

**THE PREPARATORY SURVEY ON  
THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM**

**FINAL REPORT  
VOLUME V DESIGN DRAWINGS**

**APPENDIX- 3 TRANSMISSION PIPELINE DRAWINGS**

May 2012

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

**METAWATER CO., LTD  
TOKYO ENGINEERING CONSULTANTS CO., LTD  
KUBOTA CORPORATION  
PRICewaterHOUSE COOPERS CO., LTD**





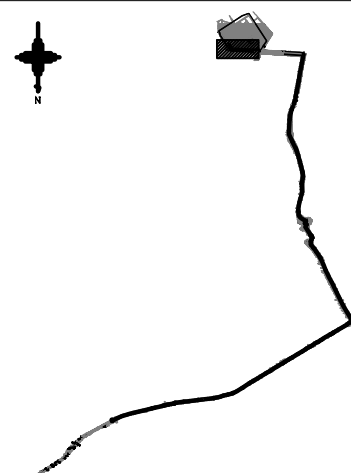
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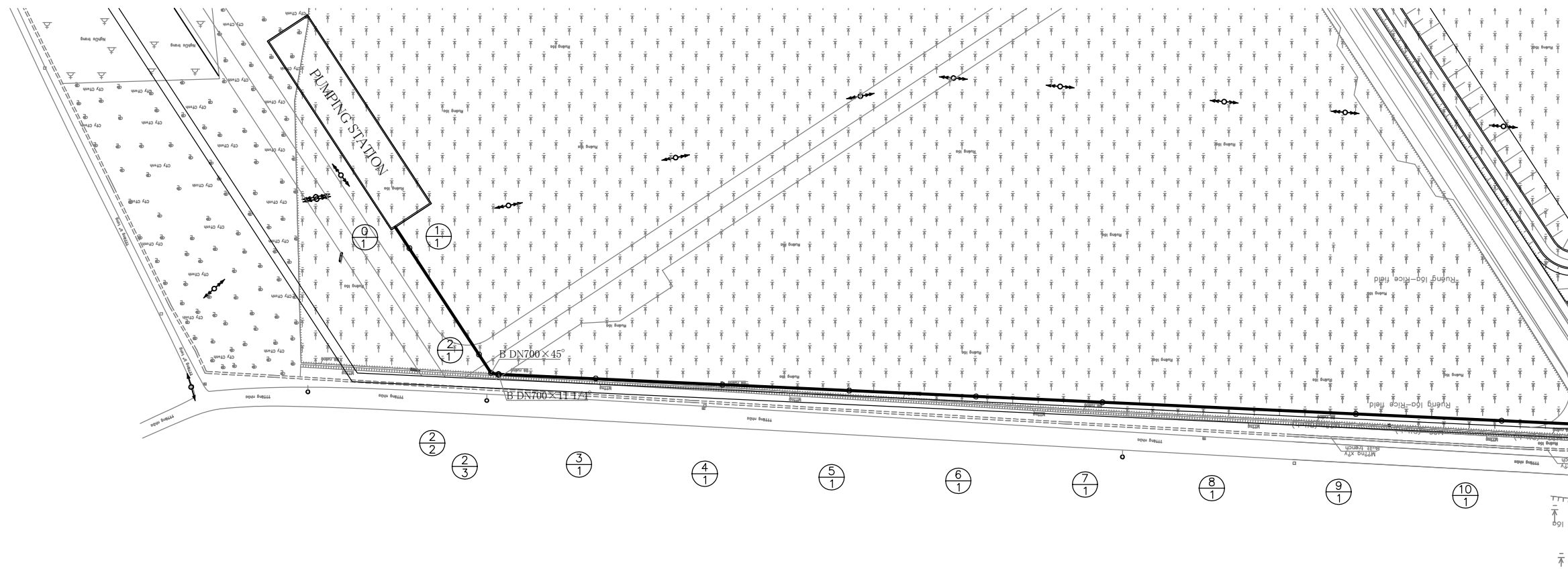
## PLAN AND PROFILE OF TRANSMISSION PIPELINE

KEY MAP



LEGEND

REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
(20/6)	STATION

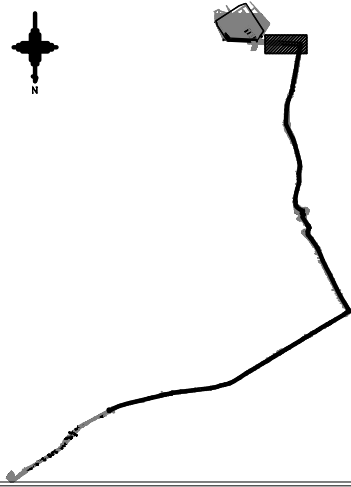


	10.00													
	9.00													
	8.00													
	7.00													
	6.00													
	5.00													
	4.00													
	3.00													
	2.00													
	1.00													
	0.00													
	D.L. = -1.00													
PIPE GRADIENT (%)		i=0.92												
EXCAVATION DEPTH (m)		1.70	1.71	1.70	1.70	1.62	1.52	1.61	1.70	1.73	1.52	1.64	1.63	
INVERT ELEVATION (m)		3.53	3.52	3.48	3.48	2.34	3.38	3.35	3.29	3.24	3.20	3.15	3.10	
GROUND ELEVATION (m)		5.23	5.23	5.17	5.17	5.05	4.90	4.94	4.99	4.97	4.71	4.79	4.73	
ACCUMULATED DISTANCE (m)		0.00	10.00	80.00	82.45	110.00	160.00	210.00	260.00	310.00	360.00	410.00	460.00	
ROTATION ANGLE		45° 11' 1/4"												
STATION		(0/1)	(1/1)	(2/1)	(2/2)	(2/3)	(3/1)	(4/1)	(5/1)	(6/1)	(7/1)	(8/1)	(9/1)	(10/1)
PIPE DIAMETER		DN 700 DUCTILE IRON PIPE												

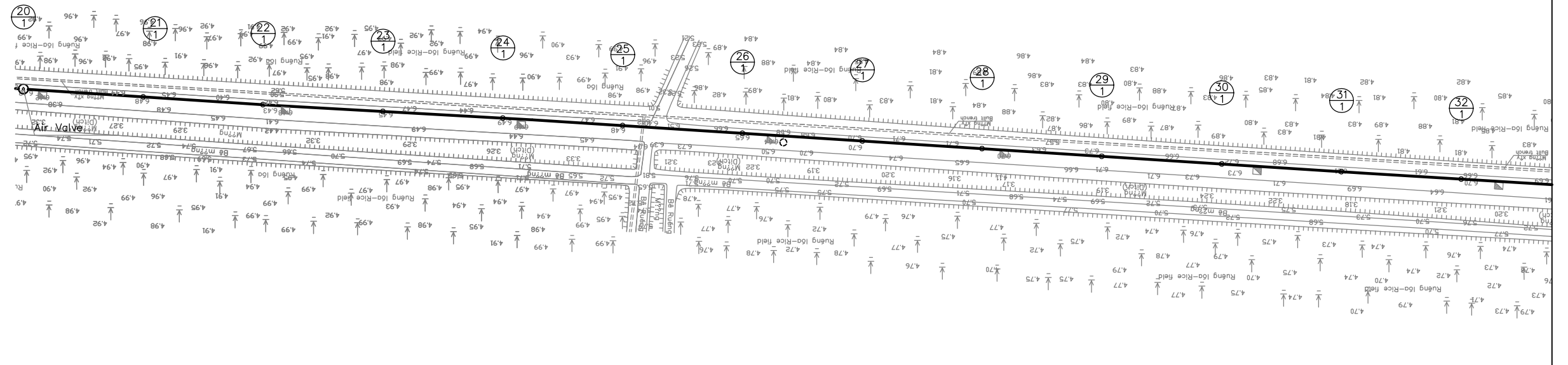
JICA Study Team														
	No.													
THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM										Date. Oct. 2011	Duong River Water Treatment Plant Transmission Pipeline			Drawing No
										Scale H=1/100 V=1/1000	PLAN AND PROFILE OF TRANSMISSION PIPELINE			B-1



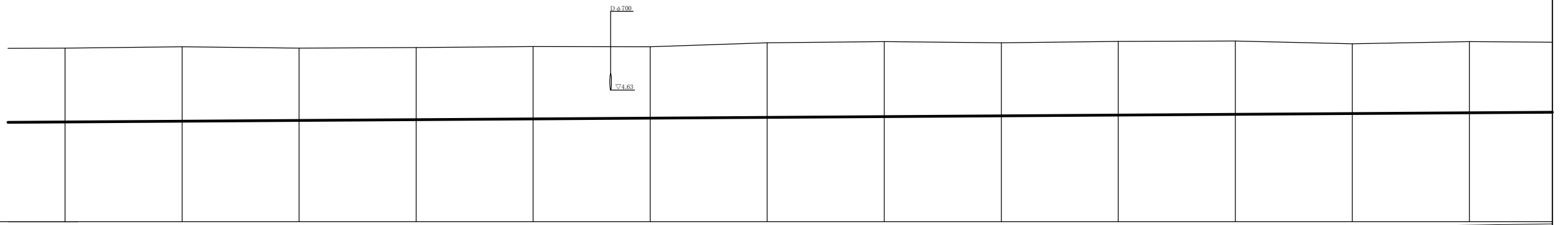
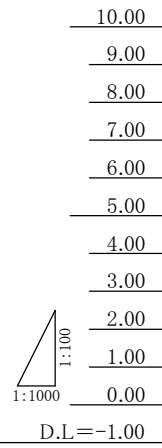
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



PIPE GRADIENT (%)	i=0.66												
EXCAVATION DEPTH (m)	3.16	3.18	3.09	3.09	3.10	3.05	3.19	3.21	3.13	3.15	3.14	2.89	3.05
INVERT ELEVATION (m)	3.27	3.30	3.33	3.37	3.40	3.44	3.46	3.50	3.53	3.56	3.59	3.63	3.66
GROUND ELEVATION (m)	6.42	6.48	6.42	6.45	6.49	6.48	6.65	6.70	6.65	6.71	6.73	6.61	6.70
ACCUMULATED DISTANCE (m)	900.00	1000.00	1060.00	1110.00	1160.00	1210.00	1260.00	1310.00	1360.00	1410.00	1460.00	1510.00	1560.00
ROTATION ANGLE													
STATION	⊙ 20 1	⊙ 21 1	⊙ 22 1	⊙ 23 1	⊙ 24 1	⊙ 25 1	⊙ 26 1	⊙ 27 1	⊙ 28 1	⊙ 29 1	⊙ 30 1	⊙ 31 1	⊙ 32 1
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE												

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date.  
Oct. 2011

Scale  
H=1/100  
V=1/1000

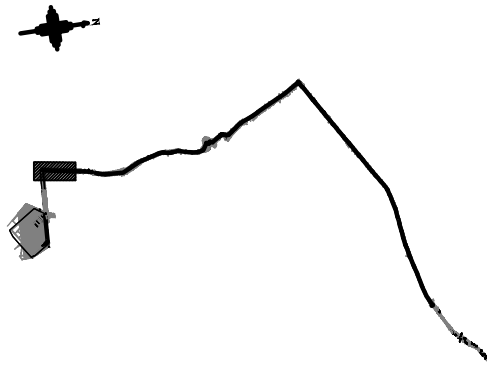
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

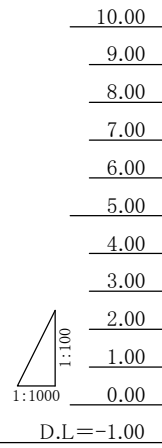
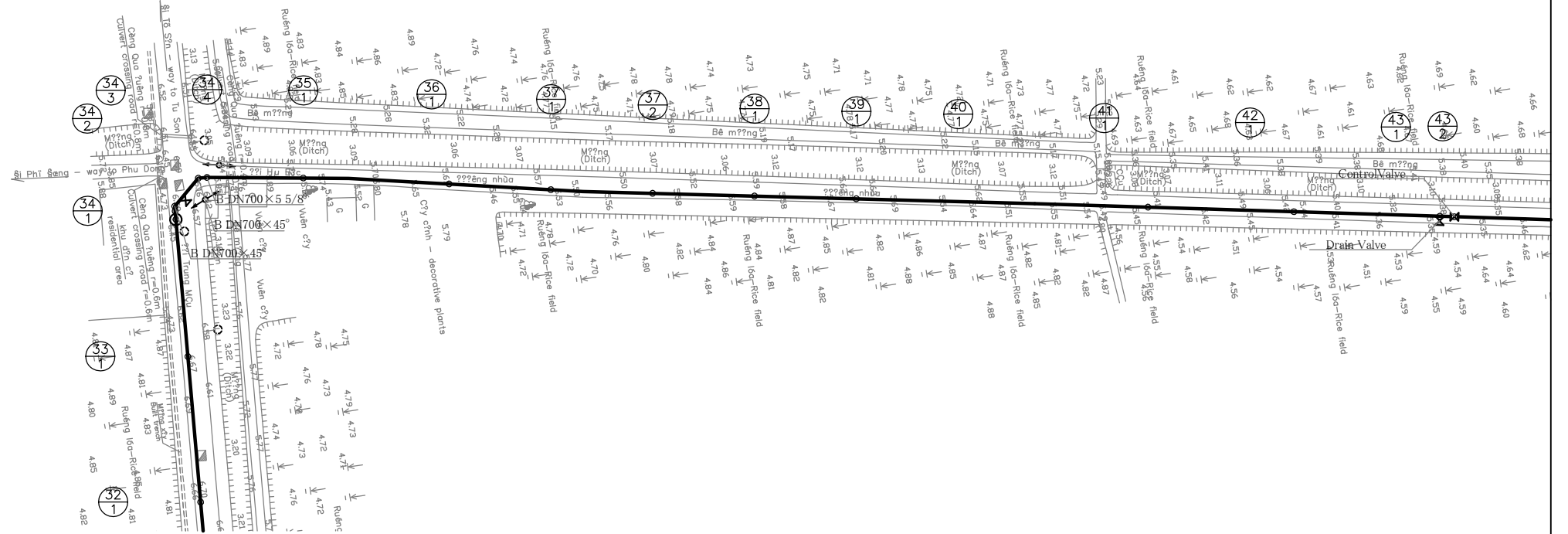
Drawing No

B-3

KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



PIPE GRADIENT (%)	i=0.86																
EXCAVATION DEPTH (m)	3.05	2.88	2.99	3.41	3.93	3.44	3.28	3.17	3.18	3.18	3.17	3.02	2.87	2.86	2.76	2.74	
INVERT ELEVATION (m)	3.66	3.69	3.72	3.74	3.93	2.29	2.31	2.36	2.37	2.42	2.46	2.50	2.54	2.59	2.63	2.64	
GROUND ELEVATION (m)	6.70	6.67	6.58	6.59	6.18	5.72	5.61	5.53	5.58	5.59	5.62	5.51	5.41	5.44	5.38	5.38	
ACCUMULATED DISTANCE (m)	1560.00	1610.00	1658.46	1661.00	1673.15	1710.00	1760.00	1794.90	1810.00	1860.00	1910.00	1960.00	2010.00	2060.00	2110.00	2115.00	
ROTATION ANGLE	A454545° D 45' 5 5/8"																
STATION	32+1	33+1	34+1	34+2	34+3	34+4	35+1	36+1	36+2	37+1	38+1	39+1	40+1	41+1	42+1	43+1	43+2
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE																

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
H=1/100  
V=1/1000

Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

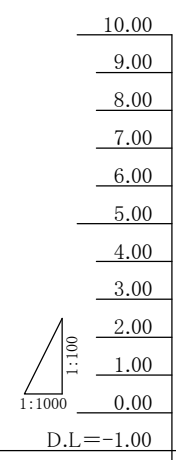
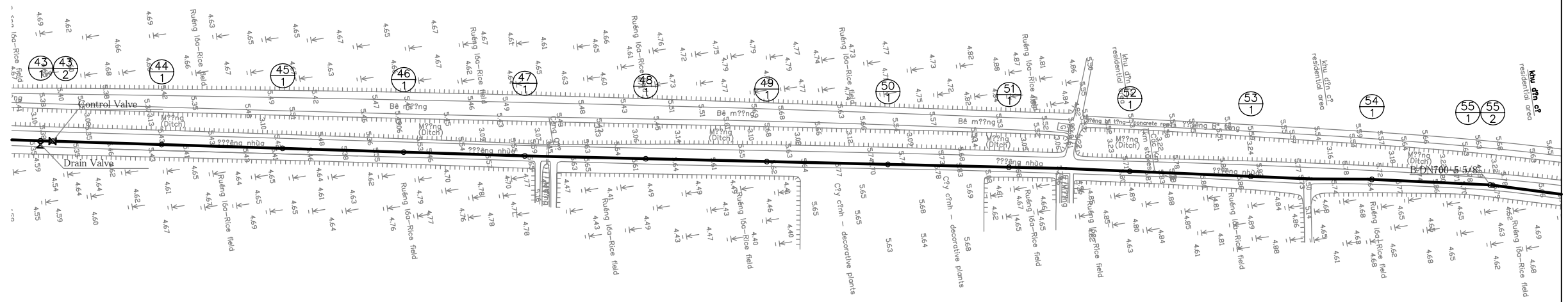
Drawing No

B-4

# PLAN AND PROFILE OF TRANSMISSION PIPELINE

**KEY MAP**

LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
②① ⑥	STATION

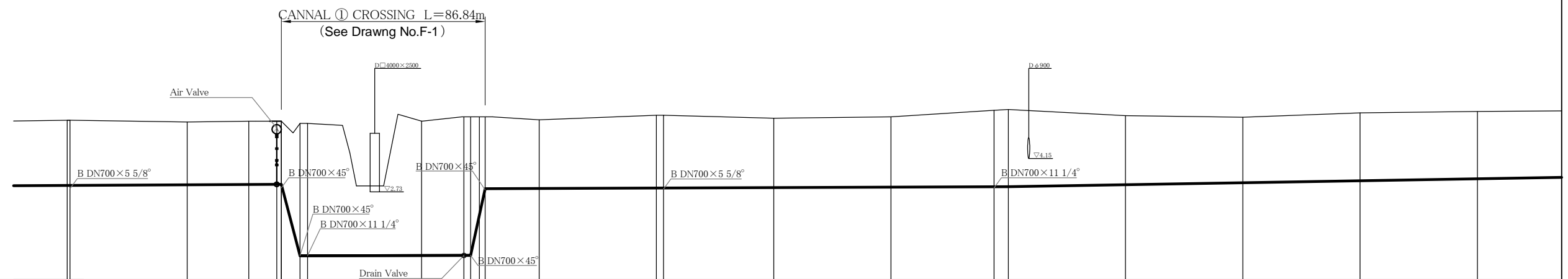
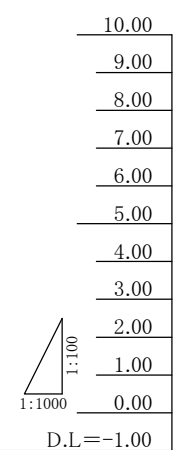
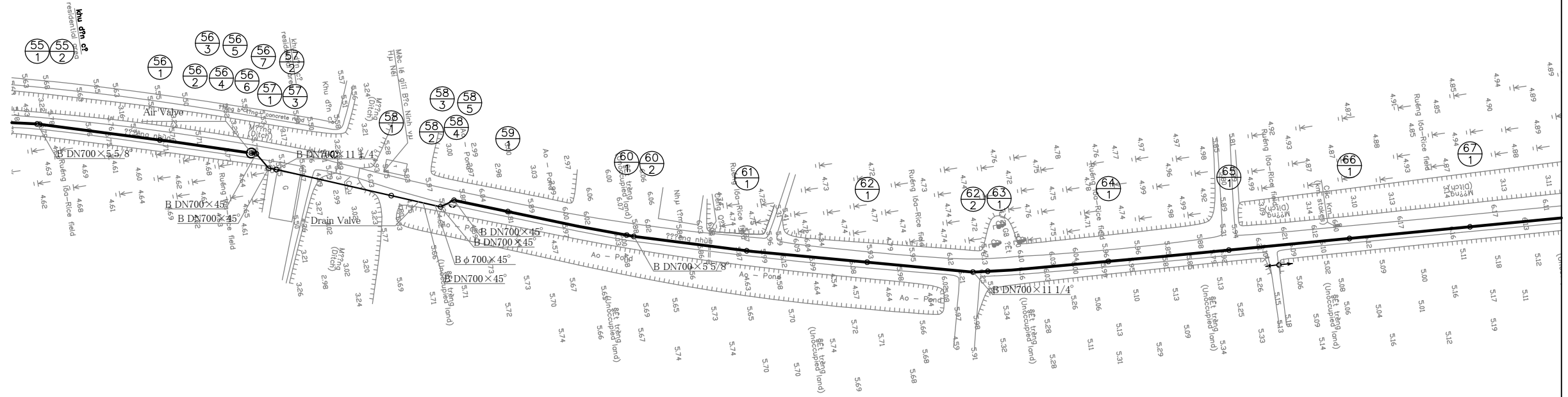


PIPE GRADIENT (%)	i=0.53														
EXCAVATION DEPTH (m)	2.76	2.74	2.76	2.71	2.77	2.85	2.78	2.77	2.86	2.78	2.87	2.87	2.74	2.78	2.78
INVERT ELEVATION (m)	2.63	2.64	2.67	2.72	2.76	2.80	2.83	2.86	2.88	2.91	2.93	2.96	2.96	3.01	3.01
GROUND ELEVATION (m)	5.38	5.38	5.43	5.42	5.53	5.65	5.61	5.62	5.74	5.68	5.80	5.82	5.72	5.79	5.79
ACCUMULATED DISTANCE (m)	2110.00	2115.00	2160.00	2210.00	2260.00	2310.00	2360.00	2410.00	2460.00	2510.00	2560.00	2610.00	2660.00	2708.85	2710.00
ROTATION ANGLE	v														
STATION	④③ ①	④③ ②	④④ ①	④⑤ ①	④⑥ ①	④⑦ ①	④⑧ ①	④⑨ ①	⑤① ①	⑤② ①	⑤③ ①	⑤④ ①	⑤④ ②	⑤⑤ ①	⑤⑤ ②
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE														

# PLAN AND PROFILE OF TRANSMISSION PIPELINE

**KEY MAP**

LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



PIPE GRADIENT (%)	i=0.40															i=1.67										
EXCAVATION DEPTH (m)	2.78	2.78	2.88	2.71	2.70	5.66	5.66	5.77	3.06	3.06	2.83	3.10	3.10	2.96	3.00	3.26	3.30	2.95	2.80	2.80	2.87					
INVERT ELEVATION (m)	3.01	3.01	3.04	3.05	3.08	-0.01	-0.01	-0.02	2.87	2.70	2.88	2.90	2.90	2.92	2.94	2.95	2.96	3.04	3.12	3.21	3.29					
GROUND ELEVATION (m)	5.79	5.79	5.71	5.75	5.75	5.65	5.65	5.75	5.93	5.93	5.81	6.00	6.00	5.87	5.83	6.21	6.25	5.96	5.92	6.10	6.19					
ACCUMULATED DISTANCE (m)	2708.85	2710.00	2780.00	2786.23	2798.15	2800.15	2811.31	2860.00	2882.30	2887.30	2910.00	2940.00	2963.05	3010.00	3060.00	3103.90	3110.00	3160.00	3210.00	3260.00	3310.00					
ROTATION ANGLE	5 5/8°		A 45°						D 45°		5 5/8°		11 1/4°													
STATION	⊙ 54 2	⊙ 55 1	⊙ 56 1	⊙ 56 2	⊙ 56 3	⊙ 56 4	⊙ 56 5	⊙ 56 6	⊙ 57 1	⊙ 57 2	⊙ 58 1	⊙ 58 2	⊙ 58 3	⊙ 58 4	⊙ 58 5	⊙ 59 1	⊙ 60 1	⊙ 60 2	⊙ 61 1	⊙ 62 1	⊙ 62 2	⊙ 63 1	⊙ 64 1	⊙ 65 1	⊙ 66 1	⊙ 67 1
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE																									

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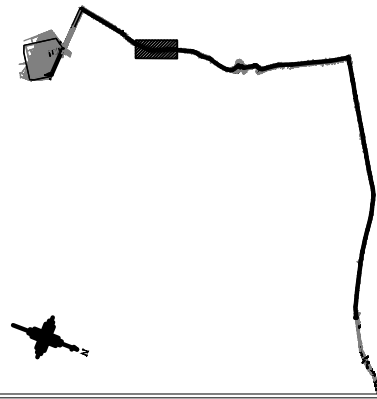
Date:  
Oct. 2011  
Scale:  
H=1/100  
V=1/1000

Duong River Water Treatment Plant Transmission Pipeline  
PLAN AND PROFILE OF TRANSMISSION PIPELINE

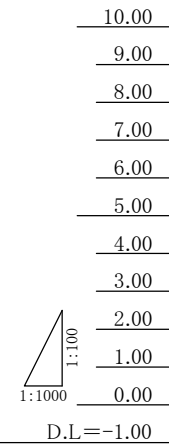
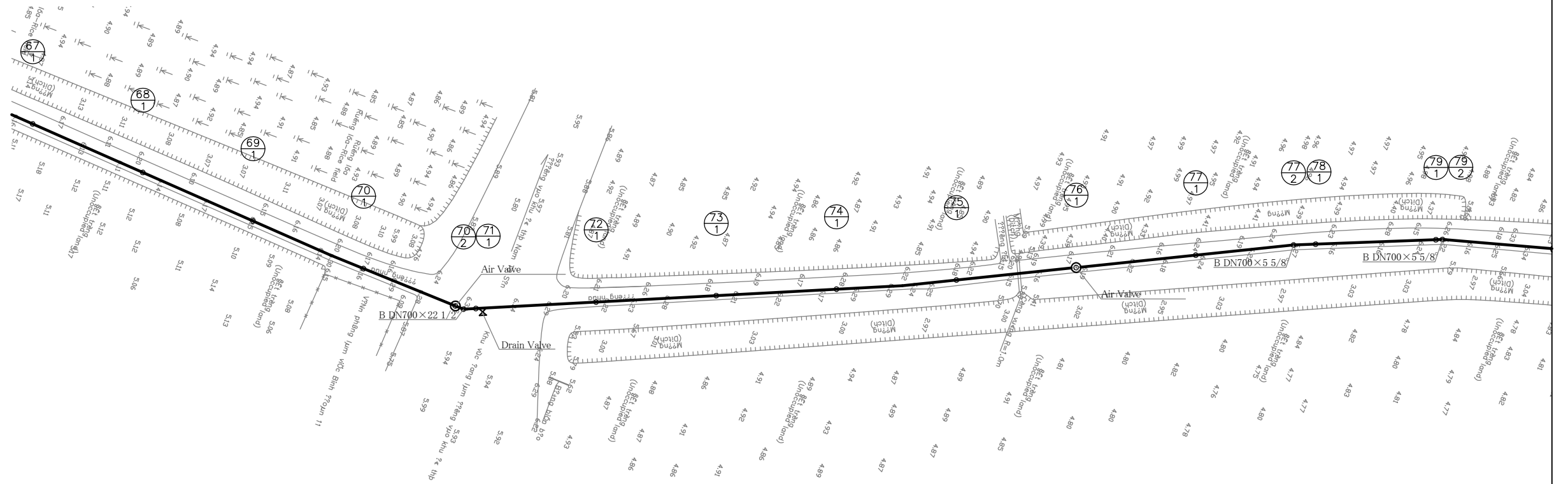
Drawing No  
B-6



KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



PIPE GRADIENT (%)	-1.67															-0.30															-0.50														
EXCAVATION DEPTH (m)	2.87	2.83	2.70	2.62	2.70	4.00	4.00	3.21	3.11	3.08	3.13	3.01	3.00	2.78	2.79	2.82	2.80	2.71	2.75																										
INVERT ELEVATION (m)	3.29	3.38	3.46	3.54	3.52	2.32	2.32	2.72	3.12	3.14	3.15	3.17	3.19	3.40	3.40	3.43	3.45	3.45	3.48																										
GROUND ELEVATION (m)	6.16	6.20	6.15	6.16	6.32	6.32	6.37	6.37	6.22	6.21	6.28	6.18	6.22	6.19	6.29	6.29	6.29	6.19	6.22																										
ACCUMULATED DISTANCE (m)	3310.00	3380.00	3410.00	3460.00	3504.50	3510.00	3514.80	3515.38	3560.00	3610.00	3660.00	3710.00	3760.00	3760.33	3760.00	3810.00	3860.00	3910.00	3912.50																										
ROTATION ANGLE																45°45'			5 5/8"			5 5/8"																							
STATION	67+1	68+1	69+1	70+1	70+2	71+1	72+1	73+1	74+1	75+1	76+1	77+1	77+2	78+1	79+1	79+2																													
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE																																												

