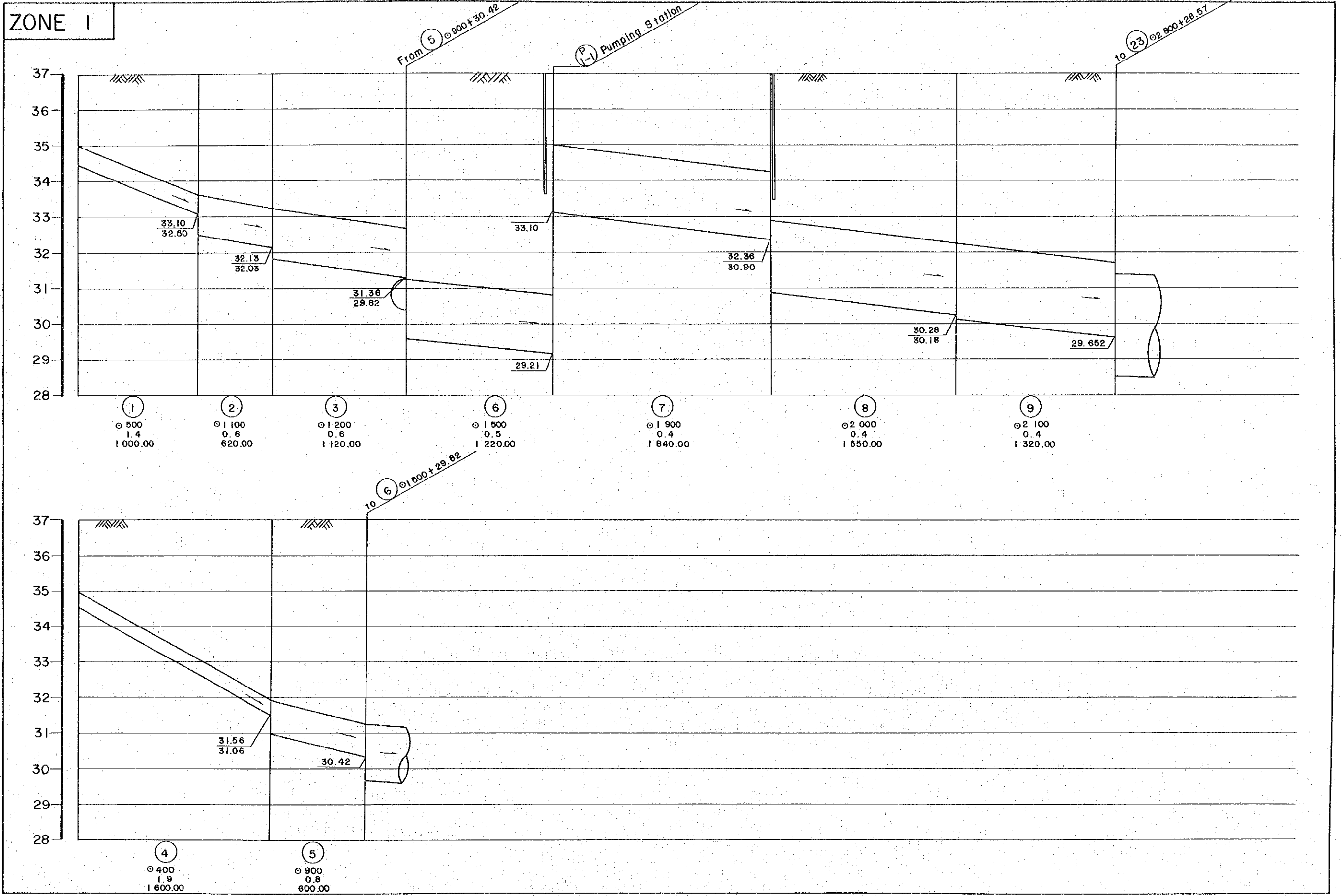


## 2. SEWER PROFILES



**LEGEND**

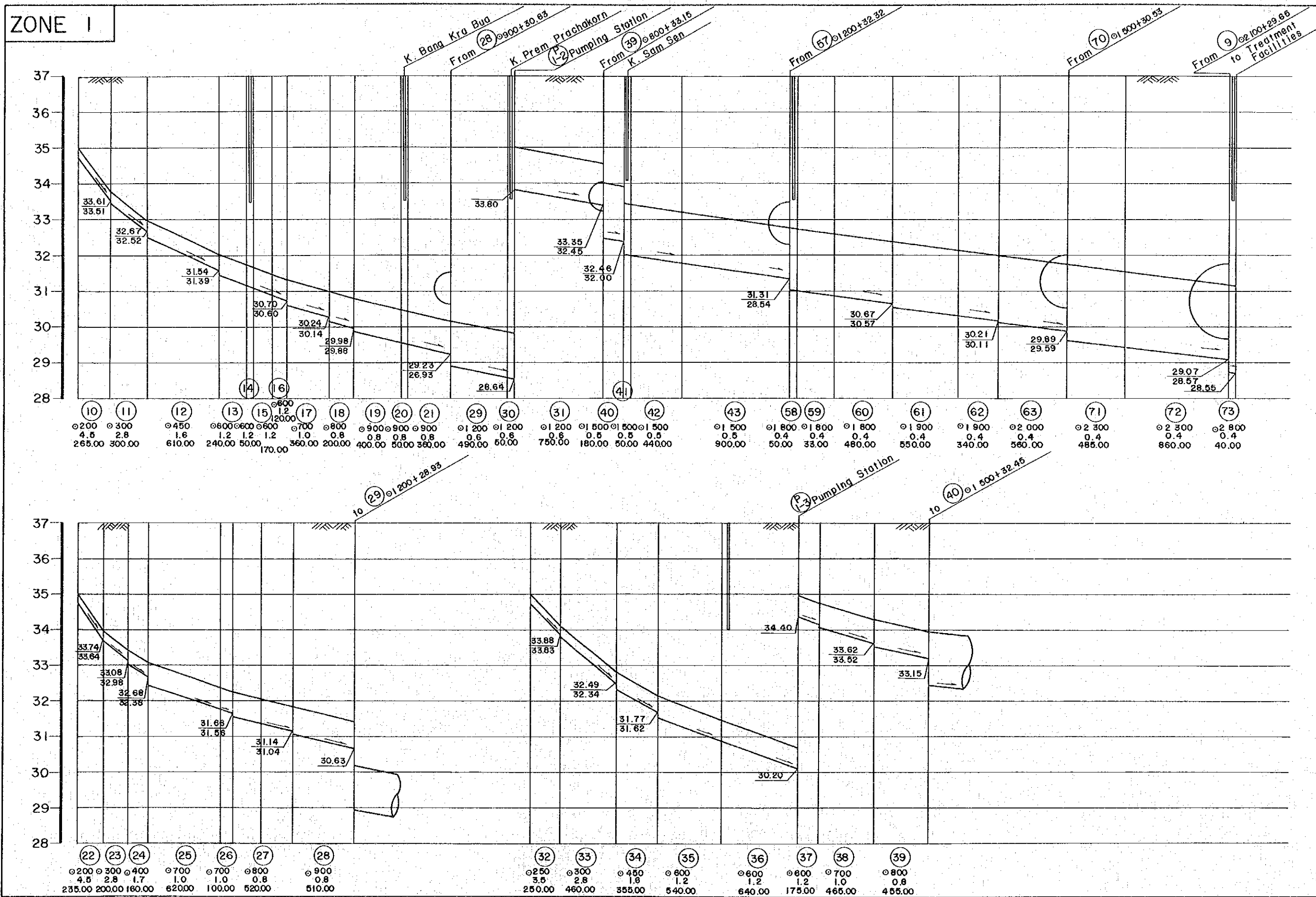
5 SEWER NO.  
1,000 DIAMETER (mm)  
0.8 SLOPE (‰)  
200 LENGTH (m)

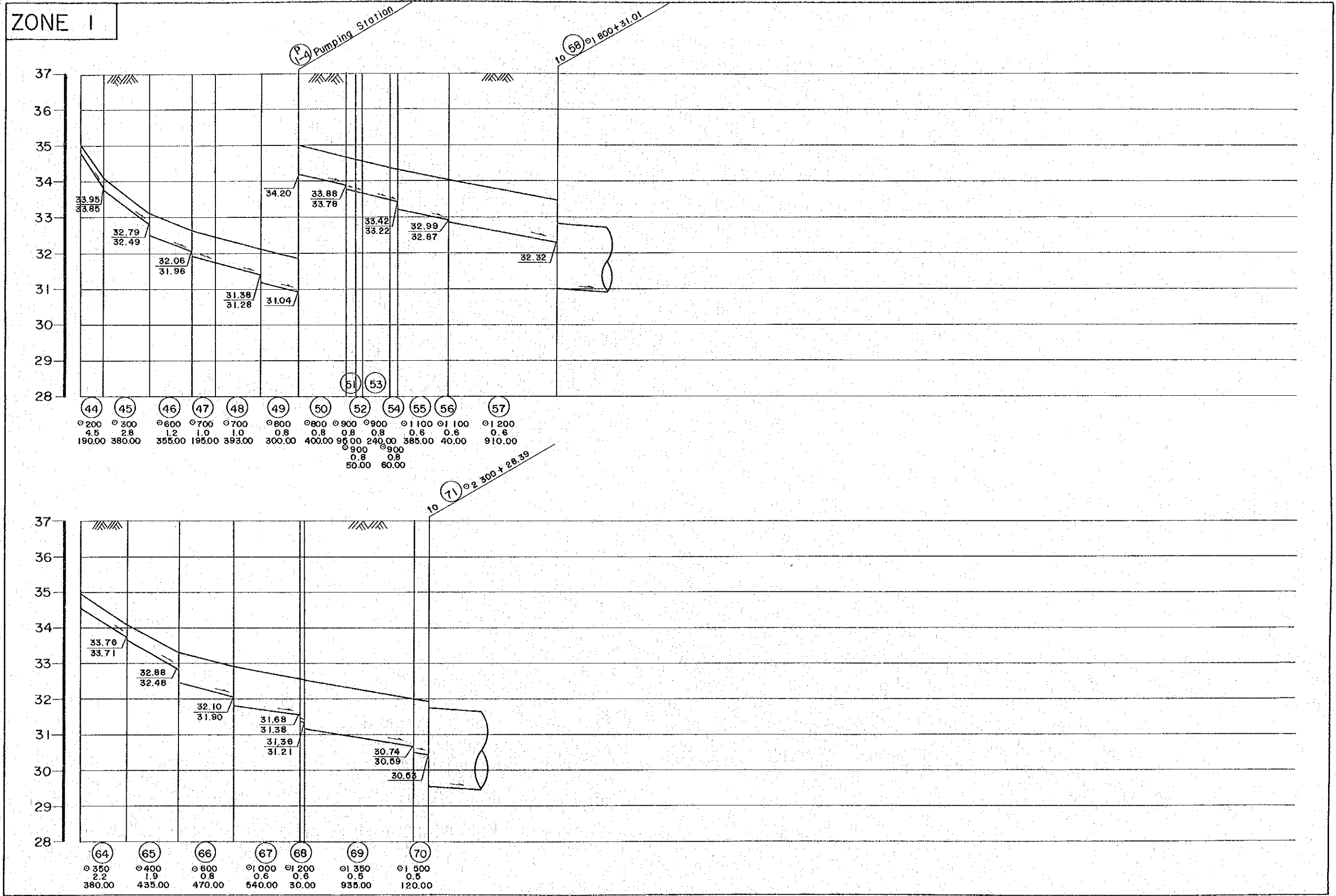
29.00 INVERT ELEVATION  
28.50

ELEVATIONS IN METERS  
M.S.L. 35.03

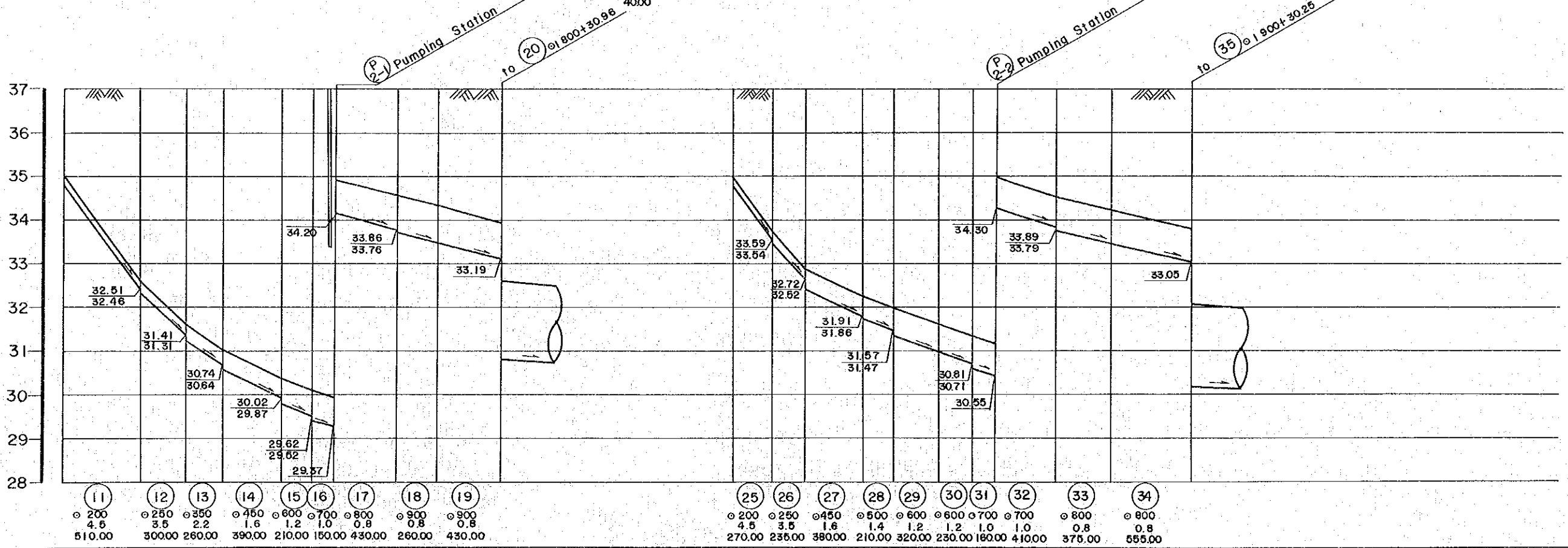
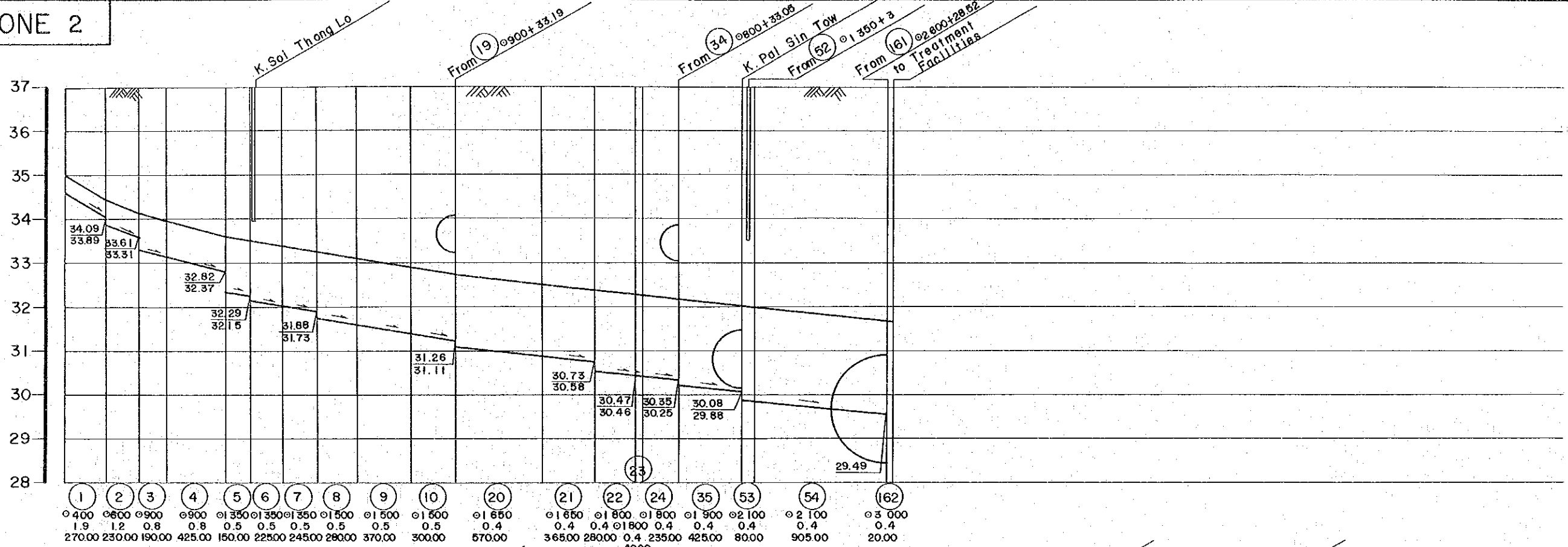
**SEWERAGE SYSTEM PROFILE**

