.88	2.59	2.30	2.55	2.70	2.96	2.6
	1.07	0.98	1.12	1.06	0.71	0.39	0.38	0.90	0.79	0.74	0.84	0.48	0.17	0.13	0.07	1.32	1.73	2.3	2.54	2.60	2.96	2.94	3.17	3.32	3.79	3.11	1.96	1.65	2.11	1.93	2.41	2.1
	0.41	..	0.02	0.89	0.51	0.32	0.29	0.90	0.69	0.63	0.67	0.43	..	0.01	0.11	1.92	1.49	3.47	4.18	4.12	4.71	4.04	4.39	4.68	4.99	4.54	2.26	2.16	2.82	2.81	3.41	3.0
BAY No. 46.																																
	1.87	2.0	2.47	2.19	1.61	1.1	0.83	1.86	1.91	1.95	2.19	0.94	0.38	0.58	0.23	3.25	3.93	4.85	5.54	6.58	6.48	6.4	6.71	7.09	7.71	6.41	4.35	3.99	4.30	4.53	5.08	4.6
	1.65	1.58	2.14	1.87	1.35	0.93	0.71	1.76	1.32	1.45	1.63	0.84	0.36	0.17	0.07	2.44	3.25	4.03	4.62	4.65	5.25	5.25	5.75	6.1	6.73	5.52	3.81	3.42	3.68	3.94	4.13	3.8
	1.25	1.32	1.96	1.44	0.89	0.53	0.43	1.54	0.95	0.93	1.05	0.66	0.2	..	..	2.91	4.06	5.55	5.41	4.55	7.70	6.10	6.6	6.59	7.35	6.98	3.68	3.27	4.15	3.96	4.38	4.3
	1.02	1.65	2.17	1.61	0.06	0.58	0.20	1.41	1.12	1.14	1.26	0.43	..	0.18	0.07	2.68	3.21	4.2	4.67	4.19	5.39	5.29	5.70	6.14	6.59	5.77	3.59	3.17	3.75	3.76	4.14	3.87
	1.54	1.45	1.94	1.72	1.21	0.85	0.64	1.50	1.34	1.1	1.45	0.80	..	0.16	0.10	2.26	2.82	3.7	4.04	4.63	5.74	4.78	5.16	5.49	6.08	5.06	3.43	3.11	3.36	3.56	3.75	3.54

APPENDIX II.

le of pressure difference in pipes 28 *and* 29 *and the* 'Φ' *corrections.*

e.	Heads —H.	R. L. of water surface in pipe No. 28	R. L. of water surface in pipe No. 29	Difference in the water surface.	Pipe No.	Filter point. R. L.	Z = Height of filter point above R.L. 286.	φ Correction $= \varphi - p$.	REMARKS.
5-32	4.41	331.48	331.52	0.04	34	317.15	31.15	0.156	$Z_{28} - Z_{29} = 10$
6-32	4.65	332.51	332.54	0.03	31	317.16	31.16	0.156	$P_{28} - P_{29} = 0.05$.
6-32	2.83	333.75	333.79	0.04	30	317.16	31.16	0.156	$g\rho = \frac{\rho_{28} - \rho_{29}}{Z_{28} - Z_{29}}$
7-32	3.60	333.55	333.58	0.03	27	317.16	31.16	0.156	$= 0.005$.
9-32	10.02	331.81	331.89	0.08	24	317.16	31.16	0.156	
9-32	11.21	331.20	331.23	0.03	21	317.15	31.15	0.156	
0-32	11.41	330.89	330.95	0.06	35	307.86	21.86	1.090	
0-32	12.60	330.31	330.35	0.04	32 & 28	308.00	22.00	0.110	
0-32	13.07	330.04	330.07	0.03	25	307.96	21.96	0.110	
0-32	13.89	329.68	329.72	0.04	22	307.96	21.96	0.110	
0-32	14.78	329.16	329.23	0.07	19	308.00	22.00	0.110	
0-32	16.40	329.32	329.38	0.06	13	309.00	23.00	0.115	
0-32	10.00	329.20	329.23	0.03	36	292.16	6.16	0.031	
0-32	8.91	328.84	328.93	0.09	26	292.13	6.13	0.031	
0-32	9.88	328.39	328.48	0.09	15	292.02	6.02	0.030	
1-32	8.32	327.33	327.39	0.06	9	292.02	6.02	0.030	
1-32	7.52	326.72	326.78	0.06	33	298.10	12.10	0.605	
1-32	7.67	326.52	326.55	0.03	29	298.00	12.00	0.600	
1-32	6.62	325.90	325.94	0.04	23	298.10	12.10	0.600	
1-32	6.72	325.86	325.92	0.06	18	319.00	33.00	0.165	
1-32	5.81	325.43	325.47	0.04	20	295.10	9.10	0.0455	
1-32	4.85	324.96	325.01	0.05	6	294.00	8.00	0.0400	
1-32	3.78	324.48	324.53	0.05	17	314.40	28.40	0.1420	
1-32	3.83	324.17	324.21	0.04	16	314.1	28.1	0.1405	
2-32	11.07	327.15	327.20	0.05	14	300.00	14.00	0.070	
2-32	10.85	326.80	326.81	0.01	10	310.50	24.50	0.123	
2-32	11.62	326.31	326.36	0.05	11	302.00	16.00	0.080	
2-32	9.24	325.57	325.65	0.08	12	286.0	0.0	0.0	
1-33	7.45	324.92	324.99	0.07	8	302.0	16.0	0.80	
1-33	7.65	324.69	324.74	0.05	7	309.50	23.5	0.1175	
1-33	3.33	323.76	323.77	0.01	1, 1	309.02	23.02	0.115	
		Total	=	1.51	5, 2	302.00	16.0	0.18	
		Mean	=	0.049					
			Say	0.05					

APPENDIX III.

Pressure Drops at Intermediate Sheet Piles.

PIER 44.

Series — FIRST SERIES 18-4-32—16-10-32

Date	18/4	8/5	15/5	25/5	5/6	26/6	28/6	1/7	4/7	10/7	17/7	31/7	11/9	18/9	25/9	28/9	2/10	5/10	8/10	11/10	14/10	16/10
Head=H	5.13	4.41	6.56	5.32	4.05	3.84	3.17	3.64	3.59	4.04	1.87	0.77	5.26	6.57	10.03	11.21	11.41	12.68	13.07	13.89	14.78	16.40
P 24	1.59	1.87	2.81	2.23	1.72	1.87	1.55	1.92	1.76	1.92	1.0	0.41	3.15	3.64	4.87	5.41	5.32	5.96	5.92	6.36	6.76	7.34
P 23	1.97	1.79	2.60	2.08	1.57	1.76	1.42	1.69	1.61	1.77	0.93	0.39	2.84	3.36	4.22	4.66	4.77	5.33	5.39	5.74	6.16	6.84
P 21	1.84	1.66	2.39	1.89	1.43	1.60	1.34	1.55	1.49	1.65	0.88	0.39	2.63	3.15	3.96	4.36	4.45	5.08	5.13	5.42	5.79	6.46
P 24/H%	30.99	42.40	42.84	42.29	42.47	47.59	48.59	52.75	49.03	47.49	53.48	53.24	59.89	55.40	48.55	48.26	46.63	47.0	45.30	45.79	45.74	44.76
P 23/H%	38.40	40.59	39.63	39.10	38.77	45.83	44.79	46.43	44.85	43.81	49.73	50.65	53.99	51.14	42.07	41.57	41.80	42.04	41.24	41.32	41.68	43.67
P 21/H%	35.87	37.64	36.43	35.53	35.28	41.67	42.27	42.58	41.50	40.84	47.06	50.65	50.0	47.95	39.48	38.89	39.0	40.06	39.25	39.02	39.18	39.39
(P 24—P 23)/H%	..	1.81	3.20	3.20	3.70	1.76	3.80	6.32	4.18	3.68	3.75	2.59	5.90	4.26	6.48	6.69	4.83	4.96	4.06	4.47	4.06	1.09
(P 23—P 21)/H%	2.56	2.95	3.20	3.57	3.46	4.16	2.52	3.85	3.35	2.97	2.67	..	3.99	3.19	2.59	2.68	2.80	1.98	1.99	2.30	2.30	4.28
(P 24—P 21)/H%	..	4.76	6.40	6.77	7.16	5.92	6.32	10.17	7.53	6.65	6.42	2.59	9.89	7.45	9.07	9.37	7.63	6.94	6.09	6.77	6.56	5.37

Series — SECOND SERIES 20-10-32—19-11-32 — THIRD SERIES 15-12-32—6-1-33.

Date	20/10	21/10	23/10	25/10	28/10	2/11	6/11	16/11	19/11			15/12	20/12	25/12	28/12	2/1	6/1	
Head=H	10.85	10.0	7.67	9.28	8.93	9.04	8.35	6.72	5.82			11.07	10.85	11.62	9.24	7.45	7.64	
P 24	4.33	3.93	4.33	4.80	4.60	4.78	4.64	3.65	3.23			4.48	4.16	5.47	3.98	3.60	3.30	
P 23	4.01	3.62	3.97	4.40	4.23	4.41	4.07	3.20	2.82			4.09	3.82	4.11	3.42	3.01	2.80	
P 21	3.74	3.38	3.70	4.11	3.94	4.10	3.80	2.98	2.64			3.77	3.54	4.83	3.19	2.83	2.62	AVERAGE DROPS=7.8%
P 24/H%	39.91	39.3	56.45	51.72	51.51	52.88	55.57	54.32	55.50			40.47	38.34	48.58	43.07	48.32	43.19	
P 23/H%	36.96	36.20	51.76	47.41	47.37	48.78	48.74	47.62	48.45			36.95	35.21	36.50	37.01	40.41	36.65	
P 21/H%	34.47	33.80	48.24	44.29	44.12	45.35	45.51	44.35	45.36			34.06	32.63	42.90	34.52	37.99	34.29	
(P 24—P 23)/H%	2.95	3.10	4.69	4.31	4.14	4.10	6.83	6.70	7.05			3.52	3.13	12.68	6.06	7.91	6.54	
(P 23—P 21)/H%	2.49	2.40	3.52	3.12	3.25	3.43	3.23	3.27	3.09			2.89	2.68	..	2.49	2.42	2.36	
(P 24—P 21)/H%	5.44	5.5	8.21	7.43	7.39	7.53	10.06	9.97	10.14			6.41	5.71	5.68	8.55	10.33	8.90	

BAY NO. 25 AND 30.

Series — FIRST SERIES 8-10-32—19-10-32. — THIRD SERIES 15-12-32—11-1-33.

Date	8/10		11/10		14/10		16/10		19/10		15/12		17/12		20/12		28/12		2/1/33		6/1		11/1		
Head=H	13.5		15.41		16.12		17.72		14.02		12.76		12.27		12.08		9.31		7.56		7.8		4.11		
Bay No.	25	30	25	30	25	30	25	30	25	30	25	30	25	30	25	30	25	30	25	30	25	30	25	30	
P A	6.19	5.97	7.31	7.11	7.53	7.37	8.02	8.02	6.62	6.61	—4.79	5.08	4.59	4.11	4.42	4.82	3.28	3.44	2.74	2.89	2.74	2.66	1.62	1.7	AVERAGE DROPS
P B	3.97	3.45	5.45	4.86	5.66	5.15	6.15	5.65	5.04	4.64	3.74	3.31	3.50	3.0	3.33	2.91	2.42	2.12	2.02	1.76	2.01	1.76	1.2	1.08	BAY 25 = 10.5 %
P A/H%	45.9	44.2	47.4	46.1	46.7	45.7	45.3	45.3	45.2	47.2	37.5	39.8	37.4	39.1	36.6	40.0	35.2	36.9	36.2	38.2	35.1	34.1	39.4	43.1	BAY 30 = 14.7 %
P B/H%	29.4	25.6	35.4	32.1	35.1	31.9	34.7	31.9	35.9	33.1	29.3	25.9	28.5	24.4	27.7	24.1	26.2	22.8	26.7	23.3	25.8	22.6	29.2	26.3	
(P A—PB)/H%	16.5	18.7	12.0	14.0	11.6	13.8	10.6	13.4	11.3	14.1	8.20	13.9	8.9	14.8	8.9	15.9	9.2	14.2	9.5	14.9	9.4	11.5	10.2	16.8	

Series — SECOND SERIES 20-10-32—20-11-32

Date	20/10		21/10		23/10		25/10		26/10		28/10		3/11		5/11		6/11		16/11		19/11		20/11	
Head=H	12.07		11.7		8.27		10.75		10.02		9.88		9.25		8.23		8.34		6.7		5.76		4.75	
P A	5.33	5.19	5.1	5.13	3.66	3.69	4.71	4.74	4.24	4.34	4.17	4.28	3.71	3.81	3.33	3.41	3.37	3.46	2.59	2.69	2.33	2.37	1.98	2.06	
P B	4.02	3.52	3.87	3.90	2.72	2.24	3.52	3.20	3.21	2.94	3.14	2.86	2.77	2.50	2.47	2.16	2.52	2.26	1.95	1.86	1.75	1.76	1.5	1.64	
P A/H%	44.2	43.00	43.6	43.8	44.3	44.6	43.8	44.1	42.4	43.3	42.2	43.3	40.1	41.2	40.5	41.4	40.4	41.5	38.7	40.2	40.5	41.2	41.7	43.3	
P B/H%	33.3	29.2	33.1	29.6	32.9	29.3	32.7	29.7	32.0	29.3	31.8	28.9	30.0	27.0	30.1	26.2	30.2	27.1	29.1	27.8	30.4	30.6	31.6	34.5	
(P A—PB)/H%	10.9	13.8	10.5	14.2	11.4	15.3	11.1	14.4	10.4	14.0	10.4	14.4	10.1	14.2	10.5	15.2	10.2	14.4	9.6	12.4	10.1	10.6	10.1	8.8	

APPENDIX IV

Showing levels of tops of filters and measuring points.

R. L. of top of filter.	R. L. at which pipe passes into pier.	R. L. of measuring point.	No. of pipe.	R. L. of top of filter.	R. L. at which pipe passes into pier.	R. L. of measuring point.	No. of pipe.	R. L. of top of filter.	R. L. at which pipe passes into pier.	R. L. of measuring point.
Pier No. 44.				Pier No. 43.				Right Flank Wall.		
310.00	310.85	342.61	7	310.15	310.69	342.52	7	310.00	310.65	343.77
301.97	310.85	342.61	9	292.05	310.69	342.58	10	310.50	310.50	343.76
294.03	310.85	342.61	10	310.34	310.69	342.58	16	313.99	314.50	352.23
309.02	310.85	342.61					21	317.48	318.00	350.76
			21	317.16	317.65	349.62				
302.00	310.85	342.61	24	317.15	317.65	349.62	24	317.48	318.00	350.82
294.00	310.85	342.61	31	317.10	317.65	349.62	31	317.65	318.00	348.28
309.50	310.64	345.98					34	317.50	318.00	348.28
302.00	310.64	345.98		Pier No. 45.			49	291.95	..	348.43
292.02	310.64	345.98					50	317.98	..	348.43
310.50	310.98	345.98	7	309.50	310.65	342.60	51	297.96	..	348.30
302.00	310.64	345.98	9	292.0	310.65	342.60	52	318.00	..	348.27
286.00	310.64	345.98	10	310.5	310.65	342.62	53	297.98	..	348.28
309.00	310.98	345.98	21	317.16	317.65	349.60	54	317.99	..	348.28
300.00	310.98	345.98	24	317.16	317.65	349.60	43	292.01	..	350.75
292.02	310.98	345.98	31	317.13	317.65	349.60	44	318.01	..	350.75
314.10	314.64	345.62					45	298.00	..	350.80
314.40	314.64	345.62					46	318.00	..	350.77
319.00	314.64	345.62		Pier No. 46.			47	298.00	..	350.72
308.00	314.64	345.62					48	318.01	..	350.72
295.10	314.64	345.62	7	310.00	310.65	342.60	37	285.98	..	343.77
			9	291.62	310.65	342.60				
317.15	317.65	349.62	10	310.50	310.67	342.60	38	311.95	..	343.76
307.96	317.65	349.62					39	291.95	..	343.77
298.10	317.65	349.62	21	317.15	317.65	349.60	40	312.00	..	343.76
317.16	317.65	349.62	24	317.16	317.65	349.60	41	292.10	..	342.72
			31	317.16	317.65	349.60	42	311.96	..	343.75
307.96	317.65	349.62								
292.13	317.65	349.62								
317.16	317.65	349.62								
308.00	317.65	349.62		Bay No. 46.				Junction Groyne.		
298.00	317.85	349.62	17	314.65	314.65	345.63	57	297.85	..	350.73
317.16	317.85	349.62	18	319.35	314.65	345.63	58	368.01	..	350.72
317.16	317.85	349.62	20	295.03	314.65	345.63	59	292.57	..	350.72
308.00	317.85	349.62					60	318.00	..	350.74
			21	317.15	317.65	349.60	55	297.97	..	348.23
298.10	317.85	349.62	24	317.15	317.65	349.60	56	318.02	..	348.19
317.15	317.85	349.62								
307.86	317.85	349.62								
292.16	317.85	349.62								

APPENDIX V.