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Scale  
V=1/100  
H=1/1000

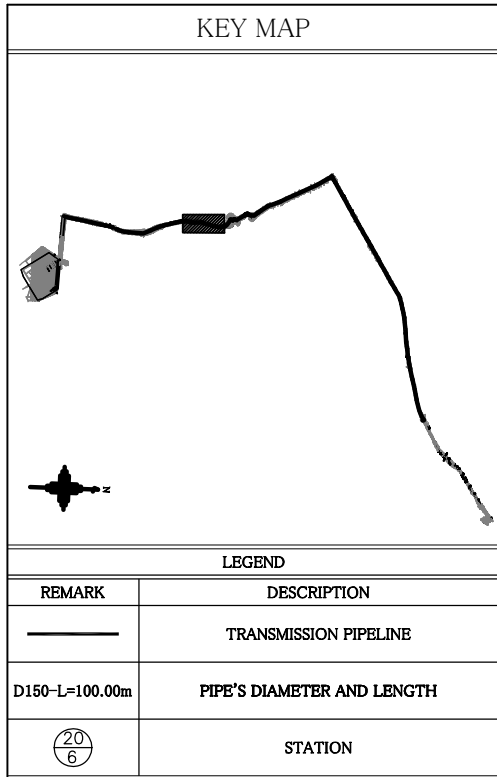
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

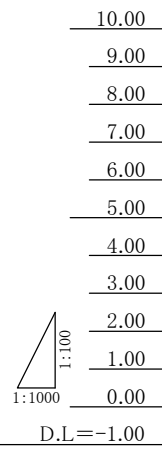
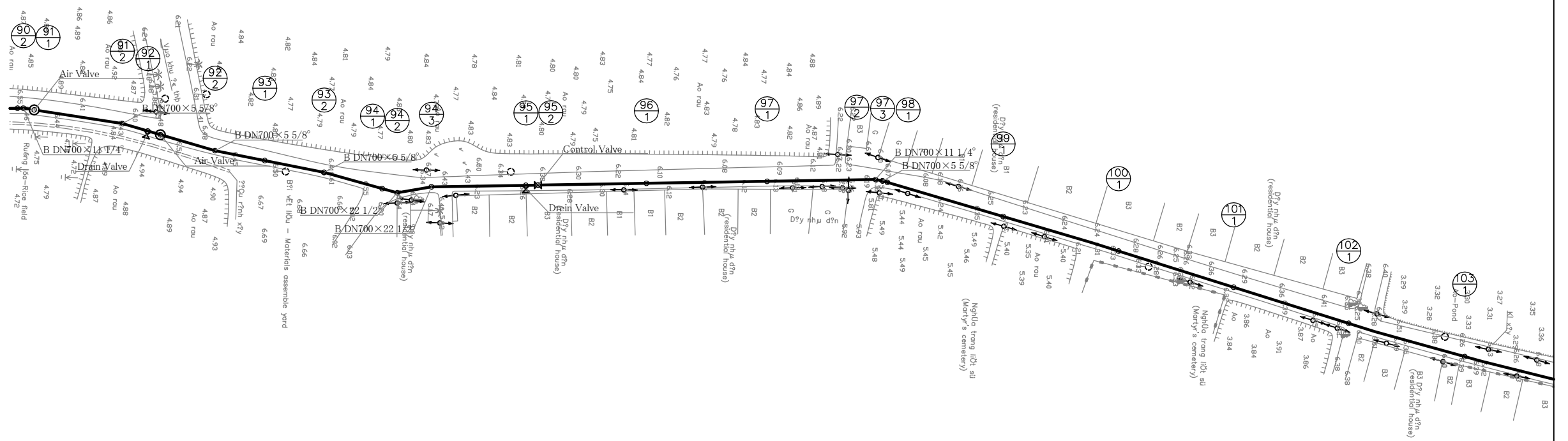
Drawing No

B-7





PLAN AND PROFILE OF TRANSMISSION PIPELINE



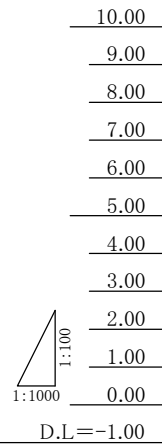
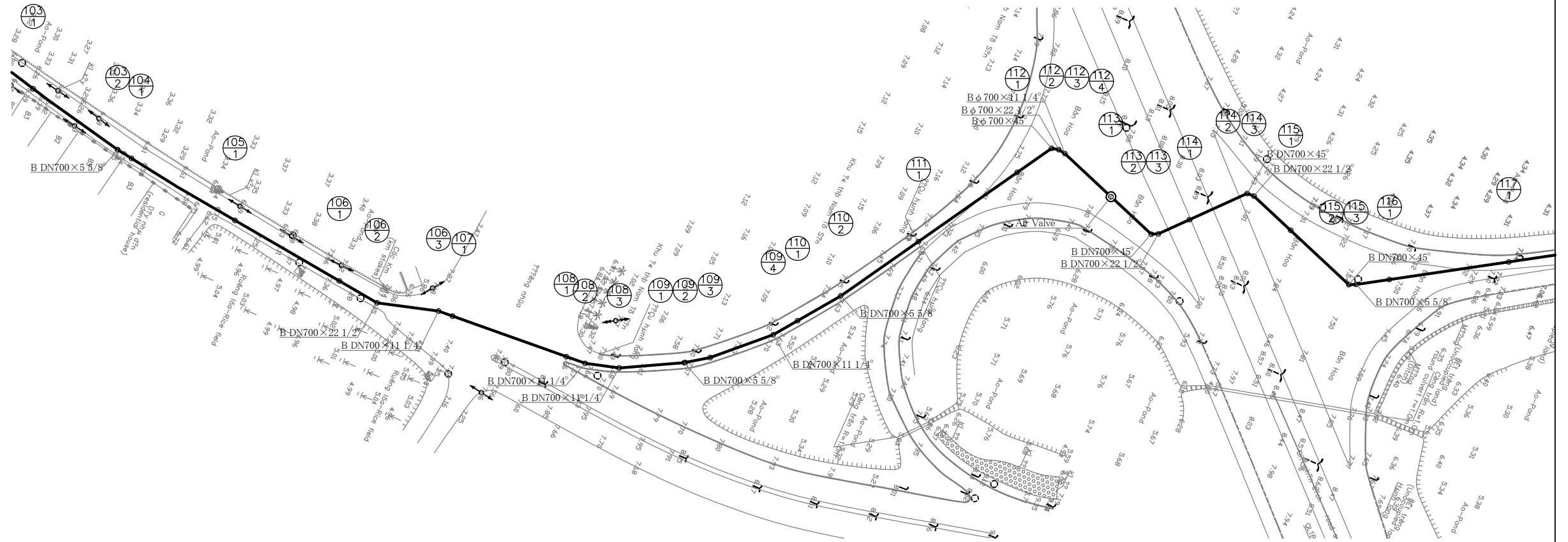
PIPE GRADIENT (%)	-1.00																					
EXCAVATION DEPTH (m)	3.04	3.00	2.94	2.94	3.29	3.30	3.29	3.39	3.39	3.23	3.12	3.12	2.92	2.90	2.88	2.88	2.74	2.66	2.67	2.78	2.74	
INVERT ELEVATION (m)	3.51	3.51	3.48	3.48	3.19	3.20	3.21	3.23	3.23	3.20	3.14	3.15	3.19	3.24	3.28	3.28	3.33	3.35	3.43	3.47	3.52	
GROUND ELEVATION (m)	6.46	6.46	6.42	6.42	6.48	6.50	6.50	6.55	6.52	6.43	6.26	6.26	6.10	6.13	6.16	6.16	6.07	6.33	6.29	6.25	6.26	
ACCUMULATED DISTANCE (m)	4500.00	4510.00	4520.00	4530.00	4580.00	4610.00	4631.05	4660.00	4686.50	4680.90	4710.00	4715.00	4760.00	4810.00	4854.50	4860.00	4910.00	4960.00	5010.00	5060.00	5110.00	
ROTATION ANGLE	11 1/4°	5 5/8°	45°45'0"	45°45'	5 5/8°		5 5/8°		22 1/2°	11 1/4°	v			11 1/4°	5 5/8°							
STATION	(90/2)	(91/1)	(91/2)	(92/1)	(92/2)	(93/1)	(93/2)	(94/1)	(94/2)	(94/3)	(95/1)	(95/2)	(96/1)	(97/1)	(97/2)	(97/3)	(98/1)	(99/1)	(100/1)	(101/1)	(102/1)	(103/1)
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE																					

# PLAN AND PROFILE OF TRANSMISSION PIPELINE

**KEY MAP**

**LEGEND**

REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



PIPE GRADIENT (%)	i = 7.27										i = 1.34										i = 5.07												
EXCAVATION DEPTH (m)	2.74	2.99	2.93	3.02	3.03	2.89	2.86	2.74	2.84	2.92	2.93	2.78	2.78	2.77	2.79	2.77	2.75	2.76	2.76	2.76	2.77	2.77	2.74	2.94	2.93	3.06	3.16	3.16	2.76	3.16	3.18	2.80	
INVERT ELEVATION (m)	3.52	3.56	3.61	3.97	4.34	4.46	4.65	4.66	4.73	4.74	4.76	4.81	4.81	4.81	4.84	4.86	4.89	4.93	5.00	5.00	5.02	5.03	5.06	4.91	4.92	4.81	4.66	4.63	4.55	4.38	4.37	4.36	
GROUND ELEVATION (m)	6.26	6.55	6.54	6.99	7.36	7.35	7.51	7.40	7.66	7.66	7.68	7.57	7.57	7.57	7.63	7.63	7.63	7.68	7.75	7.75	7.79	7.79	7.80	7.86	7.86	7.86	7.81	7.81	7.31	7.54	7.54	7.16	
ACCUMULATED DISTANCE (m)	5110.00	5153.15	5160.00	5210.00	5260.00	5278.10	5303.75	5310.00	5360.00	5368.30	5392.55	5409.60	5410.00	5420.55	5448.85	5460.00	5480.70	5510.00	5560.00	5577.35	5583.35	5583.35	5610.00	5632.75	5635.75	5660.00	5686.20	5689.20	5710.00	5743.05	5746.05	5760.00	
ROTATION ANGLE	5 5/8°			22 1/2°			11 1/4°		11 1/4°		11 1/4°		5 5/8°		11 1/4°		5 5/8°		45° 22 1/2' 11 1/4'				A	45° 22 1/2'			45° 22 1/2'			45° 5 5/8'			
STATION	⊙ 103 1	⊙ 103 2	⊙ 104 1	⊙ 105 1	⊙ 106 1	⊙ 106 2	⊙ 106 3	⊙ 107 1	⊙ 108 1	⊙ 108 2	⊙ 108 3	⊙ 108 4	⊙ 109 1	⊙ 109 2	⊙ 109 3	⊙ 109 4	⊙ 110 1	⊙ 110 2	⊙ 111 1	⊙ 112 1	⊙ 112 2	⊙ 112 3	⊙ 112 4	⊙ 113 1	⊙ 113 2	⊙ 113 3	⊙ 114 1	⊙ 114 2	⊙ 114 3	⊙ 115 1	⊙ 115 2	⊙ 115 3	⊙ 116 1
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE																																

JICA Study Team

No.			
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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale:  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

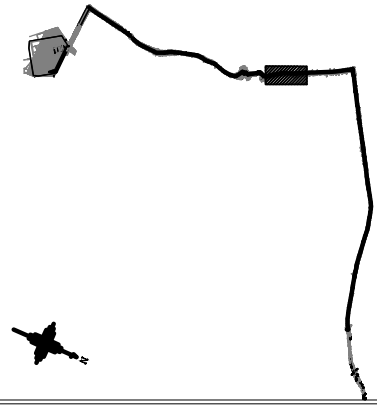
PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

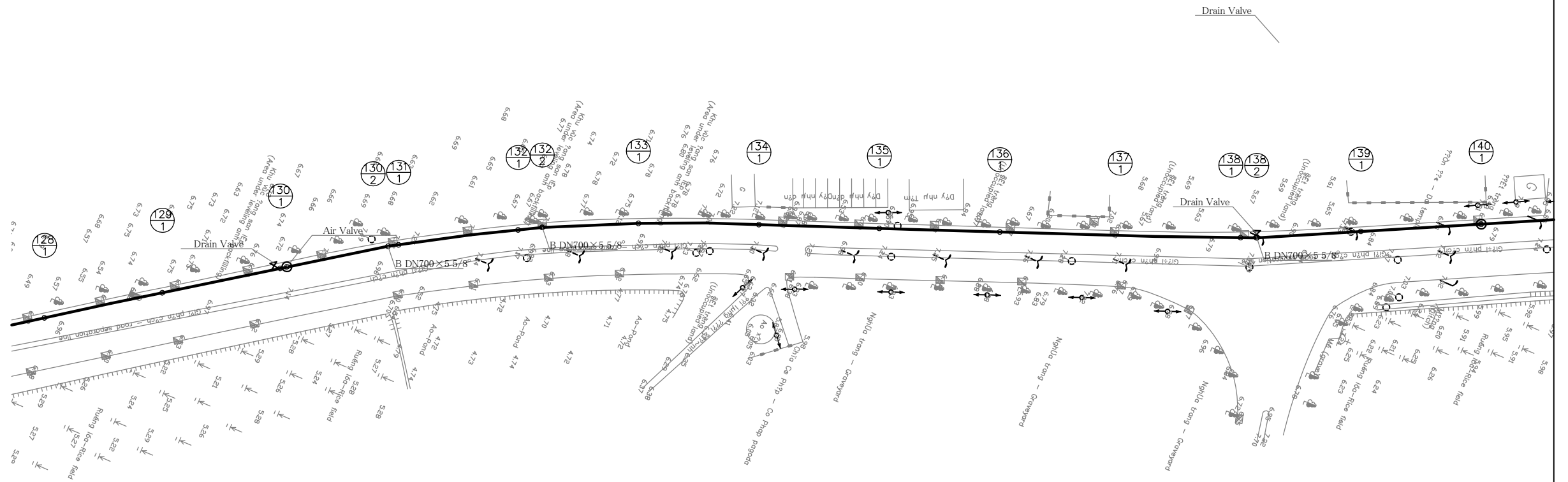
B-10



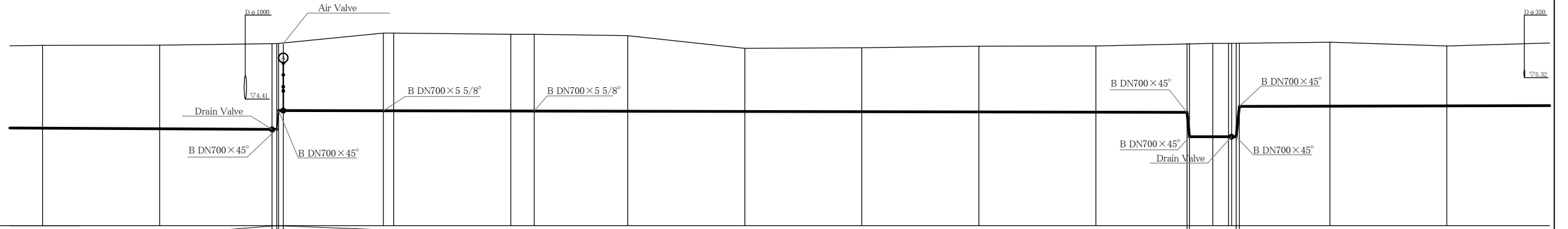
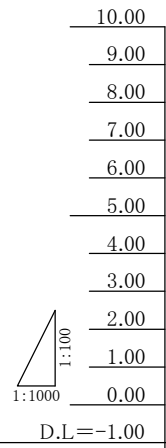
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
(20/6)	STATION



PIPE GRADIENT (%)	i = 0.50		i = 0.20										i = 0.25		
EXCAVATION DEPTH (m)	3.53	3.57	3.56 2.96	3.99 3.32	3.28	3.28	3.23	2.70	2.73	2.81	2.83	2.93 3.97	3.99 3.99 2.70	2.74	2.56
INVERT ELEVATION (m)	3.17	3.15	5.12 3.92	3.24 3.91	3.90	3.90	3.89	3.88	3.87	3.86	3.85	3.84 2.80	2.80 2.80 4.10	4.11	4.12
GROUND ELEVATION (m)	6.70	6.71	6.78 5.24	7.23 7.23	7.18	7.18	7.12	6.58	6.60	6.67	6.68	6.77 6.77	6.79 6.79 6.80	6.84	6.68
ACCUMULATED DISTANCE (m)	6300.00	6410.00	6460.00 6460.00	6505.00 6510.00	6560.00	6570.05	6610.00	6660.00	6710.00	6760.00	6810.00	6848.96 6850.00	6860.00 6860.00 6871.30	6910.00	6960.00
ROTATION ANGLE			D 45° A	5 5/8°	5 5/8°							45° 45°	5 5/8° 45°		
STATION	(128/1)	(129/1)	(130/1)	(130/2) (131/1)	(132/1) (132/2)	(133/1)	(134/1)	(135/1)	(136/1)	(137/1)	(138/1) (138/2)	(139/1)	(140/1)		
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE														

JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

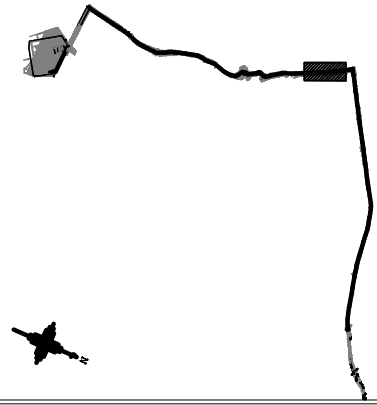
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

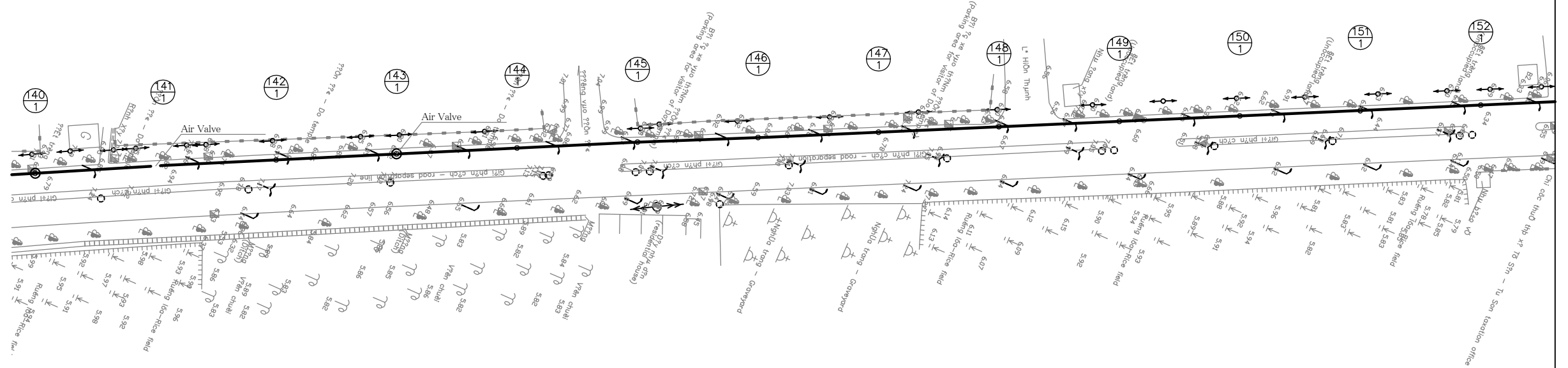
Drawing No

B-12

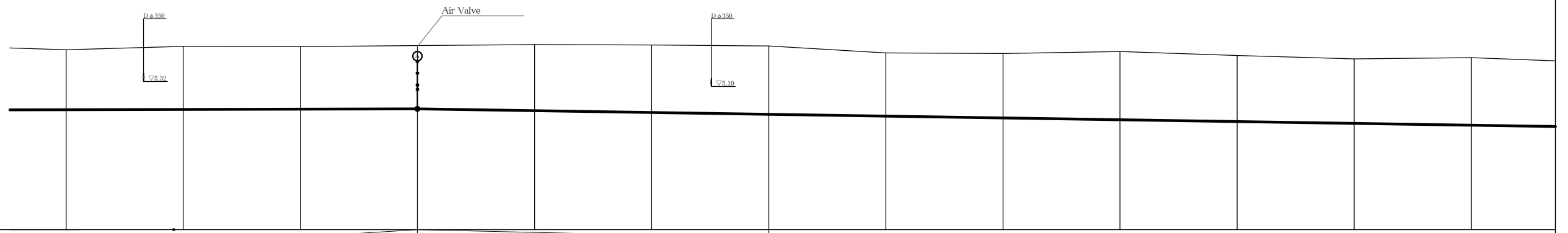
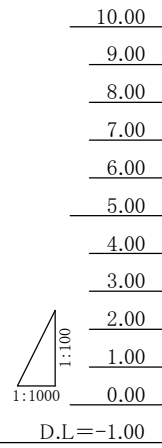
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



PIPE GRADIENT (%)	i = 0.25											i = 5.56																
EXCAVATION DEPTH (m)	2.56	2.89	2.67	2.67	2.83	2.88	2.92	2.70	2.76	2.91	2.82	2.76	2.89	2.56	2.89	2.67	2.67	2.83	2.88	2.92	2.70	2.76	2.91	2.82	2.76	2.89		
INVERT ELEVATION (m)	4.12	4.13	4.15	4.16	4.08	3.99	3.92	3.85	3.69	3.68	3.61	3.54	3.45	4.12	4.13	4.15	4.16	4.08	3.99	3.92	3.85	3.69	3.68	3.61	3.54	3.45		
GROUND ELEVATION (m)	6.68	6.82	6.81	6.82	6.90	6.88	6.84	6.54	6.52	6.60	6.43	6.29	6.34	6.68	6.82	6.81	6.82	6.90	6.88	6.84	6.54	6.52	6.60	6.43	6.29	6.34		
ACCUMULATED DISTANCE (m)	6960.00	7000.00	7060.00	7110.00	7160.00	7210.00	7260.00	7310.00	7360.00	7410.00	7460.00	7510.00	7560.00	6960.00	7000.00	7060.00	7110.00	7160.00	7210.00	7260.00	7310.00	7360.00	7410.00	7460.00	7510.00	7560.00		
ROTATION ANGLE	A																											
STATION	⊙ 140 1	⊙ 141 1	⊙ 142 1	⊙ 143 1	⊙ 144 1	⊙ 145 1	⊙ 146 1	⊙ 147 1	⊙ 148 1	⊙ 149 1	⊙ 150 1	⊙ 151 1	⊙ 152 1	⊙ 140 1	⊙ 141 1	⊙ 142 1	⊙ 143 1	⊙ 144 1	⊙ 145 1	⊙ 146 1	⊙ 147 1	⊙ 148 1	⊙ 149 1	⊙ 150 1	⊙ 151 1	⊙ 152 1		
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE																											

JICA Study Team

No.			
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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date.  
Oct. 2011

Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

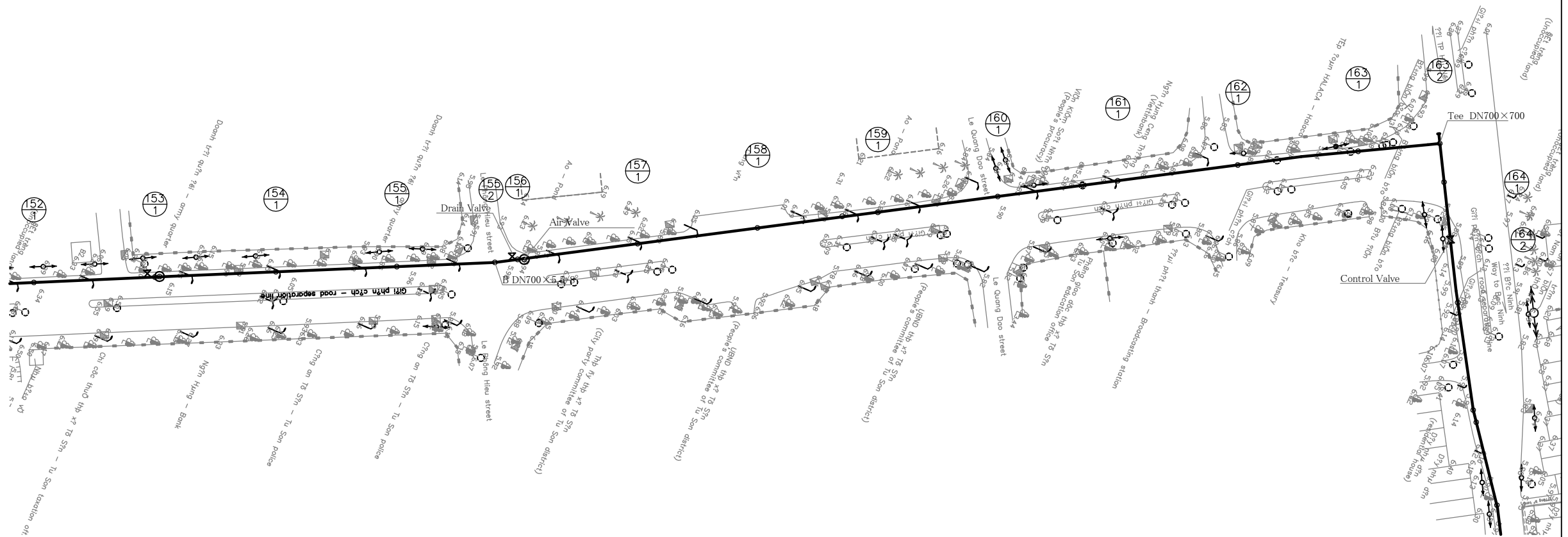
B-13

# PLAN AND PROFILE OF TRANSMISSION PIPELINE

**KEY MAP**

**LEGEND**

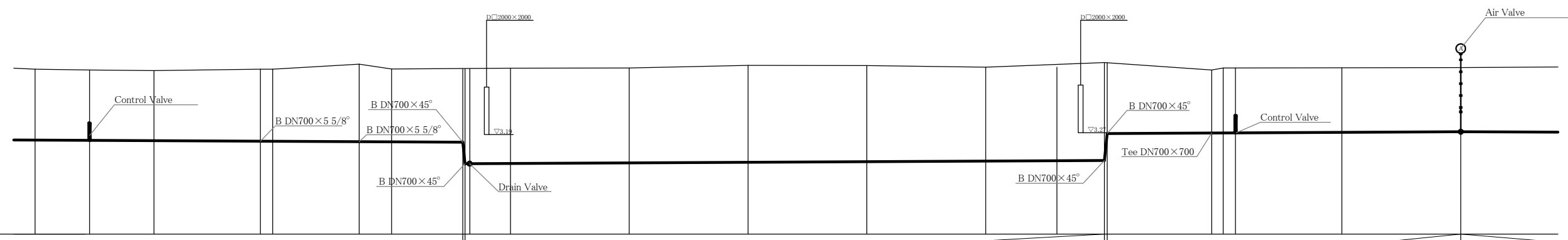
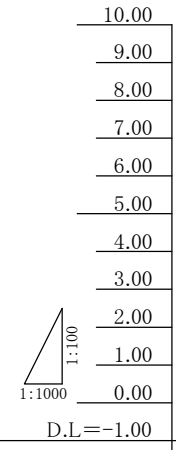
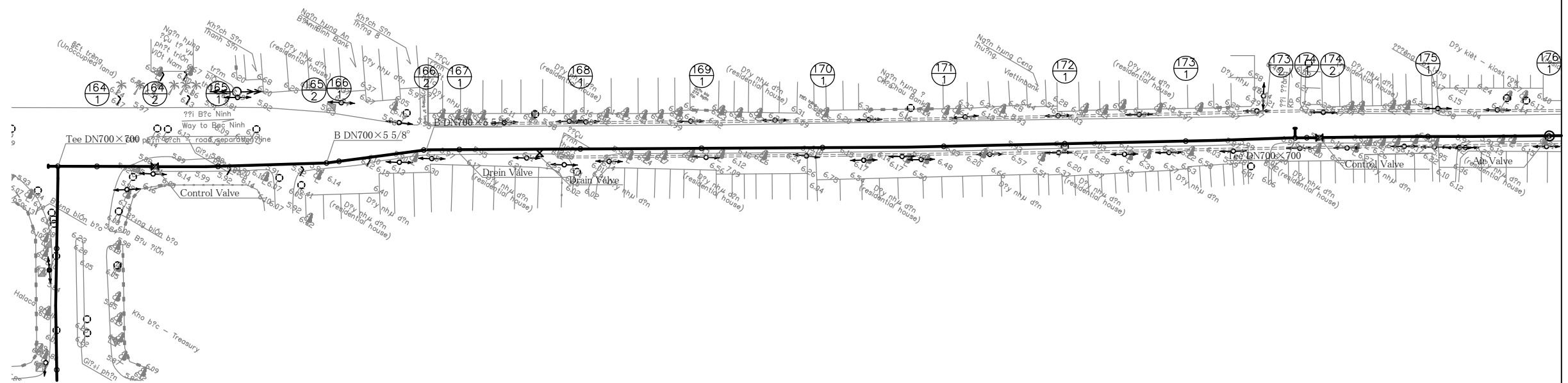
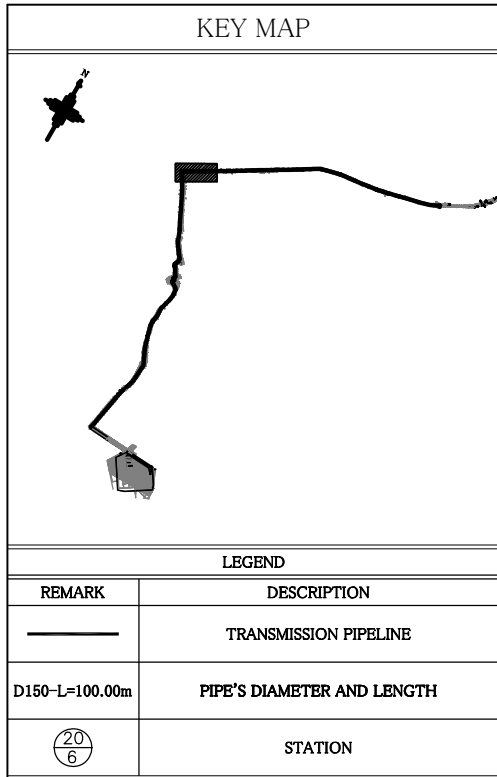
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