SCALE VERTICAL 1:100  
HORIZONTAL 1:30,000





**ZONE 2**



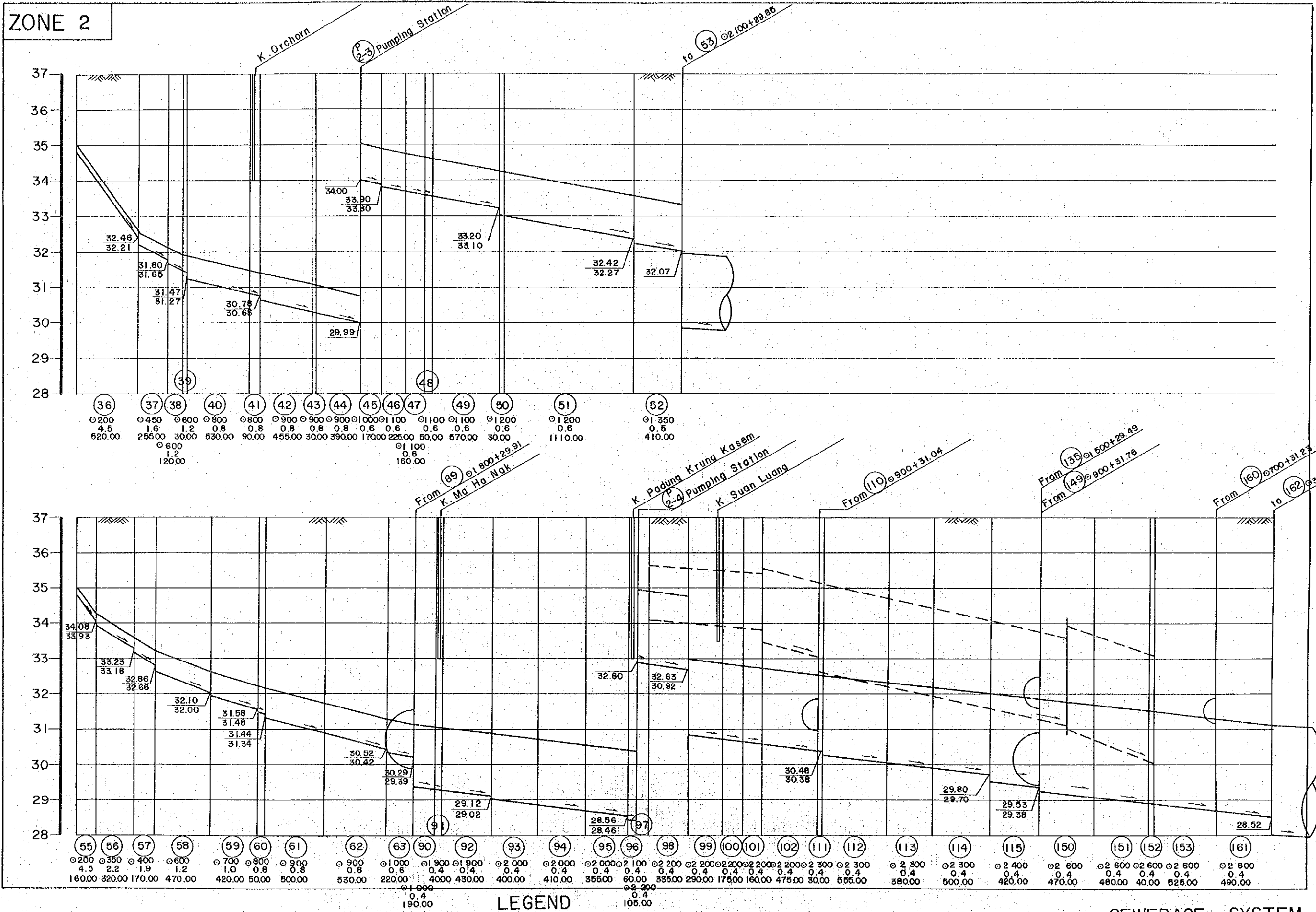
**LEGEND**

- ⑤ SEWER NO.
  - ∅1,000 DIAMETER (mm)
  - 0.8 SLOPE (‰)
  - 200 LENGTH (m)
- 
- 29.00  
28.50  
INVERT ELEVATION

ELEVATIONS IN METERS  
M.S.L. 35.03

**SEWERAGE SYSTEM PROFILE**

SCALE VERTICAL 1:100  
HORIZONTAL 1:30,000



**LEGEND**

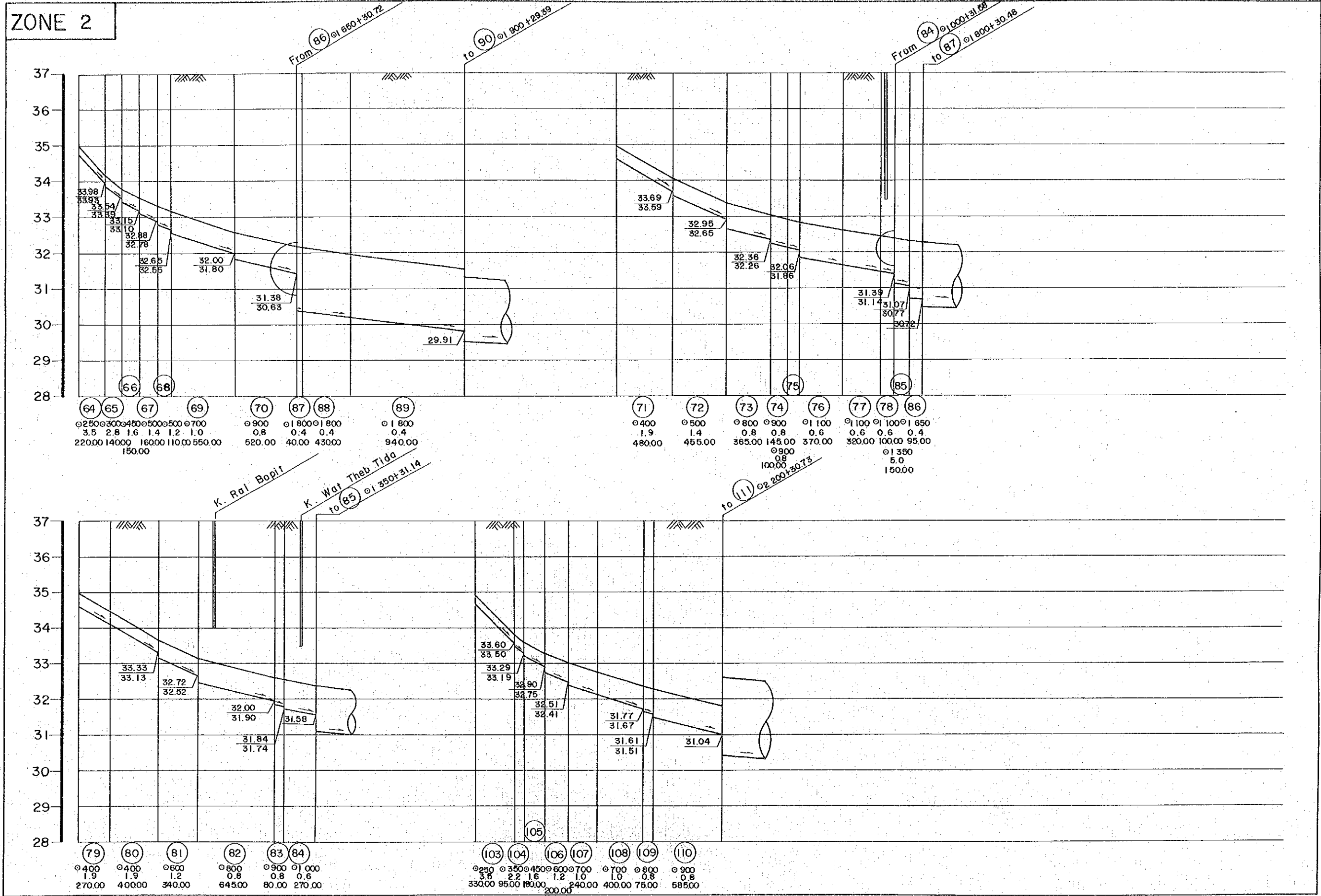
⑤ SEWER NO.  
 ∅ 1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)

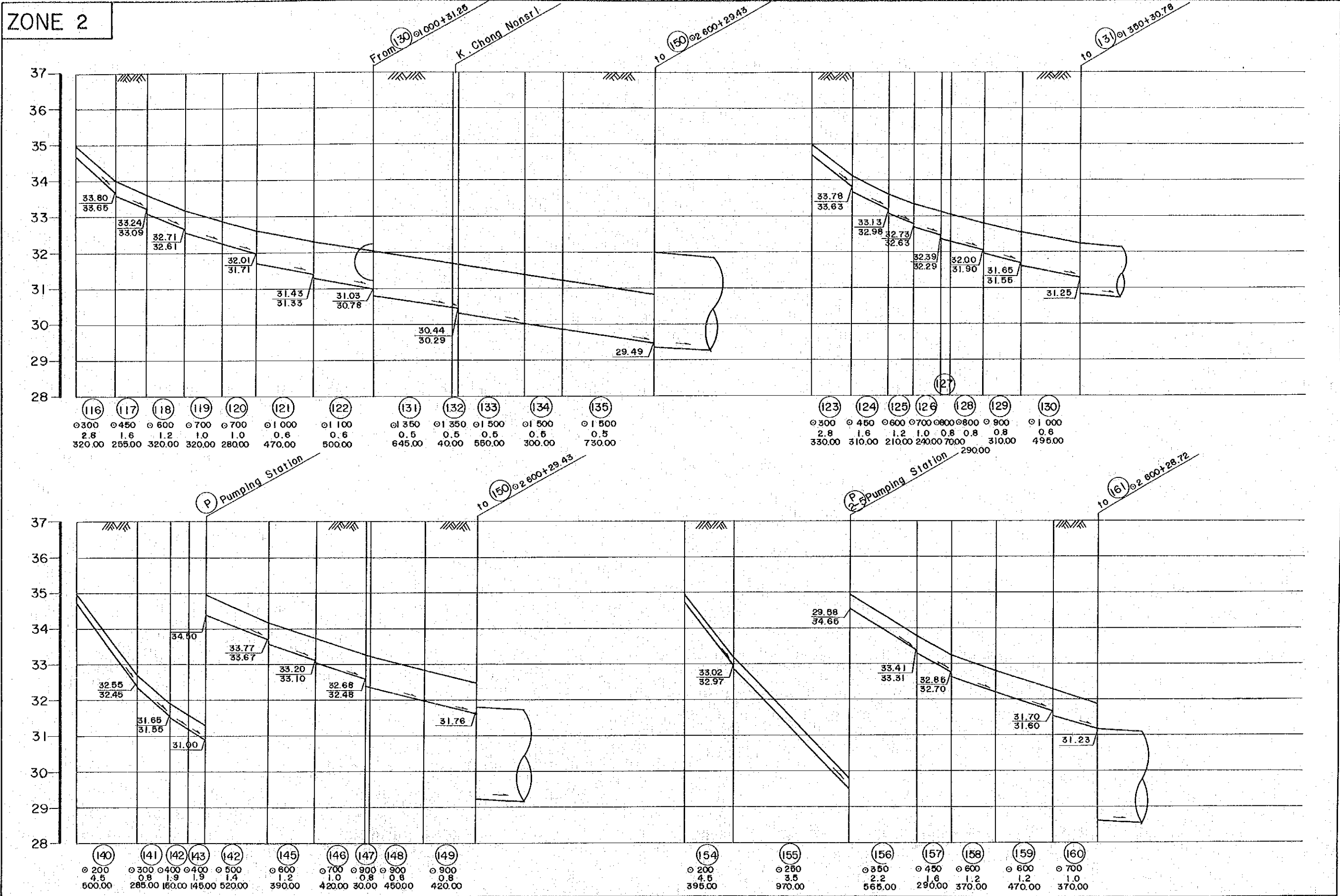
INVERT ELEVATION

ELEVATIONS IN METERS  
 M.S.L. 35.03

**SEWERAGE SYSTEM PROFILE**

SCALE VERTICAL 1:100  
 HORIZONTAL 1:30,000





**LEGEND**

(5) SEWER NO.  
 $\phi$  1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)