Statement showing percentage pressures at each of the 96 pipes in the old Weir and in the Extension.

Pier No. 44.		Pier No. 43.		Pier No. 45.		Pier No. 46.		Bay No. 46.		Right Flank Wall.		Junction groyne.	
Pipe No.	P/H%	Pipe No.	P/H%	Pipe No.	P/H%	Pipe No.	P/H%	Pipe No.	P/H%	Pipe No.	P/H%	Pipe No.	P/H%
34	77.5									34	90.6	55	50.0
35	55.8									44	46.8	56	50.8
36	48.5									43	47.9	57	44.4
33	49.2									21	50.3	58	44.7
32	48.2									42	41.5	59	38.1
31	49.1	31	45.4	31	51.0	31	52.2			31	58.8	60	36
30	50.0									41	41.2		
29	46·2									40	41.6		
28	46·2												
27	39.7												
24	45.6	24	44.0	24	46.1	24	45.6	24	48.2	39	36·4		
25	52.6									38	28.4		
										2	50.6		
26	43.2									3	34.1		
23	41.8												
22	40.0												
21	38.8	21	38.5	21	40.0	21	41·5	21	41.2	54	56.2		
										53	52.6		
18	37.6							18	40.9	52	56.9		
19	37.2									21	50.3		
17	36.5							17	37.2				
16	35.3												
										51	52.4		
13	29.4									50	50.3		
14	30.9									49	50.6		
15	31.8									16	41.8		
10	25.3	10	25.9	10	29.0	10	28.6						
										48	50.6		
11	25.3									47	57.4		
12	29.1									46	52.6		
9	20.9	9	20.5	9	21.0	9	22.6			10	22.8		
8	12.9										19.4		
7	9.4	7	11.0	7	14.3	7	*31.2			7	35.3		
4	7.4												
5	11.8												
6	21.8												
3	23.2												
2	12.9												
1	8·2												
20								20	44.8				

* Obviously erratic.

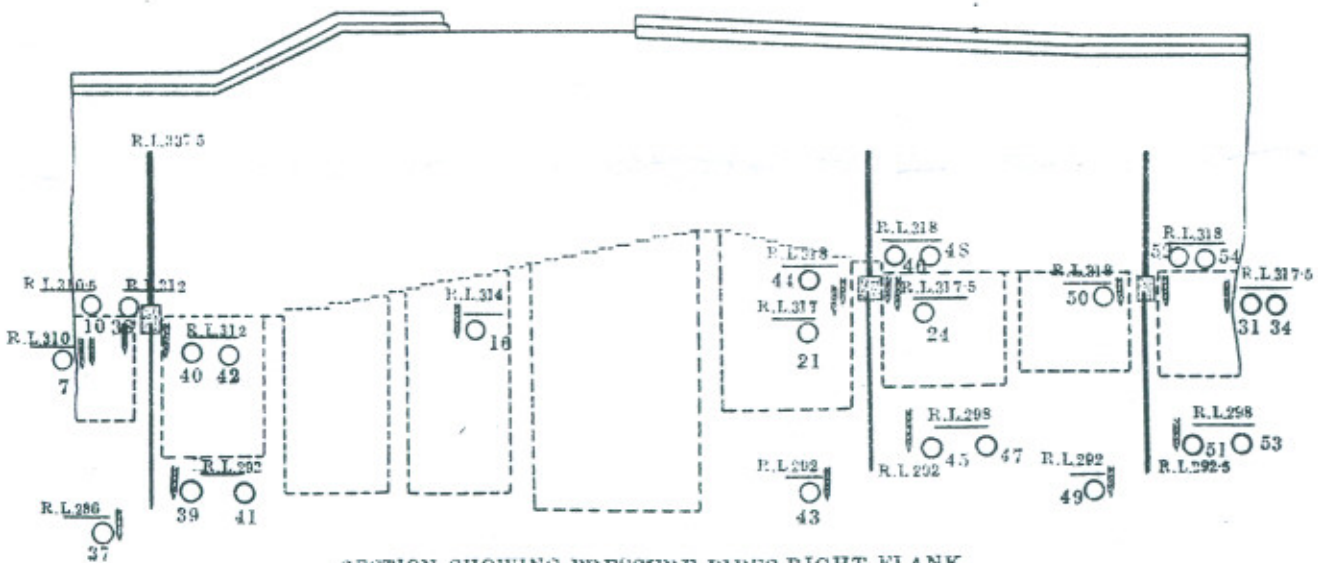
Bay	No. 25	Bay	No. 30.
A	46.1	A	44.4
B	34.7	B	31.1
C	27.1	C	25.6

Average depth of silt above U/S. floor of bays 44, 45, 46 =5 to 7 Feet.

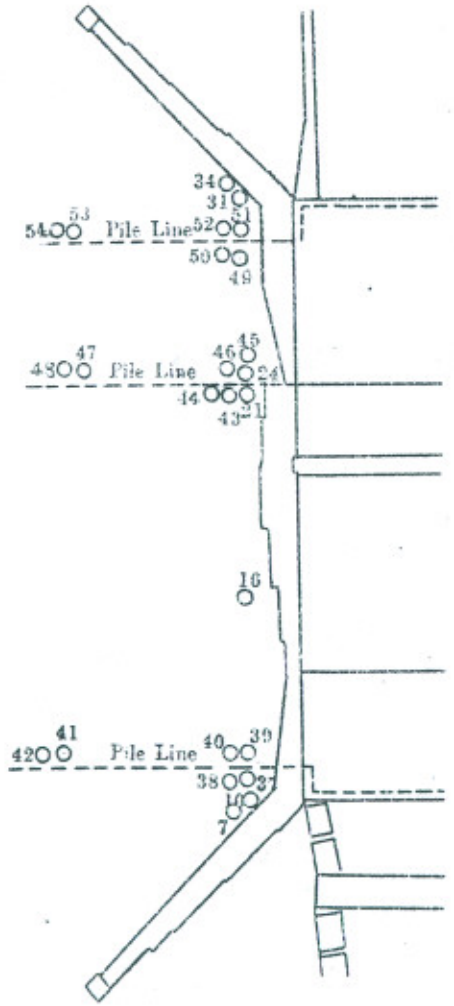
Average depth of silt above U/S. floor of bays 25 & 30 =1½ to 3 Feet.

PLATE I

PRESSURE PIPES AT WING WALL

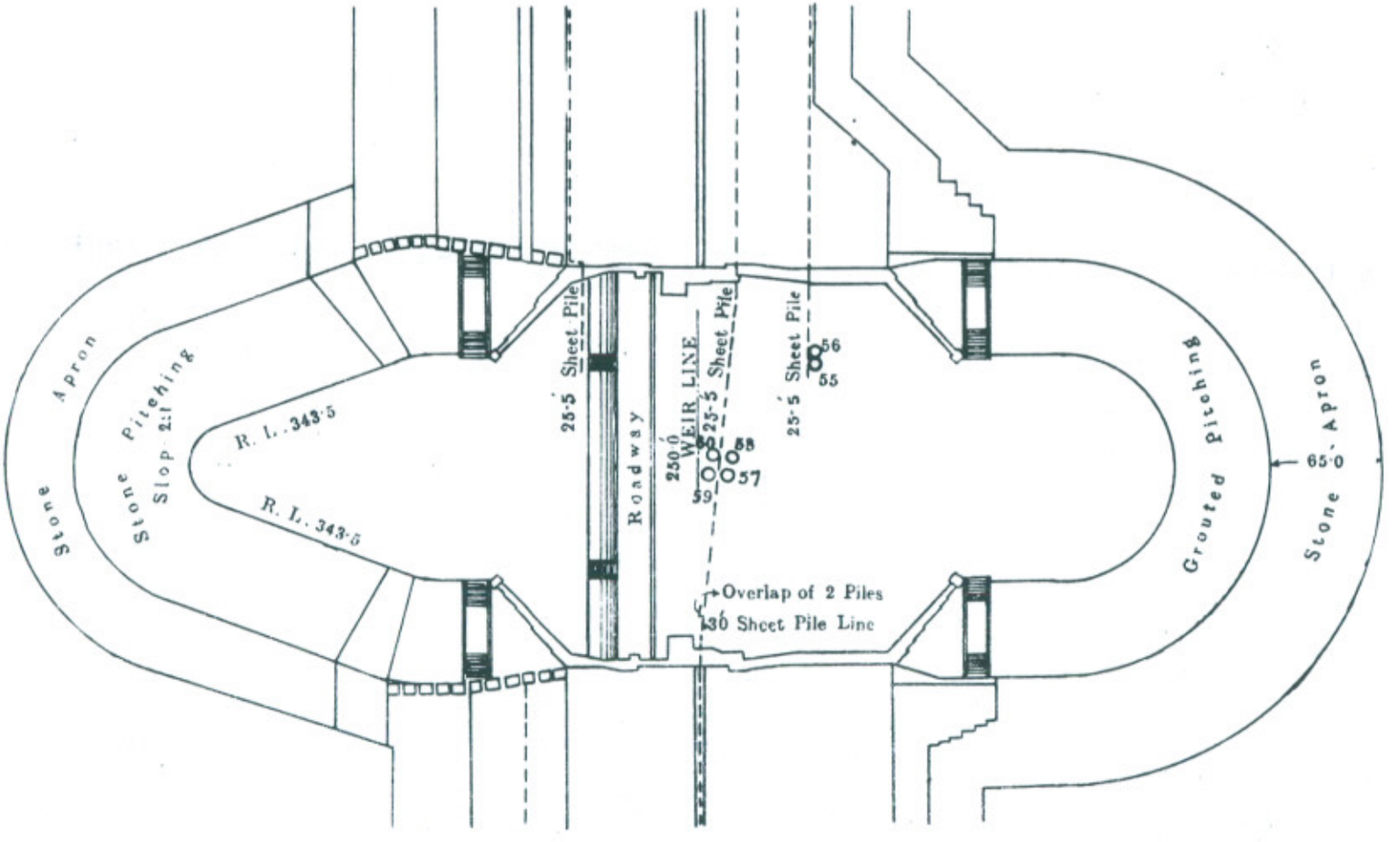


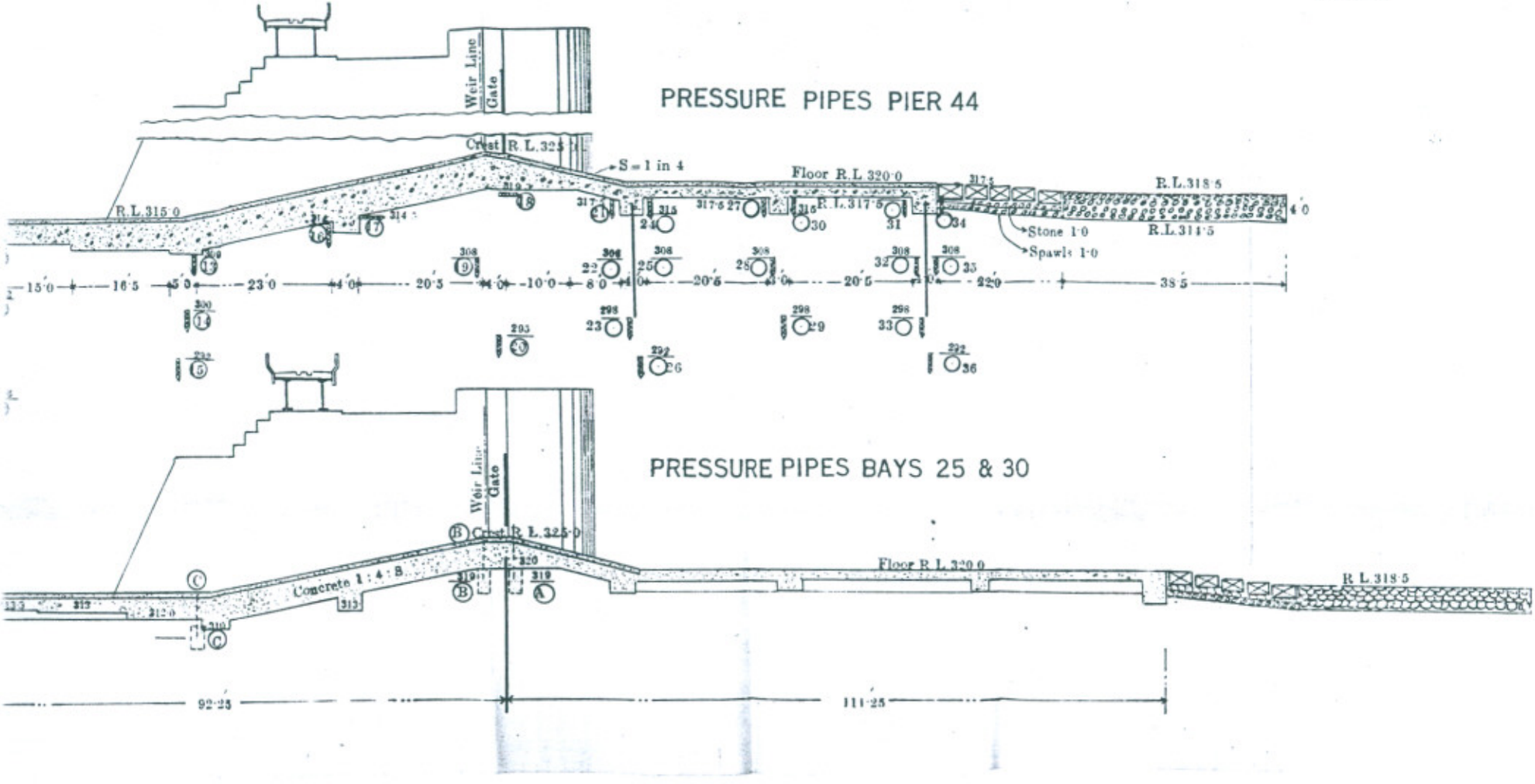
SECTION SHOWING PRESSURE PIPES RIGHT FLANK



PRESSURE PIPES IN JUNCTION GROYNE

PLATE II




PRESSURE PIPES PIER 44
Weir Line
Gate
Crest R.L. 325·0
S = 1 in 4
Floor R.L. 320·0
R.L. 315·0
R.L. 317·5
R.L. 318·5
R.L. 314·5
Stone 1·0
Spawls 1·0
15·0
16·5
5·0
23·0
4·0
20·5
10·0
8·0
20·5
20·5
22·0
38·5
PRESSURE PIPES BAYS 25 & 30
Weir Line
Gate
Crest R.L. 325·0
Concrete 1 : 4 : 8
Floor R.L. 320·0
R.L. 318·5
92·25
111·25