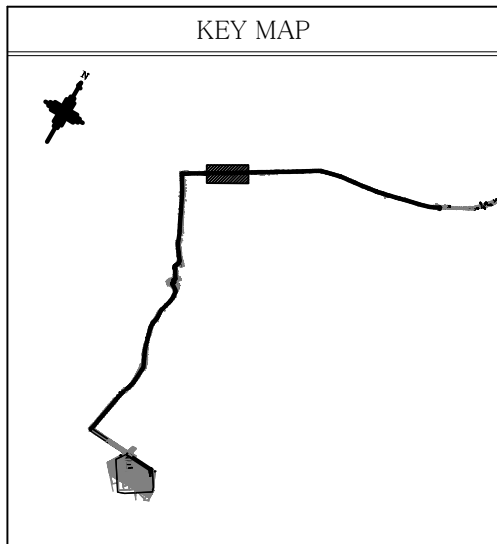
PIPE GRADIENT (%)	-0.50																	
EXCAVATION DEPTH (m)	2.89	2.77	2.85	2.74	2.80	4.00	4.00	2.96	3.12	2.90	2.70	2.84	3.06	2.79	3.12	3.06	2.98	2.97
INVERT ELEVATION (m)	3.45	3.38	3.30	3.23	3.18	1.96	1.96	1.96	3.14	3.11	3.09	3.06	3.03	3.01	2.99	2.97	2.96	2.95
GROUND ELEVATION (m)	6.34	6.15	6.15	5.96	5.98	5.96	5.84	5.84	6.25	6.01	5.83	5.90	6.09	5.80	6.10	6.02	5.92	5.91
ACCUMULATED DISTANCE (m)	7560.00	7610.00	7660.00	7710.00	7738.80	7740.00	7750.00	7760.00	7810.00	7860.00	7910.00	7960.00	8010.00	8060.00	8110.00	8143.90	8160.00	8182.90
ROTATION ANGLE	45° 5 5/8° 45° A														T7700x700		v	
STATION	152/1	153/1	154/1	155/1	155/2	156/1	157/1	158/1	159/1	160/1	161/1	162/1	163/1	163/2	164/1	164/2		
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE																	



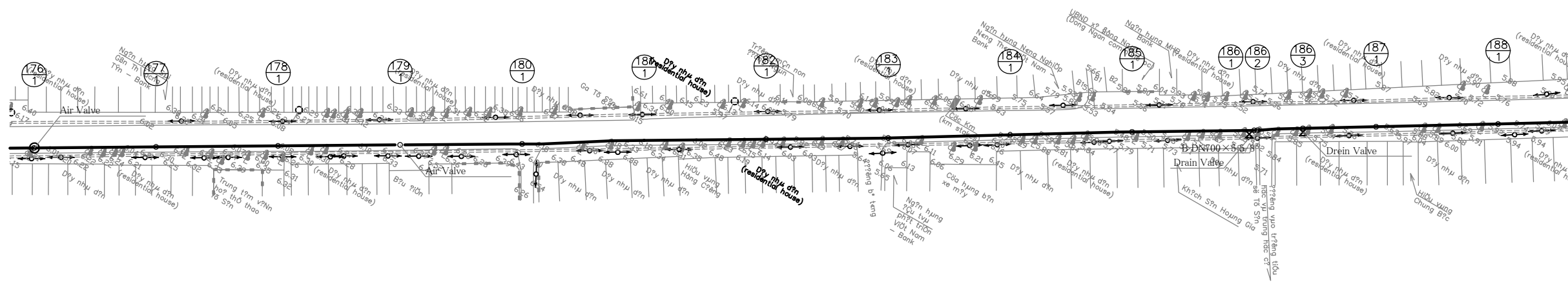
# PLAN AND PROFILE OF TRANSMISSION PIPELINE



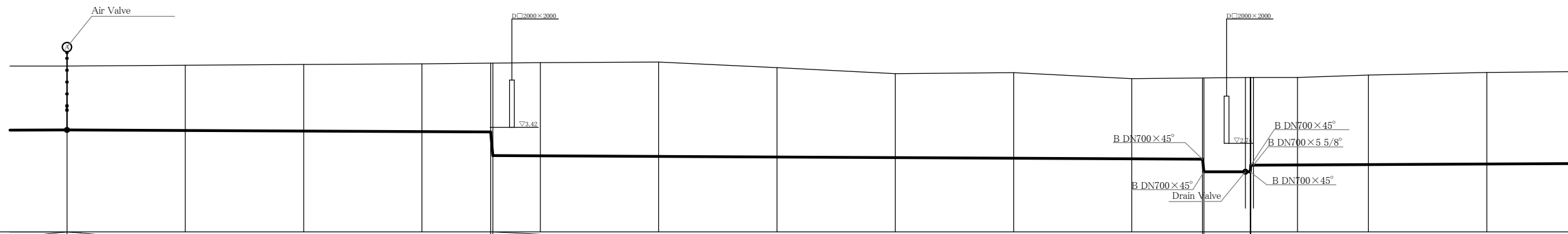
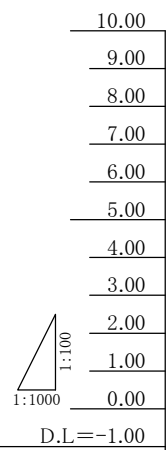
PIPE GRADIENT (%)	i = 0.50																			
EXCAVATION DEPTH (m)	2.98	2.97	2.95	3.64	3.03	3.26	3.07	3.08	4.01	3.99	4.08	4.10	4.03	4.12	2.95	3.88	3.96	2.73	2.72	2.70
INVERT ELEVATION (m)	2.96	2.95	2.94	2.30	2.91	2.89	2.89	2.87	1.98	2.00	2.05	2.05	2.08	2.10	3.24	2.03	2.04	3.27	3.29	3.31
GROUND ELEVATION (m)	5.92	5.91	5.88	5.94	5.94	6.15	5.95	5.95	5.98	5.99	6.10	6.09	6.03	5.22	5.19	5.91	5.99	5.99	6.00	6.01
ACCUMULATED DISTANCE (m)	8160.00	8182.00	8210.00	8254.80	8280.00	8296.35	8310.00	8340.00	8340.37	8350.00	8410.00	8460.00	8510.00	8560.00	8608.92	8610.00	8655.20	8665.20	8710.00	8760.00
ROTATION ANGLE	v		5 5/8"		5 5/8"		45°		45°						45°	T7700x700 V		A		
STATION	①⑥④	②①④	①⑥⑤	②①⑤	①⑥⑥	②①⑥	①⑥⑦	①⑥⑧	②①⑧	①⑥⑨	②①⑨	①⑦①	②①②	①⑦③	②①③	②①④	②①⑤	②①⑥	①⑦⑤	②①⑥
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE																			



PLAN AND PROFILE OF TRANSMISSION PIPELINE



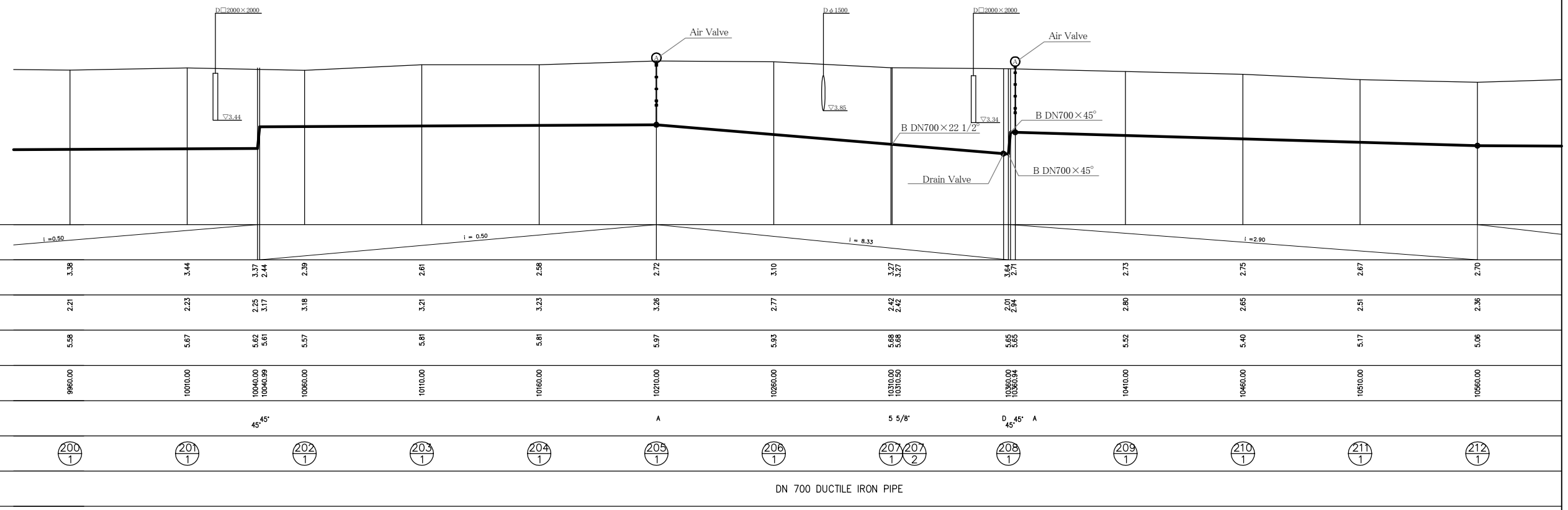
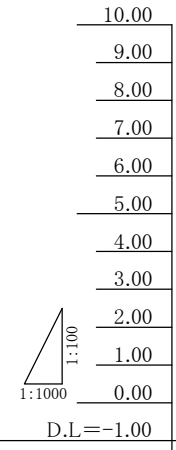
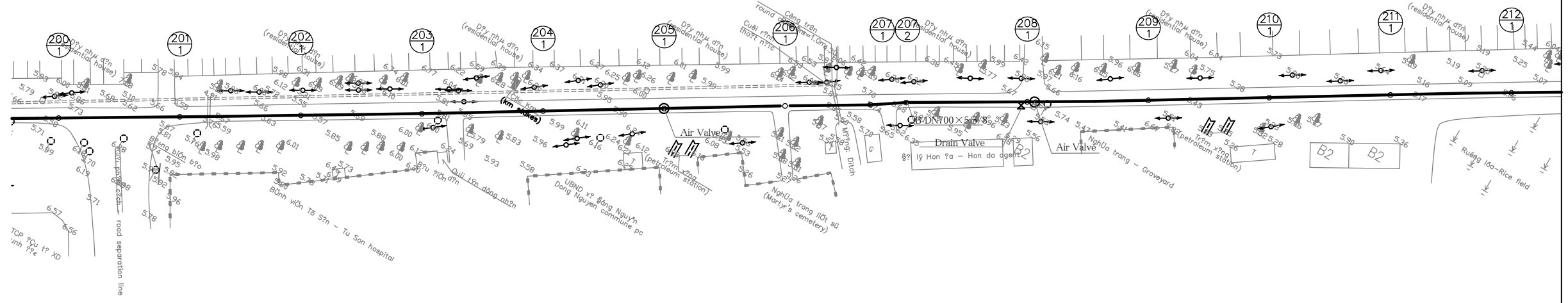
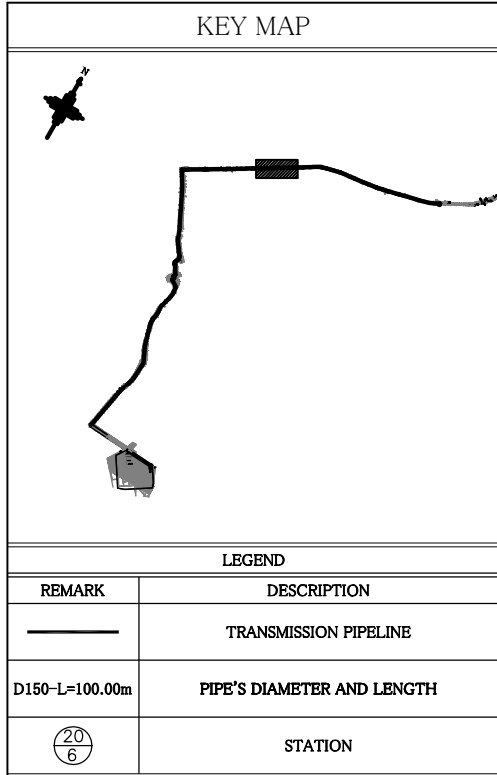
LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 6	STATION



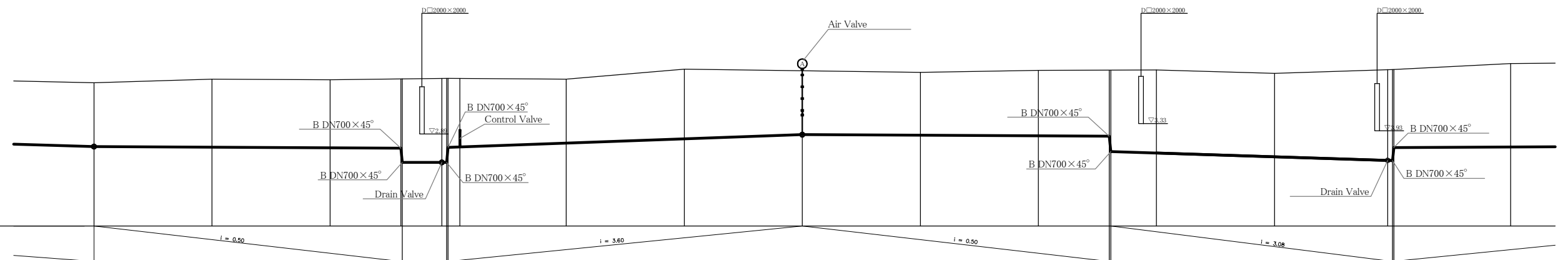
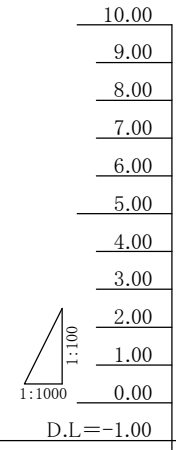
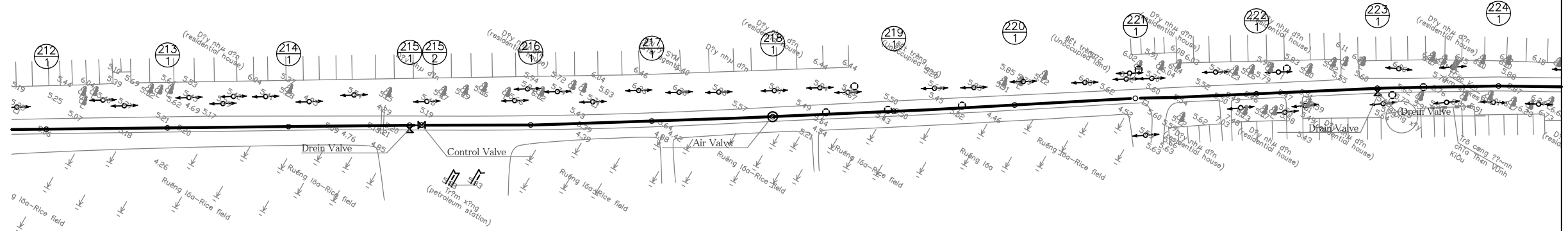
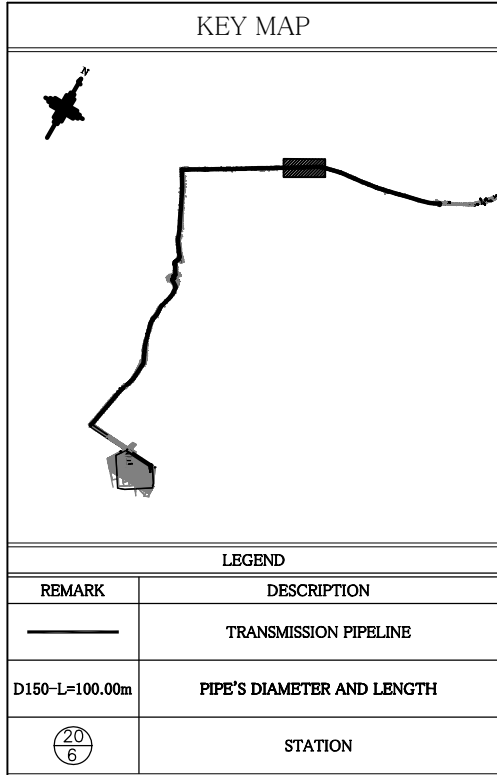
PIPE GRADIENT (%)	i = 0.50		i = 0.50										i = 0.50							
EXCAVATION DEPTH (m)	2.70	2.76	2.82	2.87	2.91	3.91	3.94	3.99	3.78	3.55	3.62	3.39	3.44	3.97	3.99	3.71	3.79	3.88		
INVERT ELEVATION (m)	3.31	3.29	3.26	3.24	3.22	2.23	2.22	2.19	2.17	2.14	2.12	2.09	2.08	1.54	1.82	1.83	1.84	1.87		
GROUND ELEVATION (m)	6.01	6.04	6.08	6.10	5.13	5.14	6.15	6.18	5.94	5.69	5.73	5.48	5.27	5.31	5.53	5.54	5.63	5.74		
ACCUMULATED DISTANCE (m)	8760.00	8810.00	8860.00	8910.00	8939.00	8940.00	8960.00	9010.00	9060.00	9110.00	9160.00	9210.00	9239.00	9240.00	9260.00	9261.40	9280.00	9310.00	9360.00	
ROTATION ANGLE	A				45°												45°		B 45° 5 5/8°	
STATION	⊙ 176 1	⊙ 177 1	⊙ 178 1	⊙ 179 1	⊙ 180 1		⊙ 181 1	⊙ 182 1	⊙ 183 1	⊙ 184 1	⊙ 185 1	⊙ 186 1			⊙ 186 2	⊙ 186 3	⊙ 187 1	⊙ 188 1		
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE																			



# PLAN AND PROFILE OF TRANSMISSION PIPELINE

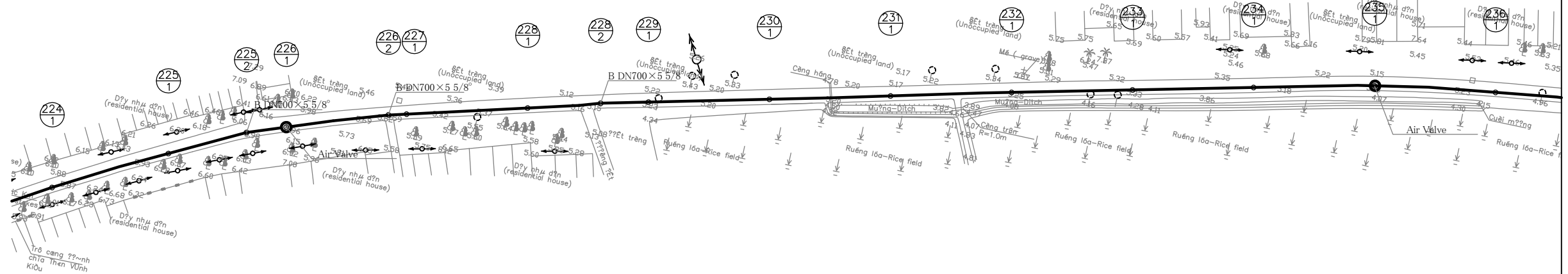
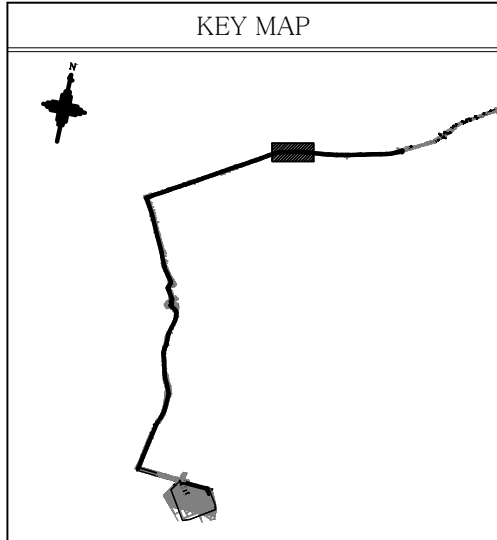


# PLAN AND PROFILE OF TRANSMISSION PIPELINE

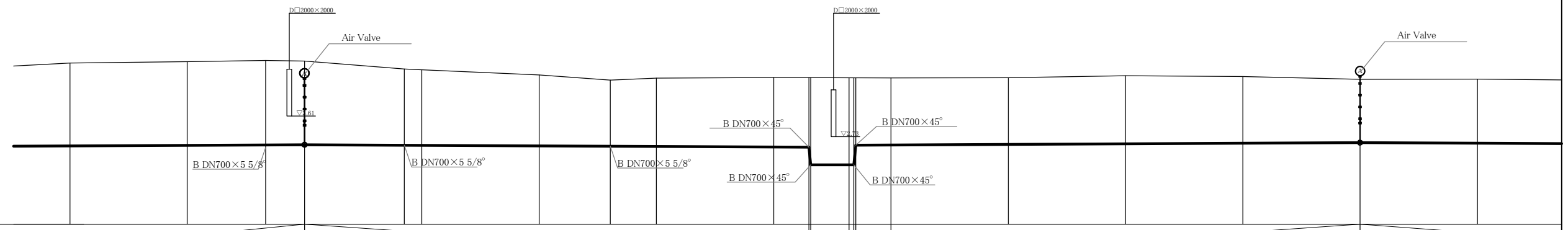
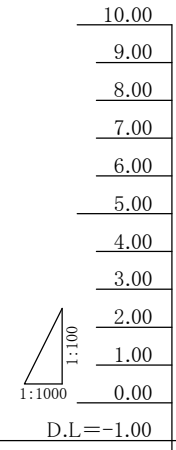


PIPE GRADIENT (%)				$i = 0.50$		$i = 3.60$		$i = 0.50$		$i = 3.08$		
EXCAVATION DEPTH (m)	2.70	2.88	2.88	2.94	3.56	2.92	2.71	2.66	2.78	2.74	3.51	3.53
INVERT ELEVATION (m)	2.36	2.34	2.31	2.30	1.88	2.33	2.51	2.69	2.82	2.49	2.09	1.93
GROUND ELEVATION (m)	5.06	5.21	5.19	5.23	5.25	5.25	5.21	5.64	5.59	5.59	5.60	5.46
ACCUMULATED DISTANCE (m)	10560.00	10610.00	10660.00	10690.00	10708.30	10715.00	10760.00	10810.00	10860.00	10910.00	10960.00	11010.00
ROTATION ANGLE				45°	45°	45°	A		45°	45°	D	
STATION	⊙ 212 1	⊙ 213 1	⊙ 214 1	⊙ 215 1	⊙ 215 2	⊙ 216 1	⊙ 217 1	⊙ 218 1	⊙ 219 1	⊙ 220 1	⊙ 221 1	⊙ 222 1
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE											

# PLAN AND PROFILE OF TRANSMISSION PIPELINE

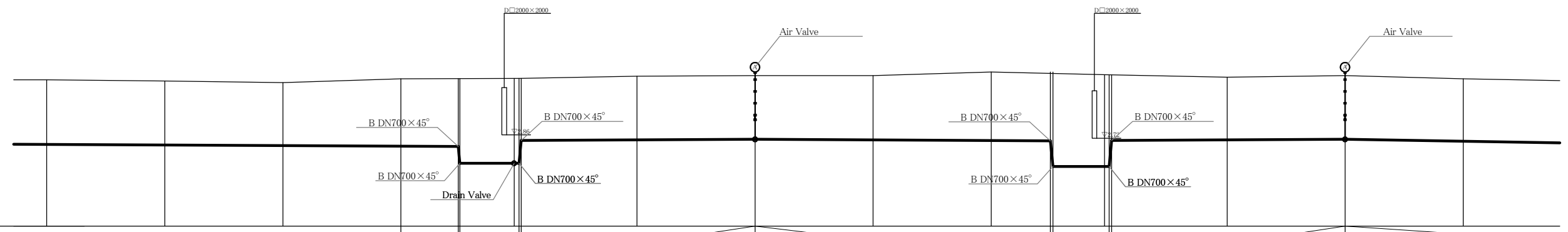
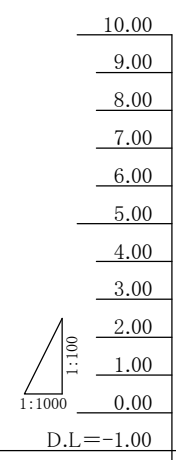
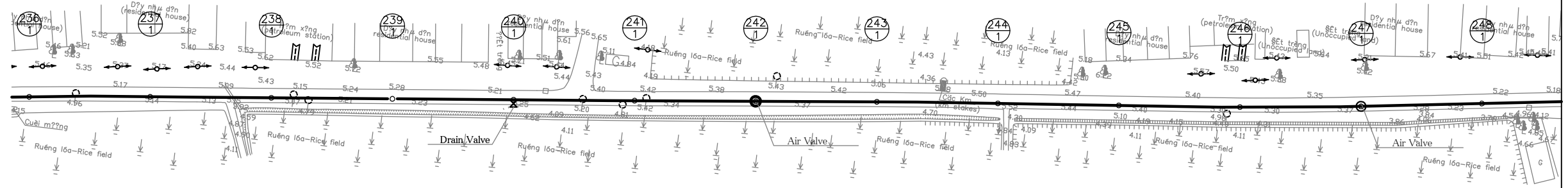
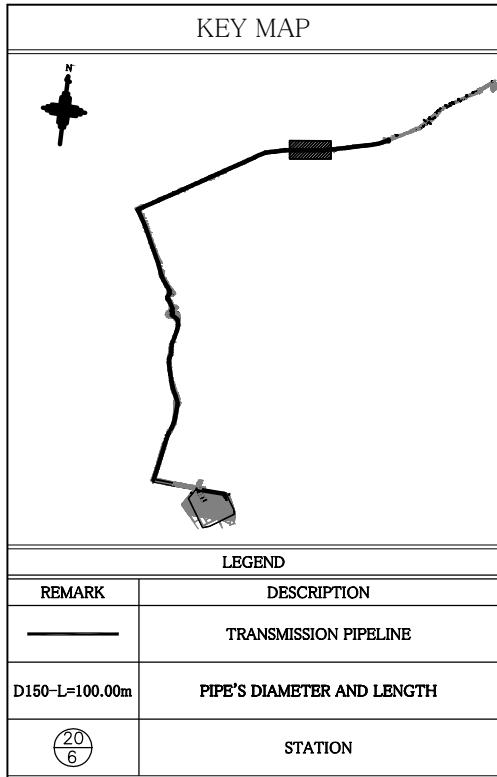


LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



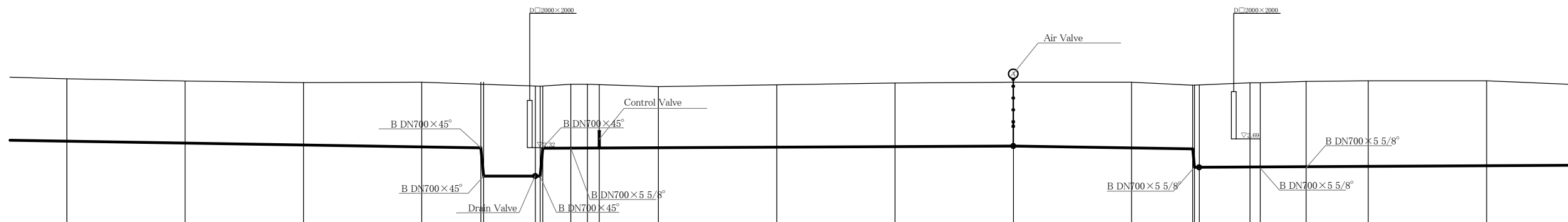
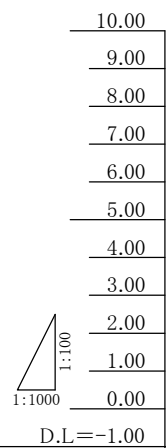
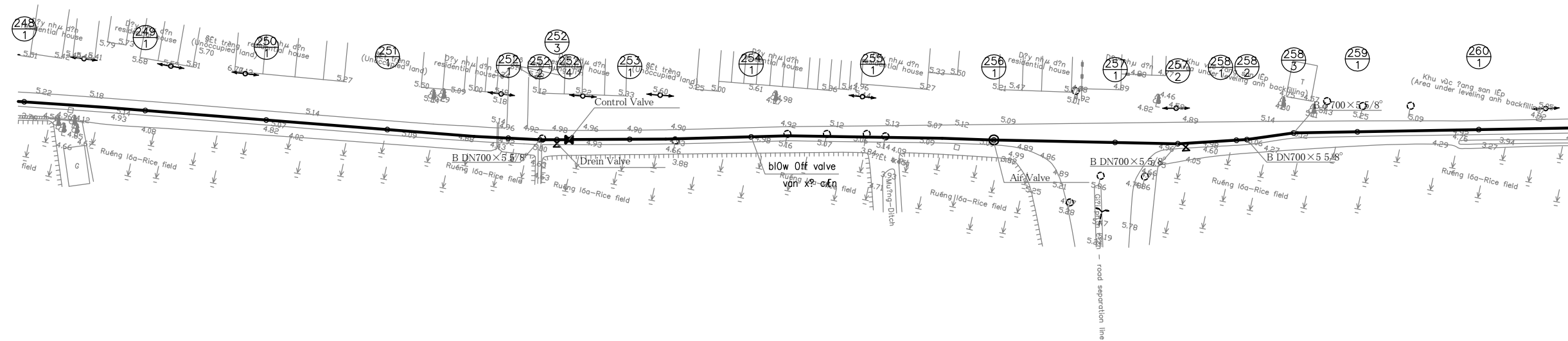
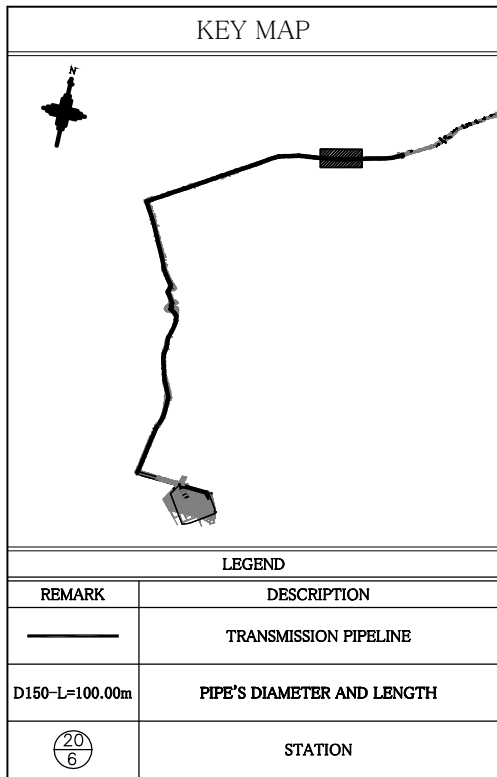
PIPE GRADIENT (%)	i = 0.50		i = 0.50																	
EXCAVATION DEPTH (m)	3.53	3.57	3.60	3.57	3.44	3.23	3.03	2.83	2.92	2.97	2.98	3.73	3.71	2.87	2.86	2.85	2.90	2.85	2.88	2.74
INVERT ELEVATION (m)	2.34	2.37	2.38	2.39	2.37	2.37	2.34	2.33	1.77	2.29	2.28	1.53	1.53	2.38	2.38	2.41	2.43	1.48	2.48	2.46
GROUND ELEVATION (m)	5.87	5.93	5.98	5.96	5.62	5.59	5.37	5.15	5.23	5.26	5.26	5.26	5.24	5.25	5.24	5.25	5.33	5.30	5.18	5.19
ACCUMULATED DISTANCE (m)	11180.00	11210.00	11243.45	11260.00	11302.50	11310.00	11360.00	11390.30	11410.00	11460.00	11475.00	11475.75	11484.15	11485.00	11510.00	11560.00	11610.00	11660.00	11710.00	11760.00
ROTATION ANGLE			5 5/8'	A	5 5/8'	5 5/8'			45°		45°	45°		A						
STATION	⊙ 224 1	⊙ 225 1	⊙ 225 2	⊙ 226 1	⊙ 226 2	⊙ 227 1	⊙ 228 1	⊙ 228 2	⊙ 229 1	⊙ 230 1			⊙ 231 1	⊙ 232 1	⊙ 233 1	⊙ 234 1	⊙ 235 1			⊙ 236 1
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE																			

# PLAN AND PROFILE OF TRANSMISSION PIPELINE



PIPE GRADIENT (%)	I = -0.50														
EXCAVATION DEPTH (m)	2.74	2.71	2.67	2.65	2.67	2.70	2.70	2.73	2.90	2.85	3.88	2.66	4.01	2.64	
INVERT ELEVATION (m)	2.46	2.43	2.41	2.38	2.37	2.65	2.67	2.65	2.62	2.61	1.52	2.65	2.67	2.59	
GROUND ELEVATION (m)	5.19	5.14	5.07	5.23	5.23	5.34	5.37	5.37	5.52	5.46	5.40	5.30	5.37	5.23	
ACCUMULATED DISTANCE (m)	11760.00	11810.00	11860.00	11910.00	11935.00	11960.00	12010.00	12110.00	12160.00	12185.10	12210.00	12260.00	12310.00	12360.00	
ROTATION ANGLE					45°	45°	A			45°	45°	A			
STATION	236/1	237/1	238/1	239/1	240/1	241/1	242/1	243/1	244/1	245/1	246/1	247/1	248/1		
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE														

# PLAN AND PROFILE OF TRANSMISSION PIPELINE



PIPE GRADIENT (%)	1.60		0.50																			
EXCAVATION DEPTH (m)	2.84	2.83	2.84	2.74	2.70	3.88	3.80	2.72	2.70	2.68	2.59	2.64	2.69	2.70	2.78	2.69	3.47	3.56	3.56	3.61	3.63	3.60
INVERT ELEVATION (m)	2.99	2.91	2.43	2.35	1.72	1.33	2.32	2.30	2.31	2.32	2.32	2.34	2.37	2.39	2.31	2.27	1.49	2.50	1.51	1.52	1.53	1.55
GROUND ELEVATION (m)	5.23	5.14	5.07	5.09	5.01	4.92	5.00	5.00	5.00	5.00	4.90	4.98	5.05	5.09	5.09	4.96	4.96	5.06	5.06	5.12	5.15	5.15
ACCUMULATED DISTANCE (m)	12380.00	12410.00	12460.00	12510.00	12544.94	12510.00	12561.17	12572.95	12580.00	12586.00	12610.00	12660.00	12710.00	12760.00	12810.00	12835.00	12835.78	12860.00	12864.35	12883.75	12910.00	12960.00
ROTATION ANGLE					45°	45°	45°	5 5/8"	45°	V												
STATION	⊙ 248 1	⊙ 249 1	⊙ 250 1	⊙ 251 1	⊙ 252 1	⊙ 252 2	⊙ 252 3	⊙ 252 4	⊙ 253 1	⊙ 254 1	⊙ 255 1	⊙ 256 1	⊙ 257 1	⊙ 257 2	⊙ 258 1	⊙ 258 2	⊙ 258 3	⊙ 259 1	⊙ 260 1			
PIPE DIAMETER	DN 700 DUCTILE IRON PIPE																					

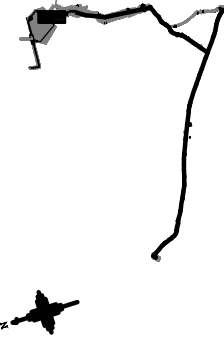








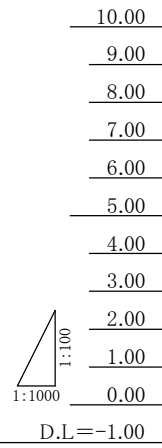
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
	STATION



	Maintenance Road $\nabla 6.30$																
PIPE GRADIENT (%)	$i = -0.50$																
EXCAVATION DEPTH (m)	2.32	2.10	2.11	1.96	1.96	1.98	1.98	1.98	1.95	2.17	2.32	2.28	2.28	4.01	3.92	3.90	
INVERT ELEVATION (m)	3.38	3.35	3.33	3.30	3.28	3.25	3.25	3.25	3.23	3.20	3.18	3.16	3.15	1.47	1.49	1.52	
GROUND ELEVATION (m)	5.69	5.45	5.43	5.26	5.23	5.23	5.16	5.16	5.17	5.37	5.49	5.44	5.43	5.47	5.42	5.41	
ACCUMULATED DISTANCE (m)	550.00	600.00	650.00	700.00	750.00	800.00	808.33	808.16	850.00	900.00	950.00	983.96	1000.00	1003.69	1050.00	1100.00	1150.00
ROTATION ANGLE	45° 45'																
STATION	11+1	12+1	13+1	14+1	15+1	16+1	16+2	16+3	17+1	18+1	19+1	19+2	20+1	21+1	22+1	23+1	
PIPE DIAMETER	DN 1600 STEEL PIPE																

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
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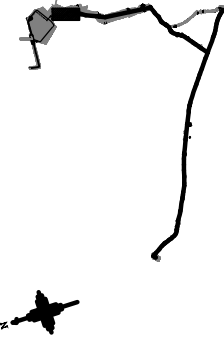
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

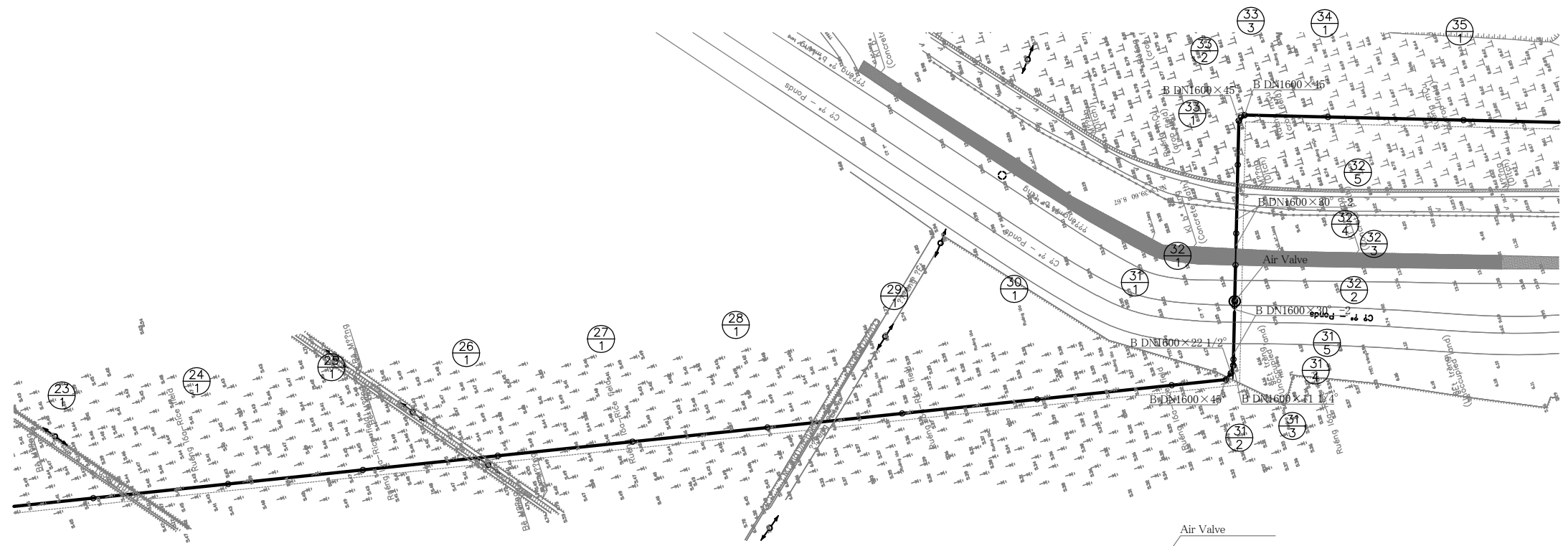
Drawing No

C-2

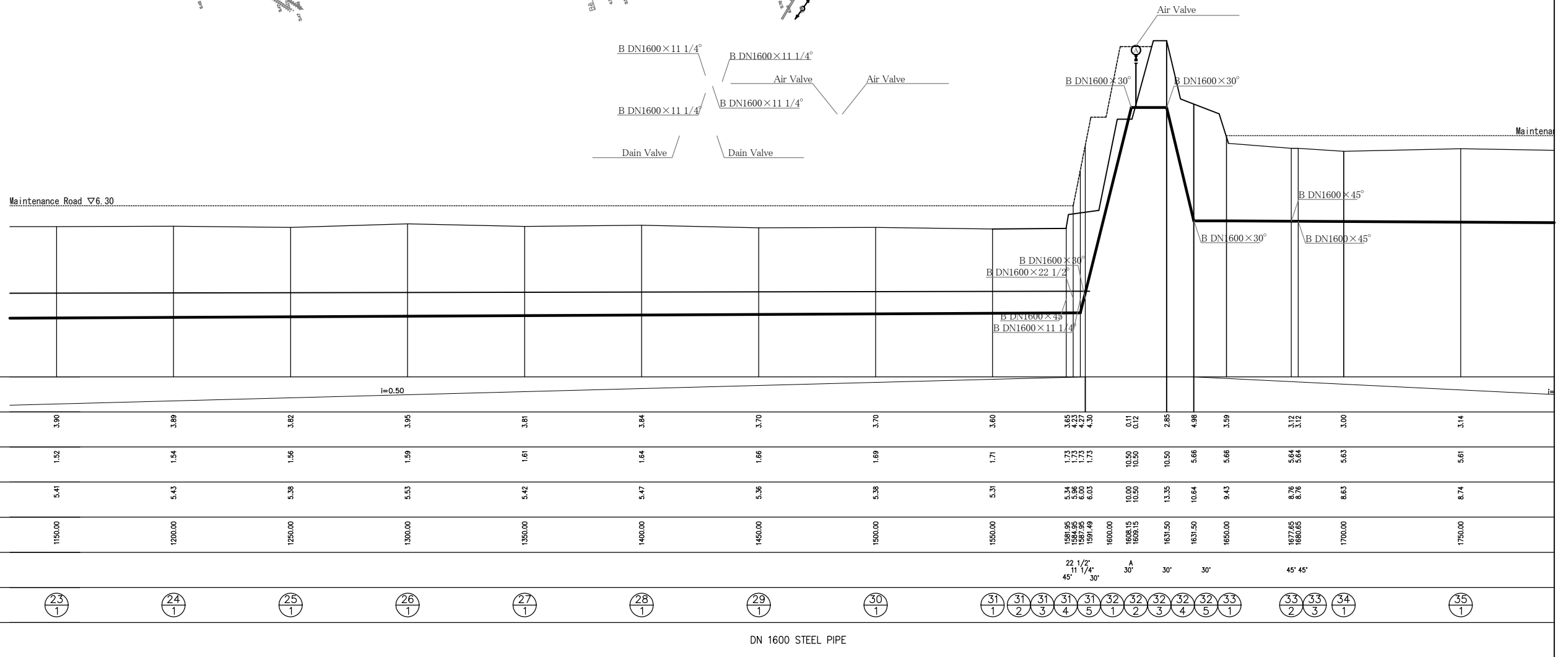
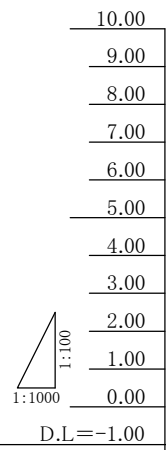
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
②③ ⑥	STATION



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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
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Date.  
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Scale  
V=1/100  
H=1/1000

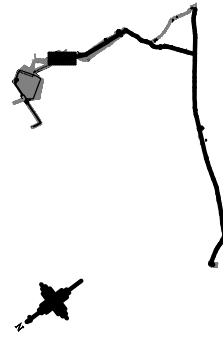
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

C-3

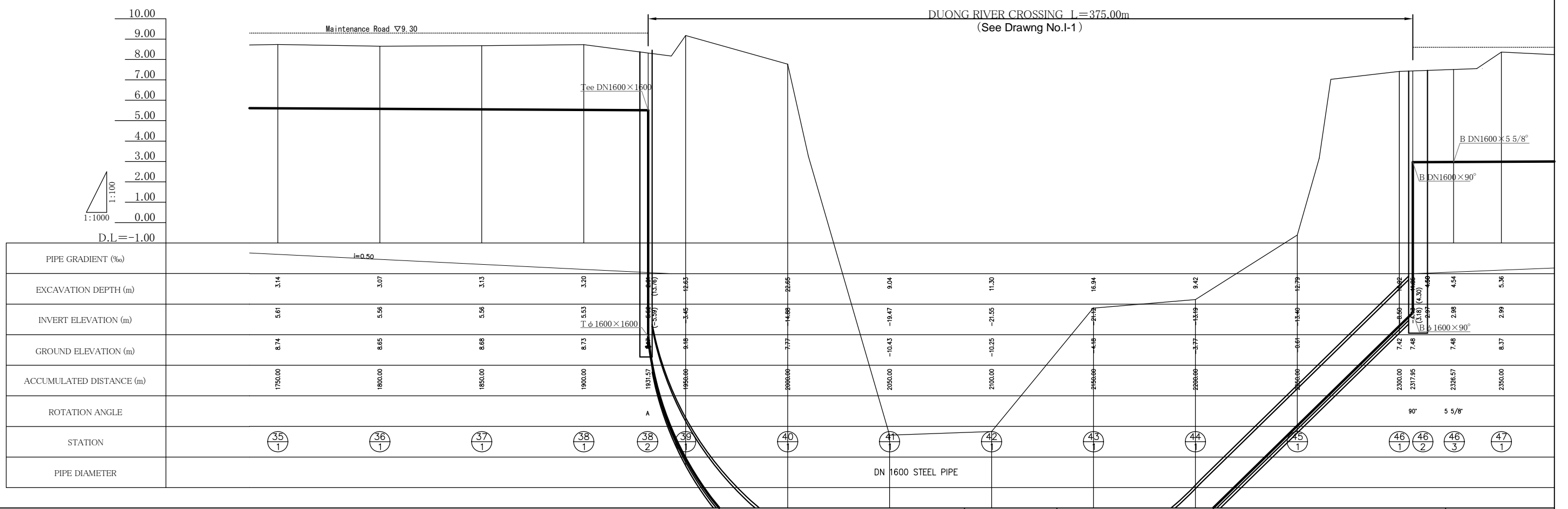
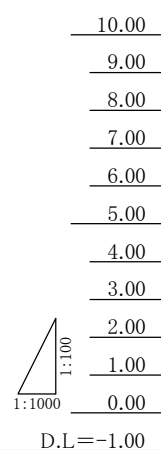
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE

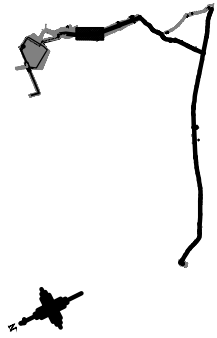


LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION

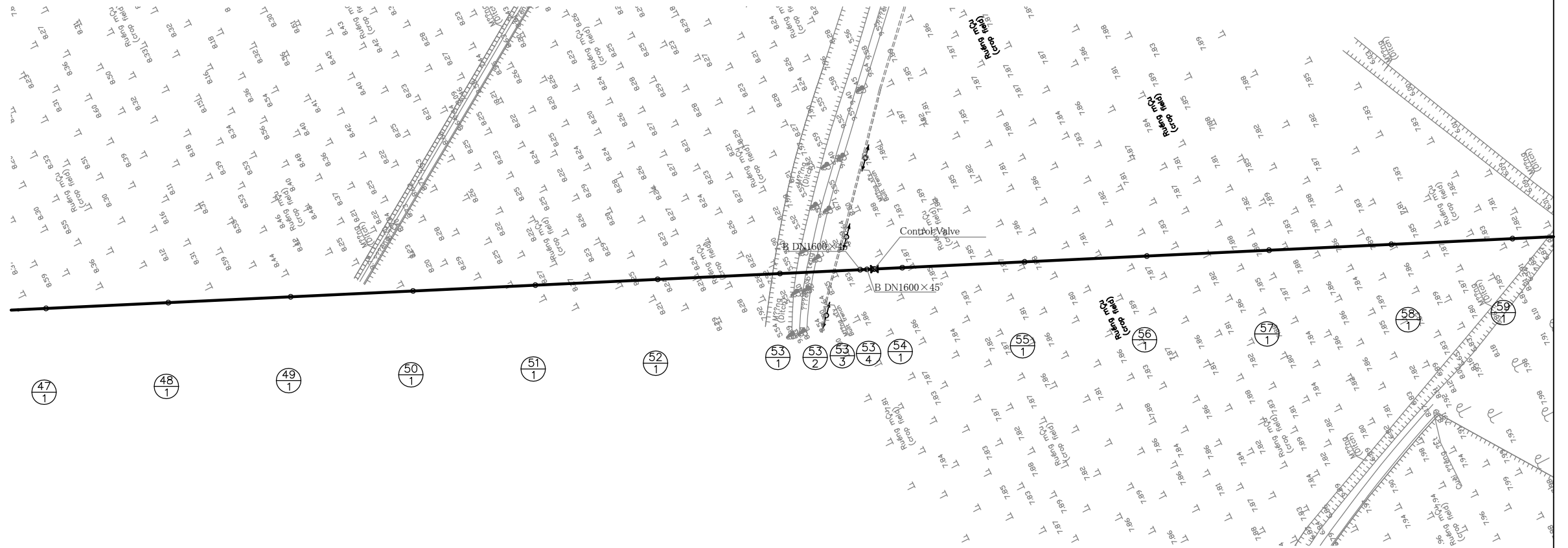


PIPE GRADIENT (%)	i=0.50																	
EXCAVATION DEPTH (m)	3.14	3.07	3.13	3.20	3.27	3.45	3.63	3.77	14.88	22.65	9.04	11.30	16.94	8.42	12.79	4.54	5.36	
INVERT ELEVATION (m)	5.61	5.56	5.56	5.53	5.37	3.45	3.45	14.88	14.88	11.30	11.30	21.55	21.55	15.49	12.79	2.98	2.99	
GROUND ELEVATION (m)	8.74	8.65	8.68	8.73	8.64	6.90	6.90	7.77	7.77	10.43	10.43	10.25	10.25	3.77	0.61	7.48	8.37	
ACCUMULATED DISTANCE (m)	1750.00	1800.00	1850.00	1900.00	1931.57	1956.00	1966.00	2006.00	2006.00	2050.00	2100.00	2100.00	2166.00	2206.00	2206.00	2300.00	2317.95	2326.57
ROTATION ANGLE																90°	5 5/8°	
STATION	⊙ 35 1	⊙ 36 1	⊙ 37 1	⊙ 38 1	⊙ 38 2	⊙ 39 1	⊙ 40 1	⊙ 41 1	⊙ 42 1	⊙ 43 1	⊙ 44 1	⊙ 45 1	⊙ 46 1	⊙ 46 2	⊙ 46 3	⊙ 47 1		
PIPE DIAMETER	DN 1600 STEEL PIPE															B DN1600x90°	B DN1600x5 5/8"	

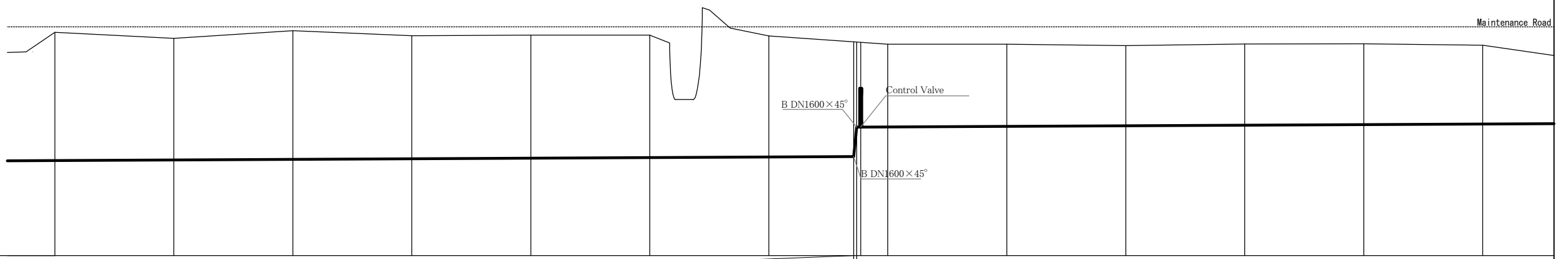
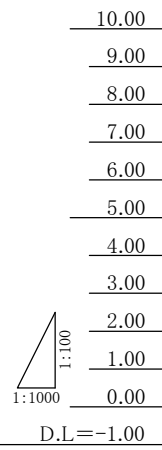
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