INVERT ELEVATION

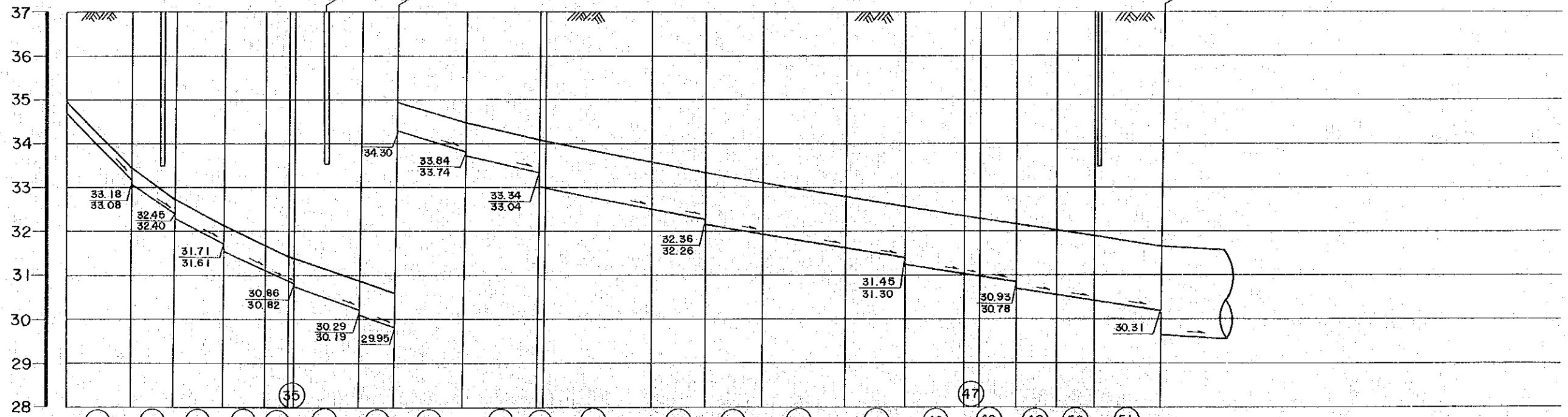
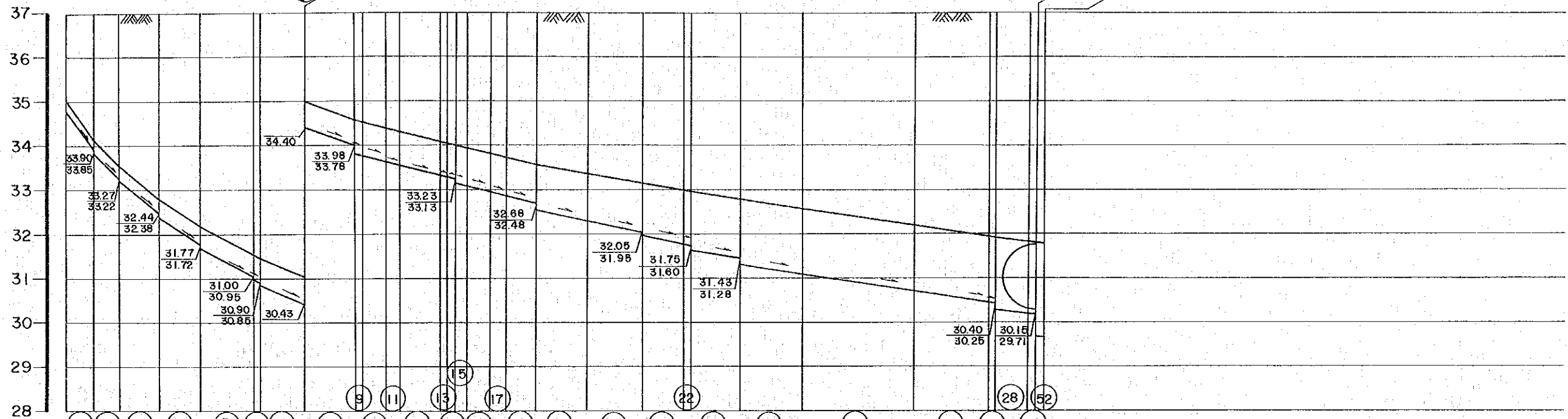
ELEVATIONS IN METERS  
 M.S.L. 35.03

**SEWERAGE SYSTEM PROFILE**

SCALE VERTICAL 1:100  
 HORIZONTAL 1:30,000



**ZONE 3**



**LEGEND**

(5) SEWER NO.  
 1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)

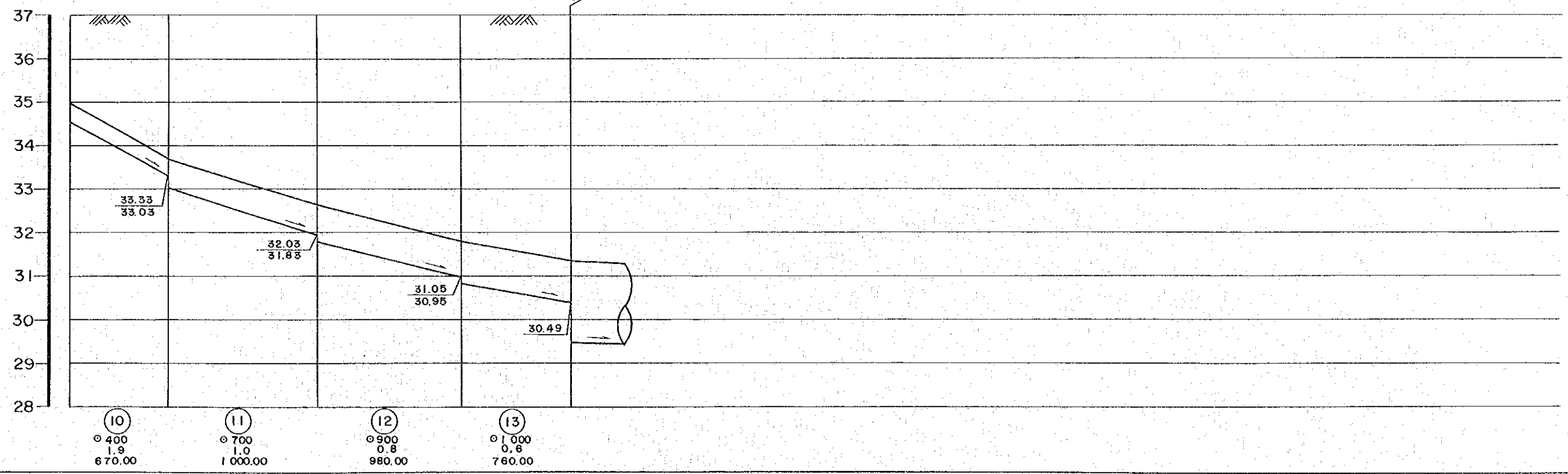
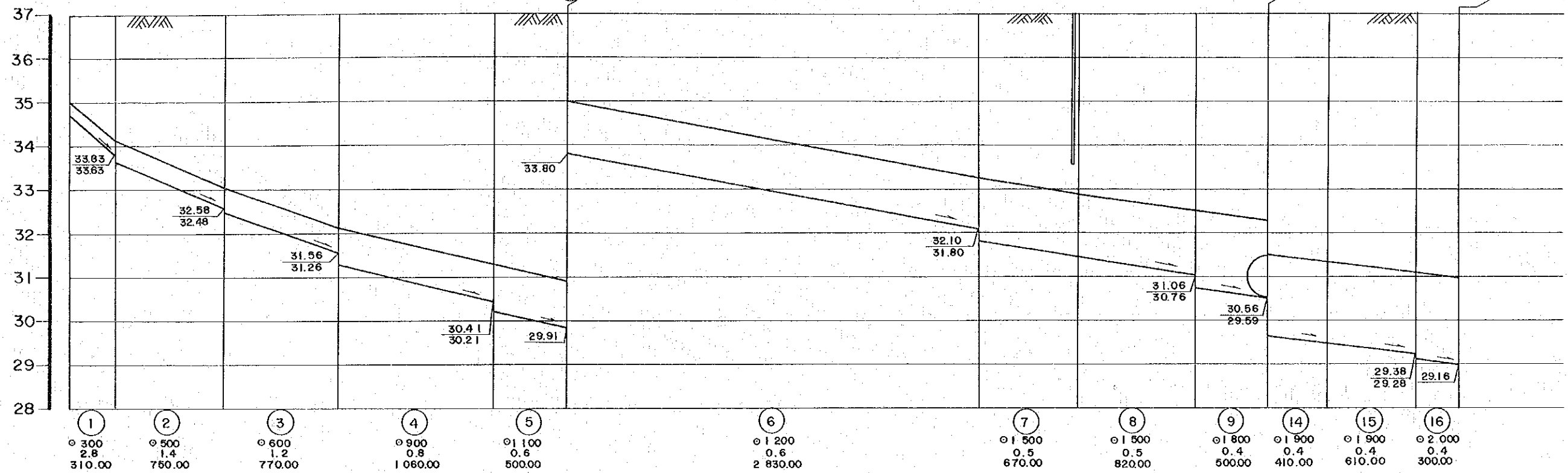
29.00 / 28.50 INVERT ELEVATION

ELEVATIONS IN METERS  
M. S. L. 35.03

**SEWERAGE SYSTEM PROFILE**

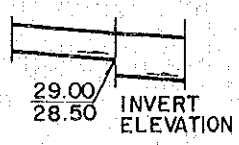
SCALE VERTICAL 1:100  
HORIZONTAL 1:30,000

**ZONE 5**



(5) SEWER NO.  
 1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)

**LEGEND**

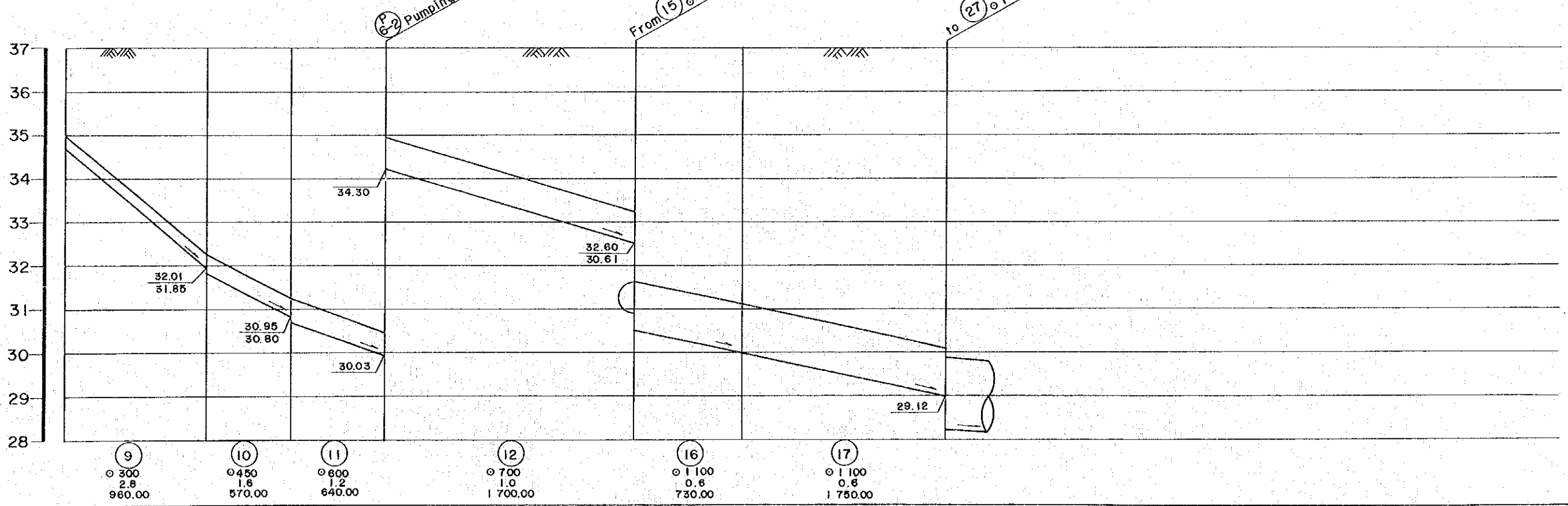
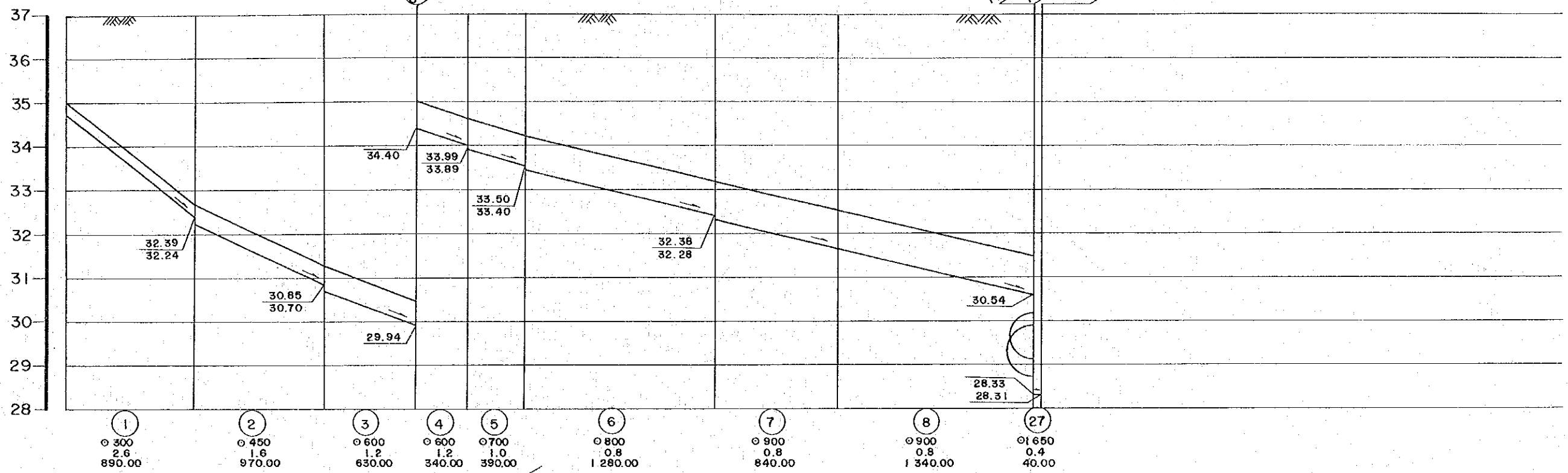


ELEVATIONS IN METERS  
 M. S. L. 35.03

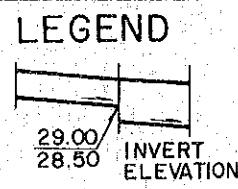
**SEWERAGE SYSTEM PROFILE**

SCALE VERTICAL 1:100  
 HORIZONTAL 1:30,000

**ZONE 6**



(5) SEWER NO.  
 ∅ 1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)

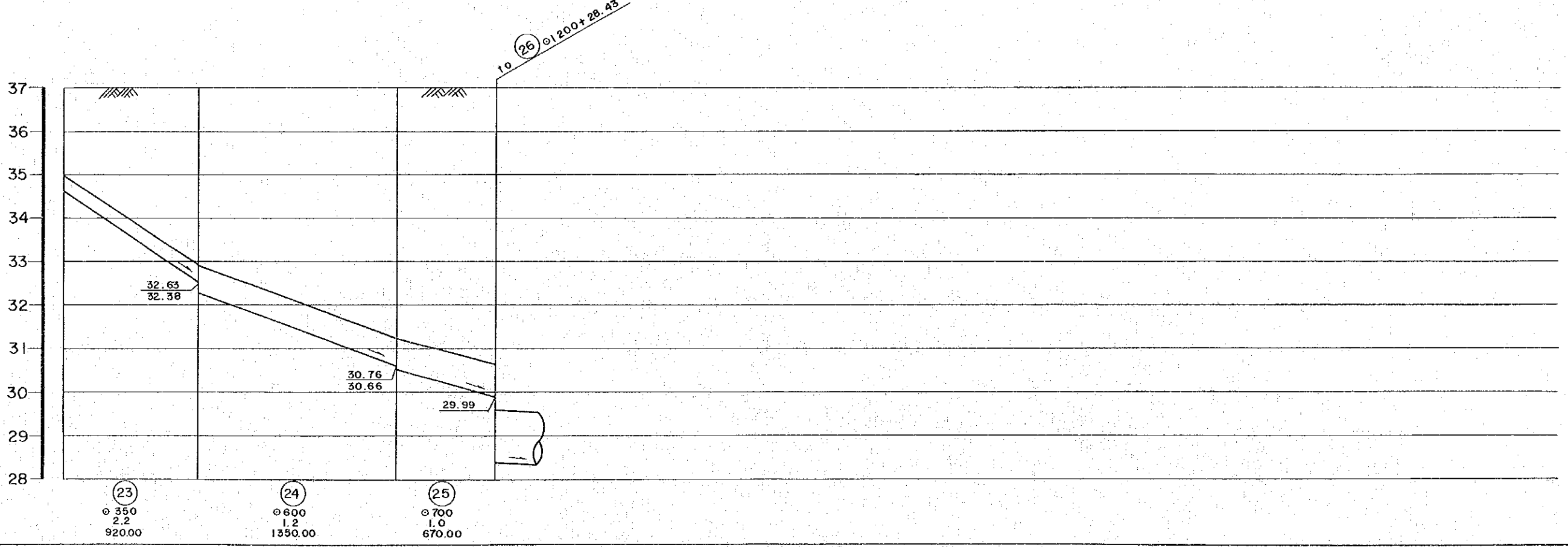
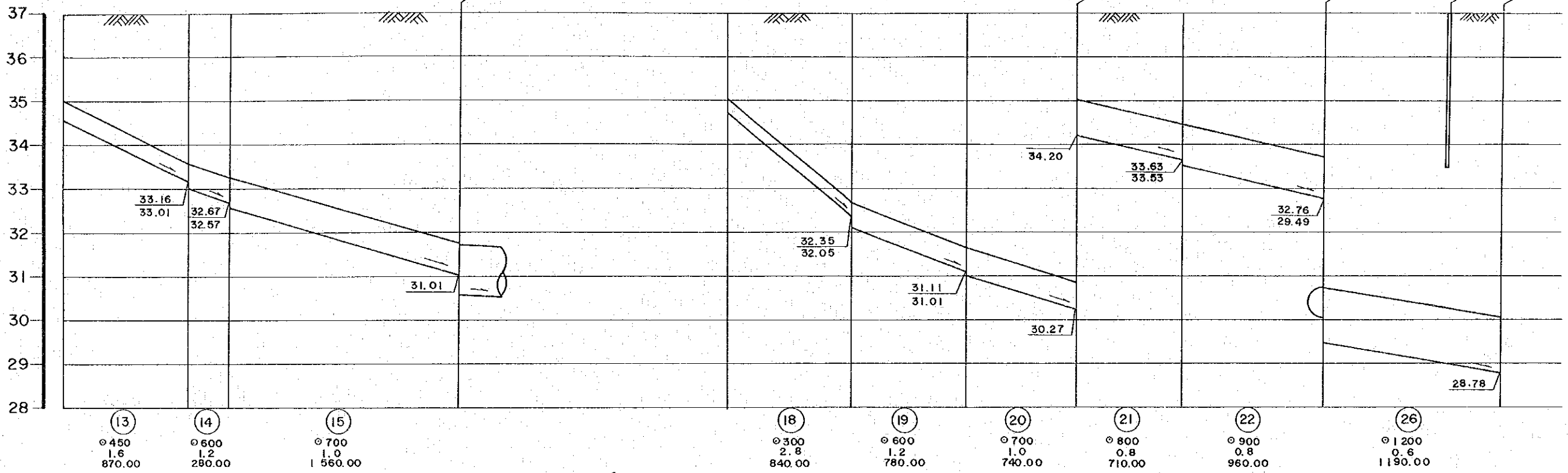