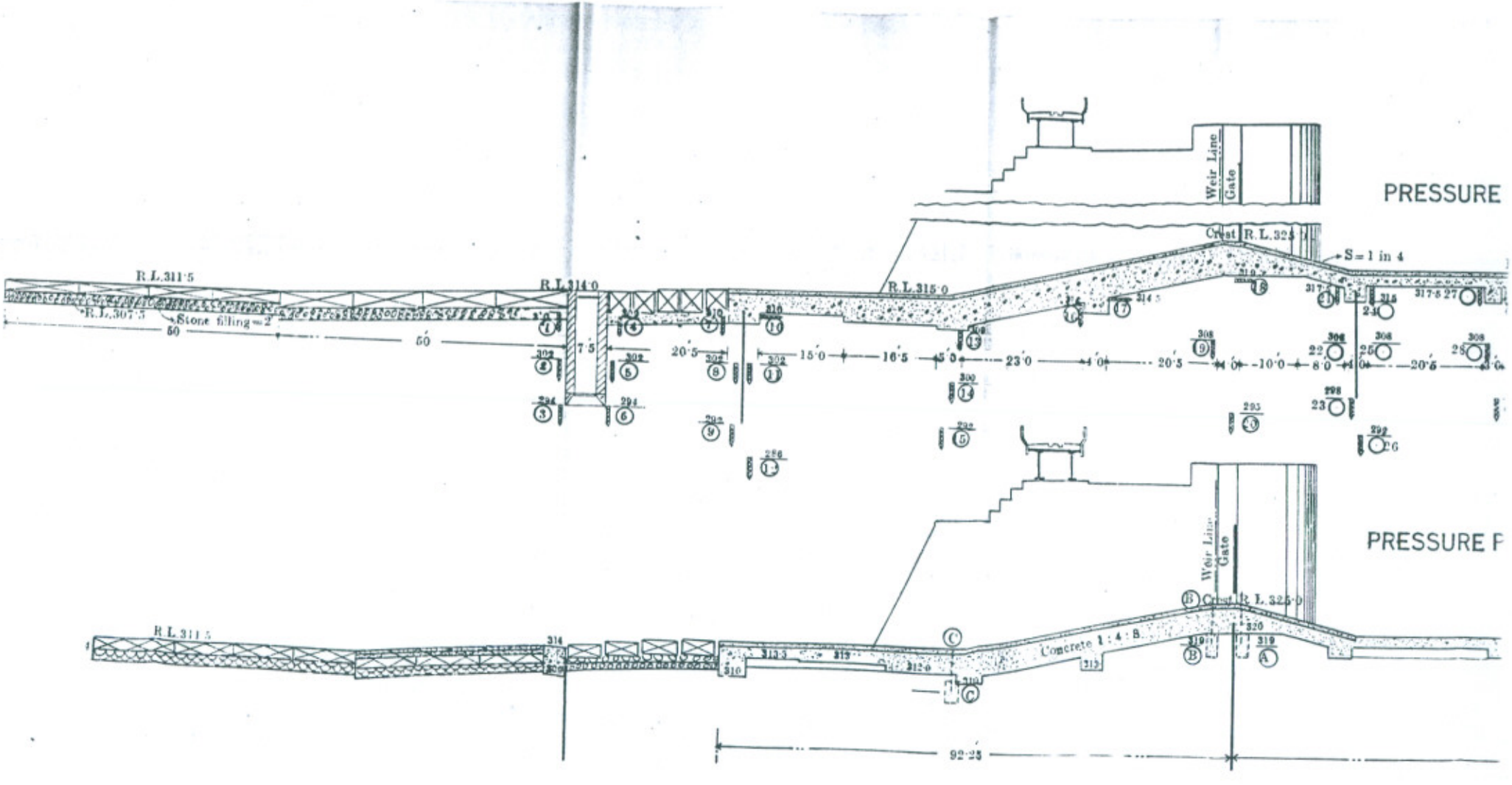
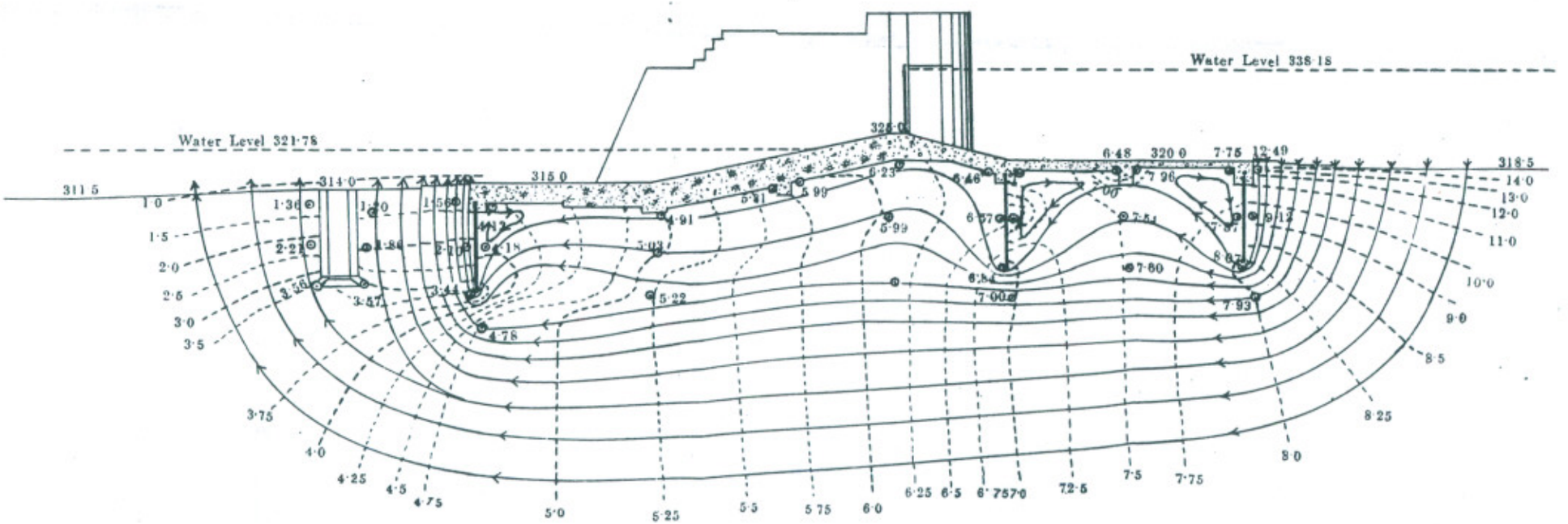
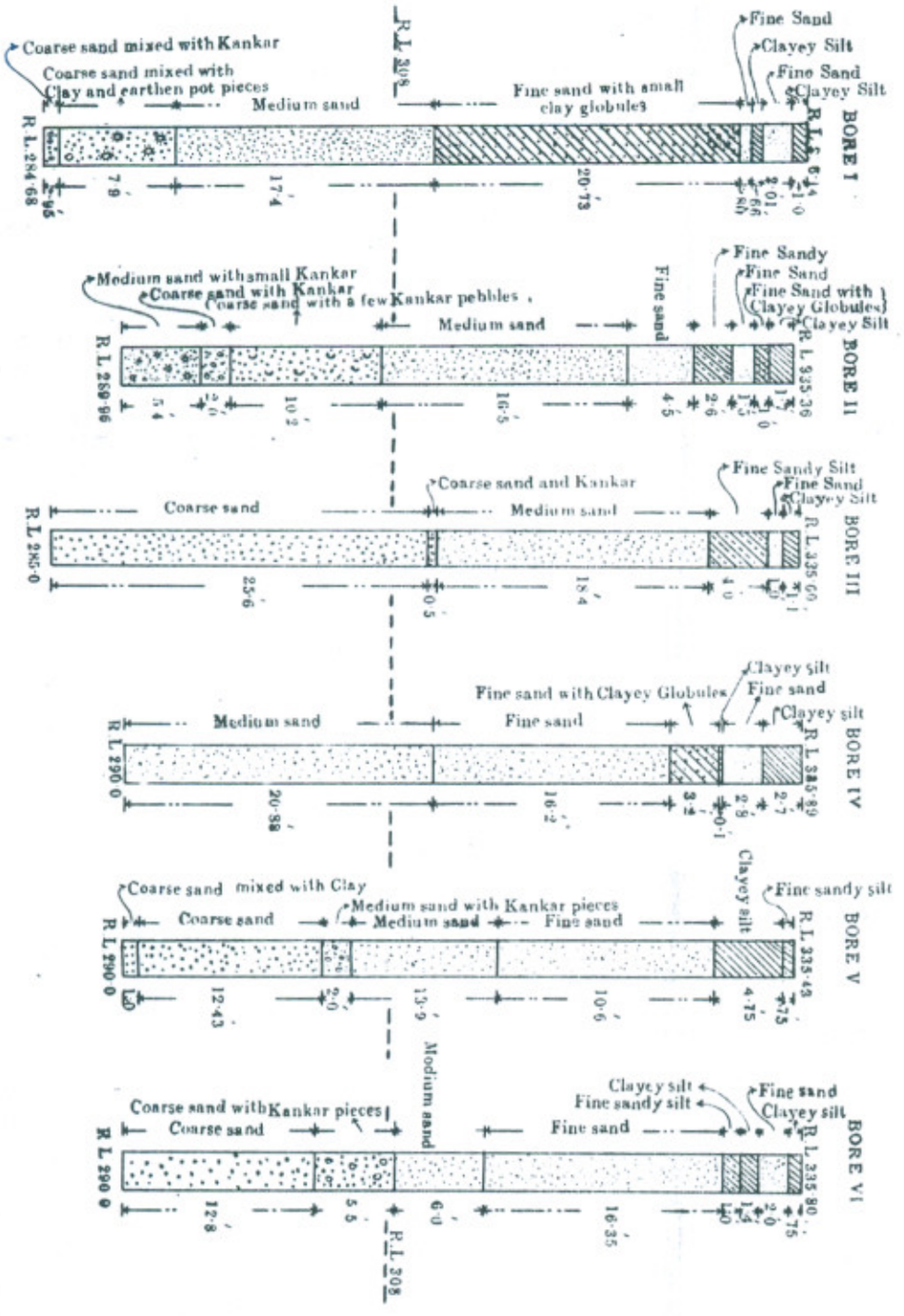

PRESSURE
Weir Line
Gate
Crest R.L.325·0
S = 1 in 4
R.L.311·5
R.L.307·5
Stone filling = 2'
R.L.314·0
R.L.315·0
50
50
7·5
20·5
15·0
16·5
5·0
23·0
4·0
20·5
4·0
10·0
8·0
4·0
20·5
4·0
PRESSURE P
Weir Line
Gate
Crest R.L.325·0
R.L.311·5
Concrete 1 : 4 : 8
92·25

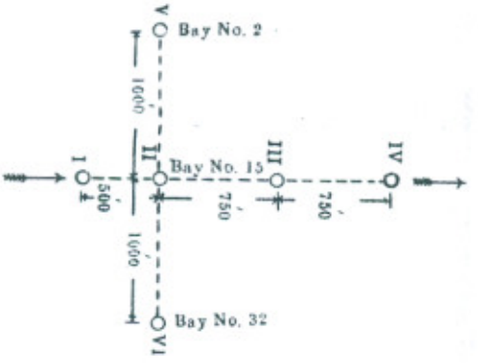
PLATE IV

STREAM LINES AND PRESSURE CONTOURS PIER 44

H – 16·4







GEOLOGICAL SECTIONS OF SOIL

PLATE V

ELECTRIC SOUNDER

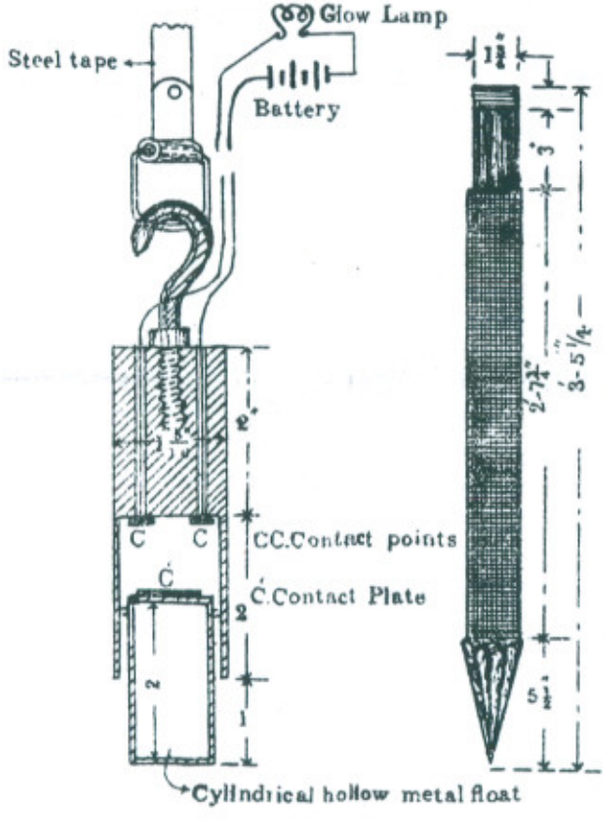


Fig I.

DRIVE POINT
WELL STRAINER

Fig II.

BELL SOUNDER

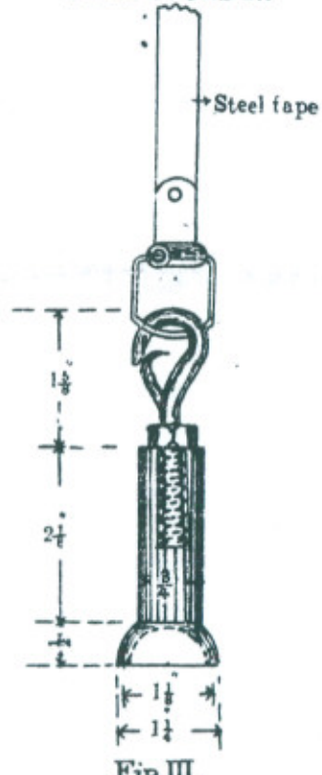
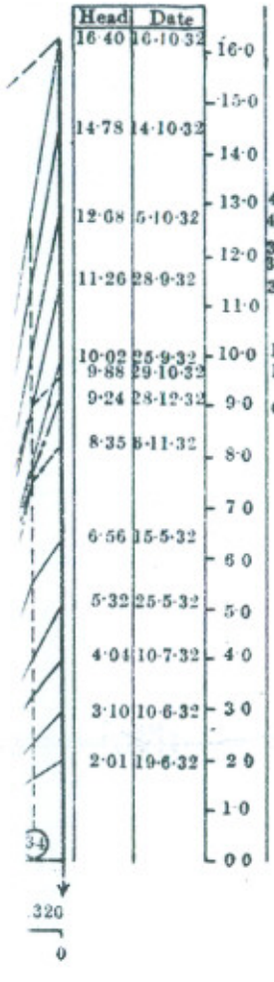


Fig III.

FIG. III

GRADIENTS ALONG DIRECT HORIZONTAL STREAM LINE



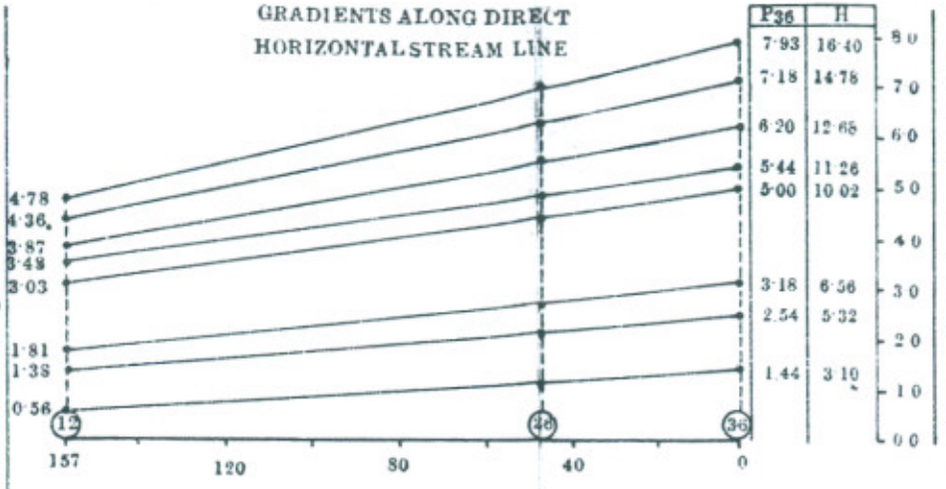


FIG. II

PRESSURES ALONG CREEP LINE

PLOT OF PRESSURES IN PIPES IN BAY 44

FIG. I

PRESSURES ALONG
NORMAL STREAM LINE

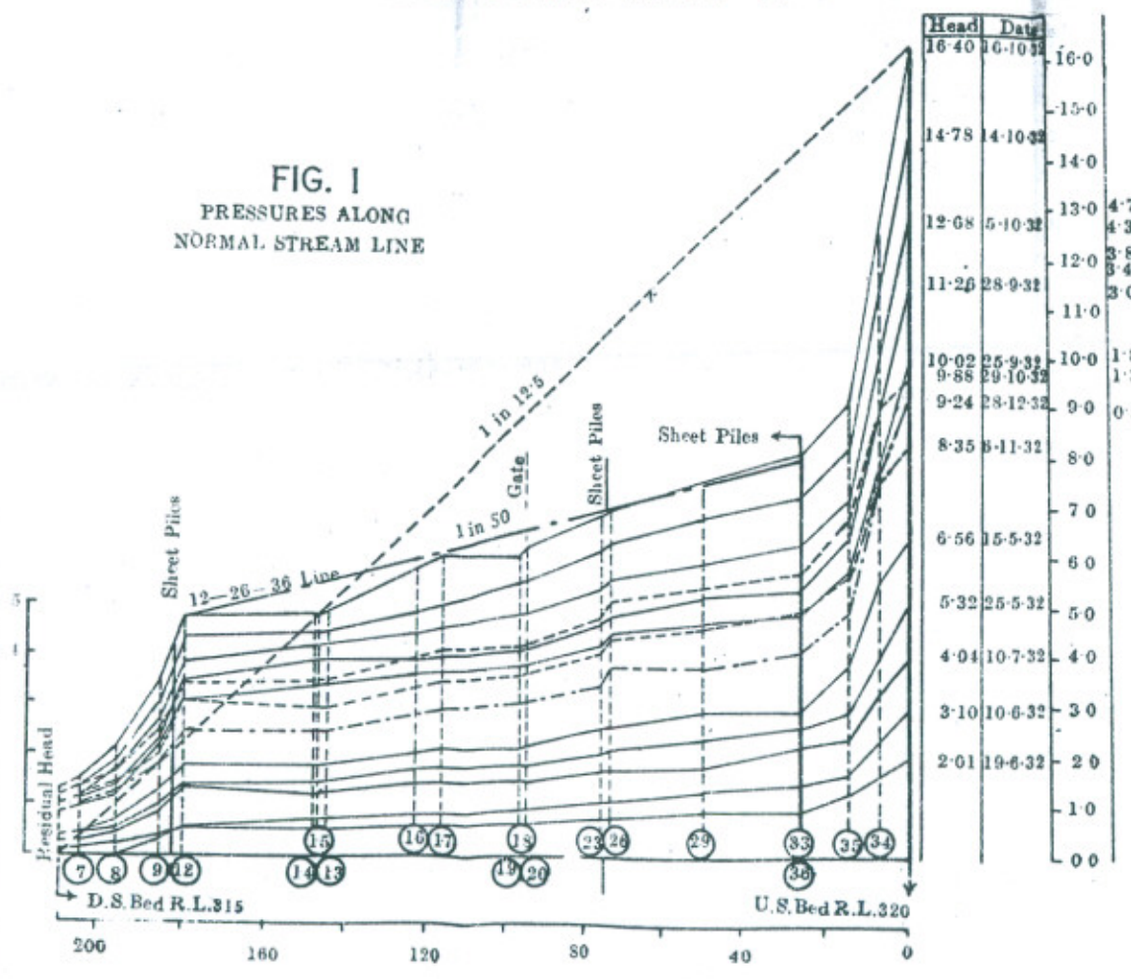
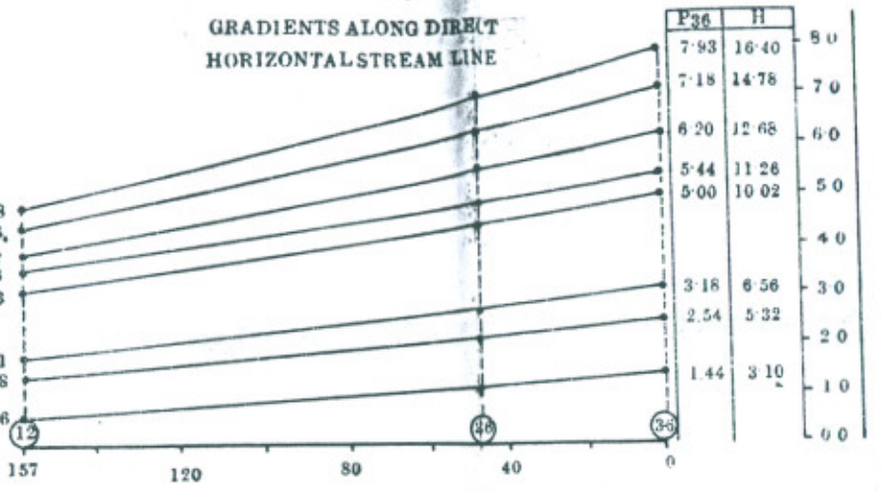