PIPE GRADIENT (%)	i=0.50											i=0.001							
EXCAVATION DEPTH (m)	5.36	5.11	5.41	5.17	5.17	5.14	5.09	4.96	3.96	3.47	3.45	3.36	3.41	3.39	3.31				
INVERT ELEVATION (m)	2.99	3.01	3.04	3.06	3.09	3.11	3.14	3.15	3.16	4.40	4.43	4.45	4.46	4.50	4.53				
GROUND ELEVATION (m)	8.37	8.12	8.44	8.23	8.25	8.25	8.22	7.87	7.87	7.87	7.87	7.81	7.88	7.89	7.83				
ACCUMULATED DISTANCE (m)	2350.00	2400.00	2450.00	2500.00	2550.00	2600.00	2650.00	2688.02	2688.02	2700.00	2750.00	2800.00	2850.00	2900.00	2950.00				
ROTATION ANGLE												45° v							
STATION	⊙ 47 1	⊙ 48 1	⊙ 49 1	⊙ 50 1	⊙ 51 1	⊙ 52 1	⊙ 53 1	⊙ 53 2	⊙ 53 3	⊙ 53 4	⊙ 54 1	⊙ 55 1	⊙ 56 1	⊙ 57 1	⊙ 58 1	⊙ 59 1			
PIPE DIAMETER	DN 1600 STEEL PIPE																		

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Scale  
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H=1/1000

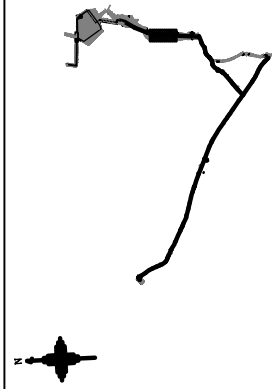
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

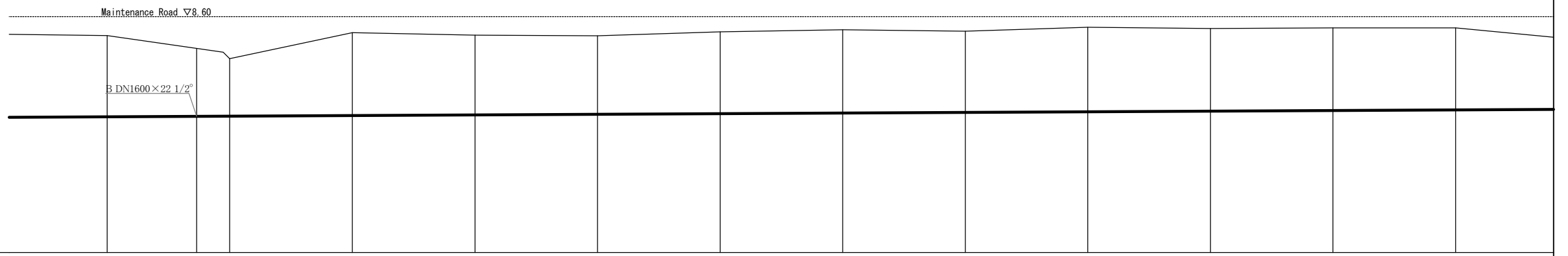
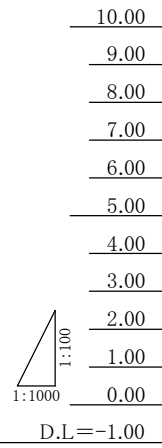
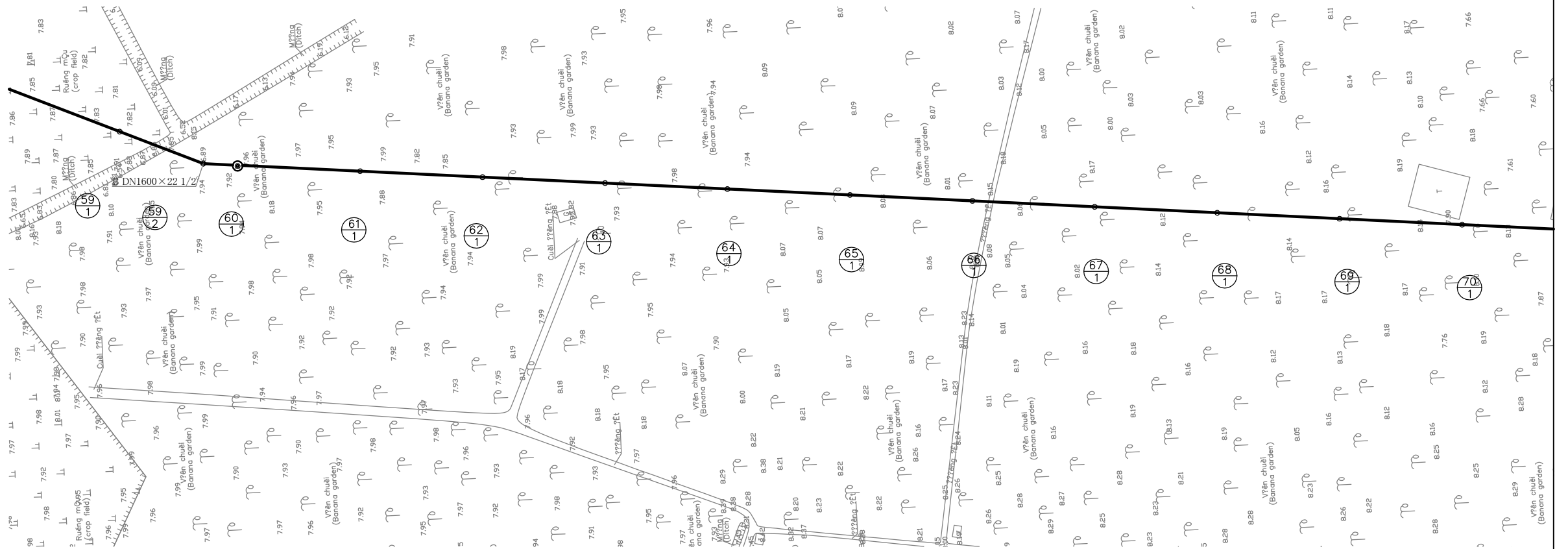
Drawing No

C-5

# PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 6	STATION



PIPE GRADIENT (%)	i=0.50												
EXCAVATION DEPTH (m)	3.31	2.77	2.34	3.38	3.25	3.20	3.33	3.40	3.31	3.45	3.37	3.37	3.34
INVERT ELEVATION (m)	4.53	4.55	4.55	4.58	4.60	4.63	4.65	4.68	4.70	4.73	4.75	4.78	4.80
GROUND ELEVATION (m)	7.83	7.85	6.89	7.95	7.85	7.82	7.98	8.07	8.01	8.17	8.12	8.14	8.14
ACCUMULATED DISTANCE (m)	2950.00	2986.46	3000.00	3050.00	3100.00	3150.00	3200.00	3250.00	3300.00	3350.00	3400.00	3450.00	3500.00
ROTATION ANGLE	22 1/2'												
STATION	59+1	59+2	60+1	61+1	62+1	63+1	64+1	65+1	66+1	67+1	68+1	69+1	70+1
PIPE DIAMETER	DN 1600 STEEL PIPE												

JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

C-6

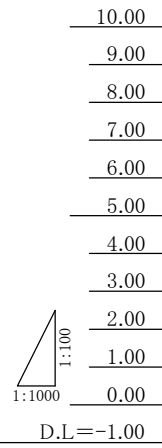
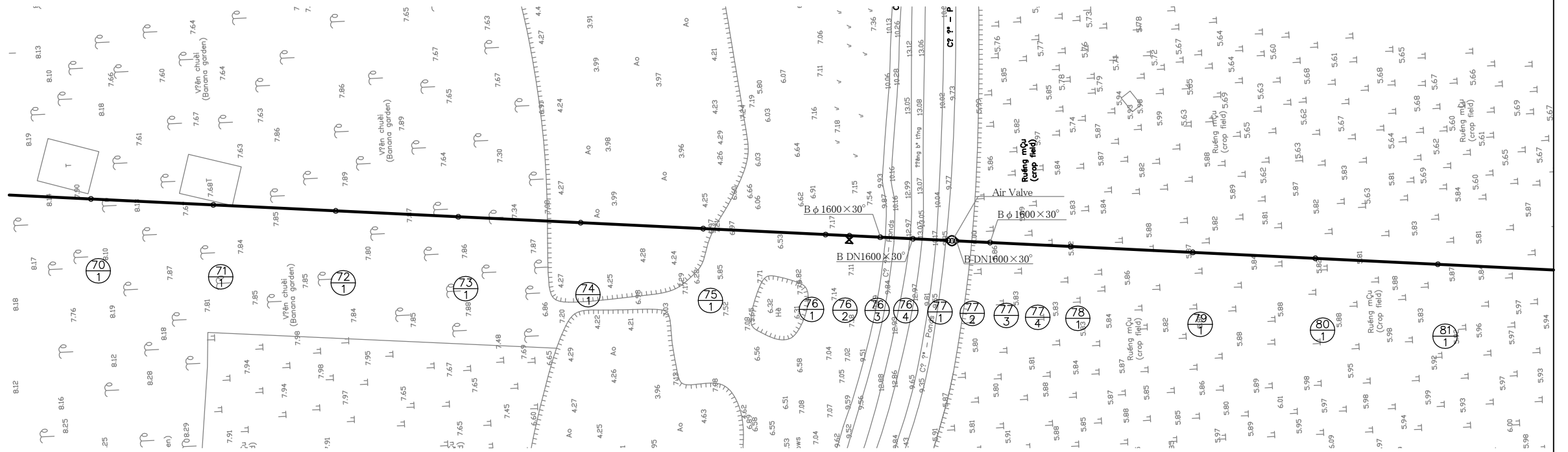


KEY MAP

LEGEND

REMARK	DESCRIPTION
	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
	STATION

PLAN AND PROFILE OF TRANSMISSION PIPELINE



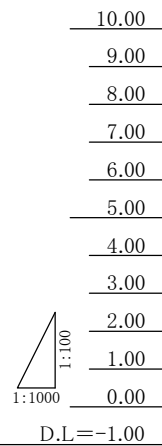
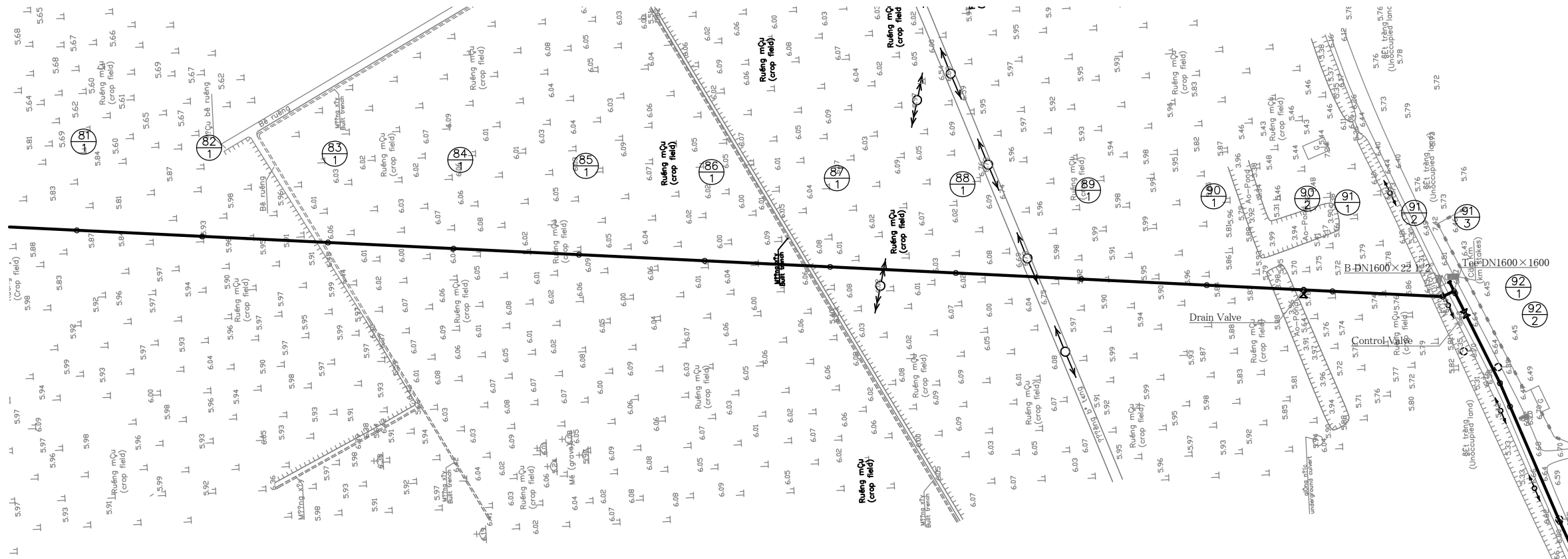
PIPE GRADIENT (%)												i=0.50				
EXCAVATION DEPTH (m)	3.34	2.85	3.00	3.00	1.78	4.93	1.58	1.86	4.49	2.47	2.47	2.95	2.93	3.01	2.98	3.06
INVERT ELEVATION (m)	4.80	4.83	4.85	4.88	4.90	4.93	4.95	4.96	4.97	10.50	10.50	10.50	2.89	2.87	2.84	2.82
GROUND ELEVATION (m)	8.14	7.67	7.85	7.87	7.08	4.24	6.53	6.53	9.47	12.97	12.97	5.86	5.82	5.87	5.82	5.87
ACCUMULATED DISTANCE (m)	3500.00	3550.00	3600.00	3650.00	3700.00	3750.00	3800.00	3859.76	3859.85	3847.00	3850.00	3857.98	3874.48	3900.00	3950.00	4050.00
ROTATION ANGLE	0											22 1/2'	22 1/2'	22 1/2'	22 1/2'	
STATION	70/1	71/1	72/1	73/1	74/1	75/1	76/1	76/2	76/3	76/4	77/1	77/2	77/3	77/4	78/1	81/1
PIPE DIAMETER	DN 1600 STEEL PIPE															

# PLAN AND PROFILE OF TRANSMISSION PIPELINE

## KEY MAP



LEGEND	
REMARK	DESCRIPTION
	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
	STATION



PIPE GRADIENT (%)	-0.50														
EXCAVATION DEPTH (m)	3.06	3.14	3.15 3.15	3.90	3.90	3.92	4.00	3.99	3.97	3.97	1.99	3.82	4.17 4.17	3.81	
INVERT ELEVATION (m)	2.82	2.79	2.77 2.77	2.14	2.12	2.09	2.07	2.04	2.02	1.99	1.97	1.97	1.94 1.94	2.70	
GROUND ELEVATION (m)	5.87	5.93	5.91 5.91	6.04	6.01	6.01	6.06	6.03	5.98	5.96	6.51	5.78	6.64 6.64	6.64	
ACCUMULATED DISTANCE (m)	4050.00	4100.00	4150.00 4153.02	4200.00	4250.00	4300.00	4350.00	4400.00	4450.00	4500.00	4538.61	4550.00	4593.94 4595.04 4600.00	4608.84 4610.80	
ROTATION ANGLE											22 1/2° D 11 1/4" T91600X1600 11 1/4"				
STATION	81 1	82 1	83 1	84 1	85 1	86 1	87 1	88 1	89 1	90 1	90 2	91 1	91 2	92 1	92 2
PIPE DIAMETER	DN 1600 STEEL PIPE														

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H=1/1000

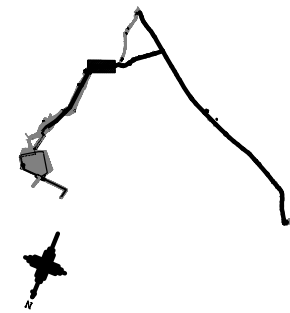
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

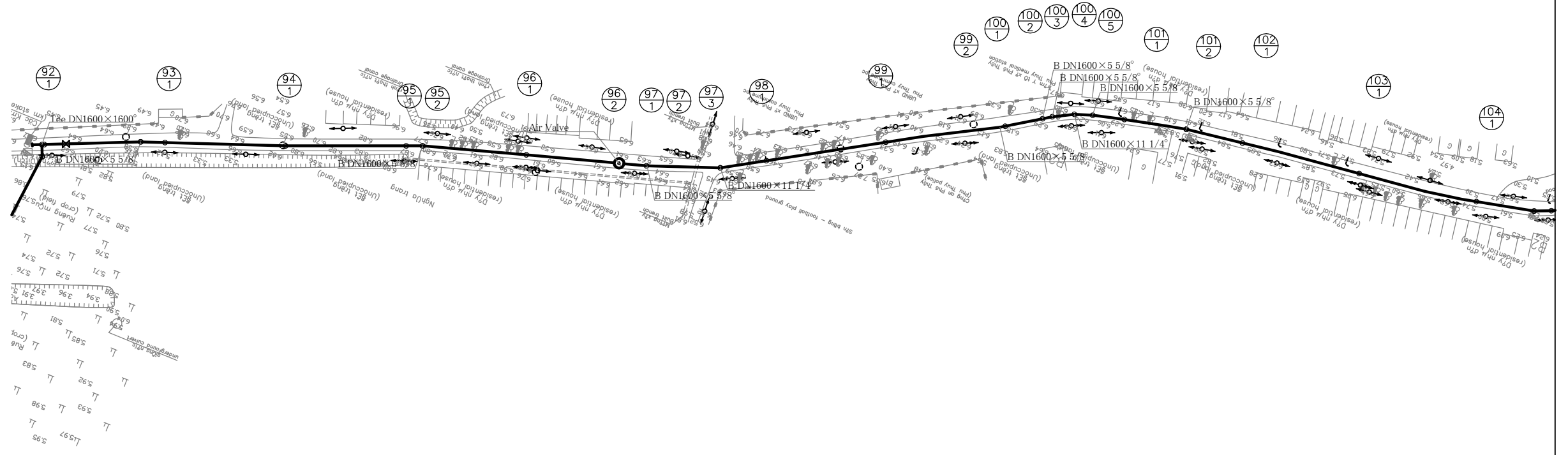
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C-8

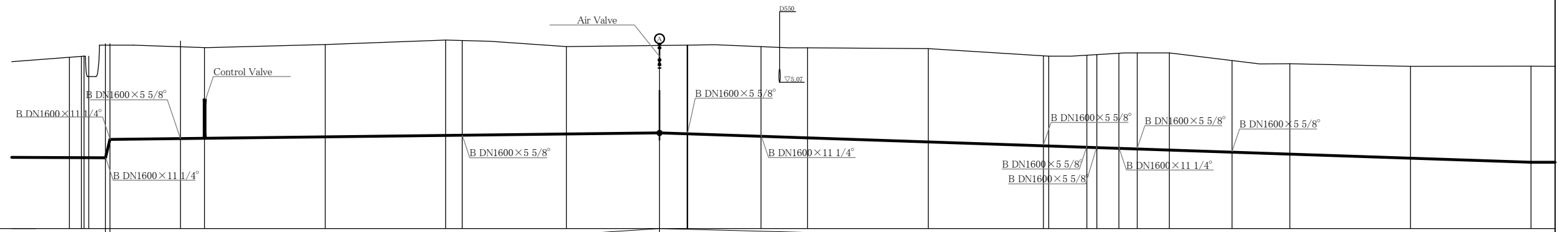
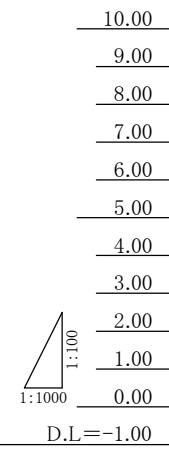
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
20/6	STATION



PIPE GRADIENT (%)	i=1.10																			i=0.50									
EXCAVATION DEPTH (m)	4.17	4.17	4.21	3.81	3.77	3.84	3.86	3.83	3.63	3.63	3.63	3.73	3.74	3.88	3.73	3.82	3.86	3.95	3.99	4.04	3.80	3.75	3.81	3.99					
INVERT ELEVATION (m)	1.94	1.94	1.94	2.74	2.75	2.81	2.87	2.87	2.92	2.97	2.98	2.98	2.83	2.76	2.59	2.43	2.37	2.36	2.33	2.30	2.26	2.17	2.09	1.92	1.75				
GROUND ELEVATION (m)	6.64	6.64	6.64	6.82	6.51	6.64	6.82	6.63	6.55	6.47	6.61	6.61	6.47	6.50	6.47	5.83	5.84	5.84	5.73	5.73	6.29	5.74	5.84	5.73	5.74				
ACCUMULATED DISTANCE (m)	4593.34	4593.34	4603.50	4639.94	4650.00	4700.00	4750.00	4756.80	4800.00	4838.60	4850.00	4850.00	4880.05	4900.00	4950.00	4950.00	5015.81	5019.95	5028.14	5036.76	5060.00	5076.02	5100.00	5150.00	5200.00				
ROTATION ANGLE	22 1/2° D 11 1/4" T91600x1600			5 5/8" V			5 5/8"			A	5 5/8"		11 1/4"			5 5/8"		5 5/8" 11 1/4" 5 5/8"		5 5/8"									
STATION	91/2	91/3	92/1	92/2	92/3	93/1	94/1	95/1	95/2	96/1	96/2	97/1	97/2	97/3	98/1	99/1	99/2	100/1	100/2	100/3	100/4	100/5	101/1	101/2	102/1	103/1	104/1		
PIPE DIAMETER	DN 1600 STEEL PIPE																												

JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

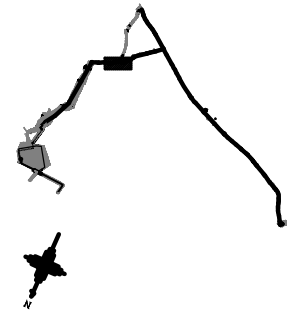
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

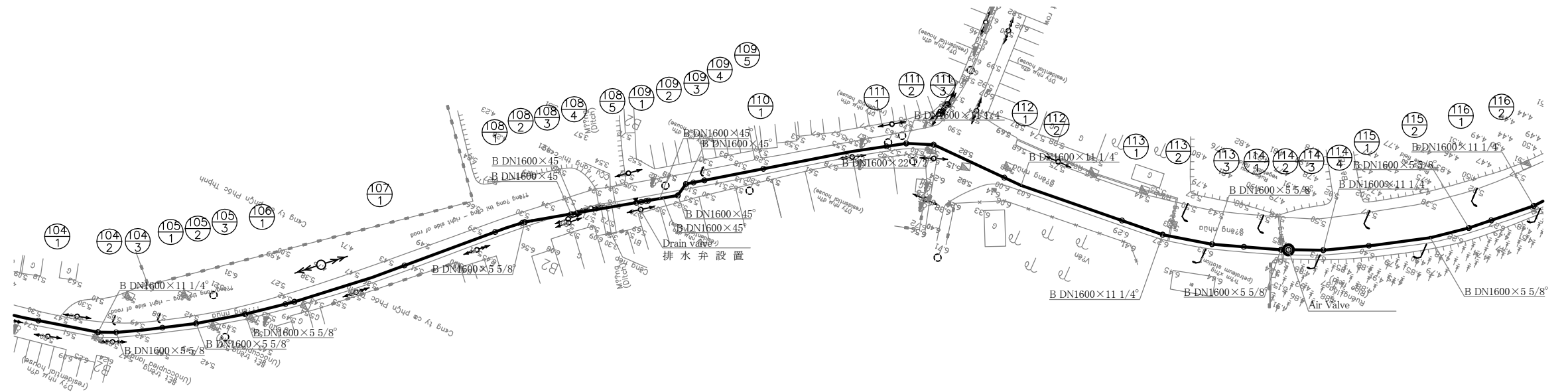
Drawing No

C-9

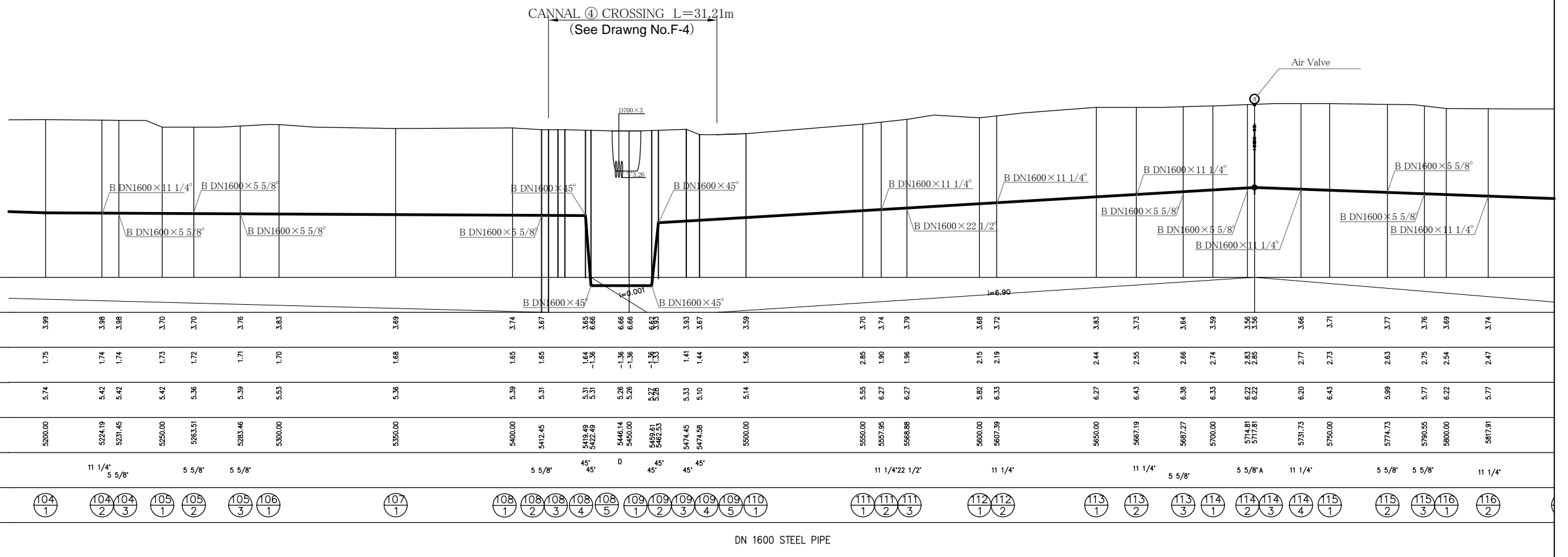
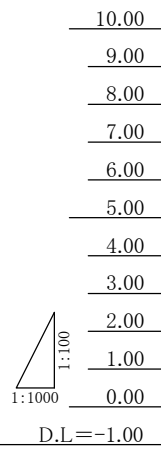
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
②① ⑥	STATION



JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

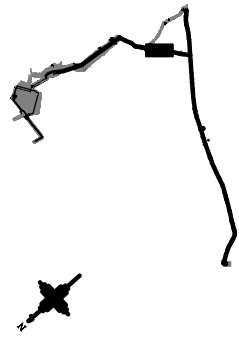
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

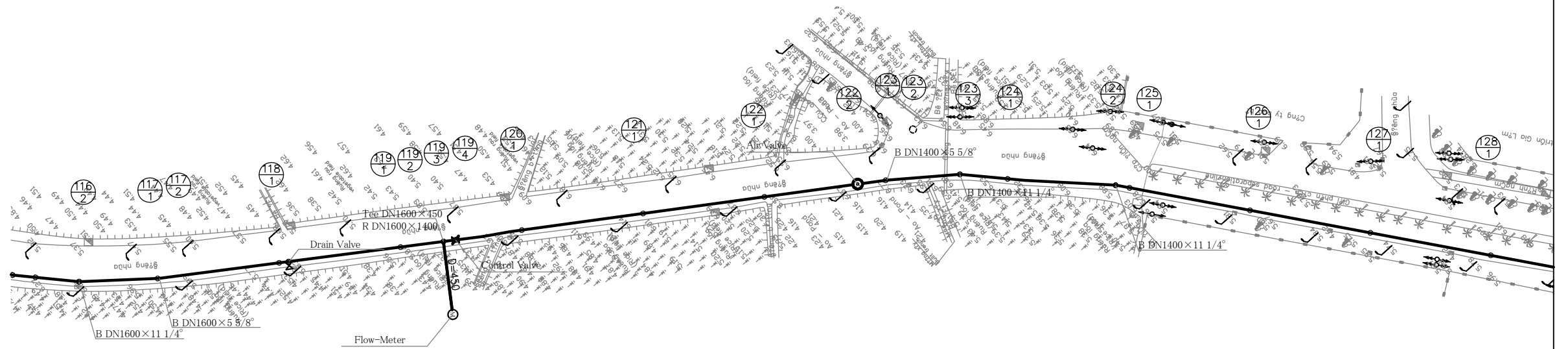
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C-10