ELEVATIONS IN METERS  
M.S.L. 35.03

**SEWERAGE SYSTEM PROFILE**

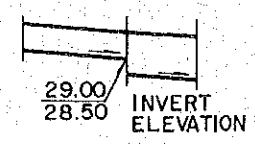
SCALE VERTICAL 1:100  
HORIZONTAL 1:30,000

**ZONE 6**



**LEGEND**

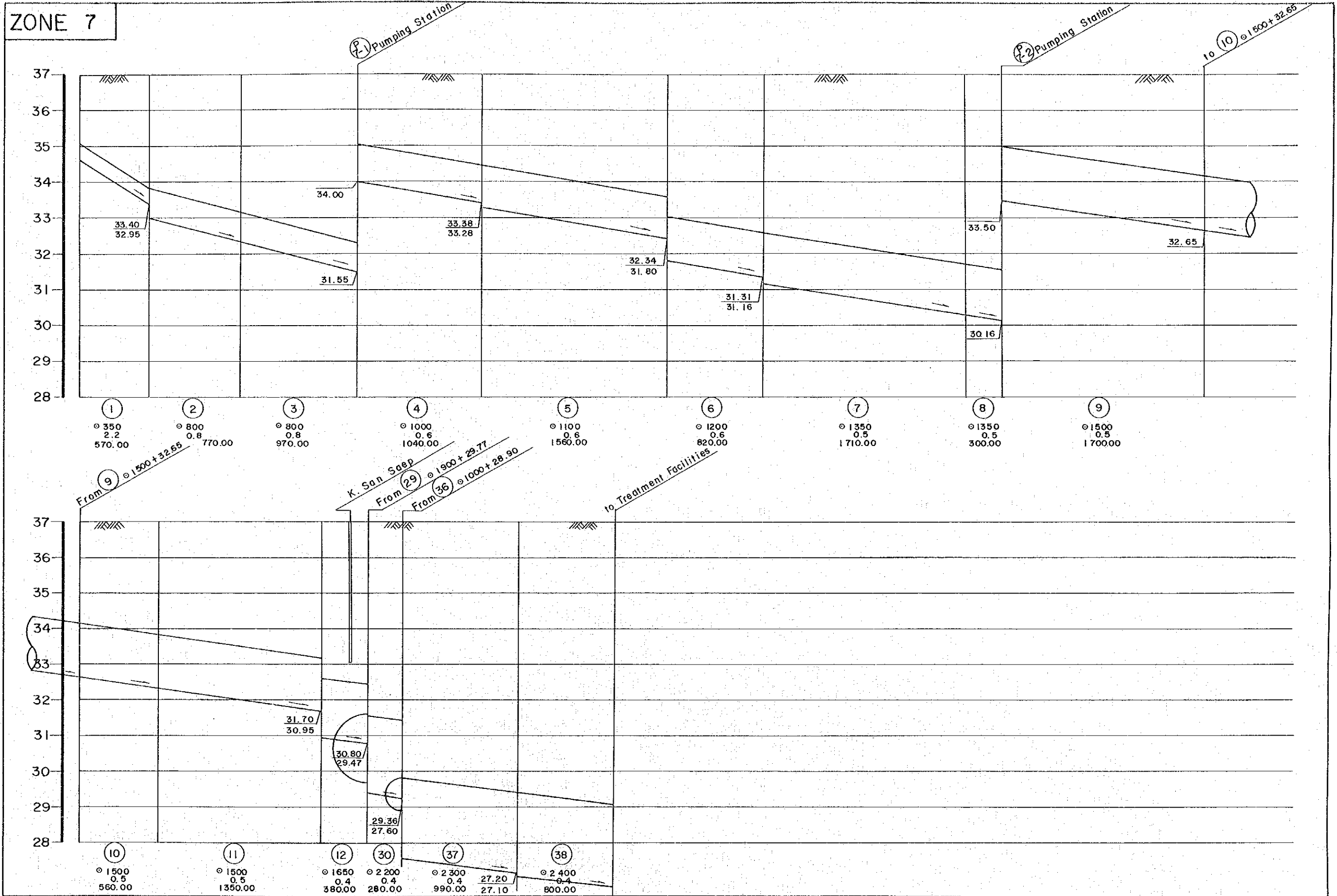
- ⑤ SEWER NO.
- 1,000 DIAMETER (mm)
- 0.8 SLOPE (‰)
- 200 LENGTH (m)



ELEVATIONS IN METERS  
M.S.L. 35.03

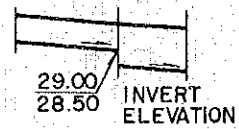
**SEWERAGE SYSTEM PROFILE**

SCALE VERTICAL 1:100  
HORIZONTAL 1:30,000



**LEGEND**

5 SEWER NO.  
 1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)

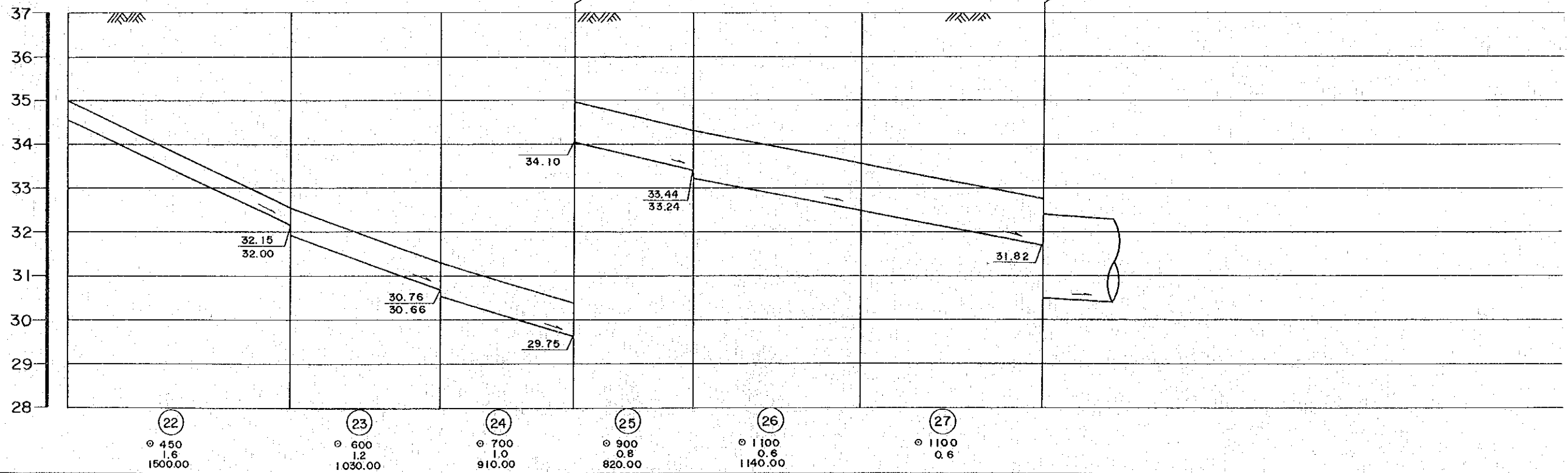
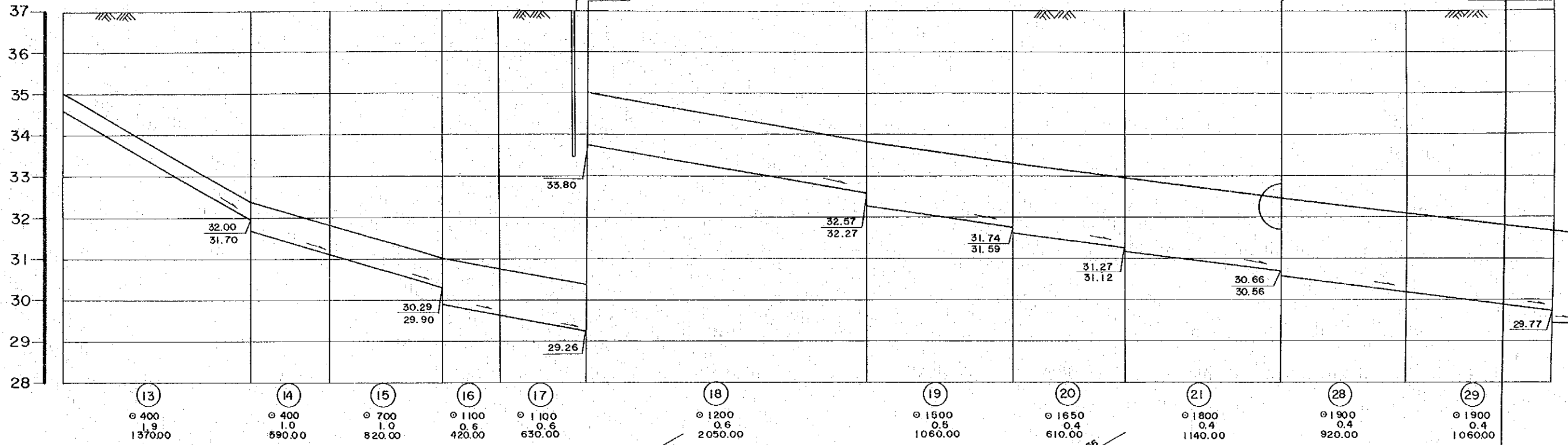


ELEVATIONS IN METERS  
 M.S.L. 35.03

**SEWERAGE SYSTEM PROFILE**

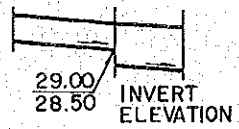
SCALE VERTICAL 1:100  
 HORIZONTAL 1:30,000

**ZONE 7**



**LEGEND**

(5) SEWER NO.  
 ∅ 1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)

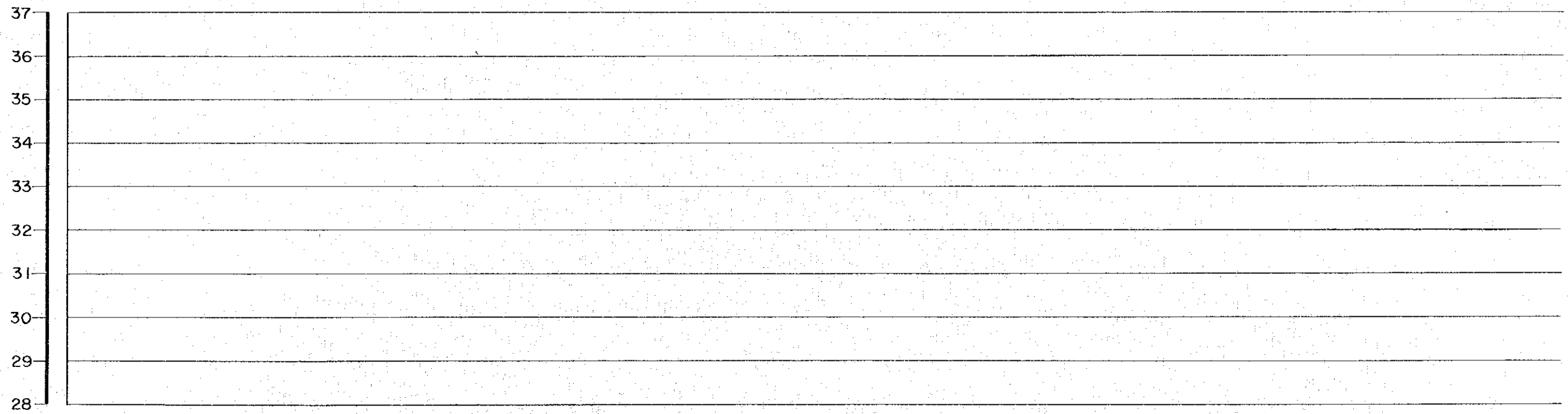
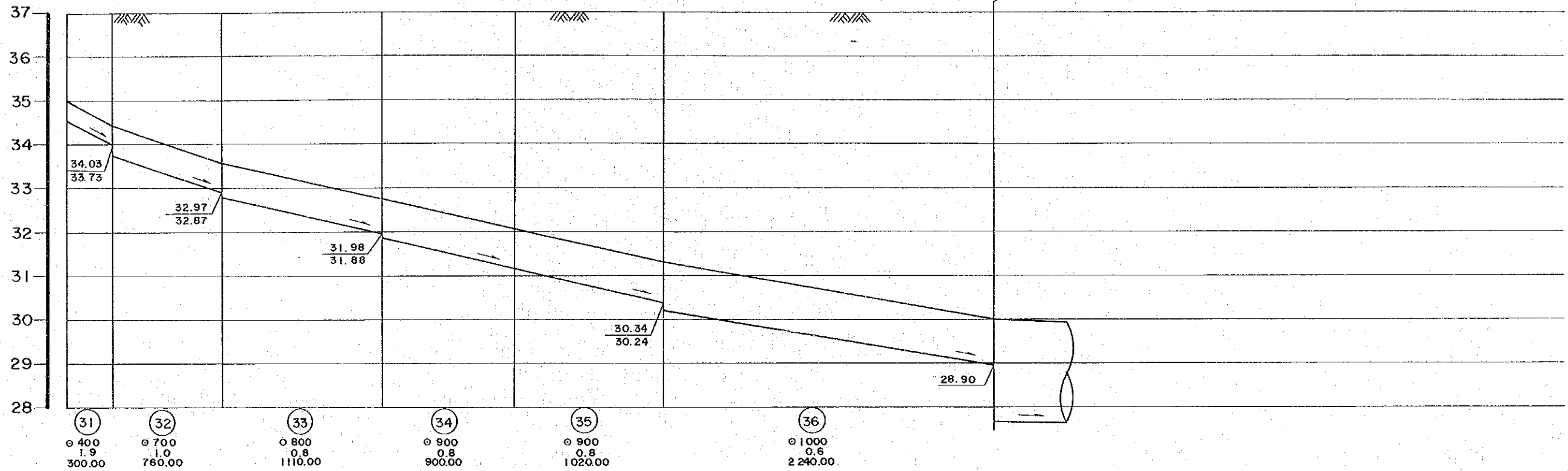