FIG. III

GRADIENTS ALONG DIRECT
HORIZONTAL STREAM LINE



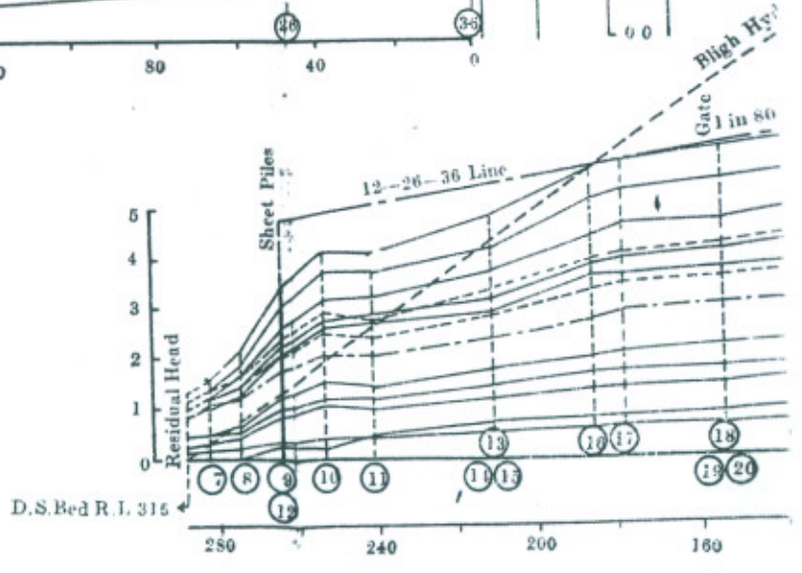
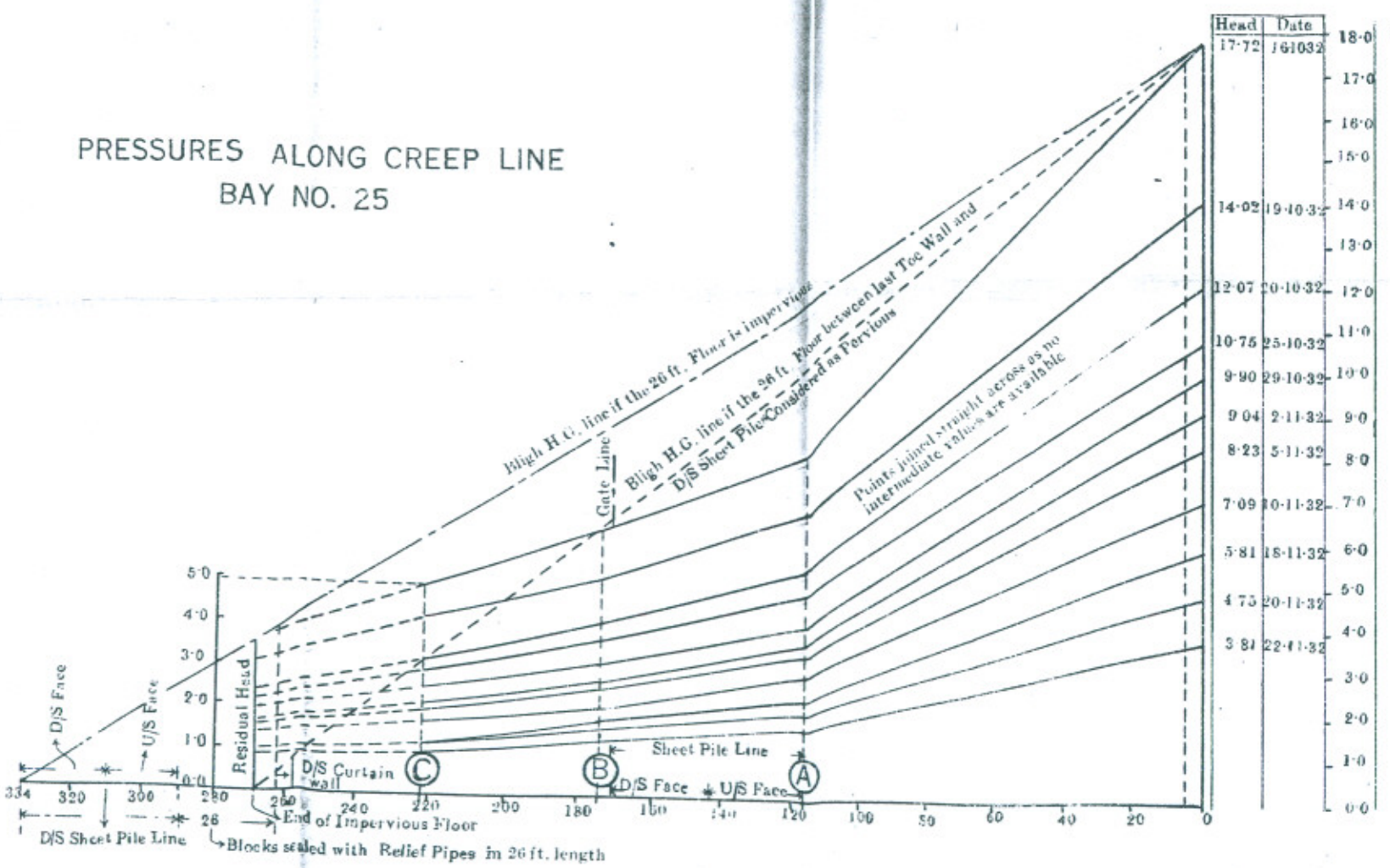
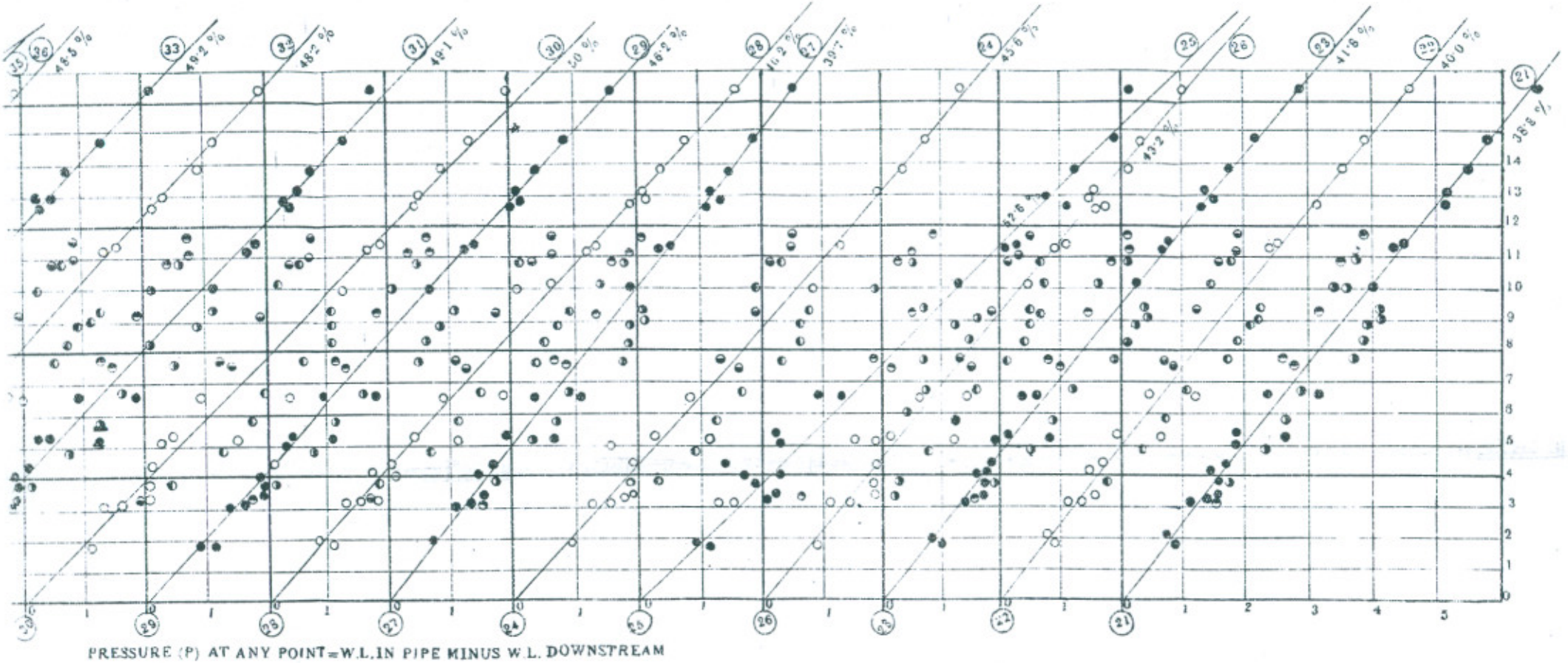
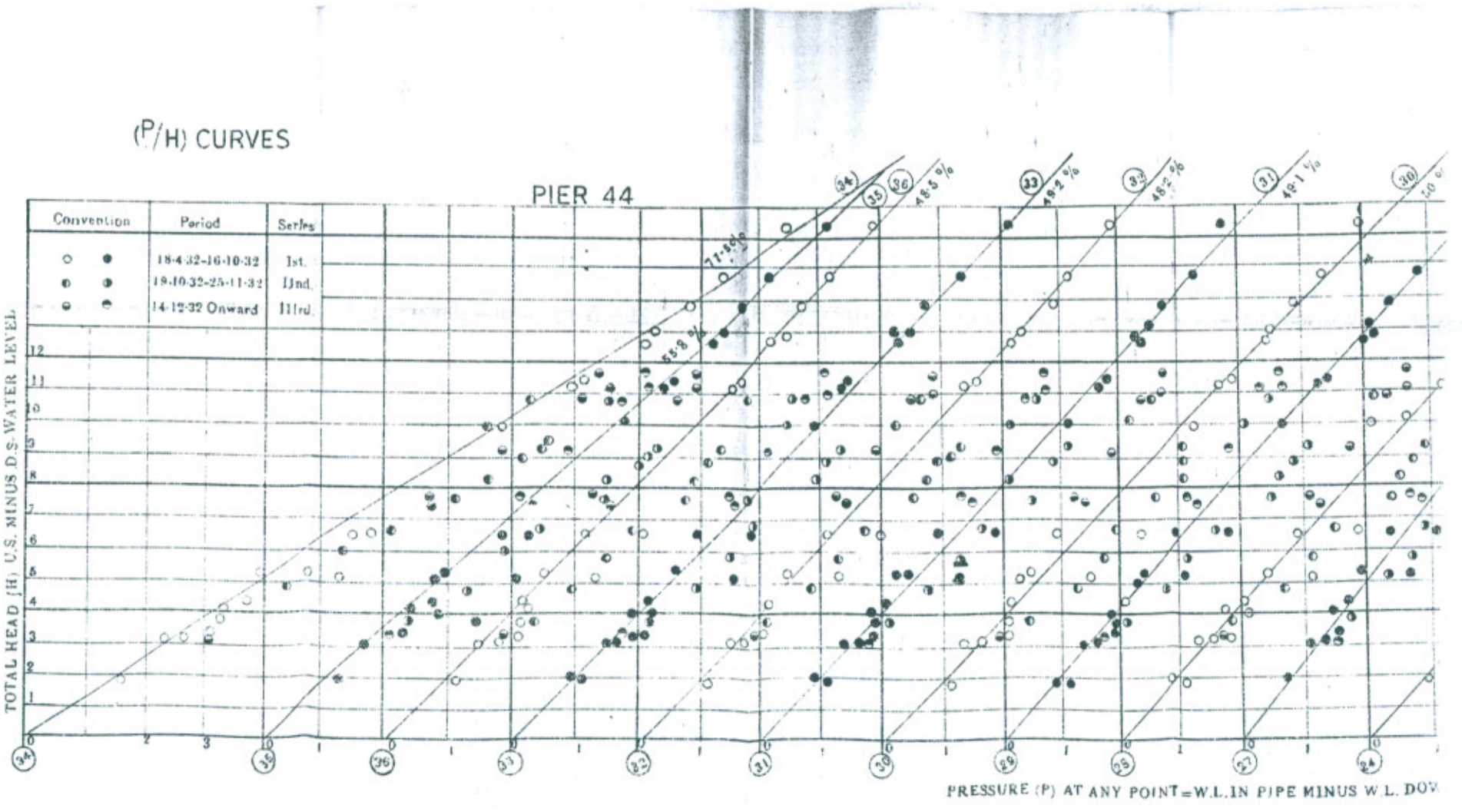