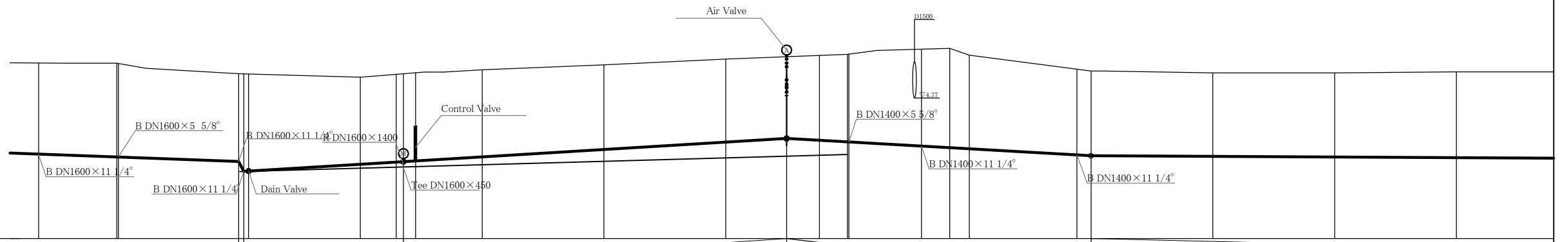
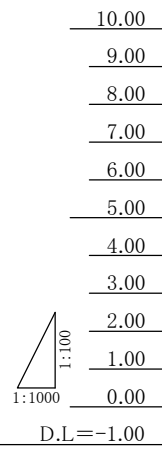
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 6	STATION



PIPE GRADIENT (%)	i=3.80		i=6.05										i=5.66									
EXCAVATION DEPTH (m)	3.74	3.83	3.61	3.58	3.61	3.63	3.58	3.49	3.41	3.36	3.49	3.60	3.61	3.99	4.08	3.95	3.52	3.48	3.44	3.46	3.53	
INVERT ELEVATION (m)	2.47	2.35	2.77	2.05	2.14	2.16	2.19	2.35	2.66	2.96	3.11	3.04	2.97	2.80	2.73	2.69	2.44	2.40	2.37	2.35	2.33	
GROUND ELEVATION (m)	5.77	6.20	5.77	5.63	6.14	6.14	6.14	5.93	6.14	6.37	6.47	5.88	6.57	5.88	5.81	6.53	5.81	5.88	5.81	5.81	5.85	
ACCUMULATED DISTANCE (m)	5817.91	5900.00	5950.00	5950.00	5964.66	5967.66	5972.66	6000.00	6050.00	6100.00	6125.00	6138.46	6150.00	6150.51	6180.40	6200.00	6244.18	6250.00	6300.00	6350.00	6400.00	
ROTATION ANGLE	11 1/4°	5 5/8°	11 1/4° D	M	V					A	5 5/8°	11 1/4°					11 1/4°					
STATION	⊙ 116 2	⊙ 117 1	⊙ 117 2	⊙ 118 1	⊙ 119 1	⊙ 119 2	⊙ 119 3	⊙ 119 4	⊙ 120 1	⊙ 121 1	⊙ 122 1	⊙ 122 2	⊙ 123 1	⊙ 123 2	⊙ 123 3	⊙ 124 1	⊙ 124 2	⊙ 125 1	⊙ 126 1	⊙ 127 1	⊙ 128 1	
PIPE DIAMETER	DN 1600 STEEL PIPE								DN 1400 STEEL PIPE													

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

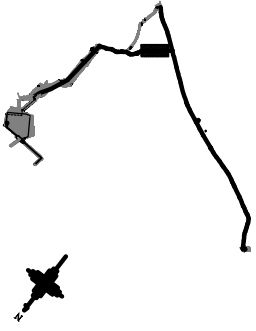
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

C-11

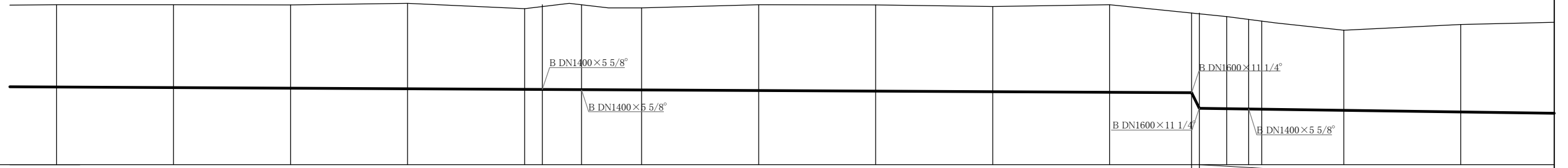
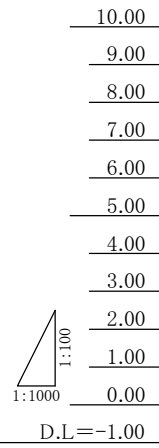
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



PIPE GRADIENT (%)	i=0.50																		
EXCAVATION DEPTH (m)	3.33	3.55	3.57	3.66	3.46	3.35	3.63	3.51	3.68	3.69	3.65	3.75	3.41	4.07	3.94	3.88	3.77	3.43	3.74
INVERT ELEVATION (m)	2.33	2.30	2.28	2.25	2.23	2.22	2.22	2.20	2.18	2.15	2.13	2.10	2.08	1.42	1.40	1.39	1.38	1.33	1.26
GROUND ELEVATION (m)	5.85	5.85	5.84	5.91	5.68	5.85	5.85	5.71	5.85	5.84	5.77	5.85	5.85	5.85	5.34	5.00	5.00	4.76	5.00
ACCUMULATED DISTANCE (m)	6400.00	6450.00	6500.00	6550.00	6600.00	6607.56	6624.27	6650.00	6700.00	6750.00	6800.00	6850.00	6885.00	6888.48	6900.00	6908.41	6950.00	7000.00	
ROTATION ANGLE	5 5/8° 5 5/8° 11 1/4° 11 1/4° 5 5/8°																		
STATION	⊙ 128 1	⊙ 129 1	⊙ 130 1	⊙ 131 1	⊙ 132 1	⊙ 132 2	⊙ 132 3	⊙ 133 1	⊙ 134 1	⊙ 135 1	⊙ 136 1	⊙ 137 1	⊙ 138 1	⊙ 138 2	⊙ 139 1	⊙ 140 1			
PIPE DIAMETER	D=DN1400 STEEL PIPE																		

JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

C-12

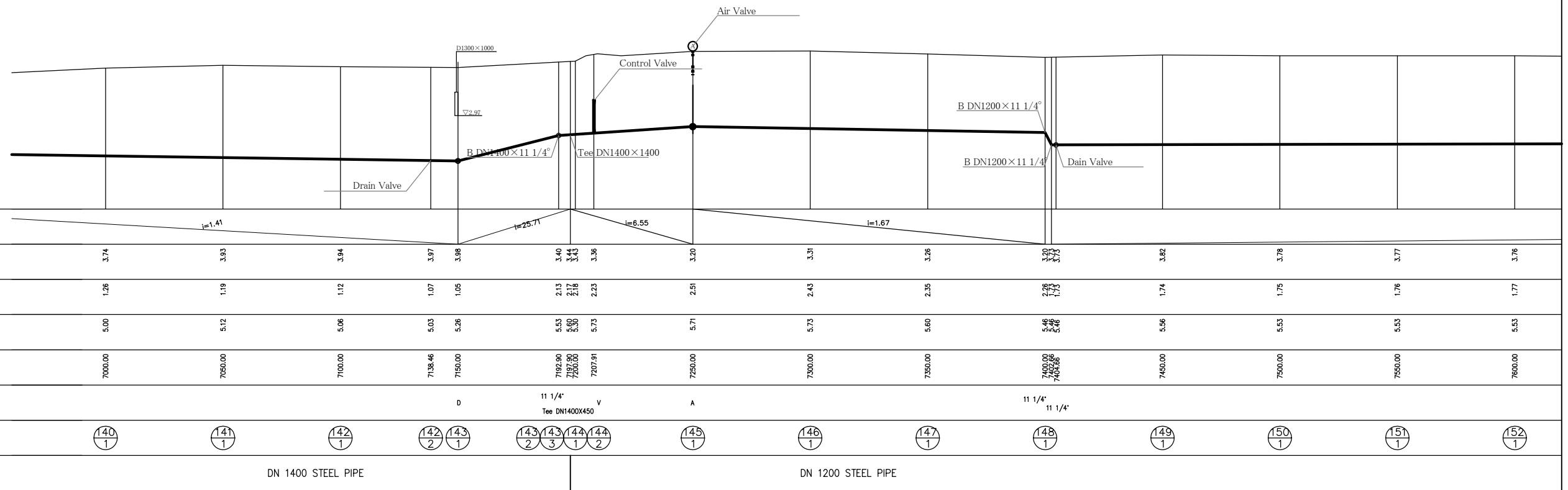
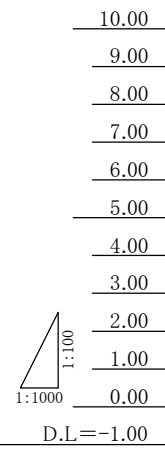
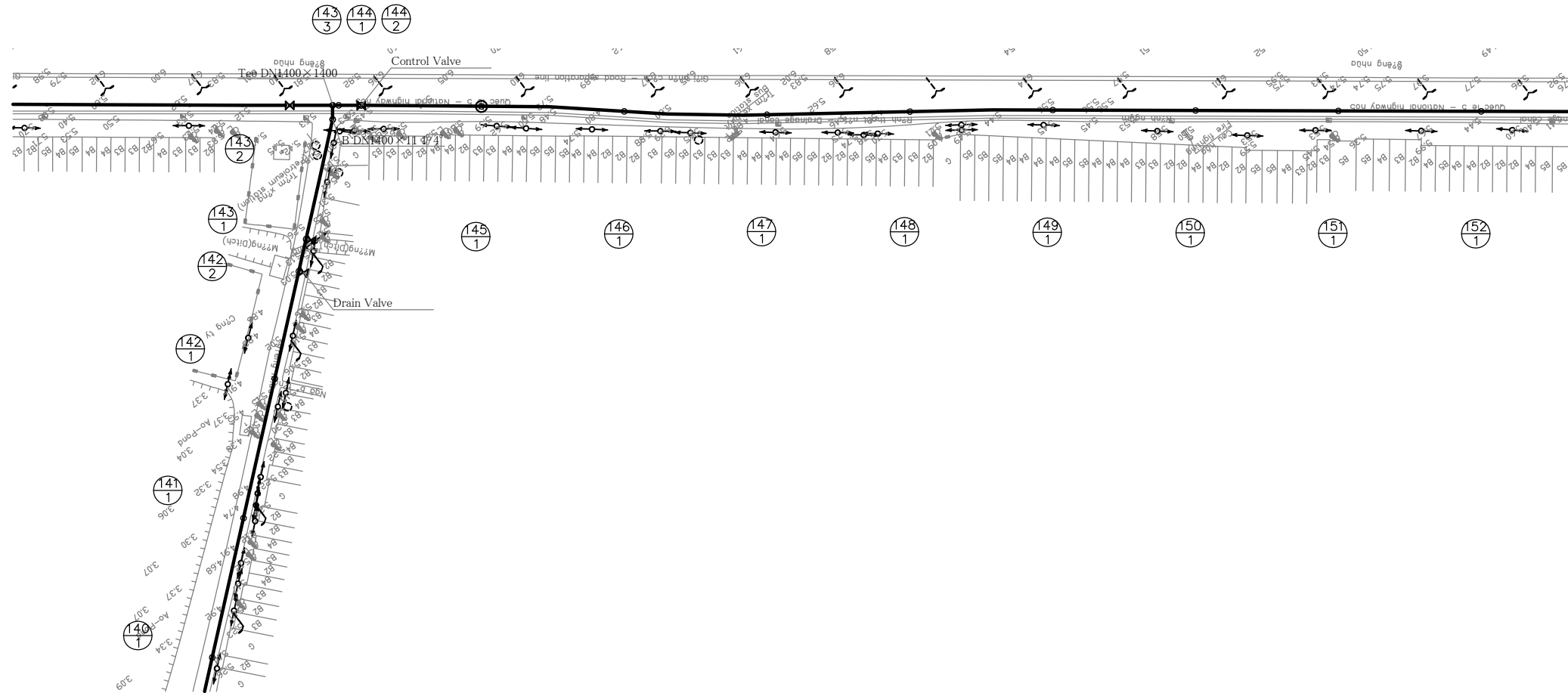
KEY MAP



LEGEND

REMARK	DESCRIPTION
	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
	STATION

PLAN AND PROFILE OF TRANSMISSION PIPELINE



JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

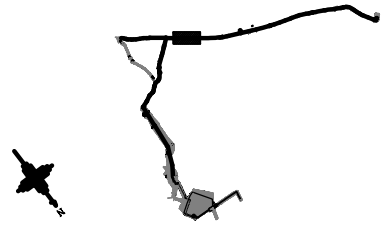
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

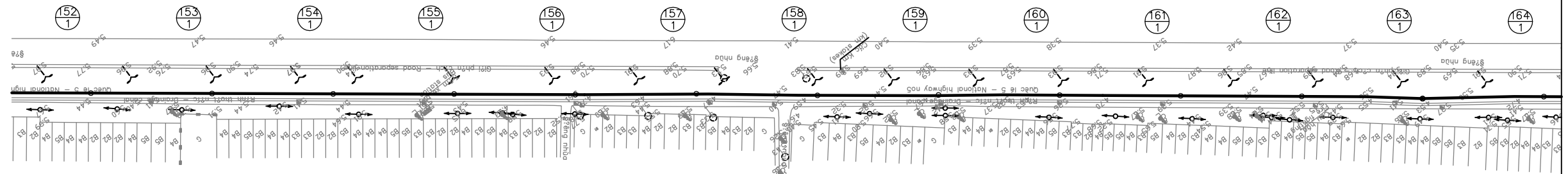
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C-13

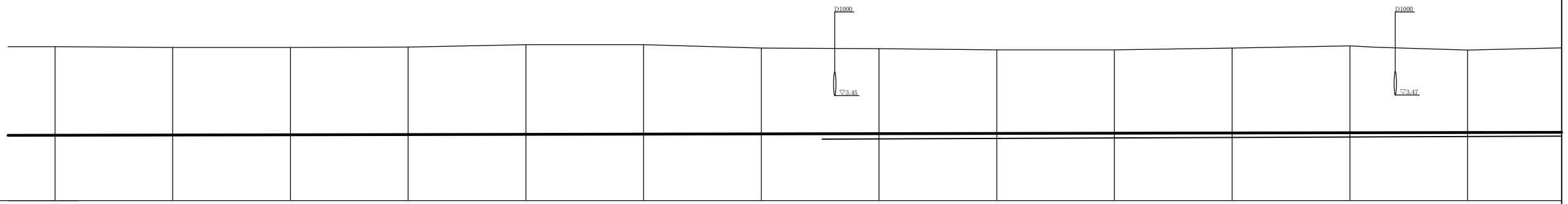
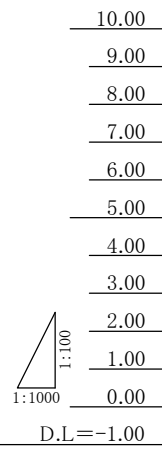
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
	STATION



PIPE GRADIENT (%)	i=0.20												
EXCAVATION DEPTH (m)	3.76	3.71	3.70	3.71	3.80	3.79	3.64	3.60	3.54	3.53	3.60	3.68	3.49
INVERT ELEVATION (m)	1.77	1.78	1.79	1.80	1.81	1.82	1.83	1.84	1.85	1.86	1.87	1.88	1.89
GROUND ELEVATION (m)	5.53	5.49	5.49	5.51	5.61	5.61	5.47	5.44	5.39	5.39	5.47	5.56	5.38
ACCUMULATED DISTANCE (m)	7600.00	7650.00	7700.00	7750.00	7800.00	7850.00	7900.00	7950.00	8000.00	8050.00	8100.00	8150.00	8200.00
ROTATION ANGLE													
STATION	152+00	153+00	154+00	155+00	156+00	157+00	158+00	159+00	160+00	161+00	162+00	163+00	164+00
PIPE DIAMETER	DN 1200 STEEL PIPE												

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date.  
Oct. 2011

Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

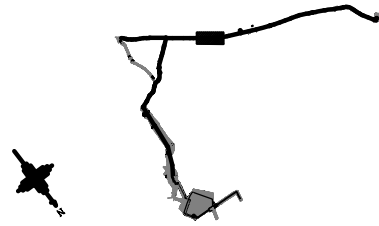
PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

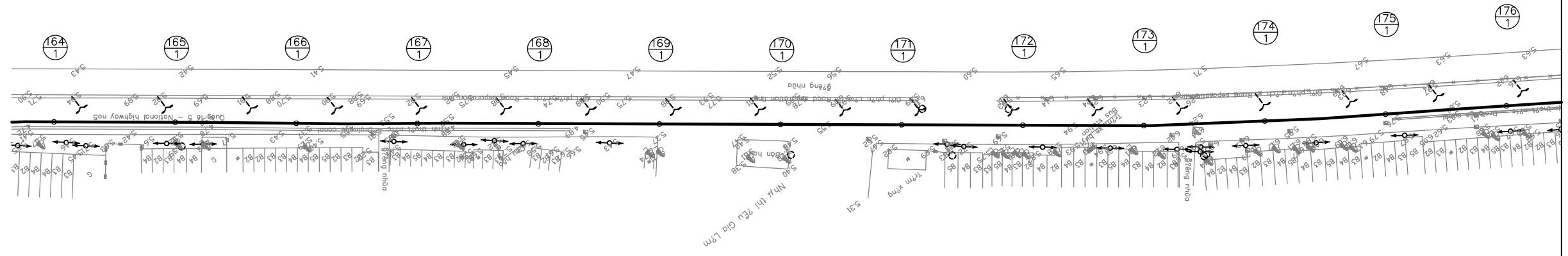
C-14



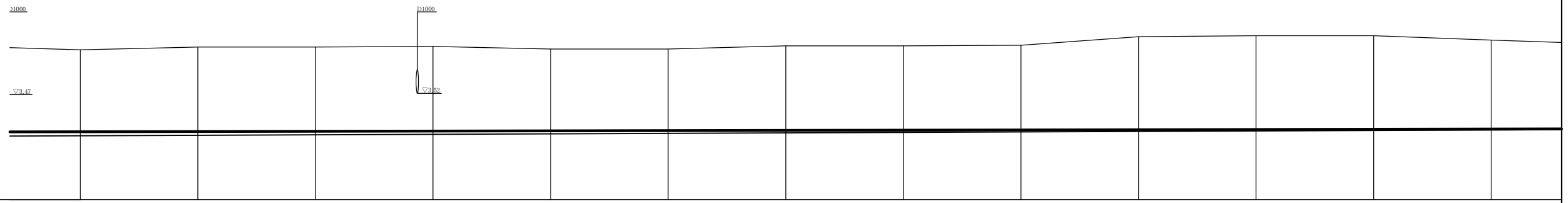
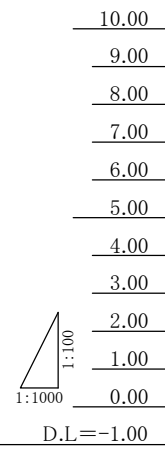
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
	STATION



PIPE GRADIENT (%)	-												
EXCAVATION DEPTH (m)	3.49	3.60	3.59	3.61	3.49	3.48	3.60	3.59	3.61	3.96	3.99	3.98	3.79
INVERT ELEVATION (m)	1.89	1.90	1.91	1.92	1.93	1.94	1.95	1.96	1.97	1.98	1.99	2.00	2.01
GROUND ELEVATION (m)	5.38	5.50	5.50	5.53	5.42	5.42	5.55	5.55	5.58	5.94	5.98	5.98	5.80
ACCUMULATED DISTANCE (m)	8200.00	8250.00	8300.00	8350.00	8400.00	8450.00	8500.00	8550.00	8600.00	8650.00	8700.00	8750.00	8800.00
ROTATION ANGLE	-												
STATION	164+1	165+1	166+1	167+1	168+1	169+1	170+1	171+1	172+1	173+1	174+1	175+1	176+1
PIPE DIAMETER	DN 1200 STEEL PIPE												

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date.  
Oct. 2011

Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

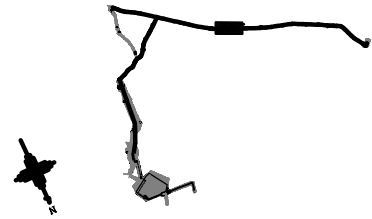
PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

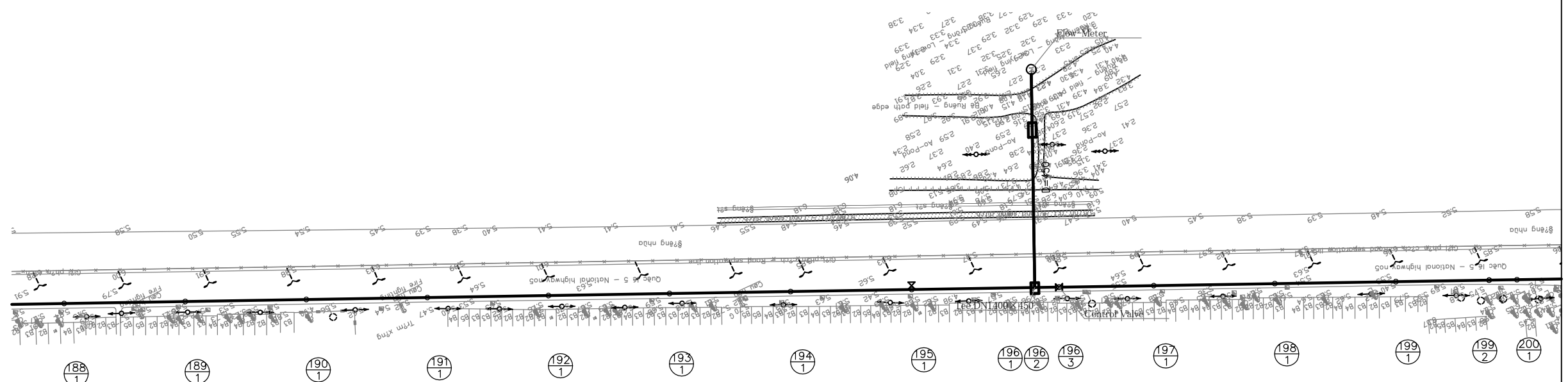
C-15



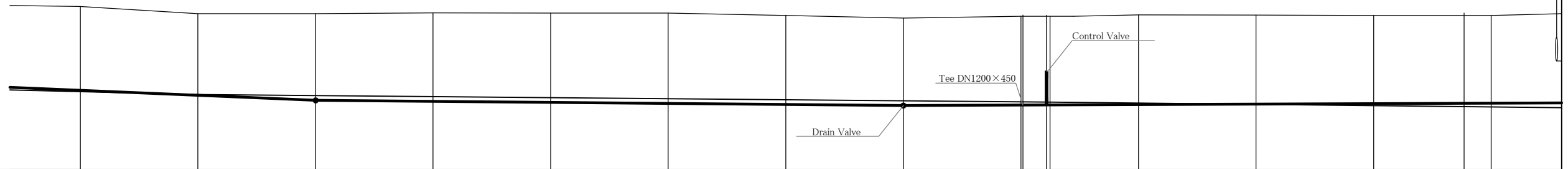
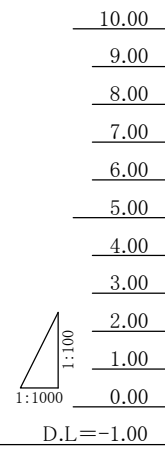
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



PIPE GRADIENT (%)	i=0.88															
EXCAVATION DEPTH (m)	3.56	3.46	3.68	3.76	3.79	3.84	3.78	3.72	3.77	3.76	3.81	3.78	3.74	3.73	3.72	
INVERT ELEVATION (m)	2.35	2.14	1.93	1.88	1.84	1.80	1.75	1.71	1.73	1.73	1.75	1.77	1.79	1.81	1.81	
GROUND ELEVATION (m)	5.91	5.60	5.60	5.64	5.63	5.63	5.53	5.42	5.50	5.49	5.55	5.54	5.53	5.62	5.53	
ACCUMULATED DISTANCE (m)	9400.00	9450.00	9500.00	9550.00	9600.00	9650.00	9700.00	9750.00	9800.00	9800.00	9850.00	9900.00	9950.00	9988.51	10000.00	
ROTATION ANGLE	D T71400X450															
STATION	⊙ 188 1	⊙ 189 1	⊙ 190 1	⊙ 191 1	⊙ 192 1	⊙ 193 1	⊙ 194 1	⊙ 195 1	⊙ 196 1	⊙ 196 2	⊙ 196 3	⊙ 197 1	⊙ 198 1	⊙ 199 1	⊙ 199 2	⊙ 200 1
PIPE DIAMETER	DN 1200 STEEL PIPE															

JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date.  
Oct. 2011

Scale  
V=1/100  
H=1/1000

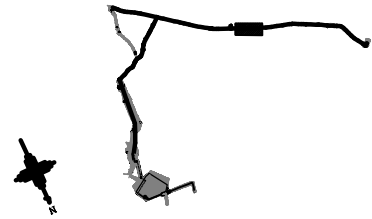
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

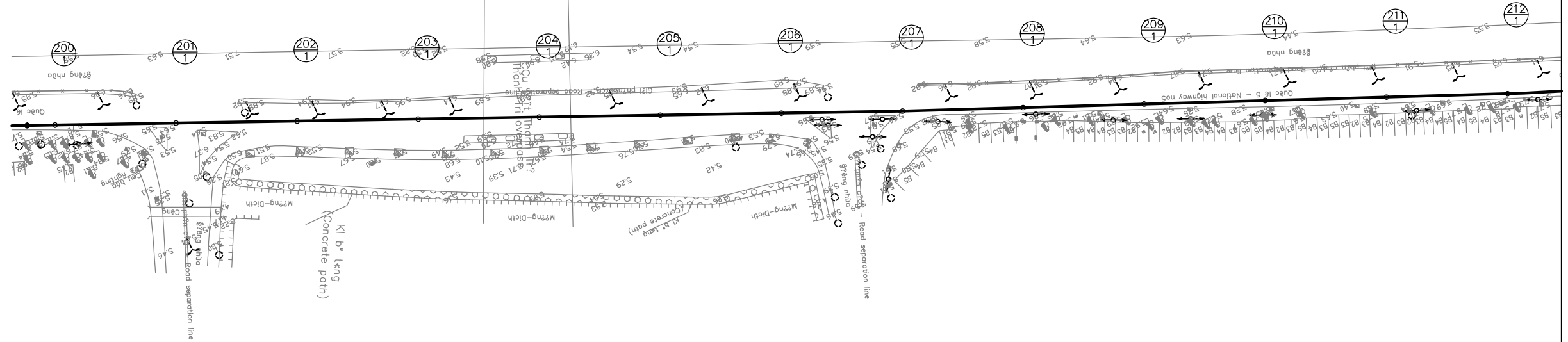
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C-17

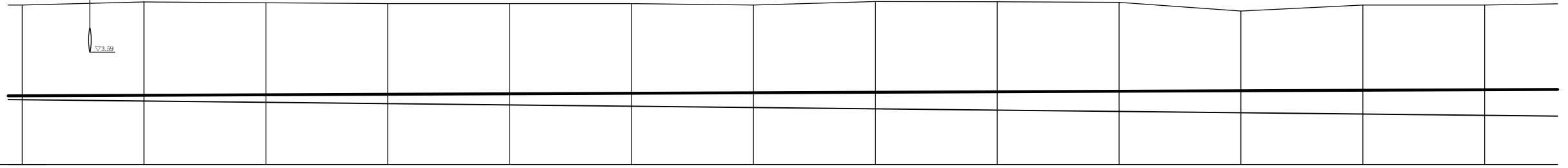
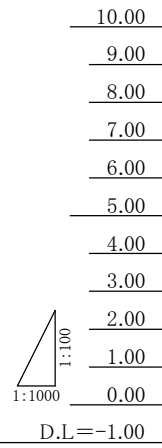
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
	STATION