ELEVATIONS IN METERS  
 M. S. L. 35.03

**SEWERAGE SYSTEM PROFILE**

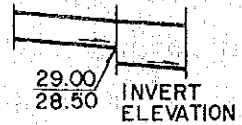
SCALE VERTICAL 1:100  
 HORIZONTAL 1:30,000

ZONE 7



LEGEND

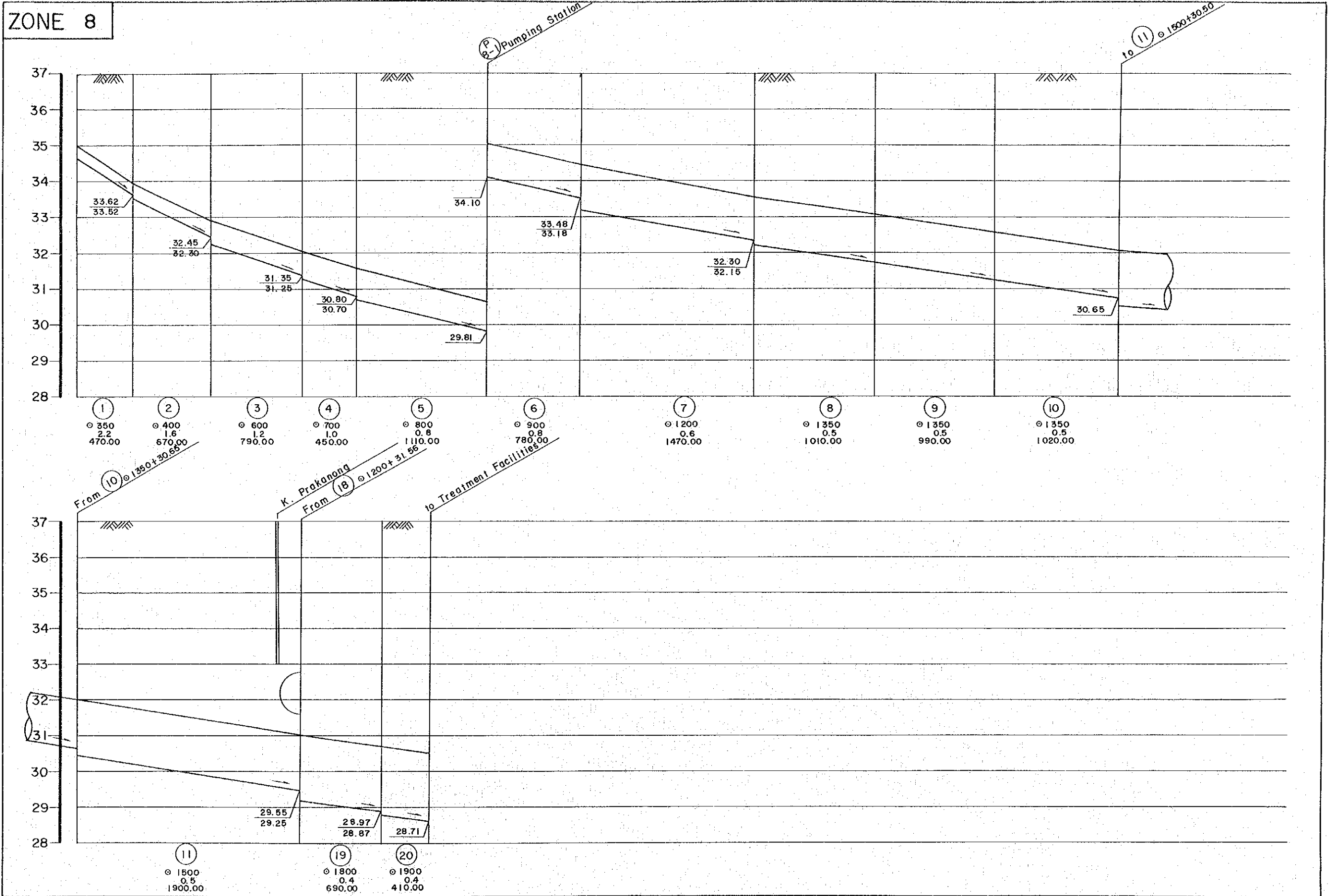
(5) SEWER NO.  
 ∅ 1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)



ELEVATIONS IN METERS  
M.S.L. 35.03

SEWERAGE SYSTEM PROFILE

SCALE VERTICAL 1:100  
HORIZONTAL 1:30,000



**LEGEND**

(5) SEWER NO.  
 ∅ 1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)

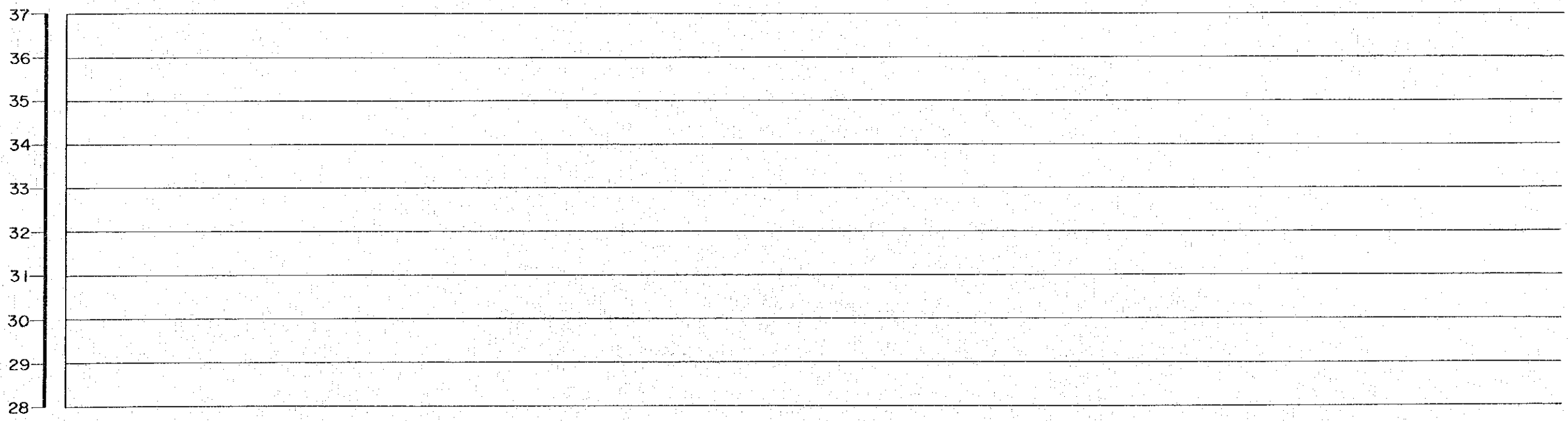
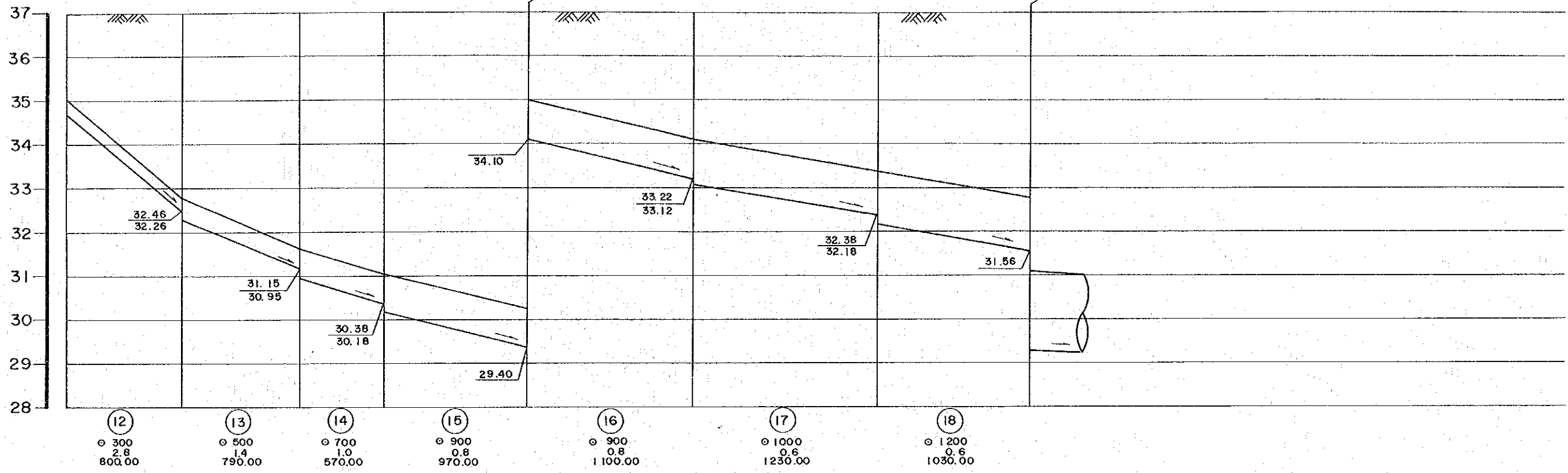
INVERT ELEVATION

ELEVATIONS IN METERS  
 M.S.L. 35.03

**SEWERAGE SYSTEM PROFILE**  
 SCALE VERTICAL 1:100  
 HORIZONTAL 1:30,000

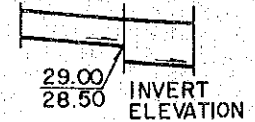


**ZONE 8**



**LEGEND**

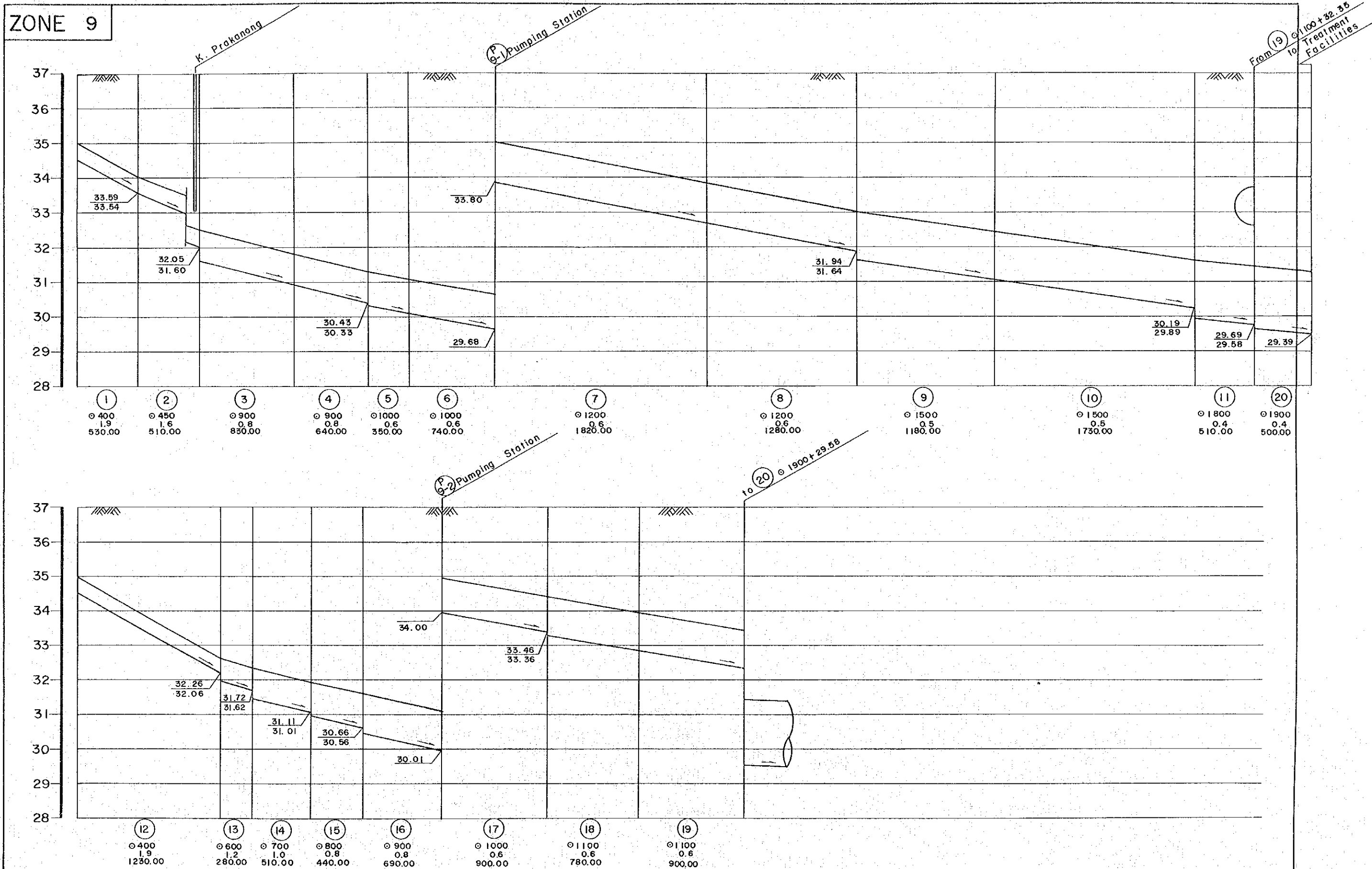
(5) SEWER NO.  
 ∅ 1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)



ELEVATIONS IN METERS  
 M. S. L. 35.03

**SEWERAGE SYSTEM PROFILE**

SCALE VERTICAL 1:100  
 HORIZONTAL 1:30,000



**LEGEND**

⑤ SEWER NO.  
 ◯ 1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)