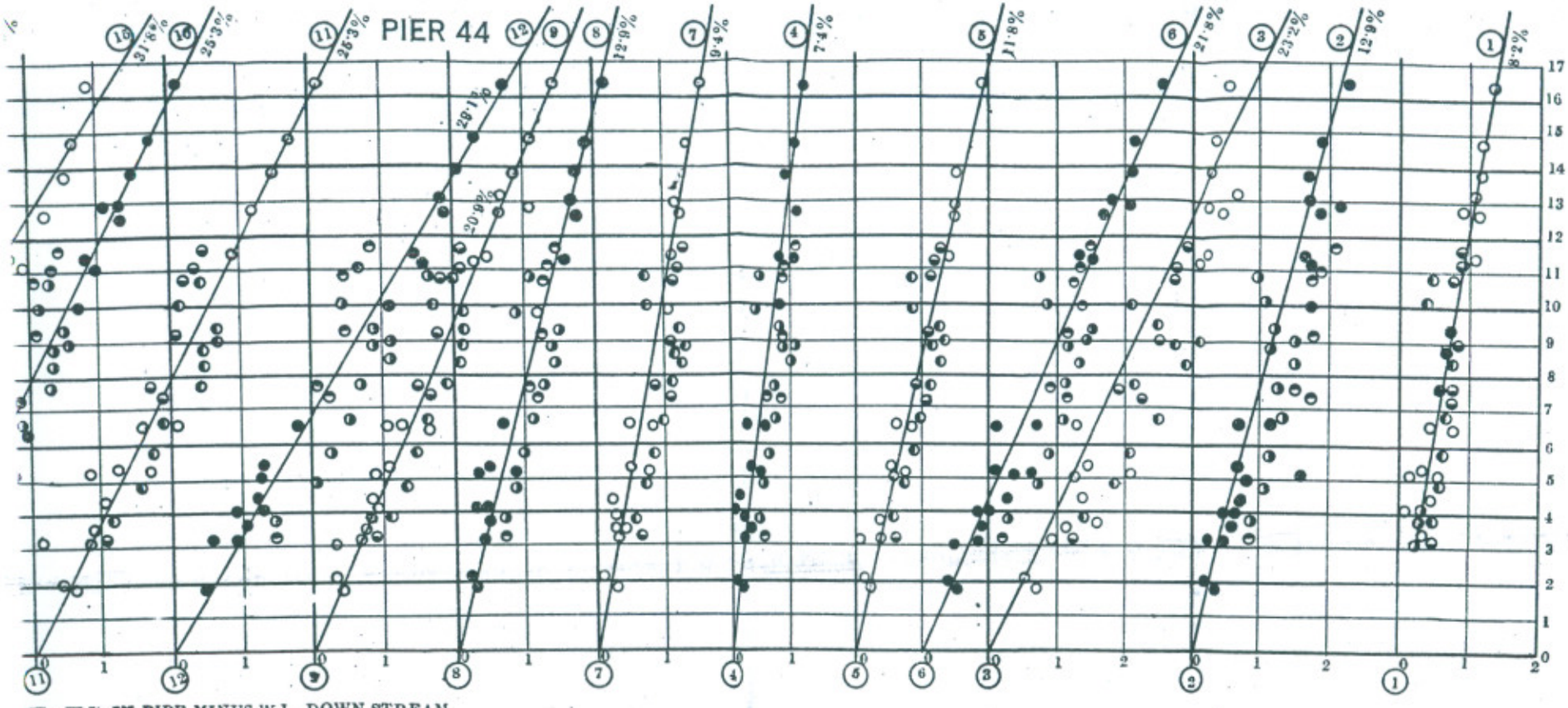
PLATE VIII

PRESSURES ALONG CREEP LINE
BAY NO. 25

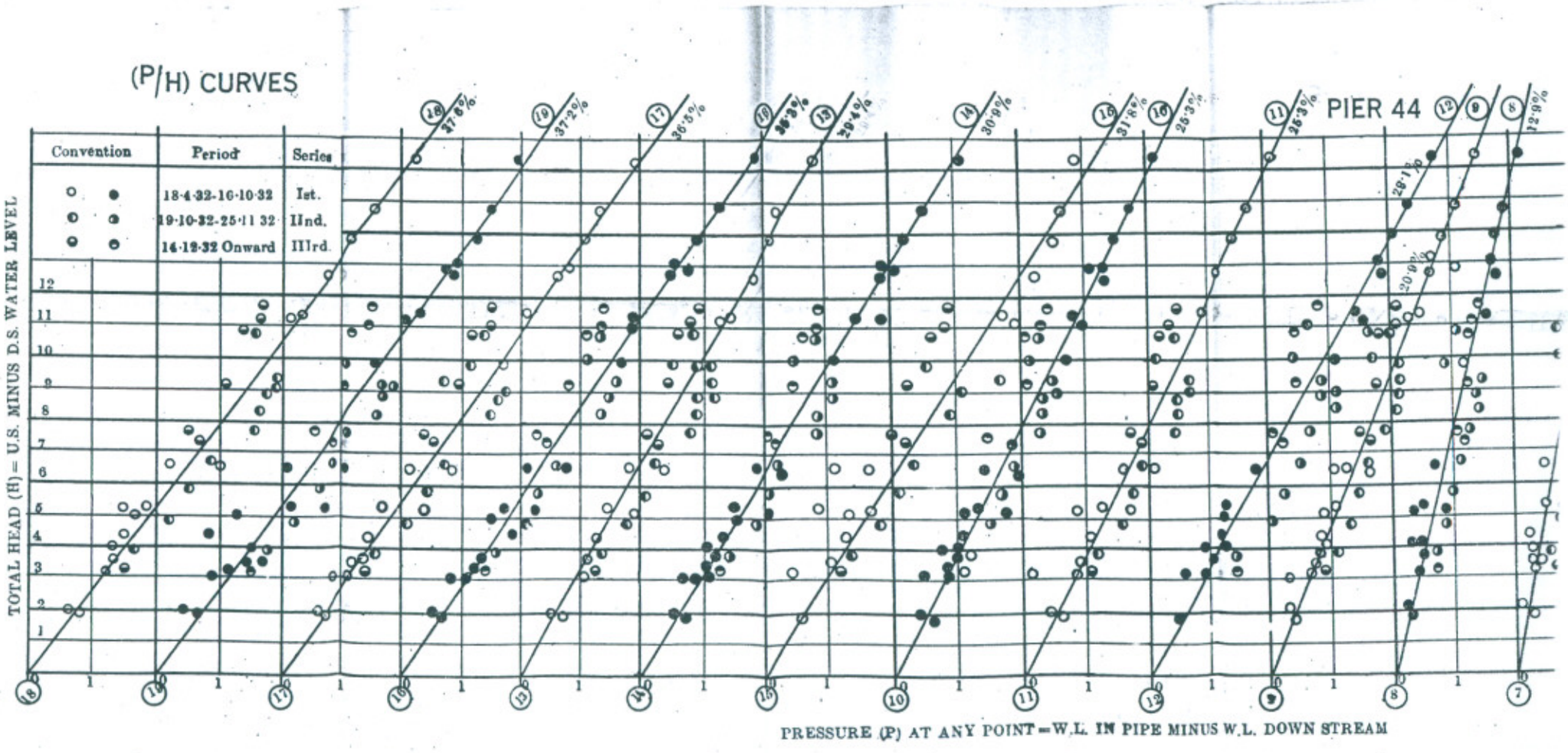


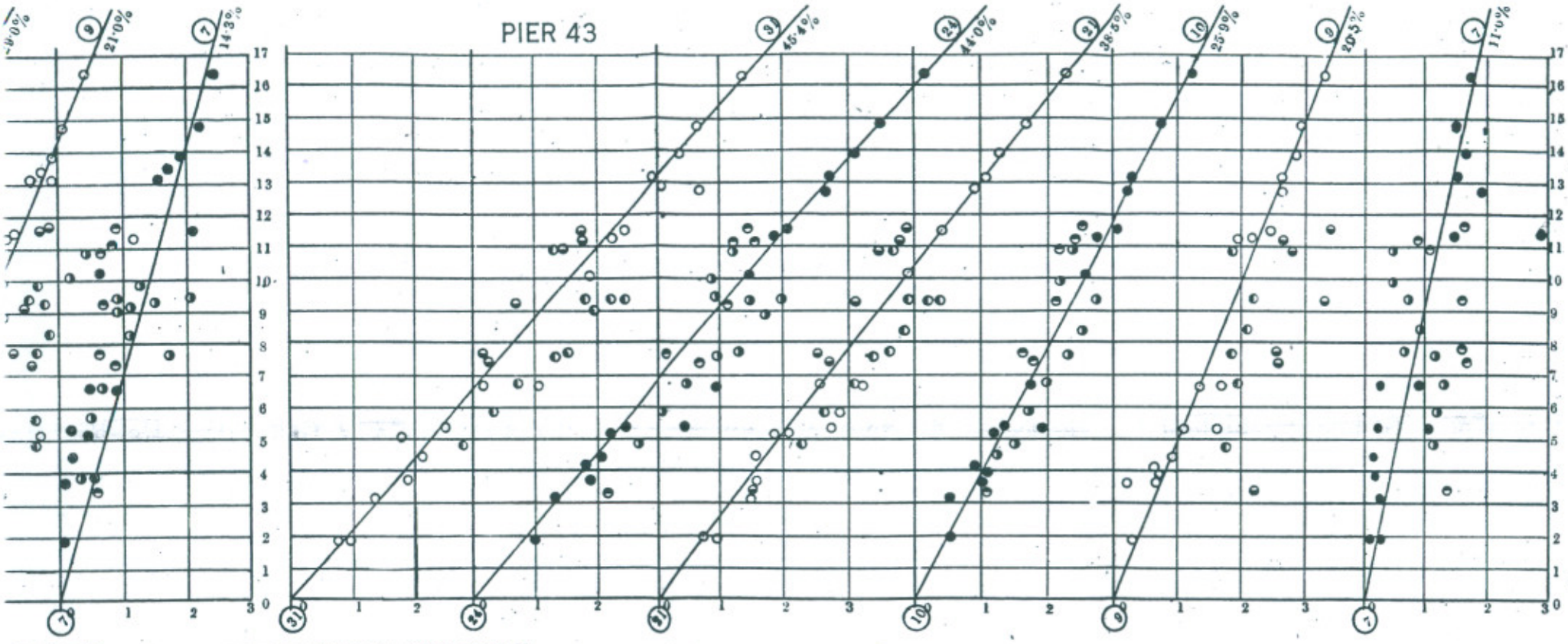

48·5 %
48·2 %
48·2 %
49·1 %
50 %
46·2 %
41·2 %
39·7 %
45·6 %
43·2 %
41·6 %
40·0 %
38·8 %
PRESSURE (P) AT ANY POINT = W.L. IN PIPE MINUS W.L. DOWNSTREAM


(P/H) CURVES
PIER 44
Convention
Period
Series
18-4-32-16-10-32
1st.
19-10-32-25-11-32
IInd.
14-12-32 Onward
IIIrd.
71·5 %
55·8 %
48·5 %
48·2 %
48·2 %
48·1 %
TOTAL HEAD (H) U.S. MINUS D.S. WATER LEVEL
PRESSURE (P) AT ANY POINT = W.L. IN PIPE MINUS W.L. DOV

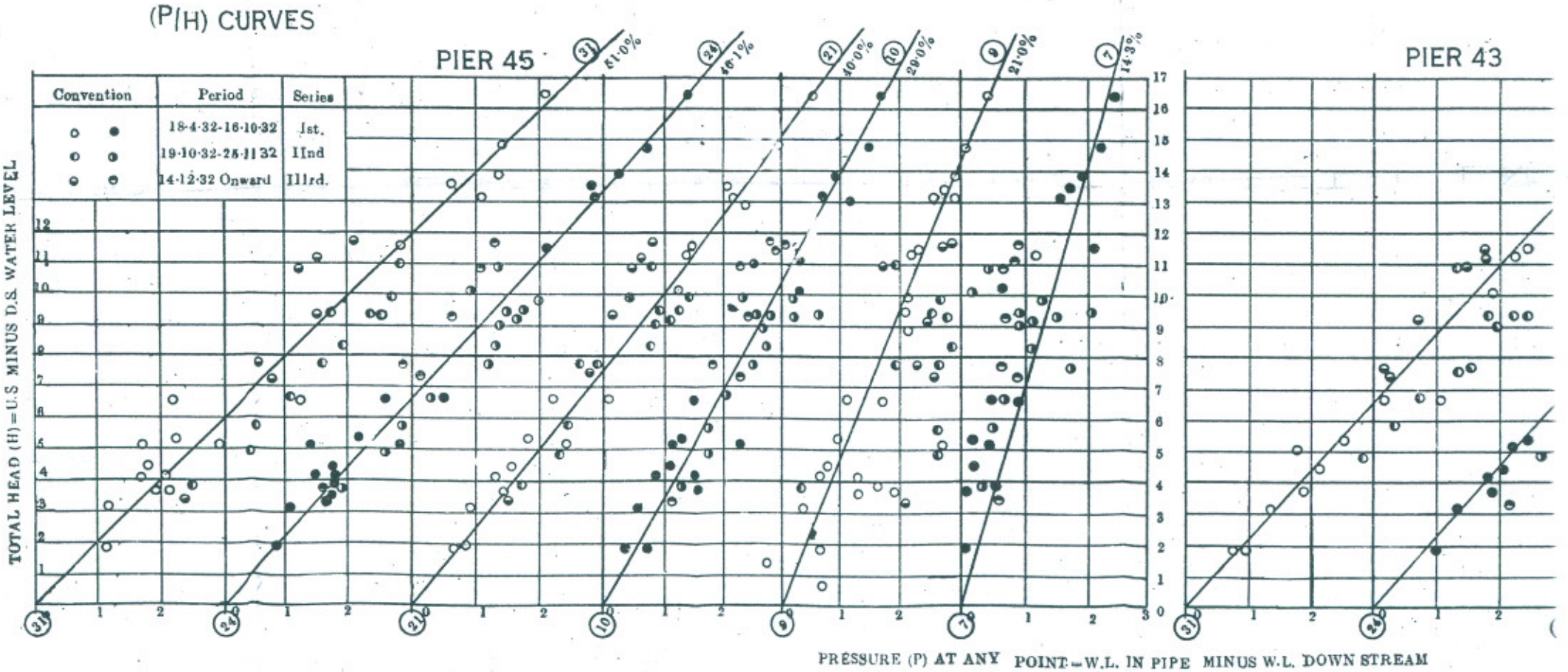


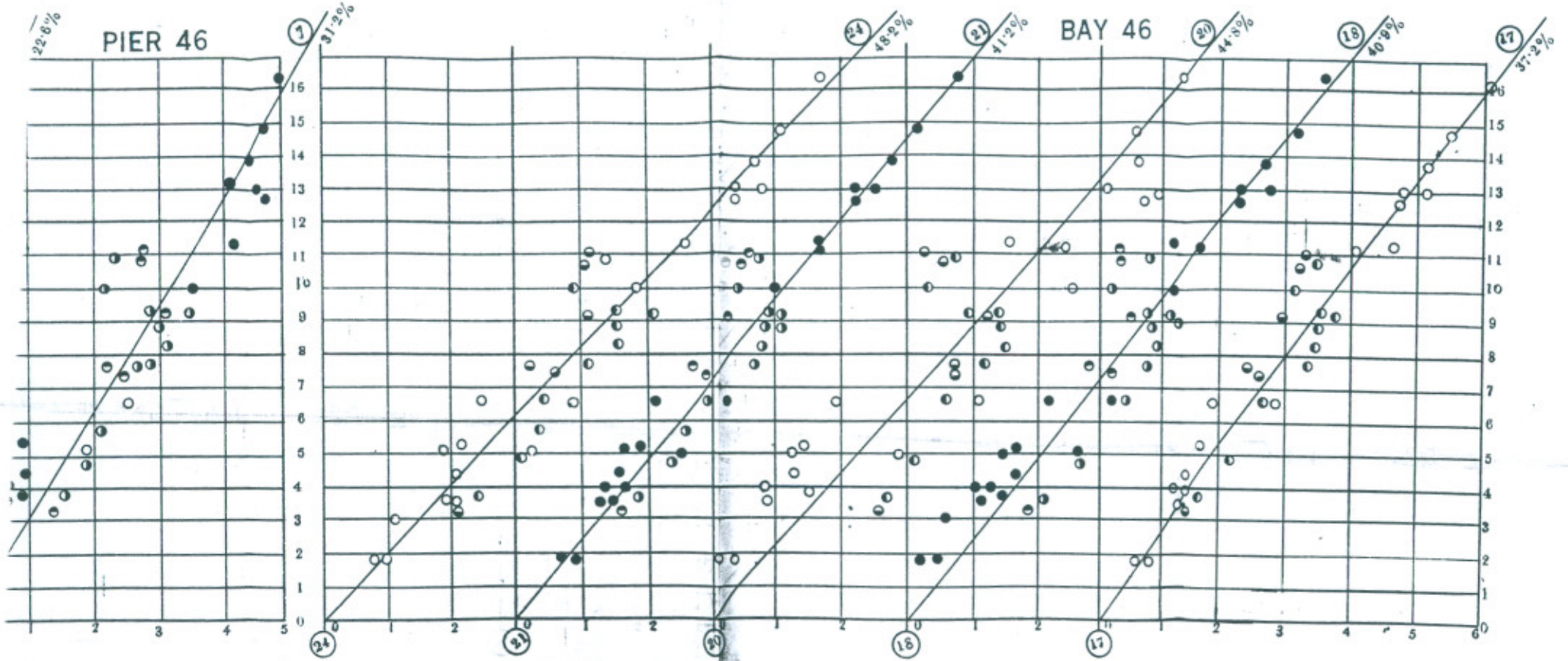
NT = W.L. IN PIPE MINUS W.L. DOWN STREAM


(P/H) CURVES
PIER 44
Convention
Period
Series
18·4·32-16·10·32
Ist.
19·10·32-25·11·32
IInd.
14·12·32 Onward
IIIrd.
TOTAL HEAD (H) = U.S. MINUS D.S. WATER LEVEL
PRESSURE (P) AT ANY POINT = W.L. IN PIPE MINUS W.L. DOWN STREAM
37·6%
37·2%
36·5%
30·3%
29·4%
30·9%
31·8%
25·3%
25·3%
28·1%
20·9%
12·9%