PIPE GRADIENT (%)	-0.41												
EXCAVATION DEPTH (m)	3.72	3.82	3.77	3.72	3.70	3.68	3.60	3.72	3.69	3.65	3.27	3.50	3.48
INVERT ELEVATION (m)	1.81	1.83	1.85	1.87	1.89	1.91	1.94	1.96	1.98	2.00	2.02	2.04	2.06
GROUND ELEVATION (m)	5.53	5.65	5.62	5.59	5.59	5.59	5.53	5.67	5.66	5.64	5.28	5.53	5.53
ACCUMULATED DISTANCE (m)	10000.00	10050.00	10100.00	10150.00	10200.00	10250.00	10300.00	10350.00	10400.00	10450.00	10500.00	10550.00	10600.00
ROTATION ANGLE													
STATION	200+00	201+00	202+00	203+00	204+00	205+00	206+00	207+00	208+00	209+00	210+00	211+00	212+00
PIPE DIAMETER	DN 1200 STEEL PIPE												

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date.  
Oct. 2011

Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

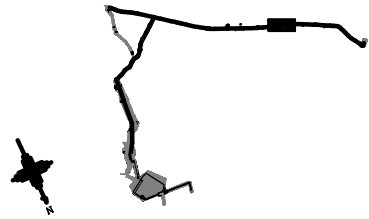
PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

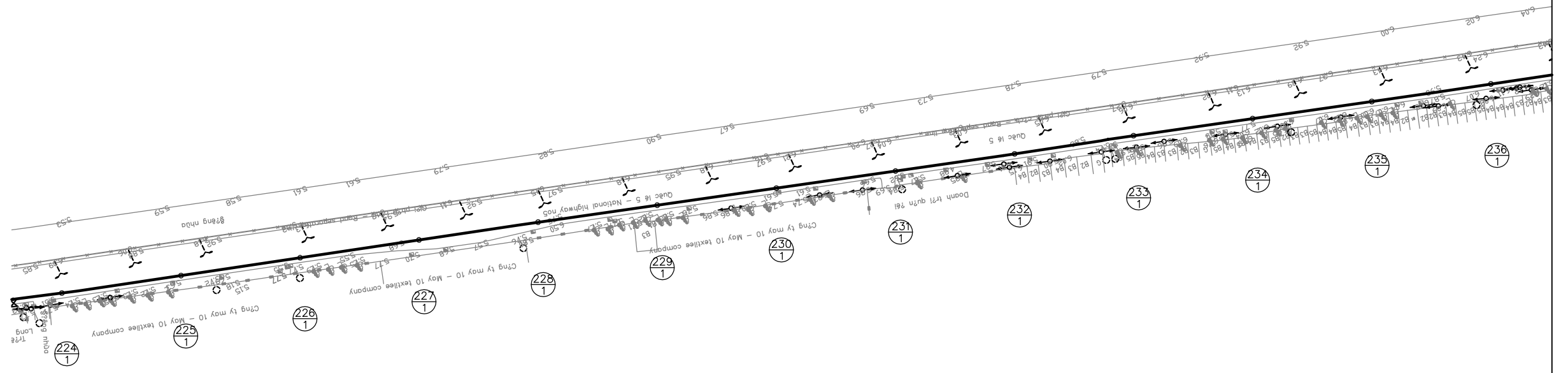
C-18



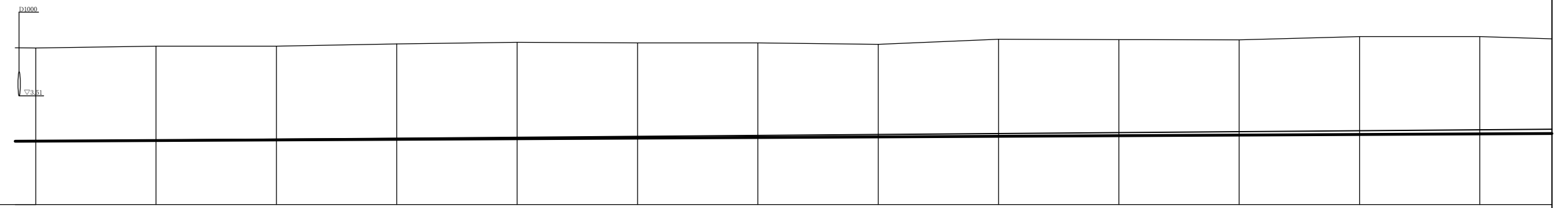
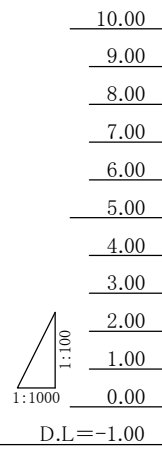
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
②① ⑥	STATION



PIPE GRADIENT (%)	i=0.50												
EXCAVATION DEPTH (m)	3.87	3.93	3.90	3.97	4.01	3.96	3.93	3.85	4.03	4.00	3.96	4.07	4.04
INVERT ELEVATION (m)	1.64	1.67	1.69	1.72	1.74	1.77	1.79	1.82	1.84	1.87	1.89	1.92	1.94
GROUND ELEVATION (m)	5.51	5.59	5.59	5.68	5.75	5.72	5.72	5.66	5.87	5.86	5.85	5.99	5.98
ACCUMULATED DISTANCE (m)	11200.00	11250.00	11300.00	11350.00	11400.00	11450.00	11500.00	11550.00	11600.00	11650.00	11700.00	11750.00	11800.00
ROTATION ANGLE													
STATION	②②④ ①	②②⑤ ①	②②⑥ ①	②②⑦ ①	②②⑧ ①	②②⑨ ①	②③① ①	②③② ①	②③③ ①	②③④ ①	②③⑤ ①	②③⑥ ①	②③⑥ ①
PIPE DIAMETER	DN 1200 STEEL PIPE												

JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date.  
Oct. 2011

Scale  
V=1/100  
H=1/1000

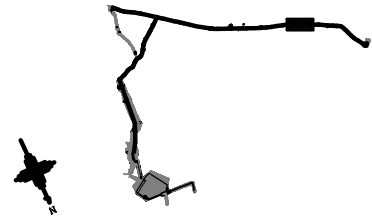
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

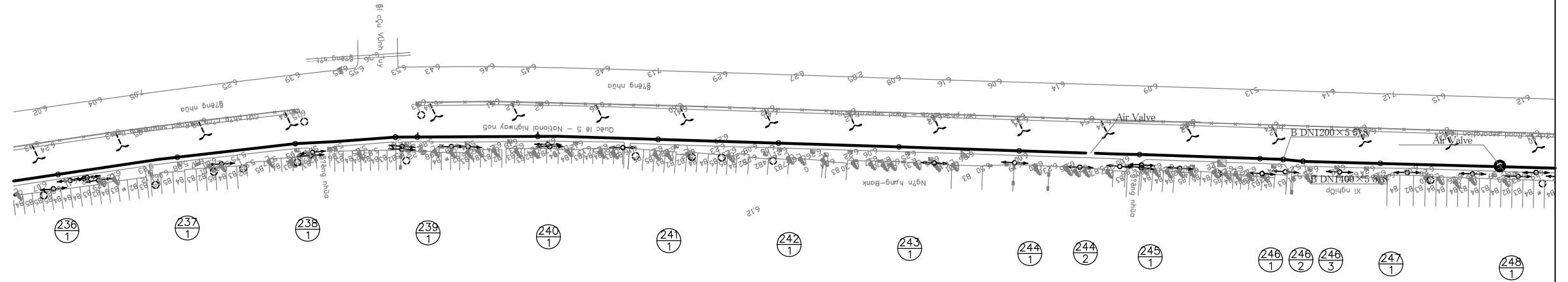
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C-20

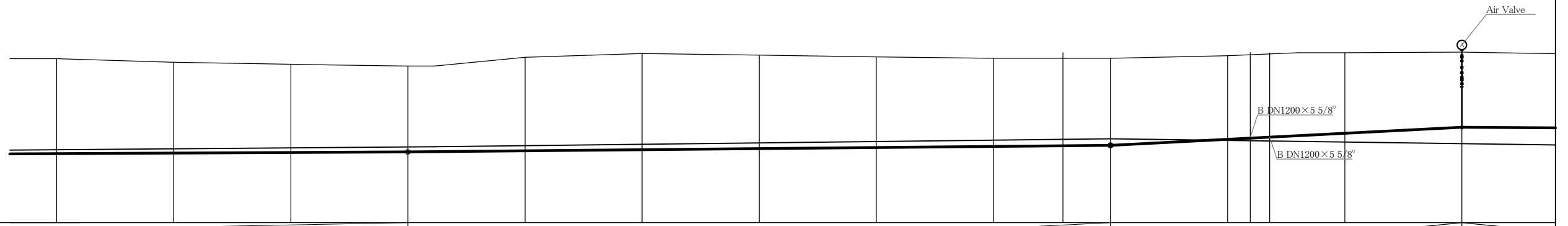
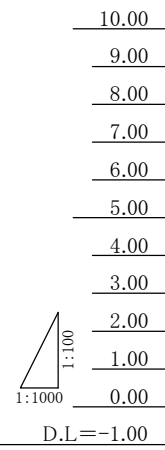
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
②③⑥ / 6	STATION



PIPE GRADIENT (%)	i=0.93													i=5.06			
EXCAVATION DEPTH (m)	4.04	3.87	3.76	3.66	3.98	4.09	3.99	3.96	3.76	3.73	3.71	3.56	3.56	3.55	3.44	3.20	
INVERT ELEVATION (m)	1.94	1.97	1.99	2.02	2.06	2.11	2.16	2.20	2.25	2.28	2.30	2.55	2.60	2.64	2.81	3.06	
GROUND ELEVATION (m)	5.98	5.83	5.75	5.67	6.04	6.20	6.14	6.06	6.00	6.24	6.00	6.11	6.26	6.26	6.24	6.26	
ACCUMULATED DISTANCE (m)	11800.00	11850.00	11900.00	11950.00	12000.00	12050.00	12100.00	12150.00	12200.00	12228.64	12250.00	12300.00	12309.69	12317.93	12350.00	12400.00	
ROTATION ANGLE														5 5/8' 5 5/8'			A
STATION	②③⑥ / 1	②③⑦ / 1	②③⑧ / 1	②③⑨ / 1	②④① / 1	②④① / 1	②④② / 1	②④③ / 1	②④④ / 1	②④④ / 2	②④⑤ / 1	②④⑥ / 1	②④⑥ / 2	②④⑥ / 3	②④⑦ / 1	②④⑧ / 1	
PIPE DIAMETER	DN 1200 STEEL PIPE																

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

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Scale  
V=1/100  
H=1/1000

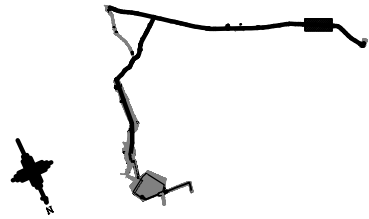
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

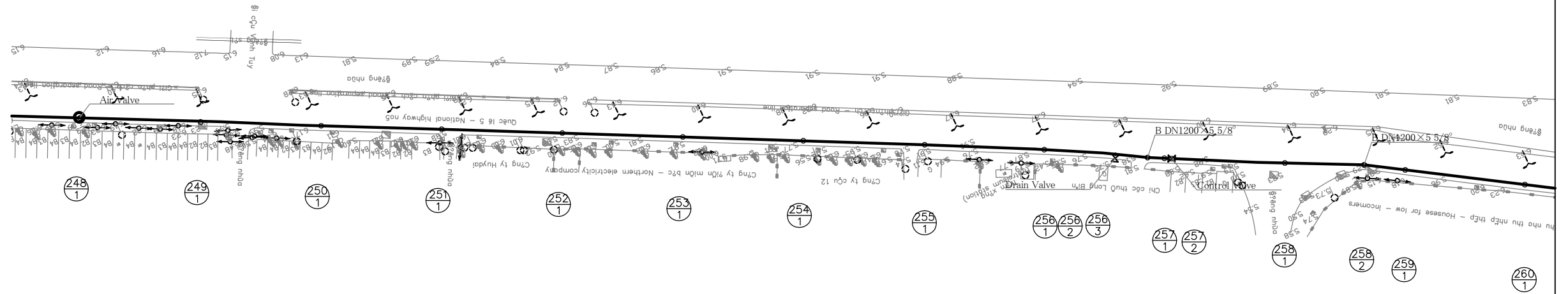
Drawing No

C-21

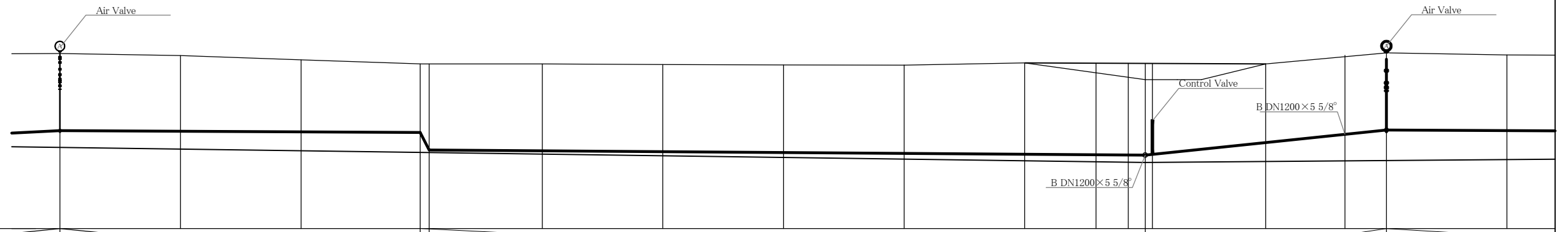
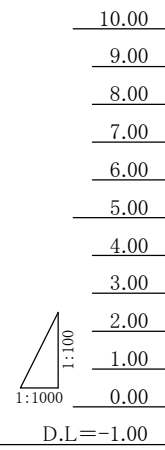
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
20/6	STATION



PIPE GRADIENT (%)	i=0.50		i=0.70										i=10.40					
EXCAVATION DEPTH (m)	3.20	3.15	2.99	2.85	3.57	3.61	3.62	3.64	3.66	3.79	3.80	3.80	3.90	3.26	3.22	3.20	3.14	
INVERT ELEVATION (m)	3.06	3.04	3.01	2.99	2.26	2.23	2.19	2.16	2.12	2.09	2.07	2.06	2.05	2.57	2.91	3.09	3.07	
GROUND ELEVATION (m)	6.26	6.18	6.00	5.83	5.83	5.83	5.81	5.79	5.76	5.87	5.29	5.29	5.18	5.83	6.18	5.29	6.20	
ACCUMULATED DISTANCE (m)	12400.00	12450.00	12500.00	12550.00	12553.67	12600.00	12650.00	12700.00	12750.00	12800.00	12829.84	12842.99	12850.00	12852.99	12900.00	12932.85	12950.00	13000.00
ROTATION ANGLE	A			11 1/4'			5 5/8' D V										A	
STATION	248/1	249/1	250/1	251/1	252/1	253/1	254/1	255/1	256/1	256/2	256/3	257/1	257/2	258/1	258/2	259/1	260/1	
PIPE DIAMETER	DN 1200 STEEL PIPE																	

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

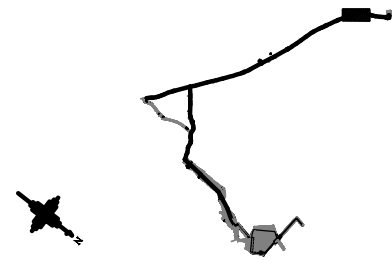
PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

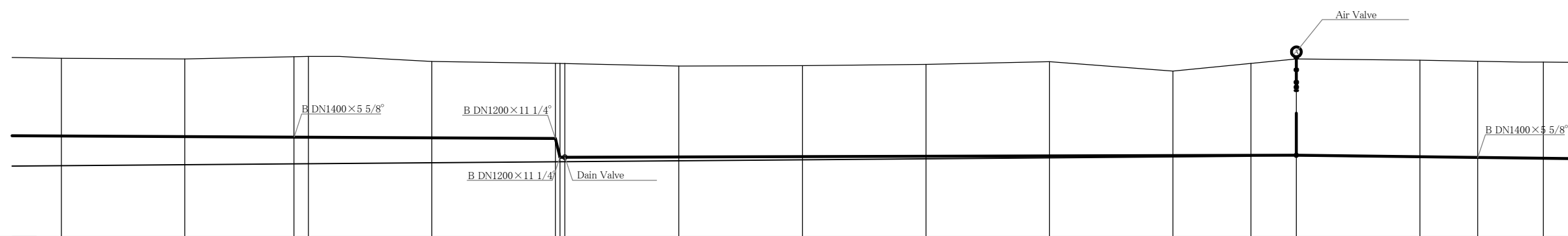
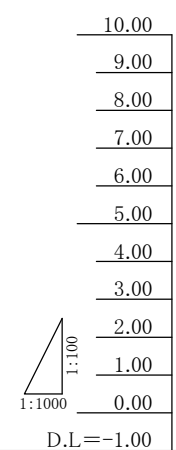
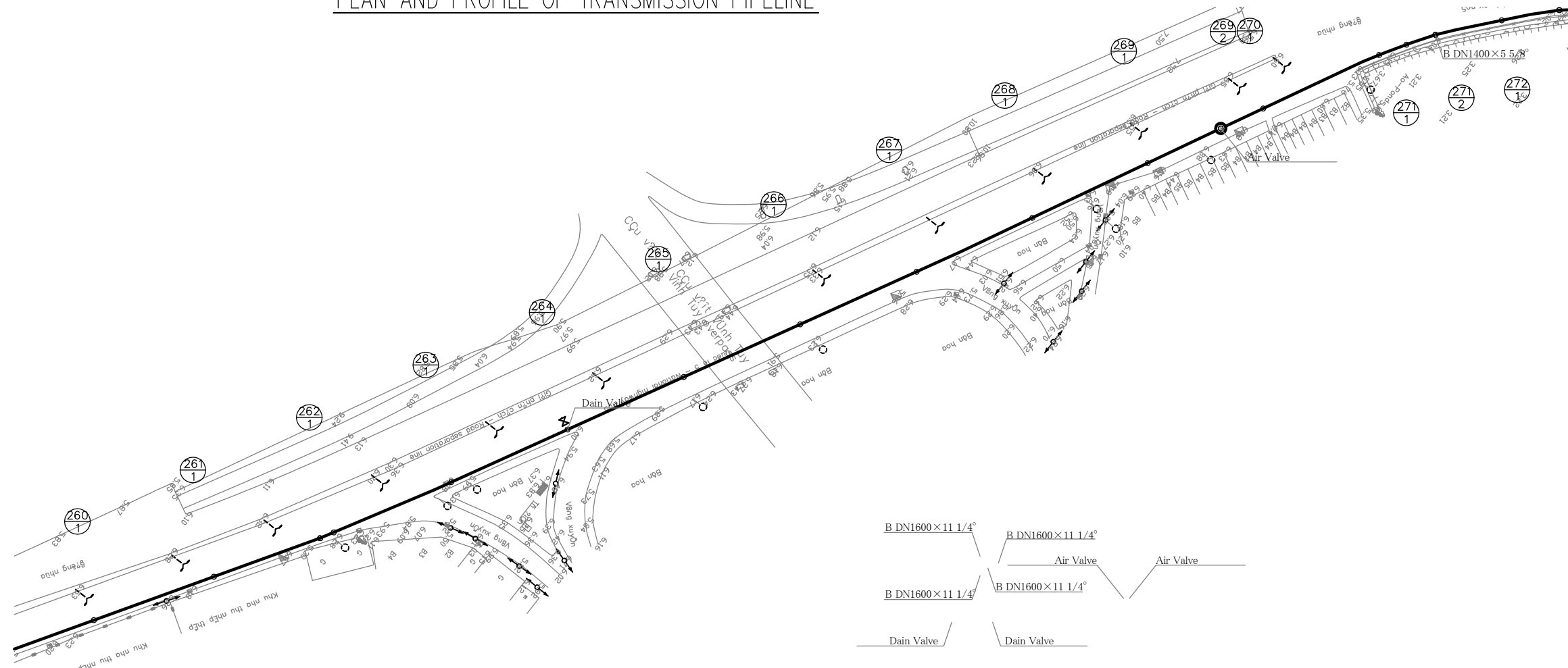
C-22



KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



PIPE GRADIENT (%)			i=0.50		i=0.27											
EXCAVATION DEPTH (m)	3.14	3.14	3.25	3.27	3.09	3.86	3.68	3.72	3.81	3.42	3.72	3.90	3.91	3.89	3.89	
INVERT ELEVATION (m)	3.07	3.04	3.02	3.02	2.99	2.97	2.22	2.23	2.25	2.26	2.27	2.28	2.29	2.21	2.15	
GROUND ELEVATION (m)	6.20	6.18	6.00	6.28	6.08	6.01	5.89	5.91	5.96	6.07	5.89	6.05	6.18	6.13	6.05	
ACCUMULATED DISTANCE (m)	13000.00	13060.00	13094.19	13100.00	13150.00	13200.00	13250.00	13300.00	13350.00	13400.00	13450.00	13461.64	13500.00	13550.00	13573.37	
ROTATION ANGLE			5 5/8°		11 1/4° D											
STATION	260/1	261/1	262/2	262/1	263/1	264/1	265/1	266/1	267/1	268/1	269/1	269/2	270/1	271/1	271/2	272/1
PIPE DIAMETER	DN 1200 STEEL PIPE															

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

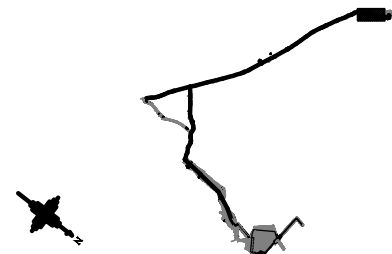
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

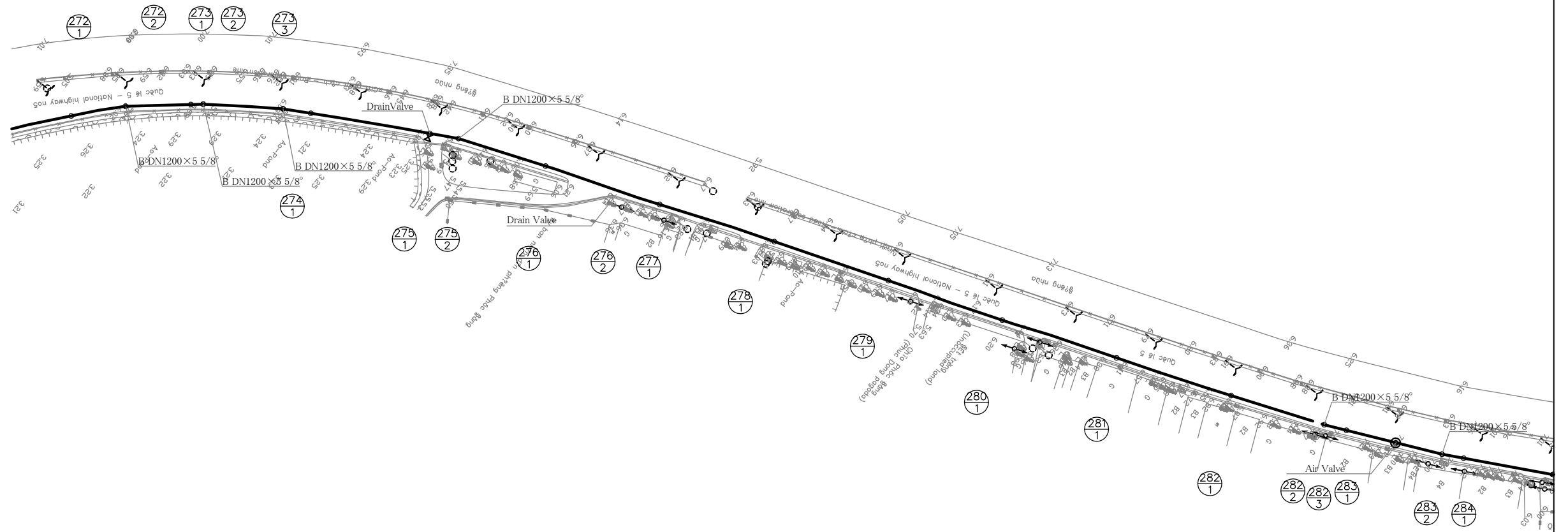
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C-23

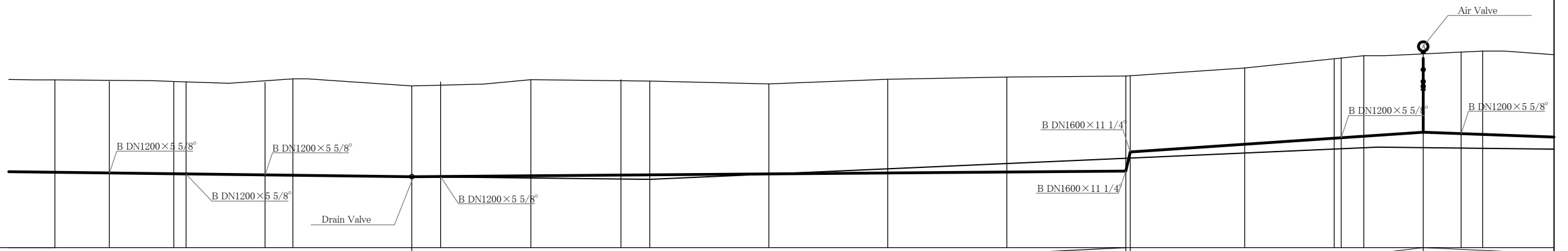
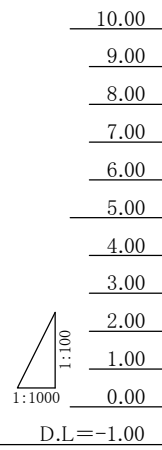
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
20/6	STATION



PIPE GRADIENT (%)	i=1.24										i=0.80			i=6.24									
EXCAVATION DEPTH (m)	3.89	3.90	3.89	3.87	3.89	4.05	3.82	3.84	4.04	3.97	3.94	3.78	3.94	3.99	4.98	3.21	3.34	3.85	3.39	3.29	3.43	3.50	
INVERT ELEVATION (m)	2.15	2.14	2.10	2.09	2.05	2.05	1.98	1.99	2.02	2.05	2.06	2.10	2.14	2.18	3.22	3.35	3.56	3.12	3.69	3.85	3.90	3.76	
GROUND ELEVATION (m)	6.05	5.80	5.98	5.80	5.87	6.09	5.80	6.00	6.06	6.00	6.00	5.88	6.08	6.17	8.21	6.55	6.97	6.97	7.07	7.14	6.54	7.26	
ACCUMULATED DISTANCE (m)	13600.00	13622.88	13650.00	13655.12	13688.33	13700.00	13750.00	13762.12	13800.00	13837.88	13850.00	13900.00	13950.00	14000.00	14050.00	14100.00	14137.57	14140.57	14150.00	14175.00	14190.90	14200.00	
ROTATION ANGLE	5 5/8'		5 5/8'		5 5/8'		D 5 5/8'					5 5/8'					A 5 5/8'						
STATION	272/1	272/2	273/1	273/2	273/3	274/1	275/1	275/2	276/1	276/2	277/1	278/1	279/1	280/1	281/1	282/1	282/2	282/3	283/1	283/2	284/1	284/2	
PIPE DIAMETER	DN 1200 STEEL PIPE																						

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

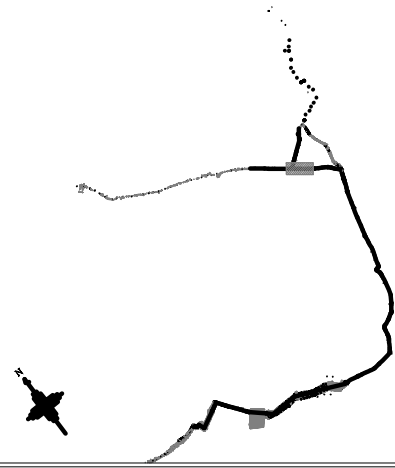
PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