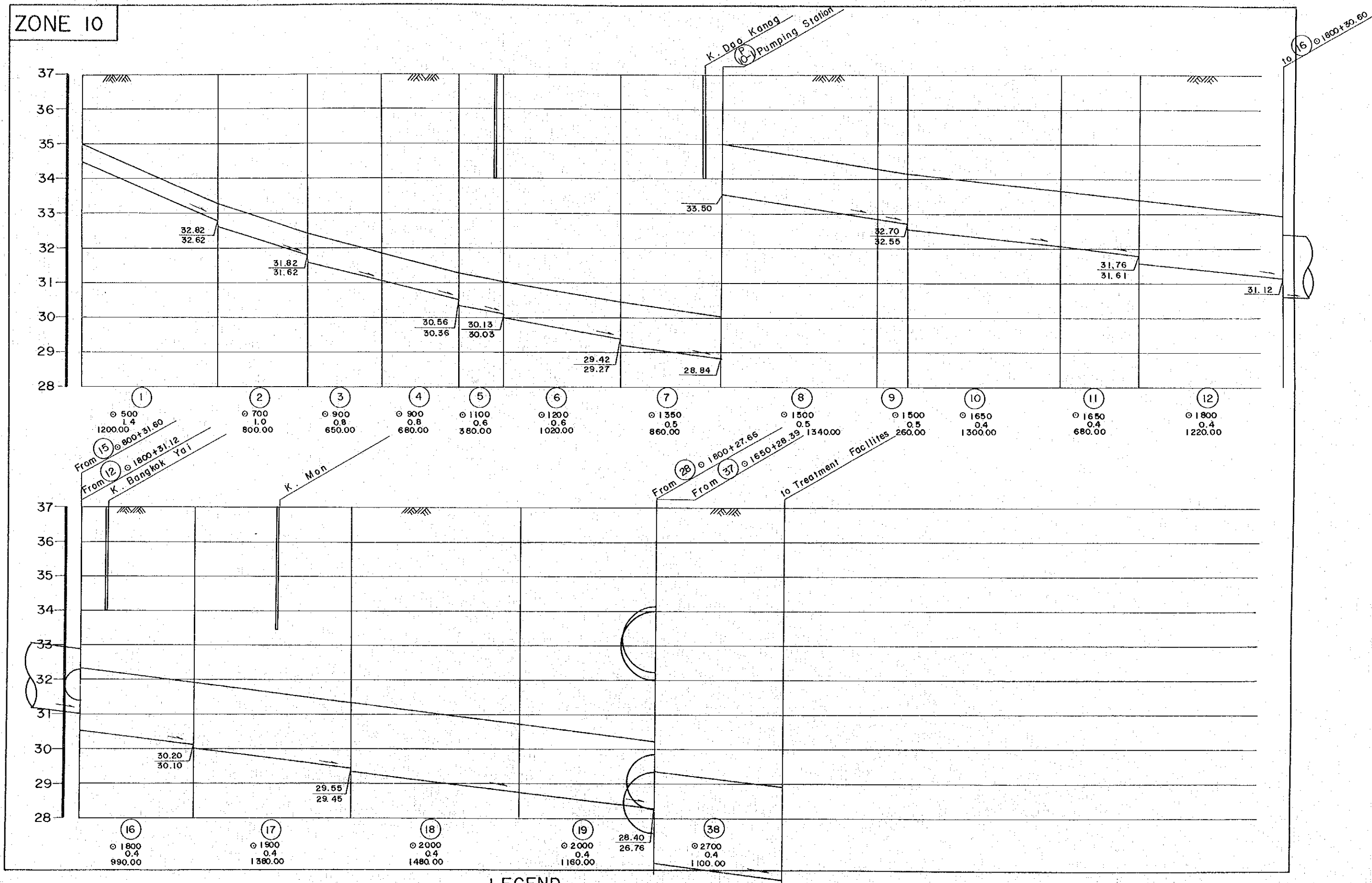
INVERT ELEVATION

ELEVATIONS IN METERS  
 M. S. L. 35.03

**SEWERAGE SYSTEM PROFILE**

SCALE VERTICAL 1:100  
 HORIZONTAL 1:30,000

**ZONE 10**



**LEGEND**

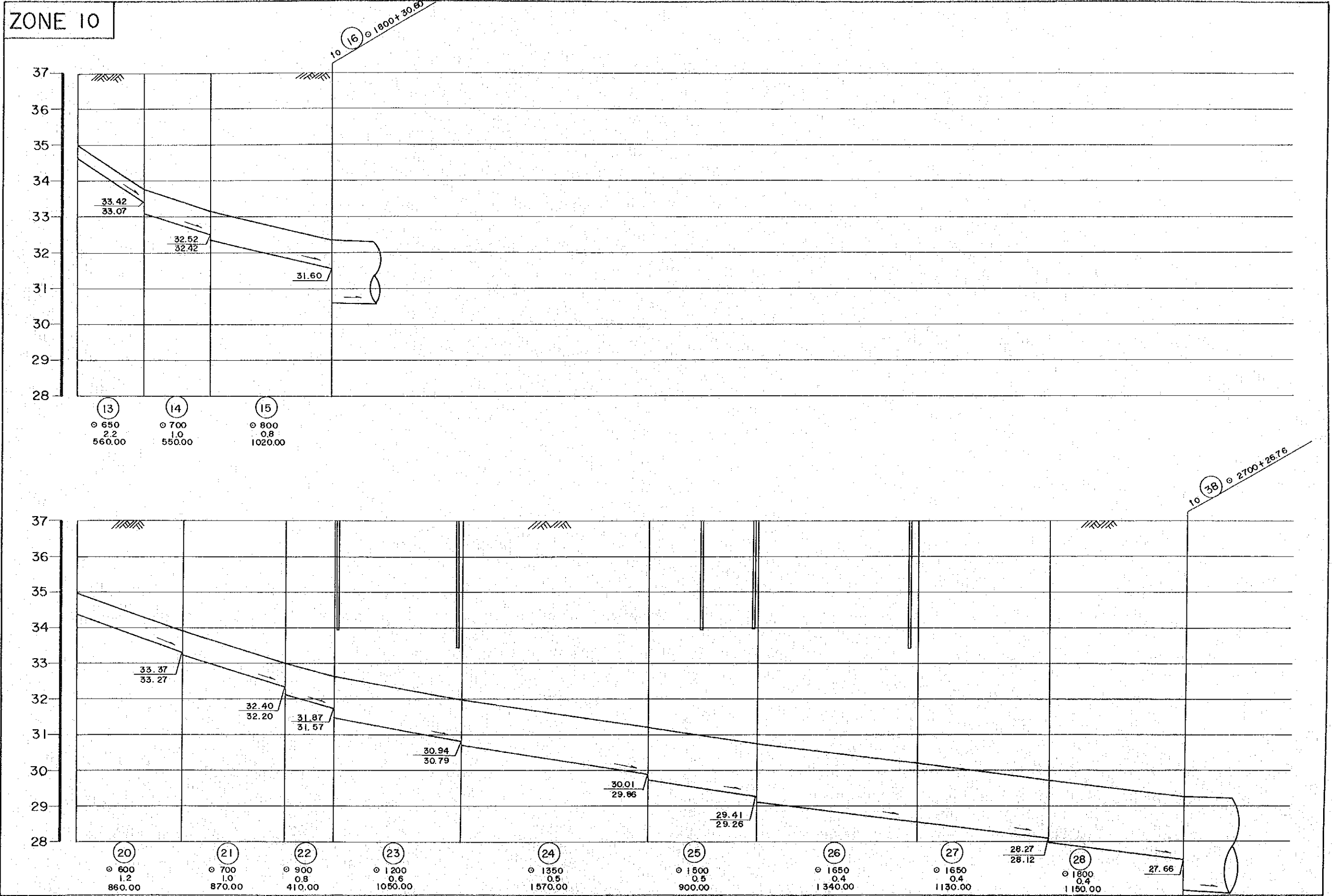
(5) SEWER NO.  
 ∅ 1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)

INVERT ELEVATION

ELEVATIONS IN METERS  
M.S.L. 35.03

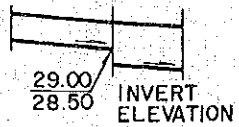
**SEWERAGE SYSTEM PROFILE**

SCALE VERTICAL 1:100  
HORIZONTAL 1:30,000



**LEGEND**

⑤ SEWER NO.  
 ∅ 1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)

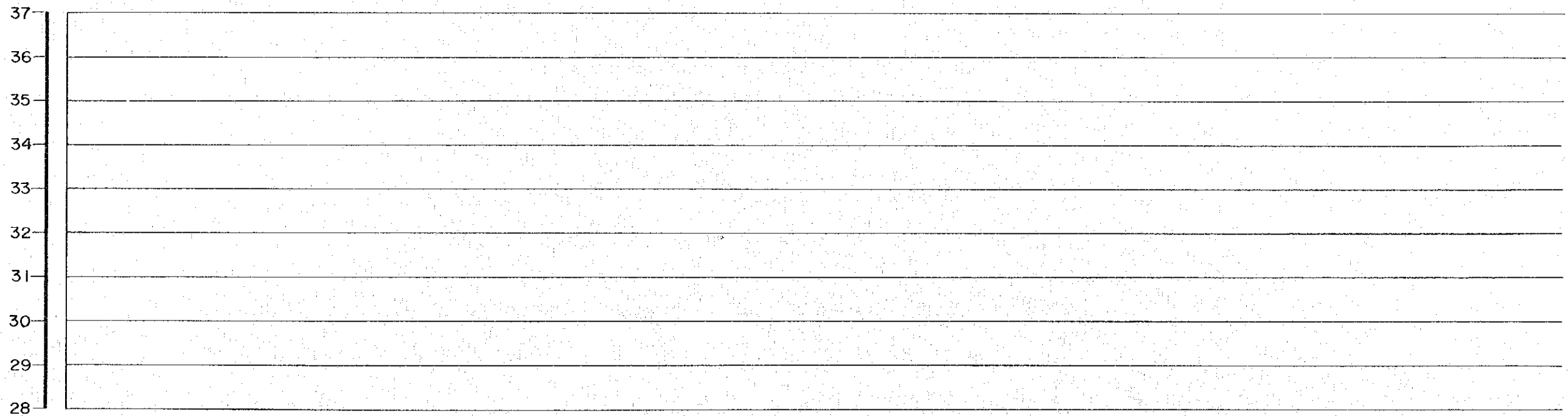
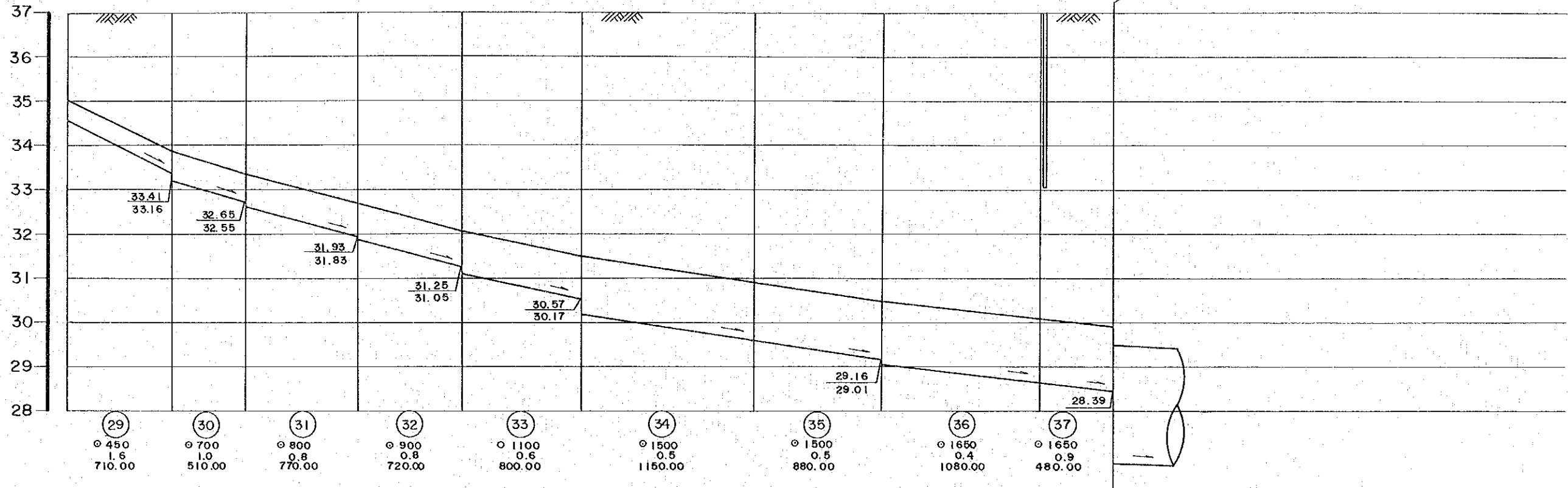


ELEVATIONS IN METERS  
 M. S. L. 35.03

**SEWERAGE SYSTEM PROFILE**

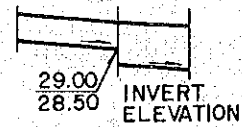
SCALE VERTICAL 1:100  
 HORIZONTAL 1:30,000

ZONE 10



LEGEND

(5) SEWER NO.  
 ∅ 1,000 DIAMETER (mm)  
 0.8 SLOPE (‰)  
 200 LENGTH (m)



ELEVATIONS IN METERS  
 M.S.L. 35.03

SEWERAGE SYSTEM PROFILE

SCALE VERTICAL 1:100  
 HORIZONTAL 1:30,000

3. COMPUTATION  
FOR  
DESIGN OF SANITARY SEWERS

Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE I	3,020	380	3,400	300 persons/ha	1018,700 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks		
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation
	Increment	Total	Increment	Total																			
	ha	ha	ha	ha	ha	ha		persons	m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s		m <sup>3</sup> /s	m <sup>3</sup> /s		m <sup>3</sup> /s	m	m	%	m/s		m <sup>3</sup> /s	m
1	30.12		3.15		33.27		9,980	0.023	0.004	0.027	4.0	0.108		0.003	0.111	500	1000.00	1.4	0.62	0.122	37.00	34.50	
2	84.98	115.10	44.79	47.94	129.77	163.04	48,910	0.114	0.064	0.178	2.8	0.498		0.014	0.512	1100	620.00	0.6	0.69	0.656	37.00	33.10	
3	46.50	161.60	32.01	79.95	78.51	241.55	72,470	0.169	0.107	0.276	2.6	0.718		0.021	0.739	1200	1120.00	0.6	0.73	0.828	37.00	32.50	
	to	6																					
4	20.27				20.27		6,080	0.014		0.014	4.6	0.064		0.002	0.066	400	1600.00	1.9	0.63	0.079	37.00	32.13	
5	112.70	132.97	3.61		116.31	136.58	40,970	0.095	0.005	0.100	3.2	0.320		0.012	0.332	900	800.00	0.8	0.70	0.444	37.00	32.03	
6	134.46	429.03	44.05	127.61	178.51	556.64	166,990	0.388	0.171	0.559	2.3	1.286		0.049	1.335	1500	1220.00	0.5	0.78	1.370	37.00	31.36	
P-1																							Pumping Station
7	504.40	933.43		127.61	504.40	1061.04	318,310	0.741	0.171	0.912	2.1	1.915		0.093	2.008	1900	1840.00	0.4	0.81	2.301	37.00	34.60	
8	323.14	1256.57		127.61	323.14	1384.18	415,250	0.966	0.171	1.137	2.0	2.274		0.122	2.396	2000	1550.00	0.4	0.84	2.639	37.00	31.56	
9	189.97	1446.54		127.61	189.97	1574.15	472,250	1.099	0.171	1.270	2.0	2.540		0.138	2.678	2100	1320.00	0.4	0.87	3.005	37.00	31.06	
	to	73																					
10	2.43				2.43		730	0.002		0.002	4.8	0.010		0.001	0.011	200	265.00	4.5	0.61	0.019	37.00	30.42	
11	7.40	9.83			7.40	9.83	2,950	0.007		0.007	4.8	0.034		0.001	0.035	300	300.00	2.8	0.63	0.044	37.00	29.82	
12	21.10	30.93			21.10	30.93	9,280	0.022		0.022	4.2	0.092		0.003	0.095	450	610.00	1.6	0.62	0.099	37.00	29.21	
13	22.33	53.26			22.33	53.26	15,980	0.037		0.037	3.8	0.141		0.005	0.146	600	240.00	1.2	0.65	0.184	37.00	34.80	
14	0.00	53.26			0.00	53.26	15,980	0.037		0.037	3.8	0.147		0.005	0.152	600	50.00	1.2	0.65	0.184	37.00	33.61	
15	11.50	64.76			11.50	64.76	19,430	0.045		0.045	3.6	0.162		0.006	0.168	600	170.00	1.2	0.65	0.184	37.00	33.51	
16	6.42	71.18			6.42	71.18	21,350	0.050		0.050	3.5	0.175		0.006	0.181	600	120.00	1.2	0.65	0.184	37.00	32.67	
17	25.64	96.82			25.64	96.82	29,050	0.068		0.068	3.3	0.224		0.009	0.233	700	360.00	1.0	0.66	0.254	37.00	32.52	





Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE I	3,020	380	3,400	300 persons/ha	1,018,700 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks		
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation
	Increment	Total	Increment	Total																			
	ha	ha	ha	ha	ha	ha		m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s	Peak	m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s		mm	m	‰	m/s	m <sup>3</sup> /s		m	m
35	34.41	63.73			34.41	63.73	19,120	0.044		0.044	3.6	0.158		0.006	0.164	∅ 600	540.00	1.2	0.65	0.184	37.00	31.62	
																						30.97	
36	3.34	67.07			3.34	67.07	20,120	0.047		0.047	3.6	0.169		0.006	0.175	∅ 600	640.00	1.2	0.65	0.184		30.97	
																						30.20	
P 1-3																							
37	4.94	72.01			4.94	72.01	21,600	0.050		0.050	3.5	0.175		0.006	0.181	∅ 600	175.00	1.2	0.65	0.184		34.40	
																						34.18	
38	24.15	96.16			24.15	96.16	28,850	0.067		0.067	3.3	0.221		0.008	0.229	∅ 700	465.00	1.0	0.66	0.254		34.08	
																						33.62	
39	33.23	129.39			33.23	129.39	38,820	0.090		0.090	3.2	0.288		0.011	0.299	∅ 800	455.00	0.8	0.65	0.324		33.52	
																						33.15	
40	94.76	617.23			94.76	617.23	185,170	0.431		0.431	2.4	1.034		0.054	1.088	∅ 1500	180.00	0.5	0.78	1.370		32.45	
																						32.36	
41	0.00	617.23			0.00	617.23	185,170	0.431		0.431	2.4	1.034		0.054	1.088	∅ 1500	50.00	0.5	0.78	1.370		32.00	
																						31.98	
42	14.59	631.82			14.59	631.82	189,550	0.441		0.441	2.4	1.058		0.056	1.114	∅ 1500	440.00	0.5	0.78	1.370		31.98	
																						31.76	
43	80.73	712.55			80.73	712.55	213,770	0.497		0.497	2.4	1.193		0.063	1.256	∅ 1500	900.00	0.5	0.78	1.370		31.76	
	to	58																				31.31	
44	2.50				2.50		750	0.002		0.002	4.8	0.010		0.001	0.011	∅ 200	190.00	4.5	0.61	0.019		34.80	
																						33.95	
45	8.65	11.15			8.65	11.15	3,350	0.008		0.008	4.8	0.038		0.001	0.039	∅ 300	380.00	2.8	0.63	0.044	33.85		
																					32.79		
46	34.58	45.73			34.58	45.73	13,720	0.032		0.032	3.9	0.125		0.004	0.129	∅ 600	355.00	1.2	0.65	0.184	32.49		
																					32.06		
47	27.34	73.07			27.34	73.07	21,920	0.051		0.051	3.5	0.179		0.006	0.185	∅ 700	195.00	1.0	0.66	0.254	31.96		
																					31.77		
48	19.97	93.04			19.97	93.04	27,910	0.065		0.065	3.4	0.221		0.008	0.229	∅ 700	395.00	1.0	0.66	0.254	31.77		
																					31.38		
49	20.36	113.40			20.36	113.40	34,020	0.079		0.079	3.3	0.261		0.010	0.271	∅ 800	300.00	0.8	0.65	0.324	31.28		
																					31.04		
P 1-4																							
50	23.85	137.25			23.85	137.25	41,180	0.096		0.096	3.2	0.307		0.012	0.319	∅ 800	400.00	0.8	0.65	0.324	34.20		
																					33.88		
51	36.20	173.45			36.20	173.45	52,040	0.121		0.121	3.0	0.363		0.015	0.378	∅ 900	95.00	0.8	0.70	0.444	33.78		
																					33.70		



Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE I	3,020	380	3,400	300 persons/ha	1,018,700 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks		
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation
	Increment	Total	Increment	Total																			
71	47.48	1482.10	2.57	252.39	50.05	1734.49	520,350	1.211	0.339	1.550	2.0	3.100		0.153	3.253	Ø 2200	485.00	0.4	0.90	3.402	37.00	29.59	
72	91.36	1573.46		252.39	91.36	1825.85	547,760	1.274	0.339	1.613	1.9	3.065		0.161	3.226	Ø 2200	860.00	0.4	0.90	3.402		29.41	
73	0.00	3020.00		380.00	0.00	3400.00	1020,000	2.373	0.510	2.883	1.8	5.189		0.299	5.488	Ø 2700	40.00	0.4	1.03	5.874		29.41	
		to Treatment Facilities																				29.07	
																						28.57	
																						28.55	

Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE 2	2,030	1,570	3,600	229 persons/ha	823,800 persons	20l l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Ground Surface Elevation	Sewer Invert Elevation	Remarks
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)			
	Increment	Total	Increment	Total																			
	ha	ha	ha	ha	ha	ha		persons	m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s		m <sup>3</sup> /s	mm	m	%	m/s			
1	29.53		0.00		29.53	6,760	0.016		0.016	4.4	0.070		0.003	0.073	400	270.00	1.9	0.63	0.079	37.00	34.60		
2	34.51	64.04	0.00		34.51	14,670	0.034		0.034	3.8	0.129		0.006	0.135	600	230.00	1.2	0.65	0.184		34.09		
3	118.30	182.34	0.00		118.30	41,760	0.097		0.097	3.2	0.310		0.016	0.326	900	190.00	0.8	0.70	0.444		33.89		
4	80.15	262.49	1.92		82.07	60,550	0.141	0.003	0.144	2.9	0.418		0.023	0.441	900	425.00	0.8	0.70	0.444		33.61		
5	249.01	511.50	39.05	40.97	288.06	126,520	0.294	0.055	0.349	2.4	0.838		0.049	0.887	1350	160.00	0.5	0.72	1.034		33.31		
6	1.48	512.98	2.50	43.47	3.98	556.45	127,430	0.296	0.058	0.354	2.4	0.850		0.899	1350	225.00	0.5	0.72	1.034		33.16		
7	3.69	516.67	3.12	46.59	6.81	563.26	128,990	0.300	0.063	0.363	2.4	0.871		0.921	1350	245.00	0.5	0.72	1.034		32.82		
8	108.46	625.13	16.43	63.02	124.89	688.15	157,590	0.367	0.085	0.452	2.3	1.040		1.101	1500	280.00	0.5	0.78	1.370		32.37		
9	13.31	638.44	6.28	69.30	19.59	707.74	162,070	0.377	0.093	0.470	2.3	1.081		1.143	1500	370.00	0.5	0.78	1.370		32.29		
10	8.50	646.94	5.12	74.42	13.62	721.36	165,190	0.384	0.100	0.484	2.3	1.113		1.176	1500	300.00	0.5	0.78	1.370		32.15		
to	20																				32.02		
11	4.97		0.00		4.97	1,140	0.003		0.003	4.8	0.014		0.001	0.015	200	510.00	4.5	0.61	0.019		31.88		
12	6.21	11.18	0.00		6.21	2,560	0.006		0.006	4.8	0.029		0.001	0.030	250	300.00	3.5	0.62	0.031		31.73		
13	11.92	23.10	0.00		11.92	5,290	0.012		0.012	4.7	0.056		0.002	0.058	350	260.00	2.2	0.62	0.059		31.59		
14	15.11	38.21	0.00		15.11	8,750	0.020		0.020	4.2	0.084		0.003	0.087	450	390.00	1.6	0.62	0.099		31.59		
15	38.73	76.94	0.00		38.73	17,620	0.041		0.041	3.7	0.152		0.007	0.159	600	210.00	1.2	0.65	0.184		31.41		
16	55.29	132.23	0.00		55.29	30,280	0.070		0.070	3.3	0.231		0.012	0.243	700	150.00	1.0	0.66	0.254		31.41		
P 2-1																					31.26		
17	12.73	144.96	0.00		12.73	33,200	0.077		0.077	3.3	0.254		0.013	0.267	800	430.00	0.8	0.65	0.324		34.80		
18	81.27	226.23	0.00		81.27	51,810	0.121		0.121	3.0	0.363		0.020	0.383	900	280.00	0.8	0.70	0.444		32.51		
																				32.46			
																				31.41			
																				31.31			
																				30.74			
																				30.64			
																				30.02			
																				29.87			
																				29.62			
																				29.52			
																				29.37			
																					Pumping Station		
																				34.20			
																				33.86			
																				33.76			
																				33.53			



Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE 2	2,030	1,570	3,600	229 persons/ha	823,800 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks		
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation
	Increment	Total	Increment	Total																			
	ha	ha	ha	ha	ha	ha		m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s		m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s		m	m	‰	m/s	m <sup>3</sup> /s		m	m
36	0.00		5.40		5.40		1,240	0.003	0.007	0.001	4.8	0.005		0.001	0.006	∅ 200	520.00	4.5	0.61	0.019	37.00	34.80	
37	0.00		6.54	11.94	6.54	11.94	2,730	0.006	0.016	0.022	4.2	0.092		0.001	0.093	∅ 450	255.00	1.6	0.62	0.099	37.00	32.46	
38	0.00		7.91	19.85	7.91	19.85	4,550	0.011	0.027	0.038	3.7	0.141		0.002	0.143	∅ 600	120.00	1.2	0.65	0.184	37.00	32.21	
39	0.00		2.48	22.33	2.48	22.33	5,110	0.012	0.030	0.042	3.6	0.151		0.002	0.153	∅ 600	30.00	1.2	0.65	0.184	37.00	31.80	
40	0.00		20.98	43.31	20.98	43.31	9,920	0.023	0.058	0.081	3.2	0.259		0.004	0.263	∅ 800	530.00	0.8	0.65	0.324	37.00	31.65	
41	0.00		0.00	43.31	0.00	43.31	9,920	0.023	0.058	0.081	3.2	0.259		0.004	0.263	∅ 800	90.00	0.8	0.65	0.324	37.00	31.51	
42	0.00		14.06	57.37	14.06	57.37	13,140	0.031	0.077	0.108	3.1	0.335		0.005	0.340	∅ 900	455.00	0.8	0.70	0.444	37.00	31.51	
43	0.00		12.38	69.75	12.38	69.75	15,970	0.037	0.094	0.131	3.0	0.393		0.006	0.399	∅ 900	30.00	0.8	0.70	0.444	37.00	31.47	
44	0.00		9.53	79.28	9.53	79.28	18,160	0.042	0.106	0.148	2.9	0.429		0.007	0.436	∅ 900	390.00	0.8	0.70	0.444	37.00	31.27	
P-2-3																					37.00	30.85	
45	0.00		13.47	92.75	13.47	92.75	21,240	0.049	0.125	0.174	2.8	0.487		0.008	0.495	∅ 1000	170.00	0.6	0.65	0.509	37.00	30.85	
46	0.00		9.39	102.14	9.39	102.14	23,390	0.054	0.137	0.191	2.8	0.535		0.009	0.544	∅ 1100	225.00	0.6	0.69	0.656	37.00	30.78	
47	0.00		24.45	126.59	24.45	126.59	28,990	0.067	0.170	0.237	2.6	0.616		0.011	0.627	∅ 1100	160.00	0.6	0.69	0.656	37.00	30.68	
48	0.00		0.00	126.59	0.00	126.59	28,990	0.067	0.170	0.237	2.6	0.616		0.011	0.627	∅ 1100	50.00	0.6	0.69	0.656	37.00	30.68	
49	2.45		1.08	127.67	3.53	130.12	29,800	0.069	0.171	0.240	2.6	0.624		0.012	0.636	∅ 1100	570.00	0.6	0.69	0.656	37.00	30.32	
50	8.88	11.33	1.75	129.42	10.63	140.75	32,230	0.075	0.174	0.249	2.6	0.647		0.012	0.659	∅ 1200	30.00	0.6	0.73	0.828	37.00	30.32	
51	4.70	16.03	1.03	130.45	5.73	146.48	33,540	0.078	0.175	0.253	2.6	0.658		0.013	0.671	∅ 1200	1100.00	0.6	0.73	0.828	37.00	30.30	
52	68.33	84.36	25.36	155.81	93.69	240.17	55,000	0.128	0.209	0.337	2.4	0.809		0.021	0.830	∅ 1350	410.00	0.5	0.72	1.034	37.00	30.30	
53	3.50	1349.71	2.46	307.13	5.96	1656.84	379,420	0.883	0.412	1.295	2.0	2.590		0.146	2.736	∅ 2100	80.00	0.4	0.87	3.005	37.00	29.99	
54	55.94	1405.65	0.00	307.13	55.94	1712.78	392,230	0.912	0.412	1.324	1.9	(2.590) 2.516		0.151	2.741	∅ 2100	905.00	0.4	0.87	3.005	37.00	29.88	
																					37.00	29.85	
																					37.00	29.85	
																					37.00	29.49	



Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE 2	2,030	1,570	3,600	229 persons/ha	823,800 persons	201 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks		
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation
	Increment	Total	Increment	Total																			
72	0.00		5.83	15.66	5.83	15.66	3,590	0.008	0.021	0.029	3.9	0.113		0.001	0.114	500	455.00	1.4	0.62	0.122	37.00	33.59	
73	0.00		28.01	43.67	28.01	43.67	10,000	0.023	0.058	0.081	3.2	0.259		0.004	0.263	800	365.00	0.8	0.65	0.324	37.00	32.95	
74	0.00		13.94	57.61	13.94	57.61	13,190	0.031	0.077	0.108	3.1	0.335		0.005	0.340	900	145.00	0.8	0.70	0.444	37.00	32.65	
75	0.00		12.77	70.38	12.77	70.38	16,120	0.038	0.094	0.132	3.0	0.396		0.006	0.402	900	100.00	0.8	0.70	0.444	37.00	32.36	
76	0.00		27.93	98.31	27.93	98.31	22,510	0.052	0.132	0.184	2.8	0.515		0.009	0.524	1100	370.00	0.6	0.69	0.656	37.00	32.14	
77	0.00		15.36	113.67	15.36	113.67	26,030	0.061	0.153	0.214	2.7	0.578		0.010	0.588	1100	320.00	0.6	0.69	0.656	37.00	32.14	
78	0.00		0.00	113.67	0.00	113.67	26,030	0.061	0.153	0.214	2.7	0.578		0.010	0.588	1100	100.00	0.6	0.69	0.656	37.00	32.06	
	to	85																			37.00	31.86	
79	0.00		6.88		6.88		1,580	0.004	0.009	0.013	4.7	0.061		0.001	0.062	400	270.00	1.9	0.63	0.079	37.00	31.64	
80	0.00		1.54	8.42	1.54	8.42	1,930	0.004	0.011	0.015	4.5	0.068		0.001	0.069	400	400.00	1.9	0.63	0.079	37.00	31.64	
81	0.00		15.91	24.33	15.91	24.33	5,570	0.013	0.033	0.046	3.6	0.166		0.002	0.168	600	340.00	1.2	0.65	0.184	37.00	31.45	
82	0.00		23.25	47.58	23.25	47.58	10,900	0.025	0.064	0.089	3.2	0.285		0.004	0.289	800	645.00	0.8	0.65	0.324	37.00	31.45	
83	0.00		17.17	64.75	17.17	64.75	14,830	0.035	0.087	0.122	3.0	0.366		0.006	0.372	900	80.00	0.8	0.70	0.444	37.00	31.39	
84	0.00		19.13	83.88	19.13	83.88	19,210	0.045	0.113	0.158	2.9	0.458		0.007	0.465	1000	270.00	0.6	0.65	0.509	37.00	34.60	
85	0.00		8.43	205.98	8.43	205.98	47,170	0.110	0.277	0.387	2.4	0.929		0.018	0.947	1350	150.00	0.5	0.72	1.034	37.00	34.09	
86	0.00		52.06	258.04	52.06	258.04	59,090	0.137	0.346	0.483	2.3	1.111		0.023	1.134	1650	95.00	0.4	0.74	1.580	37.00	34.09	
87	0.00		14.66	337.05	14.66	337.05	77,180	0.180	0.453	0.633	2.2	1.393		0.030	1.423	1800	40.00	0.4	0.78	1.992	37.00	33.33	
88	0.00		13.98	351.03	13.98	351.03	80,390	0.187	0.471	0.658	2.2	1.448		0.031	1.479	1800	430.00	0.4	0.78	1.992	37.00	33.13	
89	0.00		14.40	365.43	14.40	365.43	83,680	0.195	0.491	0.686	2.2	1.509		0.032	1.541	1800	940.00	0.4	0.78	1.992	37.00	32.72	
90	0.00		4.88	460.60	4.88	460.60	105,480	0.245	0.618	0.863	2.1	1.812		0.041	1.853	1900	190.00	0.4	0.81	2.301	37.00	32.52	
																					37.00	32.00	
																					37.00	31.90	
																					37.00	31.84	
																					37.00	31.74	
																					37.00	31.58	
																					37.00	31.58	
																					37.00	31.14	
																					37.00	31.07	
																					37.00	30.77	
																					37.00	30.72	
																					37.00	30.63	
																					37.00	30.46	
																					37.00	30.46	
																					37.00	30.29	
																					37.00	30.29	
																					37.00	29.91	
																					37.00	29.39	
																					37.00	29.34	



Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
	ZONE 2	2,030	1,570	3,600	229 persons/ha	823,800 persons	201 l/c/d	116 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks		
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation
	Increment	Total	Increment	Total																			
	ha	ha	ha	ha	ha	ha		persons	m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s		m <sup>3</sup> /s	m <sup>3</sup> /s		mm	m	‰	m/s	m <sup>3</sup> /s		m	m
91	0.00		0.00	460.60	0.00	460.60	105,480	0.245	0.618	0.863	2.1	1.812		0.041	1.853	Ø 1900	40.00	0.4	0.81	2.301	29.31		
92	0.00		12.56	473.16	12.56	473.16	108,350	0.252	0.635	0.887	2.1	1.863		0.042	1.905	Ø 1900	430.00	0.4	0.81	2.301	29.29		
93	0.00		44.79	517.95	44.79	517.95	118,610	0.276	0.695	0.971	2.1	2.039		0.046	2.085	Ø 2000	400.00	0.4	0.84	2.639	29.29		
94	0.00		23.01	540.96	23.01	540.96	123,880	0.288	0.726	1.014	2.0	2.028		0.048	2.076	Ø 2000	410.00	0.4	0.84	2.639	29.12		
95	0.00		14.66	555.62	14.66	555.62	127,240	0.296	0.746	1.042	2.0	2.084		0.049	2.133	Ø 2000	355.00	0.4	0.84	2.639	29.02		
96	0.00		85.14	640.76	85.14	640.76	146,730	0.341	0.860	1.201	2.0	2.402		0.056	2.458	Ø 2100	60.00	0.4	0.87	3.005	28.86		
P 2-4	0.00		105.17	745.93	105.17	745.93	170,820	0.397	1.001	1.398	1.9	2.656		0.066	2.722						28.86		
97	0.00		0.00	745.93	0.00	745.93	170,820	0.397	1.001	1.398	1.9	2.656		0.066	2.722	Ø 2200	105.00	0.4	0.90	3.402	28.70		
98	0.00		11.99	757.92	11.99	757.92	173,560	0.404	1.018	1.422	1.9	2.702		0.067	2.769	Ø 2200	335.00	0.4	0.90	3.402	28.70		
99	0.00		22.15	780.07	22.15	780.07	178,640	0.416	1.047	1.463	1.9	2.780		0.069	2.849	Ø 2200	290.00	0.4	0.90	3.402	28.56		
100	0.00		11.41	791.48	11.41	791.48	181,250	0.422	1.063	1.485	1.9	2.822		0.070	2.892	Ø 2200	175.00	0.4	0.90	3.402	28.46		
101	0.00		22.12	813.60	22.12	813.60	186,310	0.433	1.092	1.525	1.9	2.898		0.072	2.970	Ø 2200	160.00	0.4	0.90	3.402	28.44		
102	0.00		32.61	846.21	32.61	846.21	193,780	0.451	1.136	1.587	1.9	3.015		0.074	3.089	Ø 2200	475.00	0.4	0.90	3.402	28.44		
	to	111																					
103	0.00		3.04		3.04		700	0.002	0.004	0.006	4.8	0.029		0.001	0.030	Ø 250	330.00	3.5	0.62	0.031	32.80		
104	0.00		2.18	5.22	2.18	5.22	1,200	0.003	0.007	0.010	4.8	0.048		0.001	0.049	Ø 350	95.00	2.2	0.62	0.059	32.76		
105	0.00		6.47	11.69	6.47	11.69	2,680	0.006	0.016	0.022	4.2	0.092		0.001	0.093	Ø 450	180.00	1.6	0.62	0.099	32.76		
106	0.00		7.53	19.22	7.53	19.22	4,400	0.010	0.026	0.036	3.8	0.137		0.002	0.139	Ø 600	200.00	1.2	0.65	0.184	32.63		
107	0.00		10.05	29.27	10.05	29.27	6,700	0.016	0.039	0.055	3.5	0.193		0.003	0.196	Ø 700	240.00	1.0	0.66	0.254	30.92		
108	0.00		10.61	39.88	10.61	39.88	9,130	0.021	0.054	0.075	3.3	0.248		0.004	0.252	Ø 700	400.00	1.0	0.66	0.254	30.80		
																					30.80		
																					30.73		
																					30.73		
																					30.67		
																					30.67		
																					30.48		
																					34.75		
																					33.60		
																					33.50		
																					33.29		
																					33.19		
																					32.90		
																					32.75		
																					32.51		
																					32.41		
																					32.17		
																					32.17		
																					31.77		

Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
	ZONE 2	2,030	1,570	3,600	229 persons/ha	823,800 persons	201 l/c/d	116 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks		
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation
	Increment	Total	Increment	Total																			
	ha	ha	ha	ha	ha	ha		persons	m <sup>3</sup> /s	m <sup>3</sup> /s	m <sup>3</sup> /s	Peak Flow	m <sup>3</sup> /s	m <sup>3</sup> /s		m <sup>3</sup> /s	m	%	m/s	m <sup>3</sup> /s		m	m
(109)	0.00		11.02	50.90	11.02	50.90	11,660	0.027	0.068	0.095	3.2	0.304		0.004	0.308	Ø 800	75.00	0.8	0.65	0.324	37.00	31.67	
(110)	0.00		11.77	62.67	11.77	62.67	14,350	0.033	0.084	0.117	3.1	0.363		0.006	0.369	Ø 900	585.00	0.8	0.70	0.444	37.00	31.61	
(111)	0.00		0.00	908.88	0.00	908.88	208,130	0.484	1.220	1.704	1.9	3.238		0.080	3.318	Ø 2300	30.00	0.4	0.92	3.831	37.00	31.51	
(112)	83.45	83.45	15.28	924.16	98.73	1007.61	230,740	0.537	1.241	1.778	1.9	3.378		0.089	3.467	Ø 2300	555.00	0.4	0.92	3.831	37.00	31.04	
(113)	42.75	126.20	17.83	941.99	60.58	1068.19	244,620	0.568	1.265	1.833	1.8	(3.378) 3.299		0.091	3.469	Ø 2300	380.00	0.4	0.92	3.831	37.00	30.38	
(114)	49.05	175.25	22.06	964.05	71.11	1139.30	260,900	0.607	1.294	1.901	1.8	3.422		0.097	3.519	Ø 2300	500.00	0.4	0.92	3.831	37.00	30.37	
(115)	8.82	184.07	16.09	980.14	24.91	1164.21	266,600	0.620	1.316	1.936	1.8	3.485		0.100	3.585	Ø 2400	420.00	0.4	0.95	3.291	37.00	30.15	
to (150)																					37.00	30.00	
(116)	0.00		3.87		3.87		890	0.002	0.005	0.007	4.8	0.034		0.001	0.035	Ø 300	320.00	2.8	0.63	0.044	37.00	29.80	
(117)	0.00		8.03	11.90	8.03	11.90	2,730	0.006	0.016	0.022	4.2	0.092		0.001	0.093	Ø 450	255.00	1.6	0.62	0.099	37.00	29.70	
(118)	0.00		8.60	20.50	8.60	20.50	4,690	0.011	0.028	0.039	3.7	0.144		0.002	0.146	Ø 600	320.00	1.2	0.65	0.184	37.00	29.53	
(119)	0.00		12.60	33.10	12.60	33.10	7,580	0.018	0.044	0.062	3.4	0.211		0.003	0.214	Ø 700	320.00	1.0	0.66	0.254	37.00	34.70	
(120)	0.00		4.79	37.89	4.79	37.89	8,680	0.020	0.051	0.071	3.3	0.234		0.003	0.237	Ø 700	280.00	1.0	0.66	0.254	37.00	33.80	
(121)	0.00		44.86	82.75	44.86	82.75	18,950	0.044	0.111	0.155	2.9	0.450		0.007	0.457	Ø 1000	470.00	0.6	0.65	0.509	37.00	33.65	
(122)	0.00		29.78	112.53	29.78	112.53	25,770	0.060	0.151	0.211	2.8	0.591		0.010	0.601	Ø 1100	500.00	0.6	0.69	0.656	37.00	33.24	
to (131)																					37.00	33.09	
(123)	0.00		4.23		4.23		970	0.002	0.005	0.007	4.8	0.034		0.001	0.035	Ø 300	330.00	2.8	0.63	0.044	37.00	32.71	
(124)	0.00		6.99	11.22	6.99	11.22	2,570	0.006	0.015	0.026	4.2	0.008		0.001	0.089	Ø 450	310.00	1.6	0.62	0.099	37.00	32.61	
(125)	0.00		5.70	16.92	5.70	16.92	3,870	0.009	0.023	0.032	3.9	0.125		0.001	0.126	Ø 600	210.00	1.2	0.65	0.184	37.00	32.29	
(126)	0.00		16.39	33.31	16.39	33.31	7,630	0.018	0.045	0.063	3.4	0.214		0.003	0.217	Ø 700	240.00	1.0	0.66	0.254	37.00	32.01	
																					37.00	31.71	
																					37.00	31.43	
																					37.00	31.33	
																					37.00	31.03	
																					37.00	34.70	
																					37.00	33.78	
																					37.00	33.63	
																					37.00	33.13	
																					37.00	32.98	
																					37.00	32.73	
																					37.00	32.63	
																					37.00	32.39	

Name of Zone	Area (ha)			Population Density	Population	Unit Flow		
	Residential	Commercial	Total			Per Capita	Commercial	Infiltration
ZONE 2	2,030	1,570	3,600	229 persons/ha	823,800 persons	20 l/c/d	116 m <sup>3</sup> /ha/d	7.6 m <sup>3</sup> /ha/d

No. of Sewers	Area by Land Use				Area		Total Population	Domestic Wastewater Flow					Other Flow		Total Design Flow	Designed Sewer					Remarks		
	Residential Area		Commercial Area		Increment	Total		Residential (Ave.)	Commercial (Ave.)	Total	Peaking Factor	Peak Flow	Industrial	Infiltration		Diameter	Length	Slope	Velocity (Full)	Capacity (Full)		Ground Surface Elevation	Sewer Invert Elevation
	Increment	Total	Increment	Total																			
(127)	0.00		10.35	43.66	10.35	43.66	10,000	0.023	0.059	0.082	3.2	0.262		0.004	0.266	Ø 800	70.00	0.8	0.65	0.324	37.00	32.29	
(128)	0.00		10.12	53.78	10.12	53.78	12,320	0.029	0.072	0.101	3.1	0.313		0.005	0.318	Ø 800	290.00	0.8	0.65	0.324	37.00	32.23	
(129)	0.00		8.93	62.71	8.93	62.71	14,360	0.033	0.084	0.117	3.1	0.363		0.006	0.369	Ø 900	310.00	0.8	0.70	0.444	37.00	32.00	
(130)	0.00		21.29	84.00	21.29	84.00	19,240	0.045	0.113	0.158	2.9	0.458		0.007	0.465	Ø 1000	495.00	0.6	0.65	0.509	37.00	31.90	
(131)	0.00		15.73	212.26	15.73	212.26	48,610	0.113	0.285	0.398	2.4	0.955		0.019	0.974	Ø 1350	645.00	0.5	0.72	1.034	37.00	31.65	
(132)	0.00		9.36	221.62	9.36	221.62	50,750	0.118	0.298	0.416	2.4	0.998		0.019	1.017	Ø 1350	40.00	0.5	0.72	1.034	37.00	31.55	
(133)	0.00		12.66	234.28	12.66	234.28	53,650	0.125	0.315	0.440	2.4	1.056		0.021	1.077	Ø 1500	550.00	0.5	0.78	1.370	37.00	31.25	
(134)	0.00		24.23	258.51	24.23	258.51	59,200	0.138	0.347	0.485	2.3	1.116		0.023	1.139	Ø 1500	300.00	0.5	0.78	1.370	37.00	30.78	
(135)	0.00		8.27	266.78	8.27	266.78	61,090	0.142	0.358	0.500	2.3	1.150		0.023	1.173	Ø 1500	750.00	0.5	0.78	1.370	37.00	30.46	
to (150)																					37.00	30.46	
(140)	6.03				6.03		1,380	0.003		0.003	4.8	0.014		0.003	0.017	Ø 200	500.00	4.5	0.61	0.019	37.00	30.01	
(141)	5.07	11.10	0.77		5.84	11.87	2,720	0.006	0.001	0.007	4.8	0.034		0.004	0.038	Ø 300	285.00	2.8	0.63	0.044	37.00	30.01	
(142)	8.79	19.89	0.00	0.77	8.79	20.66	4,730	0.011	0.001	0.012	4.7	0.056		0.005	0.061	Ø 400	150.00	1.9	0.63	0.079	37.00	29.86	
(143)	7.38	27.27	0.00	0.77	7.38	28.04	6,420	0.015	0.001	0.016	4.4	0.070		0.005	0.075	Ø 400	145.00	1.9	0.63	0.079	37.00	29.86	
(P)																					37.00	29.49	Pumping Station
(144)	21.06	48.33	0.00	0.77	21.06	49.10	11,240	0.026	0.001	0.027	3.9	0.105		0.007	0.112	Ø 500	520.00	1.4	0.62	0.122	37.00	34.80	
(145)	5.94	54.27	0.00	0.77	5.94	55.04	12,600	0.029	0.001	0.030	3.9	0.117		0.008	0.125	Ø 600	390.00	1.2	0.65	0.184	37.00	32.55	
(146)	30.91	85.18	7.45	8.23	38.37	93.41	21,390	0.050	0.011	0.061	3.3	0.201		0.011	0.212	Ø 700	420.00	1.0	0.66	0.254	37.00	32.45	
(147)	61.53	146.71	7.72	15.95	69.25	162.66	37,250	0.087	0.021	0.108	3.1	0.335		0.017	0.352	Ø 900	30.00	0.8	0.70	0.444	37.00	31.65	
(148)	30.00	176.71		15.95	30.00	192.66	44,120	0.103	0.021	0.124	3.0	0.372		0.020	0.392	Ø 900	450.00	0.8	0.70	0.444	37.00	31.55	