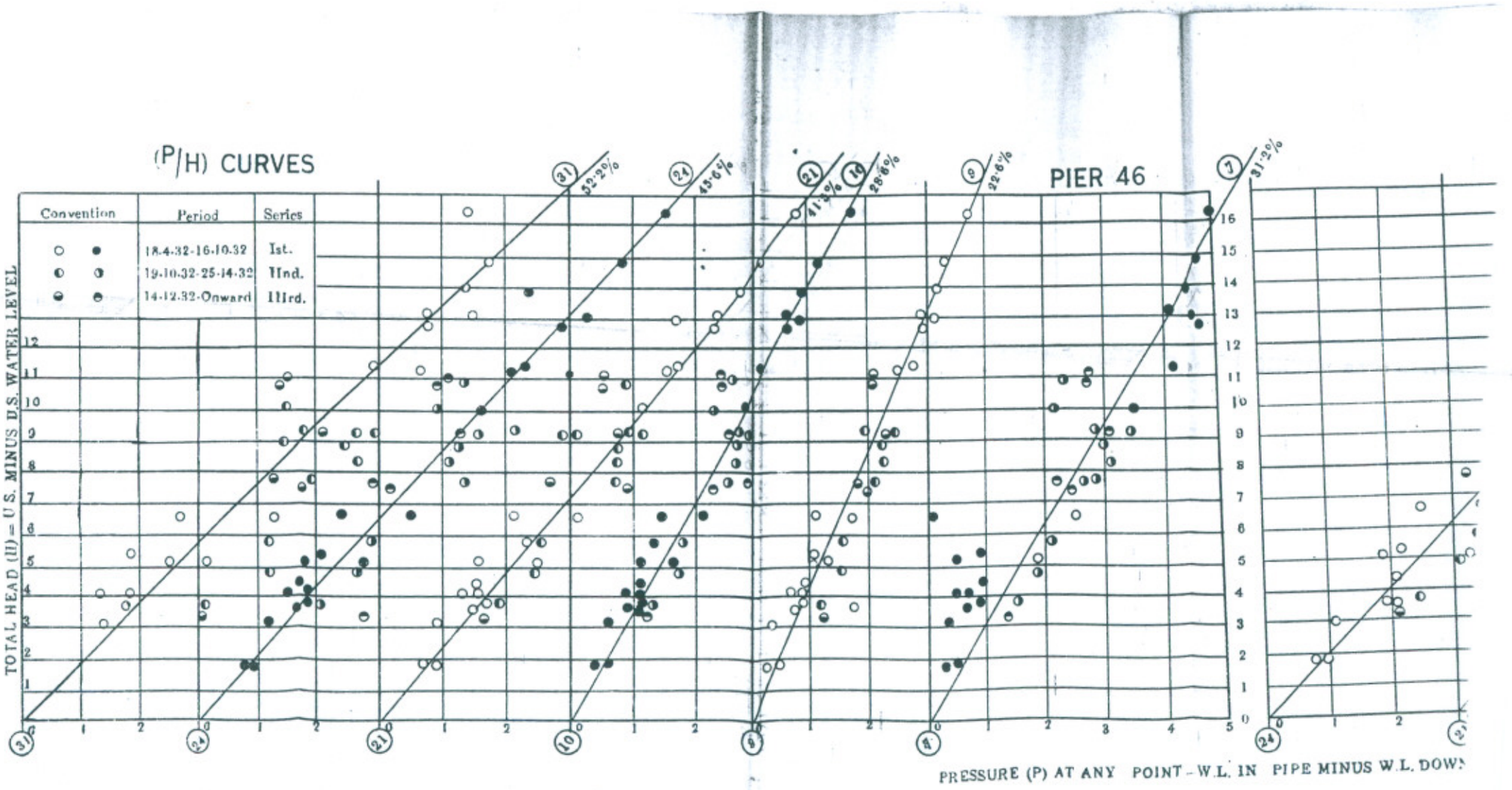


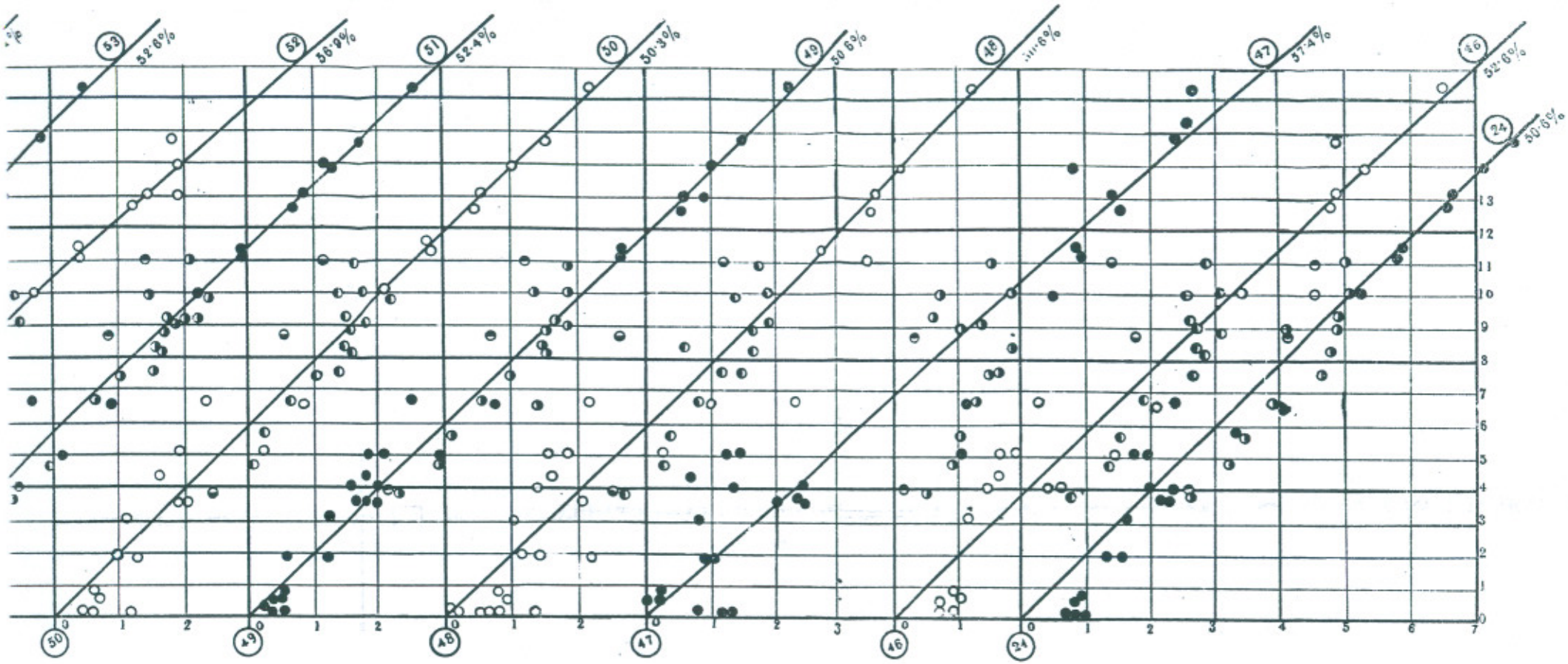
(P) AT ANY POINT = W.L. IN PIPE MINUS W.L. DOWN STREAM


(P/H) CURVES
PIER 45
PIER 43
Convention
Period
Series
18-4-32-16-10-32
1st.
19-10-32-25-11 32
IInd
14-12-32 Onward
IIIrd.
31
24
21
10
9
7
51·0%
46·1%
40·0%
29·0%
21·0%
14·3%
TOTAL HEAD (H) = U.S MINUS D.S. WATER LEVEL
PRESSURE (P) AT ANY POINT = W.L. IN PIPE MINUS W.L. DOWN STREAM



ESSURE (P) AT ANY POINT - W.L. IN PIPE MINUS W.L. DOWN STREAM


(P/H) CURVES
PIER 46
Convention
Period
Series
18.4.32-16.10.32
19.10.32-25.14.32
14.12.32-Onward
Ist.
IInd.
IIIrd.
31
24
21
10
9
7
32·2%
45·6%
41·3%
28·6%
32·6%
31·2%
TOTAL HEAD (H) = U.S. MINUS D.S. WATER LEVEL
PRESSURE (P) AT ANY POINT - W.L. IN PIPE MINUS W.L. DOWN



URE (P) AT ANY POINT = W.L. IN PIPE MINUS W.L. DOWN STREAM

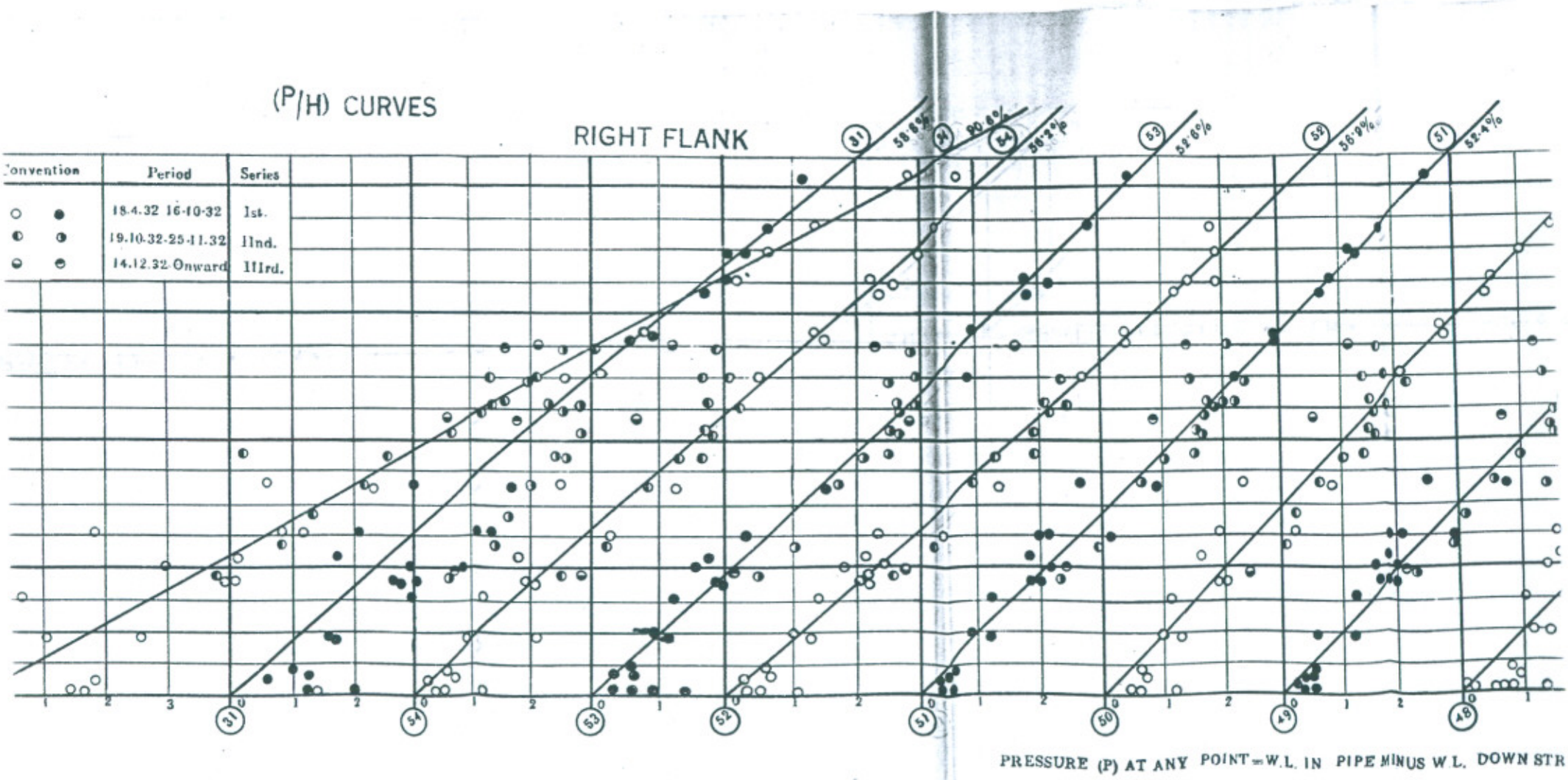
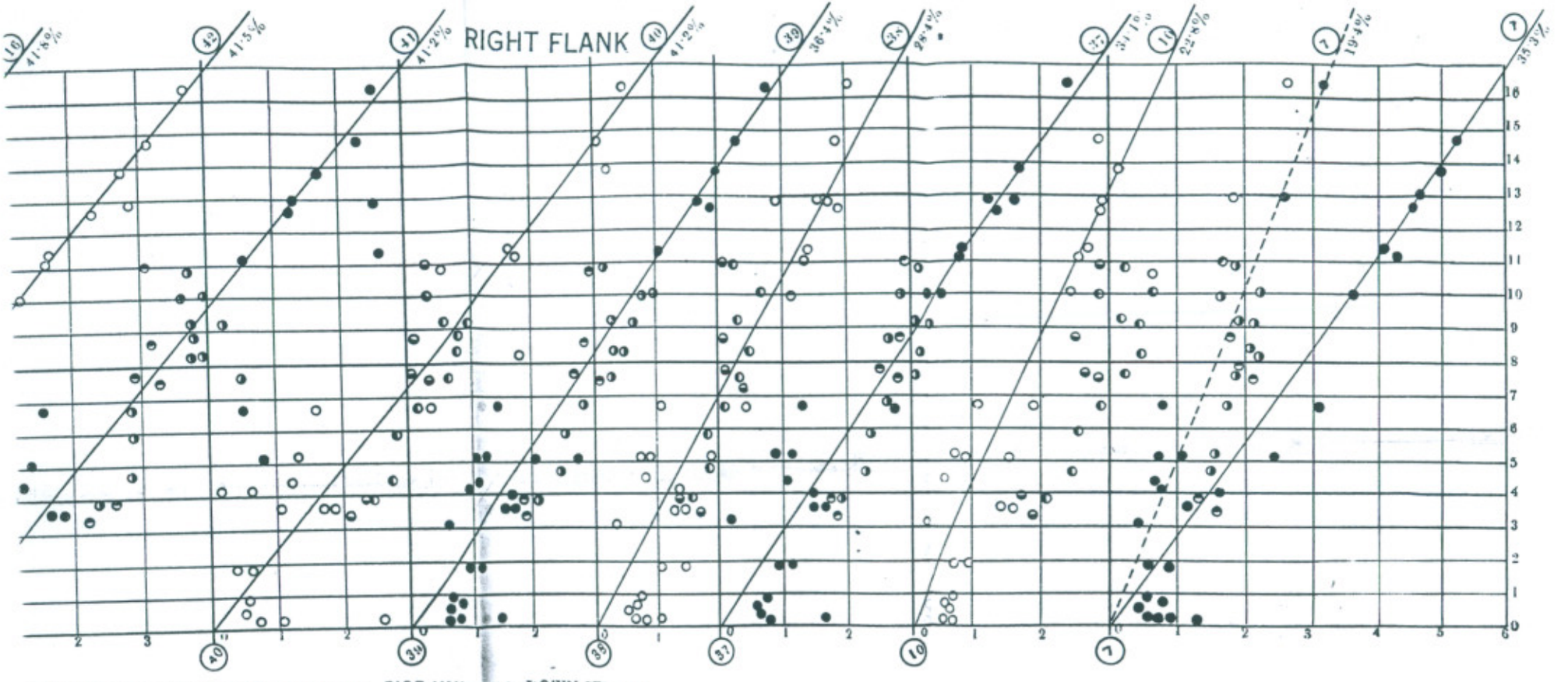
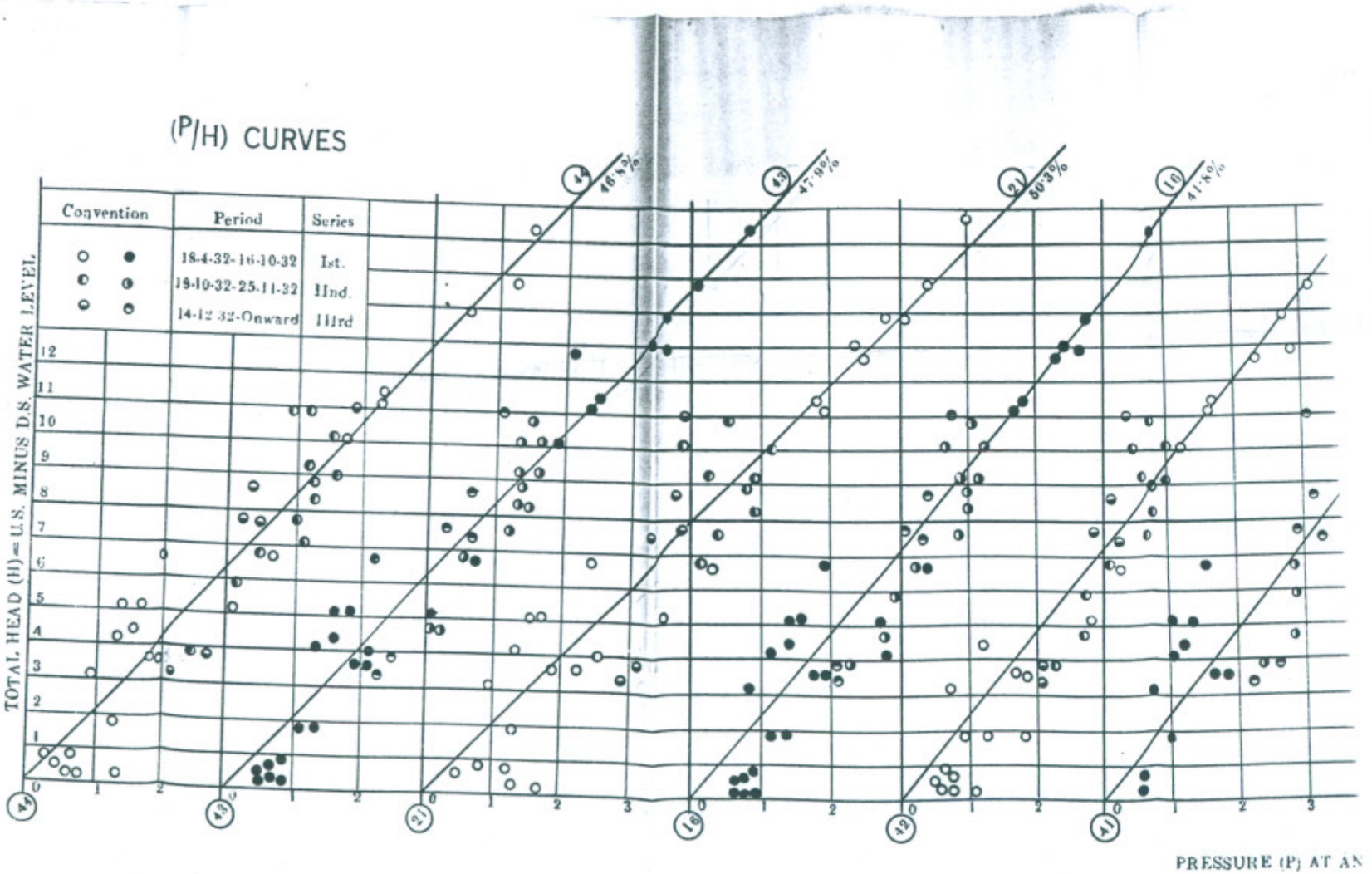
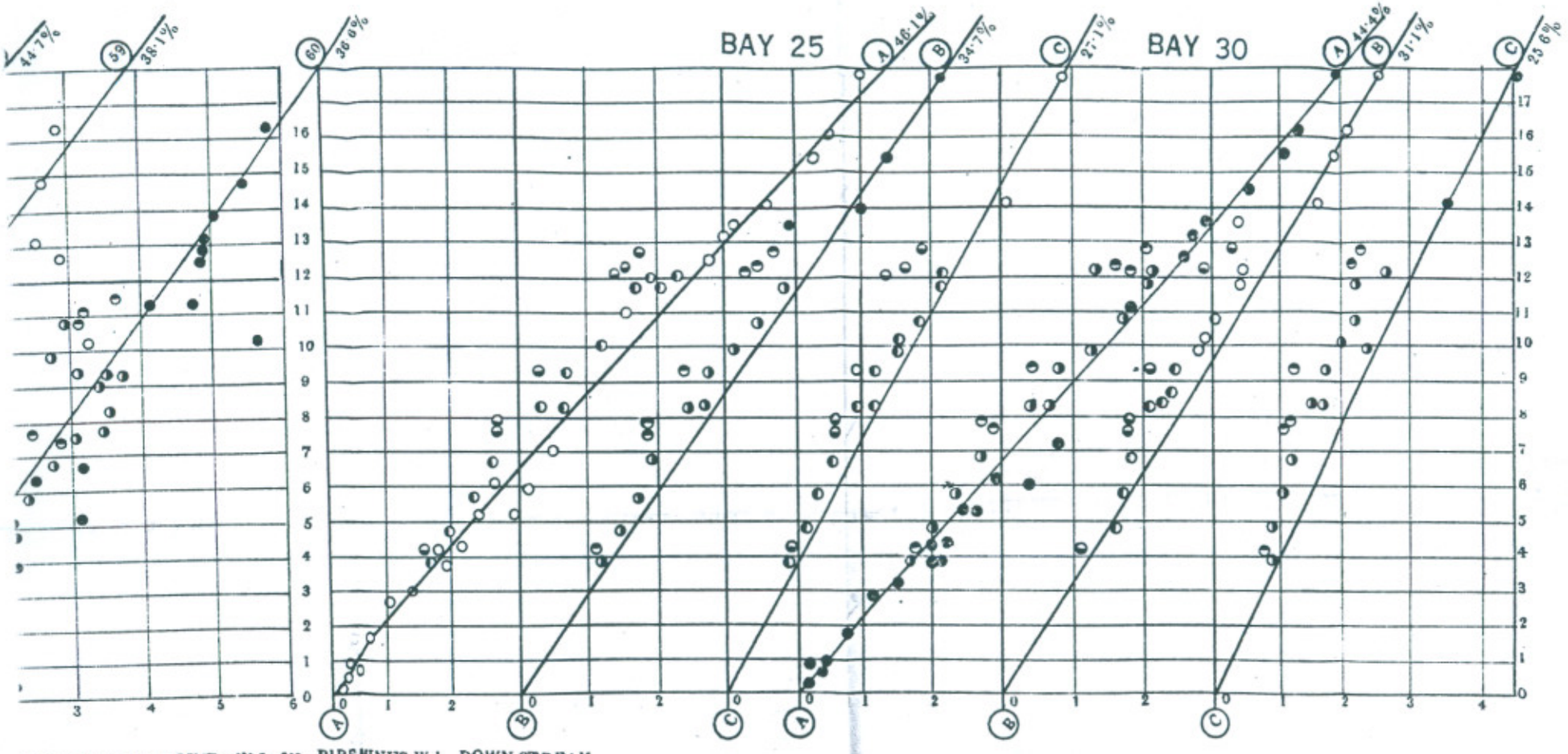

(P/H) CURVES
RIGHT FLANK
Convention
Period
Series
18.4.32 16-10-32
Ist.
19.10.32-25.11.32
IInd.
14.12.32 Onward
IIIrd.
31
58·6%
54
50·6%
54
56·2%
53
52·6%
52
56·9%
51
52·4%
PRESSURE (P) AT ANY POINT = W.L. IN PIPE MINUS W.L. DOWN STR

PLATE XI B



RESSURE (P) AT ANY POINT = W.L. IN PIPE MINUS W.L. DOWN STREAM


(P/H) CURVES
Convention
Period
Series
18-4-32-16-10-32
19-10-32-25-11-32
14-12-32-Onward
Ist.
IInd.
IIIrd
TOTAL HEAD (H) = U.S. MINUS D.S. WATER LEVEL
PRESSURE (P) AT AN



E (P) AT ANY POINT – W.L. IN PIPE MINUS W L. DOWN STREAM

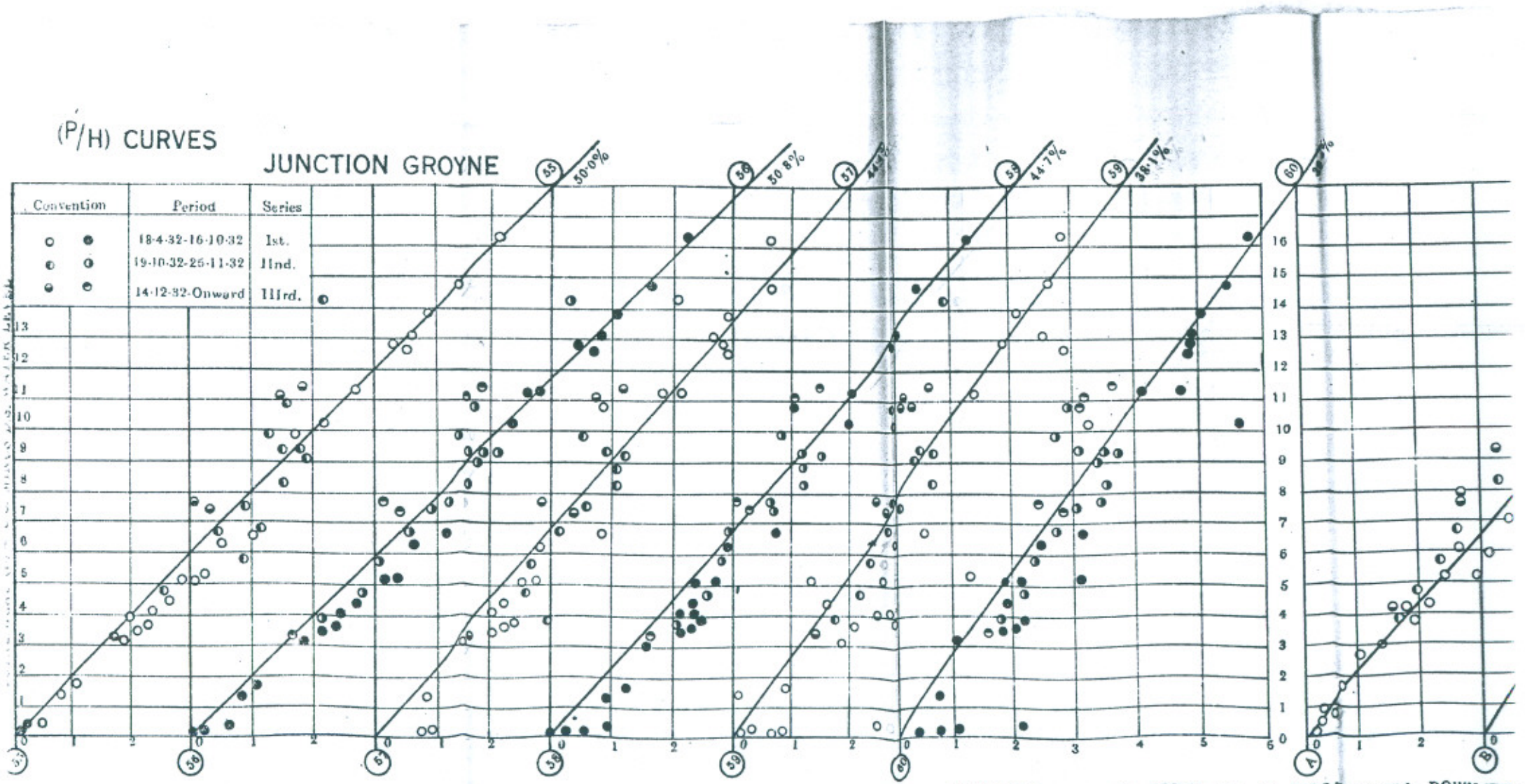
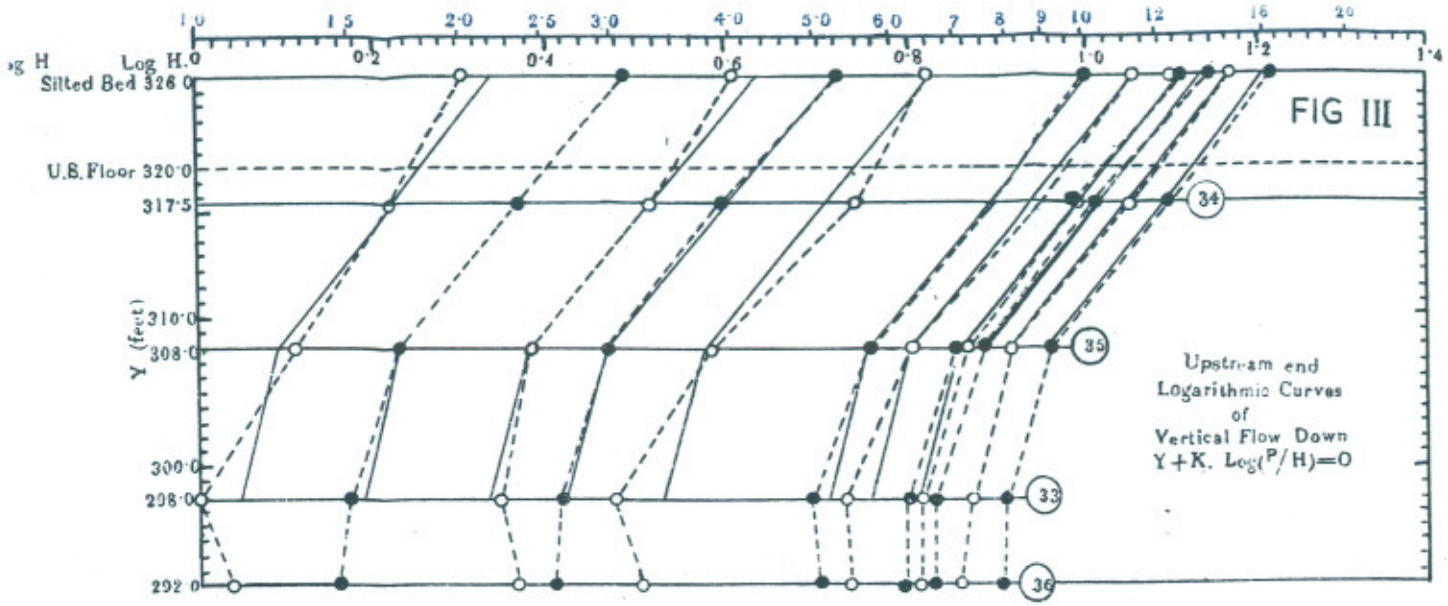
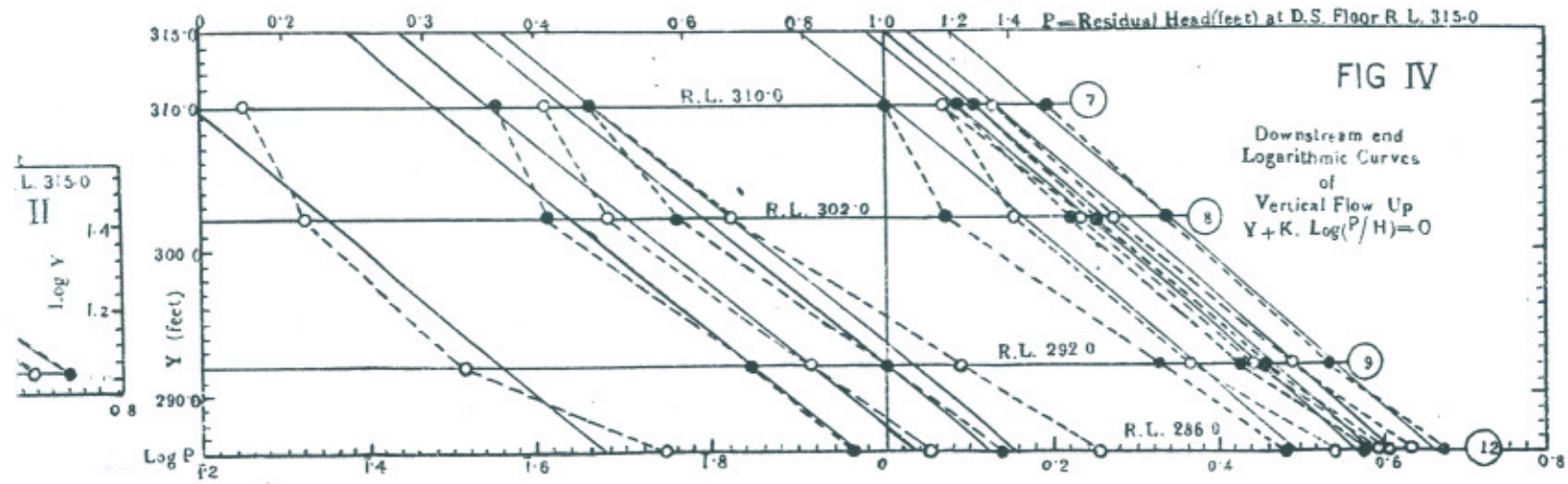

(P/H) CURVES
JUNCTION GROYNE
Convention
Period
Series
18-4-32-16-10-32
Ist.
19-10-32-25-11-32
IInd.
14-12-32-Onward
IIIrd.
55
50·0%
56
50·8%
57
44·4%
58
44·7%
59
38·1%
60
PRESSURE (P) AT ANY POINT – W.L. IN PIPE MINUS W.L. DOWN STR

PLATE XIII

PRESSURE DISTRIBUTION IN VERTICAL FLOW





Alternate Observations shown by hollow and solid circles.

Dotted lines join points of each Observation.

Full lines are parallels which satisfy equations of flow

Dotted lines in Fig. I Join points corrected for ϕ

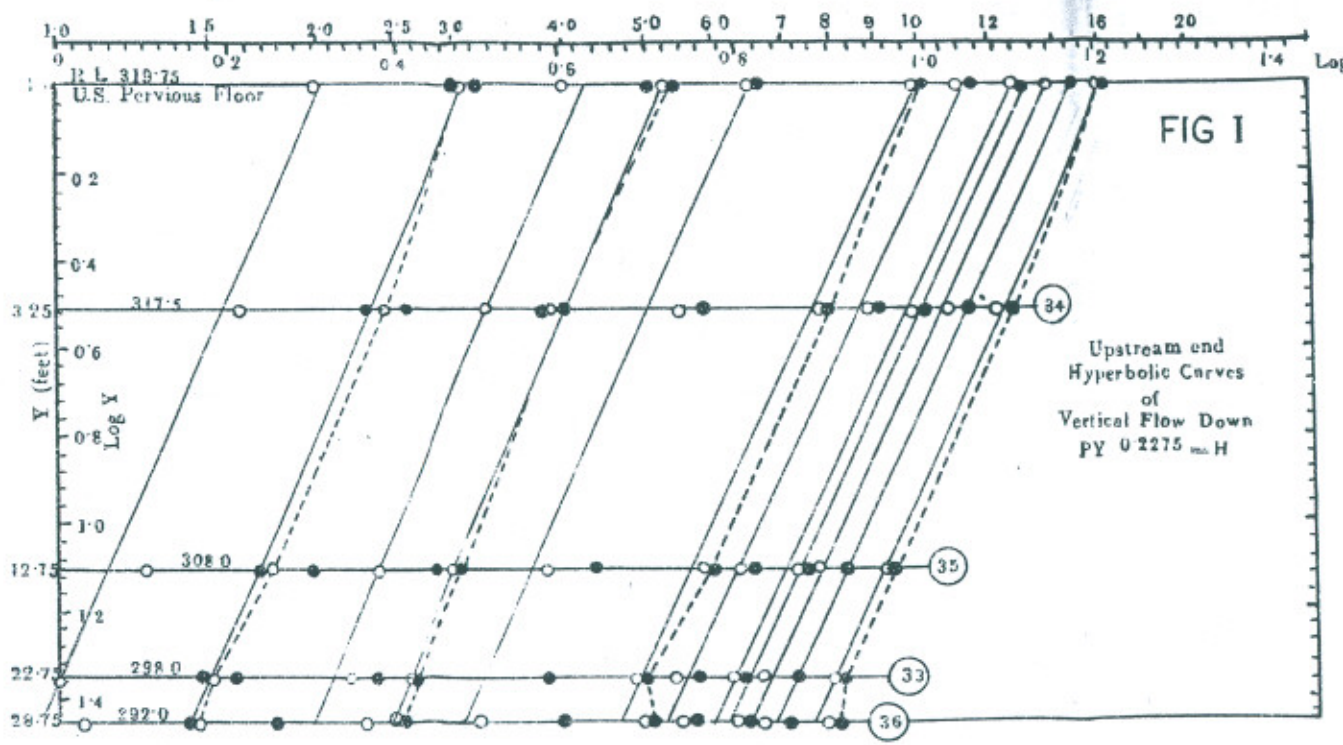

R.L. 319·75
U.S. Pervious Floor
317·5
308·0
298·0
292·0
Y (feet)
Log Y
Log H
34
35
33
36
Upstream end
Hyperbolic Curves
of
Vertical Flow Down
PY 0·2275 = H

FIG I

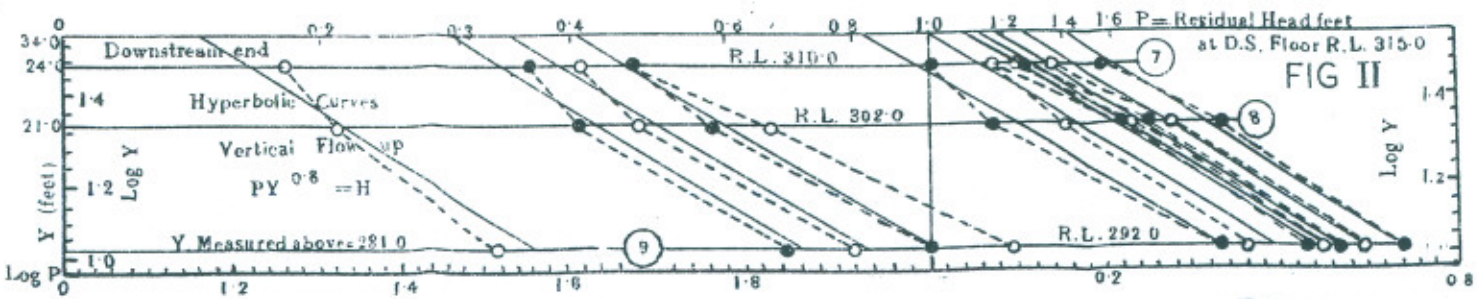
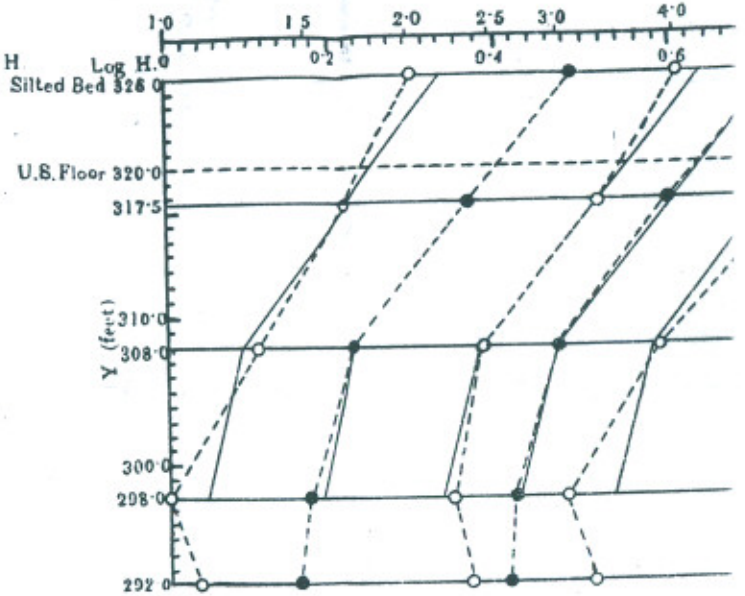

Downstream end
Hyperbolic Curves
Vertical Flow up
PY 0·8 = H
Y Measured above 281·0
R.L. 310·0
R.L. 302·0
R.L. 292·0
Y (feet)
Log Y
Log P
P = Residual Head feet
at D.S. Floor R.L. 315·0
7
8
9

FIG II


Log H
Silted Bed 326·0
U.S. Floor 320·0
317·5
310·0
308·0
300·0
298·0
292·0
Y (feet)

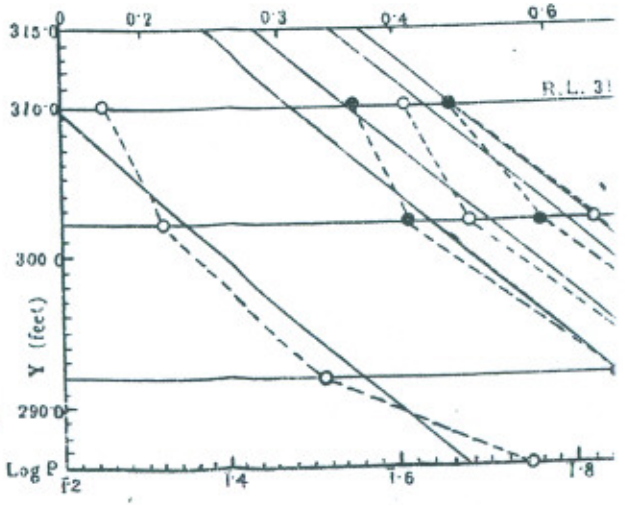
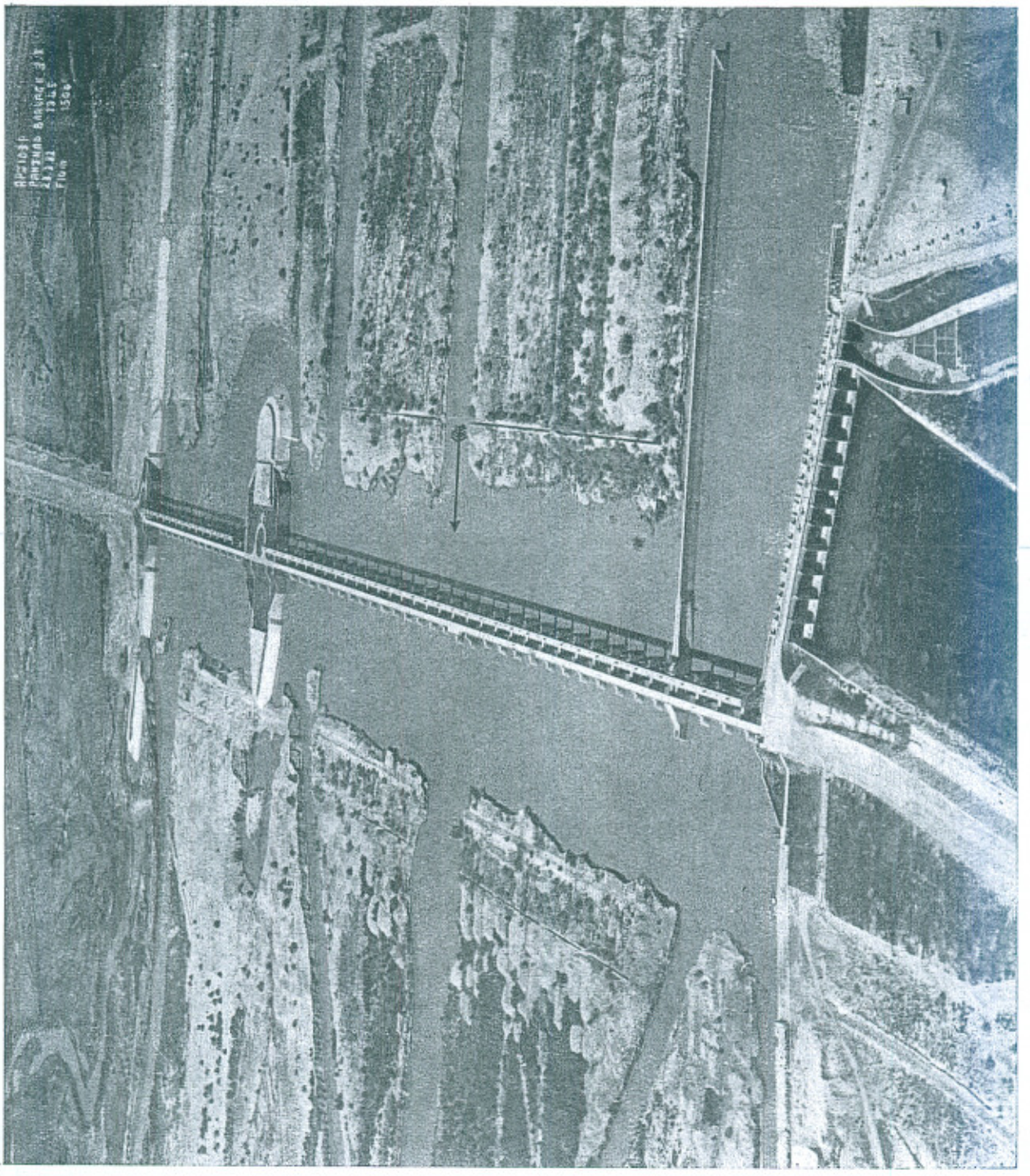
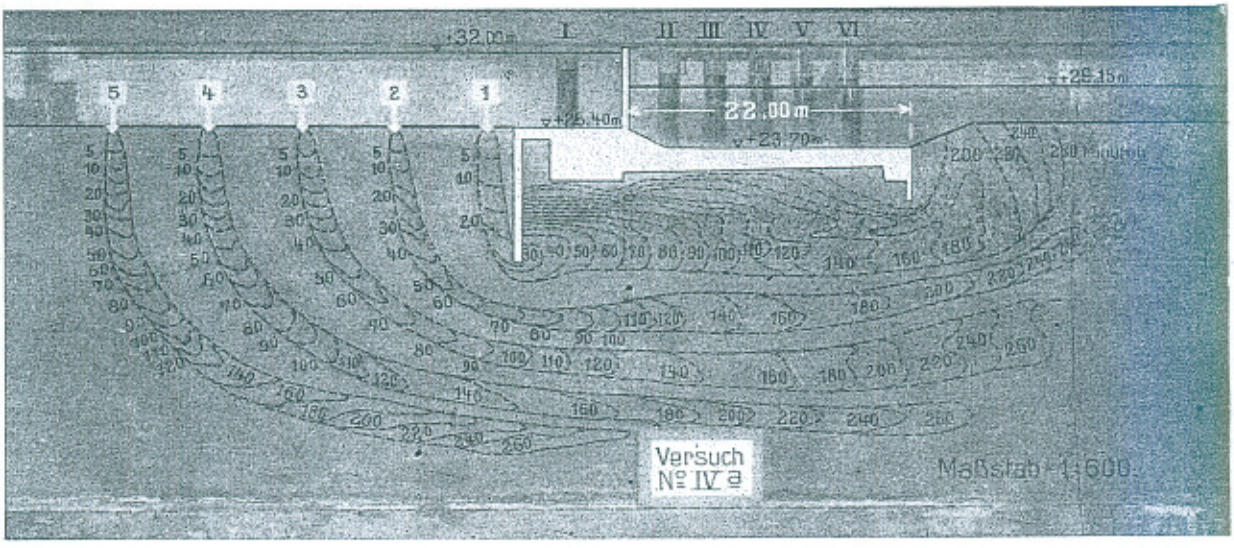

315·0
310·0
300·0
290·0
Y (feet)
Log P
R.L. 31
F2

FIG. 1



AERIAL VIEW OF PANJNAD HEAD WORKS

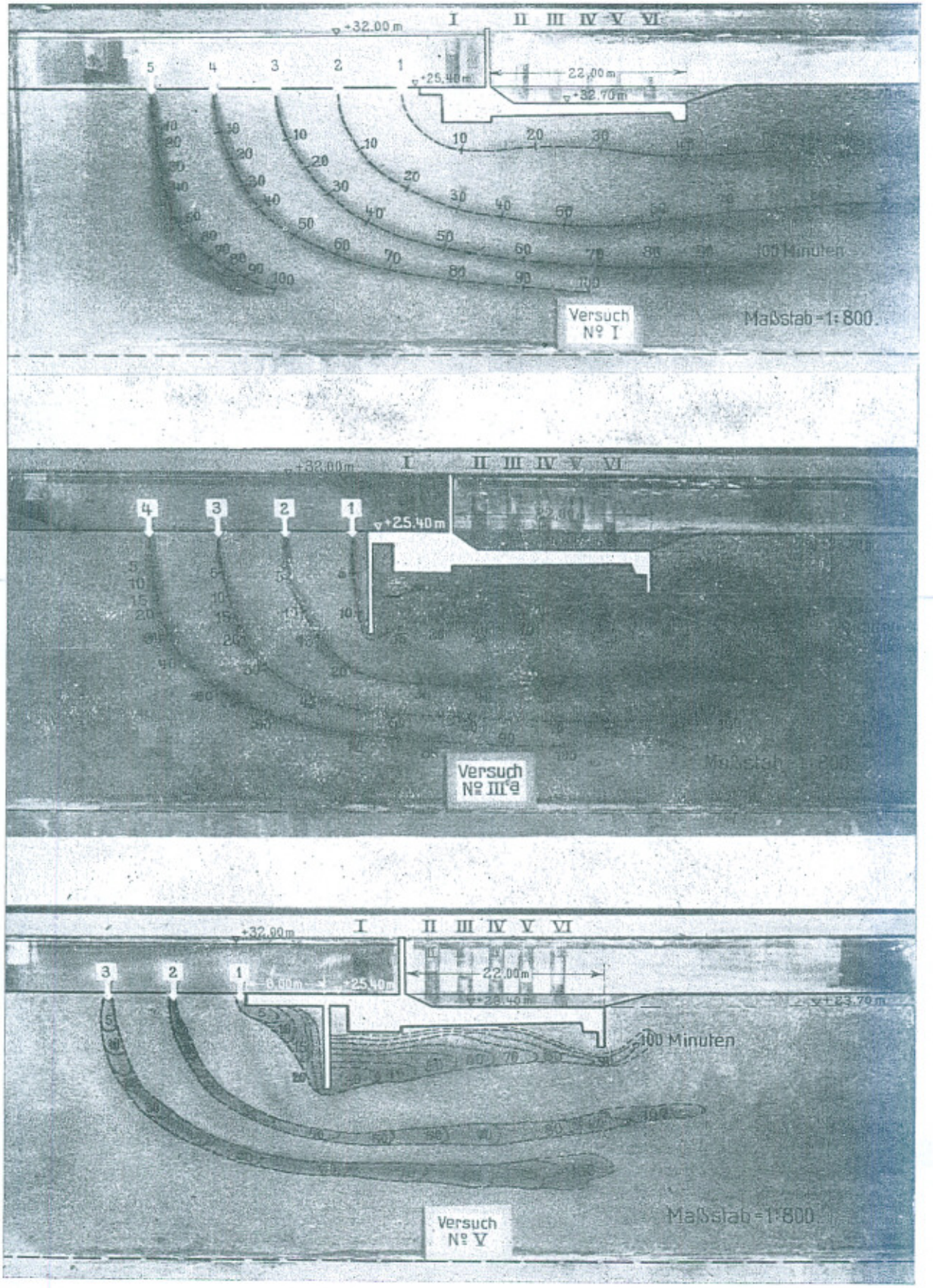
FIG. 2



STREAM LINES IN SUBSOIL FLOW AS DETERMINED BY DYES.

By Courtesy of Dr. Rehbock Karlsruhe.

FIG. 3



STREAM LINES IN SUBSOIL FLOW AS DETERMINED BY DYES.

By Courtesy of Dr. Rehbock Karlsruhe.