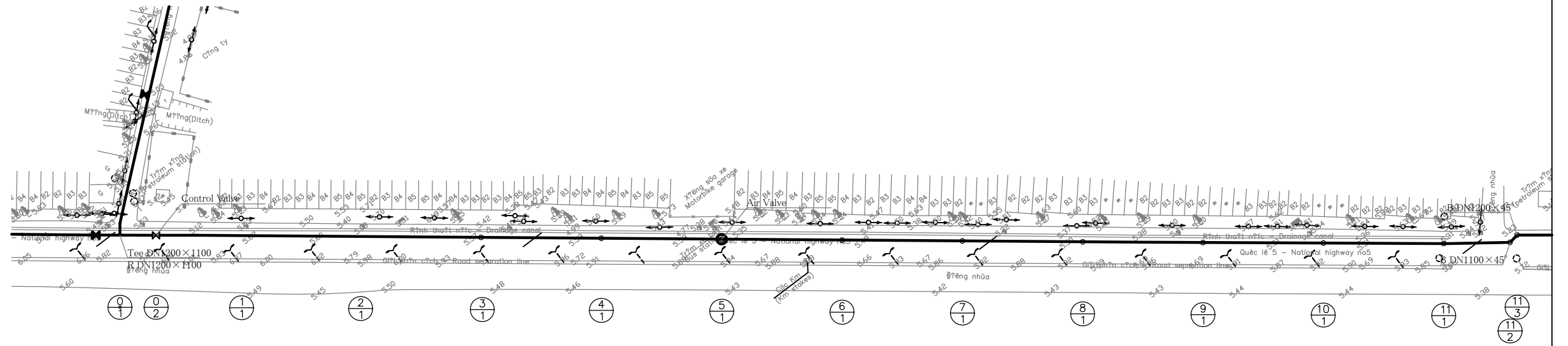
C-24



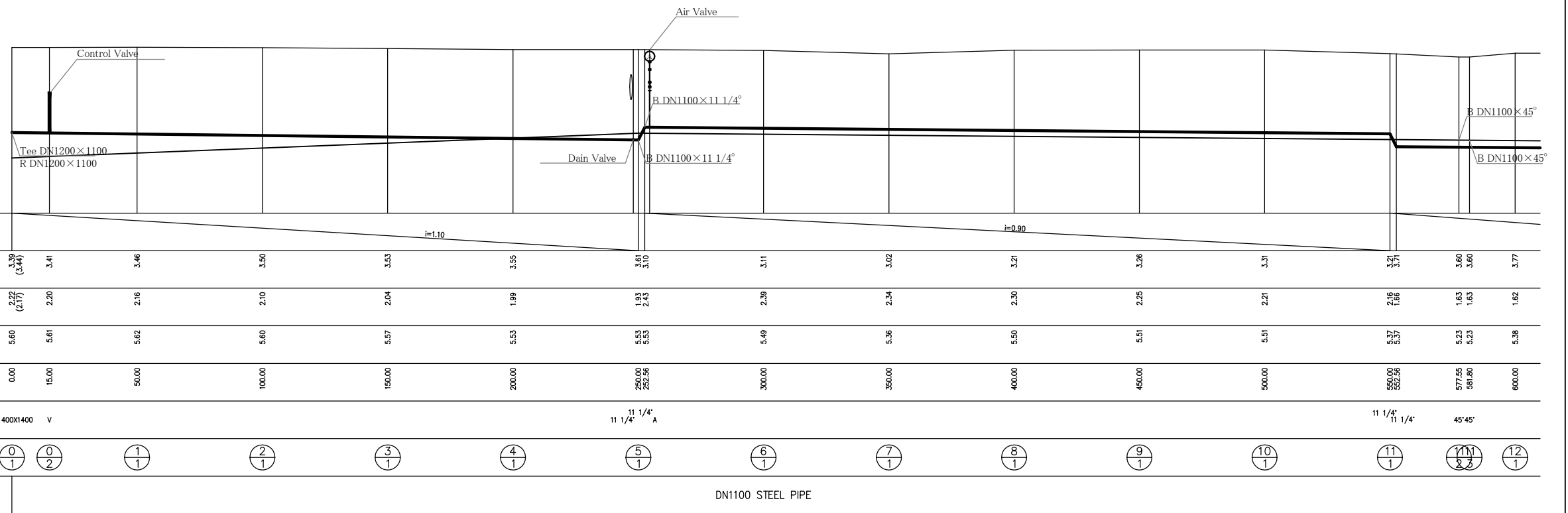
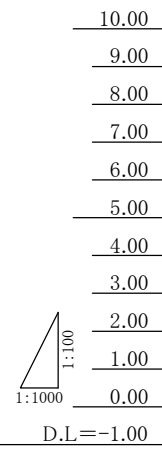
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
②① ⑥	STATION



JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date.  
Oct. 2011

Scale  
V=1/100  
H=1/1000

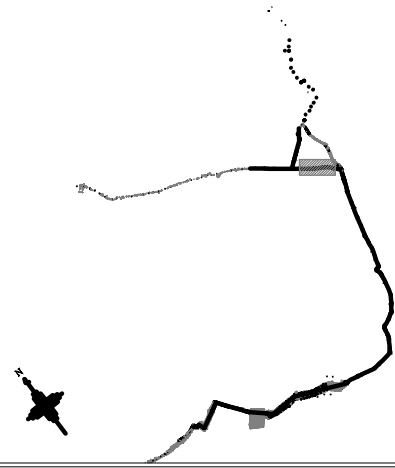
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

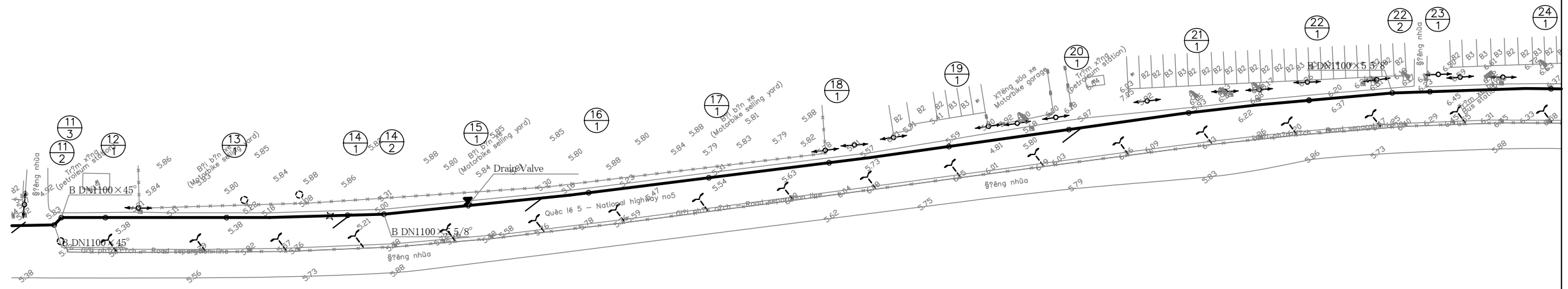
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D-1

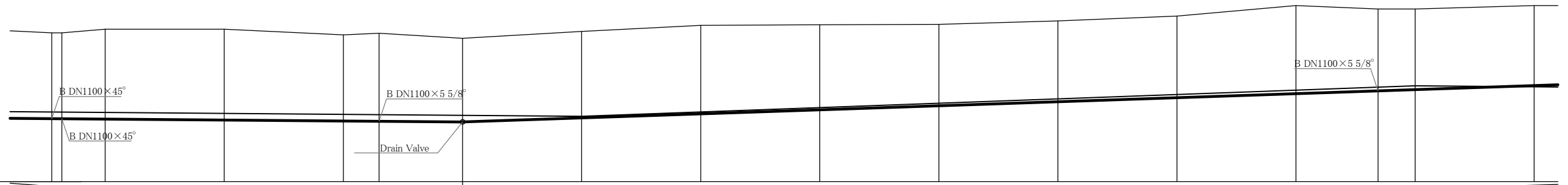
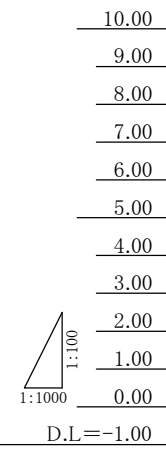
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
	STATION



PIPE GRADIENT (%)	i=0.80														i=3.38					
EXCAVATION DEPTH (m)	3.60	3.60	3.77	3.81	3.61	3.69	3.50	3.62	3.70	3.56	3.42	3.39	3.42	3.69	3.43	3.33	3.35			
INVERT ELEVATION (m)	1.63	1.63	1.62	1.58	1.54	1.53	1.50	1.67	1.84	2.01	2.18	2.35	2.52	2.68	2.80	2.85	3.02			
GROUND ELEVATION (m)	5.23	5.23	5.38	5.38	5.15	5.21	5.00	5.29	5.54	5.57	5.59	5.73	5.93	6.37	6.23	6.23	6.37			
ACCUMULATED DISTANCE (m)	577.55	581.80	600.00	650.00	700.00	715.00	750.00	800.00	850.00	900.00	950.00	1000.00	1050.00	1100.00	1134.45	1150.00	1200.00			
ROTATION ANGLE	45°45'			5 5/8"				0										5 5/8"		
STATION	11+3	12+1	13+1	14+1	14+2	15+1	16+1	17+1	18+1	19+1	20+1	21+1	22+1	22+2	23+1	24+1				
PIPE DIAMETER	DN1100 STEEL PIPE																			

JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

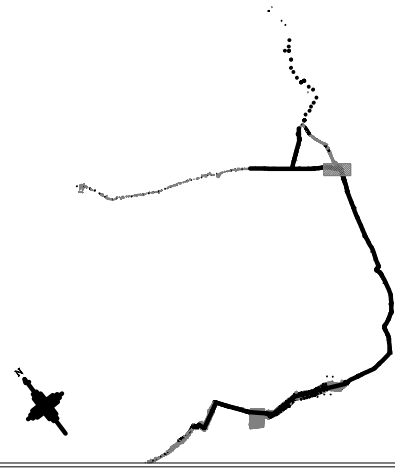
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

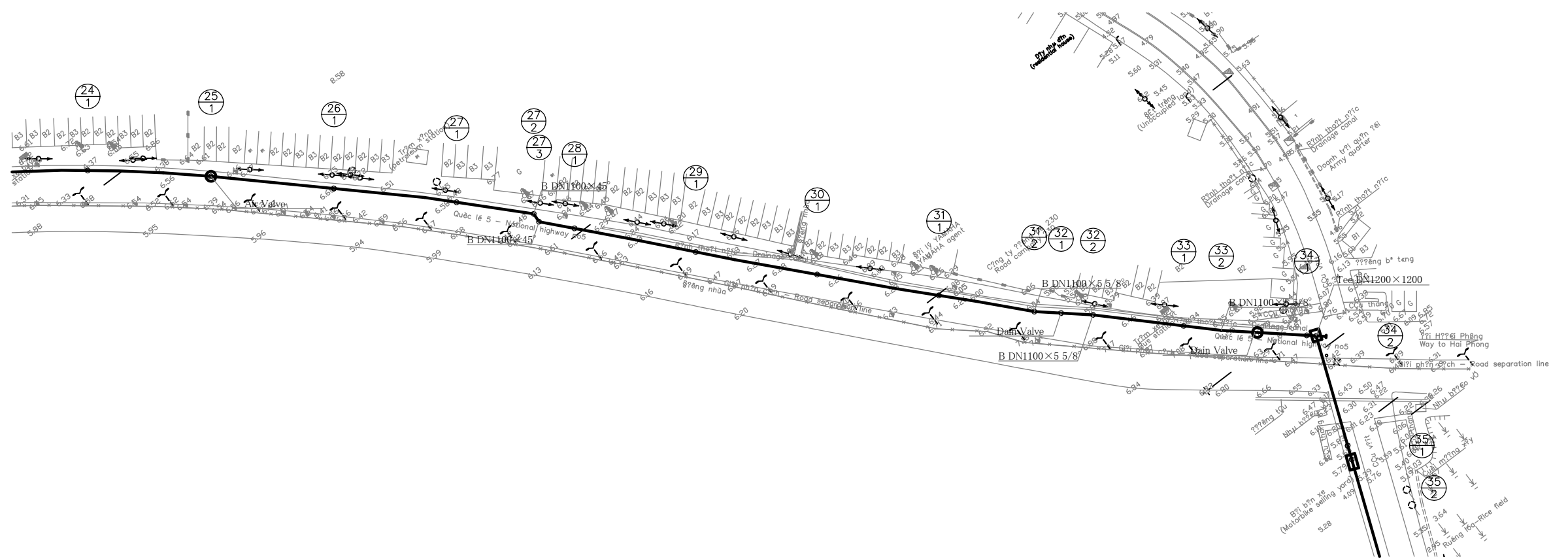
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D-2

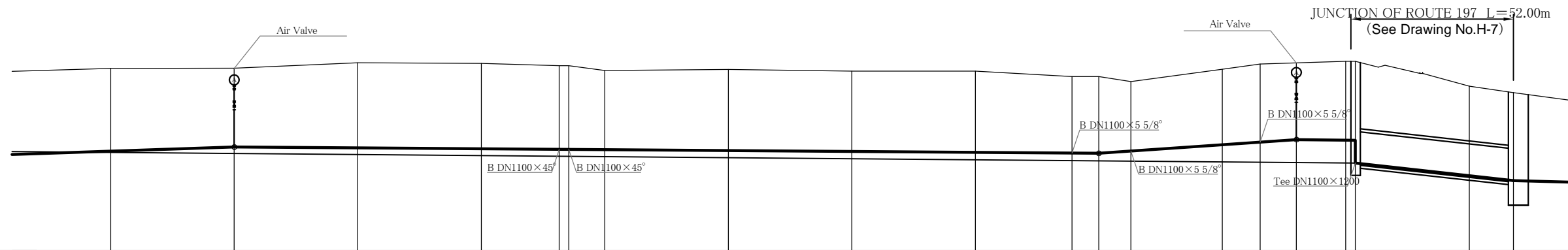
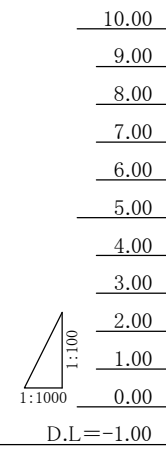
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 6	STATION



PIPE GRADIENT (%)																						
EXCAVATION DEPTH (m)	3.35	3.20	3.45	3.47	3.39	3.39	3.21	3.29	3.26	3.29	3.10	3.11	2.82	3.06	3.17	3.11	3.20	4.13	3.55	3.56		
INVERT ELEVATION (m)	3.02	3.19	3.15	3.12	3.09	3.09	3.08	3.04	3.01	2.97	2.94	2.94	3.08	3.28	3.39	3.49	3.47	2.54	2.10	1.83		
GROUND ELEVATION (m)	6.37	6.38	6.60	6.59	6.48	6.48	6.29	6.33	6.26	6.26	6.04	6.04	5.84	6.34	6.55	6.60	6.66	6.66	5.65	5.39		
ACCUMULATED DISTANCE (m)	1200.00	1250.00	1300.00	1350.00	1381.55	1385.40	1400.00	1450.00	1500.00	1550.00	1589.15	1600.00	1613.00	1650.00	1665.30	1680.00	1700.00	1703.85	1750.00	1767.85		
ROTATION ANGLE	A				45°45'						5 5/8" D 5 5/8"		5 5/8" A		T71200X1200							
STATION	⊙ 24 1	⊙ 25 1	⊙ 26 1	⊙ 27 1	⊙ 27 2	⊙ 28 1	⊙ 29 1	⊙ 30 1	⊙ 31 1	⊙ 31 2	⊙ 32 1	⊙ 32 2	⊙ 33 1	⊙ 33 2	⊙ 34 1	⊙ 34 2	⊙ 35 1	⊙ 35 2				
PIPE DIAMETER	DN1100 STEEL PIPE																					

JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

D-3



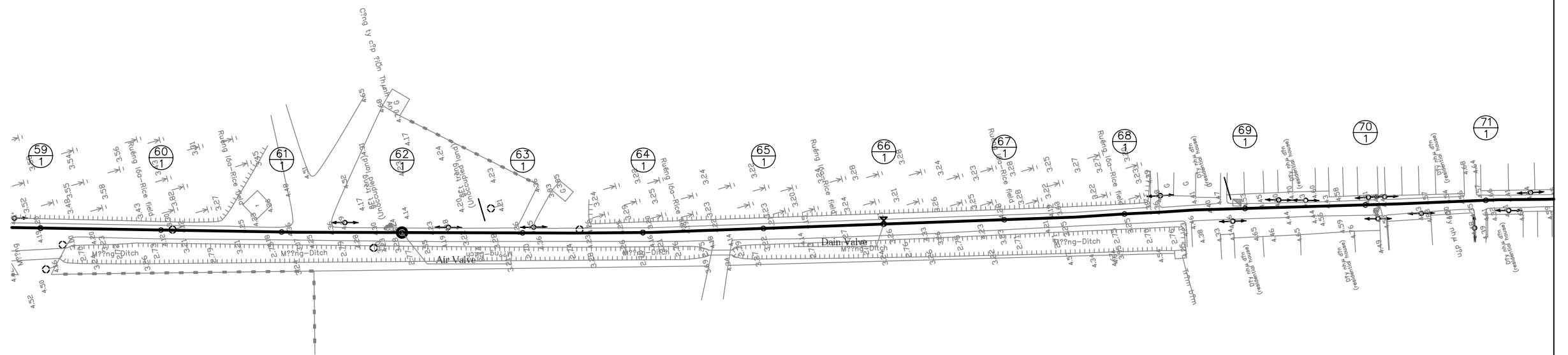




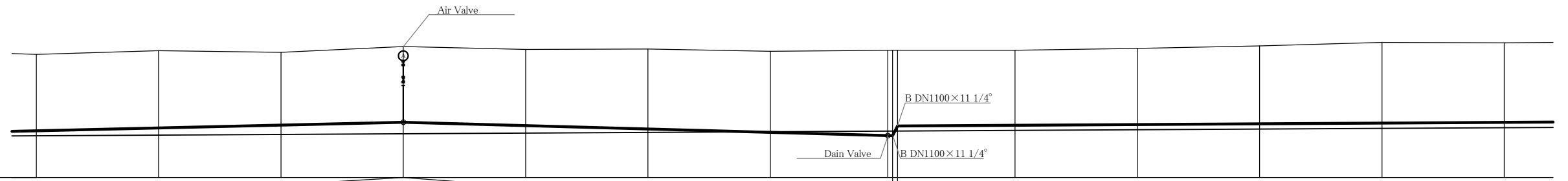
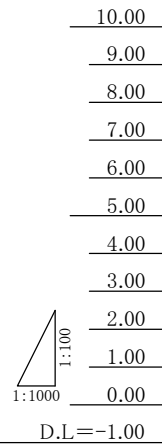
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊕ 6	STATION



PIPE GRADIENT (%)	i=23.2											i=27.5	
EXCAVATION DEPTH (m)	3.13	3.16	2.98	3.10	3.12	3.28	3.31	3.50	3.07	3.11	3.19	3.31	3.26
INVERT ELEVATION (m)	0.91	1.03	1.15	1.26	1.13	0.99	0.85	0.71	1.14	1.17	1.20	1.23	1.26
GROUND ELEVATION (m)	4.04	4.19	4.12	4.36	4.24	4.26	4.16	4.21	4.21	4.28	4.38	4.53	4.51
ACCUMULATED DISTANCE (m)	2950.00	3000.00	3050.00	3100.00	3150.00	3200.00	3250.00	3300.00	3350.00	3400.00	3450.00	3500.00	3550.00
ROTATION ANGLE	A							11 1/4°		A			
STATION	⊕ 59 1	⊕ 60 1	⊕ 61 1	⊕ 62 1	⊕ 63 1	⊕ 64 1	⊕ 65 1	⊕ 66 1	⊕ 67 1	⊕ 68 1	⊕ 69 1	⊕ 70 1	⊕ 71 1
PIPE DIAMETER	DN1100 STEEL PIPE												

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

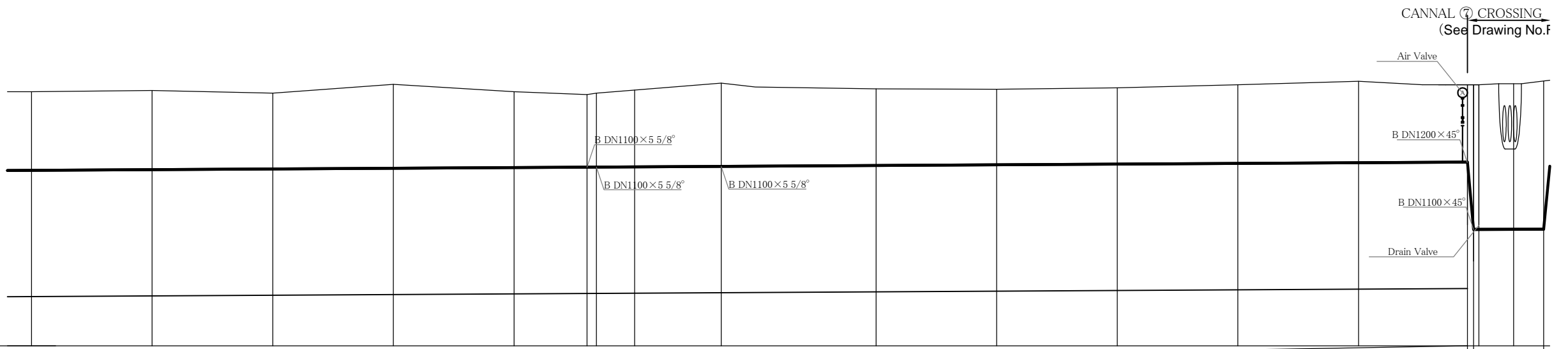
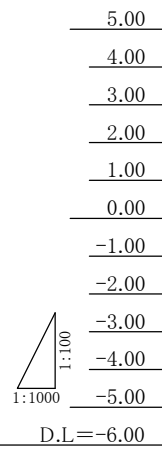
D-6

KEY MAP

PLAN AND PROFILE OF TRANSMISSION PIPELINE

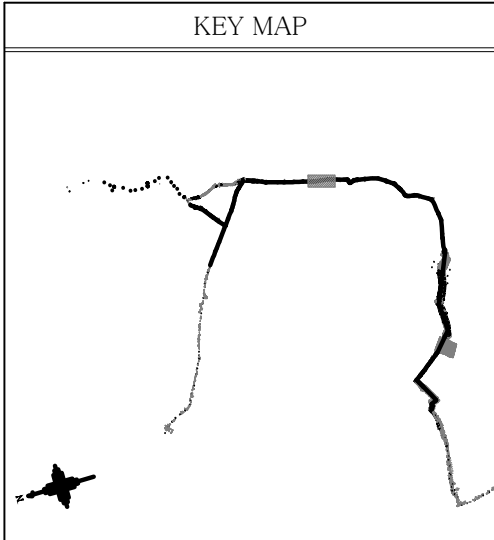


LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION

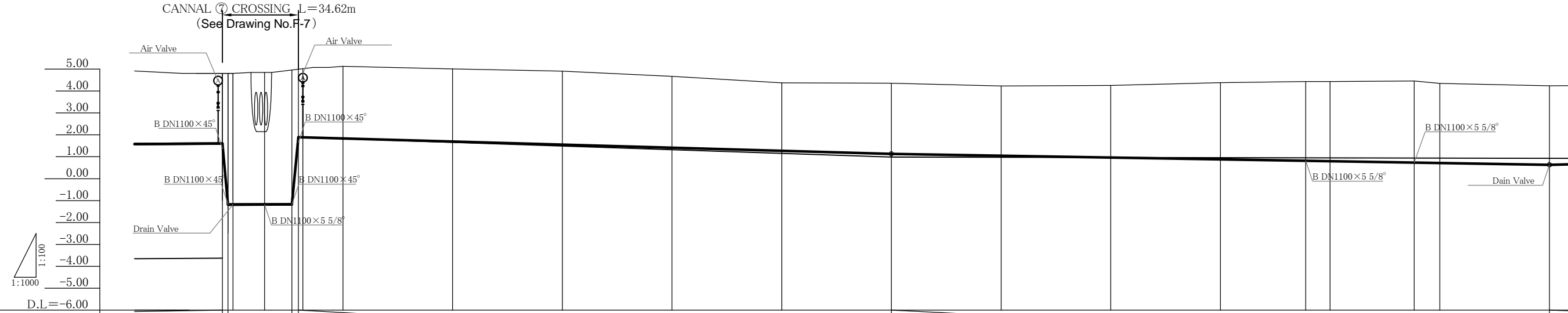
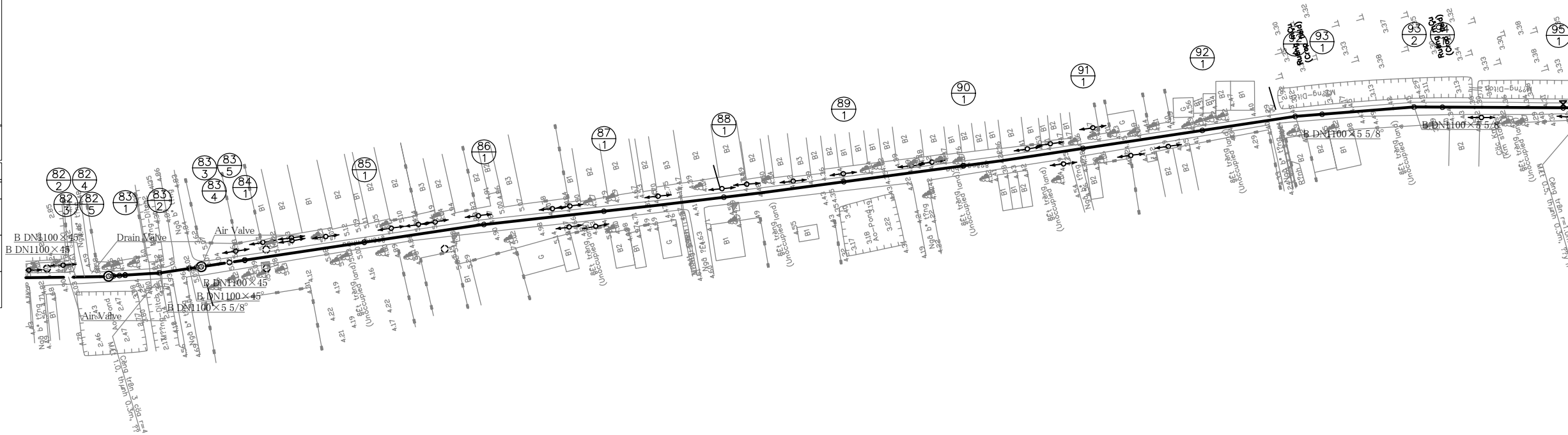


PIPE GRADIENT (%)	i=0.58																			
EXCAVATION DEPTH (m)	3.28	3.28	3.14	3.48	3.14	3.00	3.06	3.18	3.45	3.28	3.17	3.13	3.16	3.26	3.37	3.20	6.99	7.02	7.25	
INVERT ELEVATION (m)	1.26	1.29	1.32	1.34	1.37	1.39	1.39	1.40	1.42	1.43	1.46	1.49	1.52	1.55	1.58	1.60	-1.19	-2.18	-1.18	
GROUND ELEVATION (m)	4.51	4.56	4.45	4.82	4.51	4.39	4.45	4.58	4.87	4.71	4.63	4.61	4.67	4.80	4.94	4.80	4.80	4.84	5.02	
ACCUMULATED DISTANCE (m)	3550.00	3600.00	3650.00	3700.00	3750.00	3782.20	3784.10	3800.00	3835.90	3850.00	3900.00	3950.00	4000.00	4050.00	4100.00	4145.12	4147.67	4150.00	4164.30	4186.50
ROTATION ANGLE	5 5/8' 5 5/8' A 45' 45' 5 5/8' 45'																			
STATION	71+00	72+00	73+00	74+00	75+00	75+20	75+40	76+00	76+30	77+00	78+00	79+00	80+00	81+00	82+00	82+20	82+40	83+00	83+20	83+30

# PLAN AND PROFILE OF TRANSMISSION PIPELINE



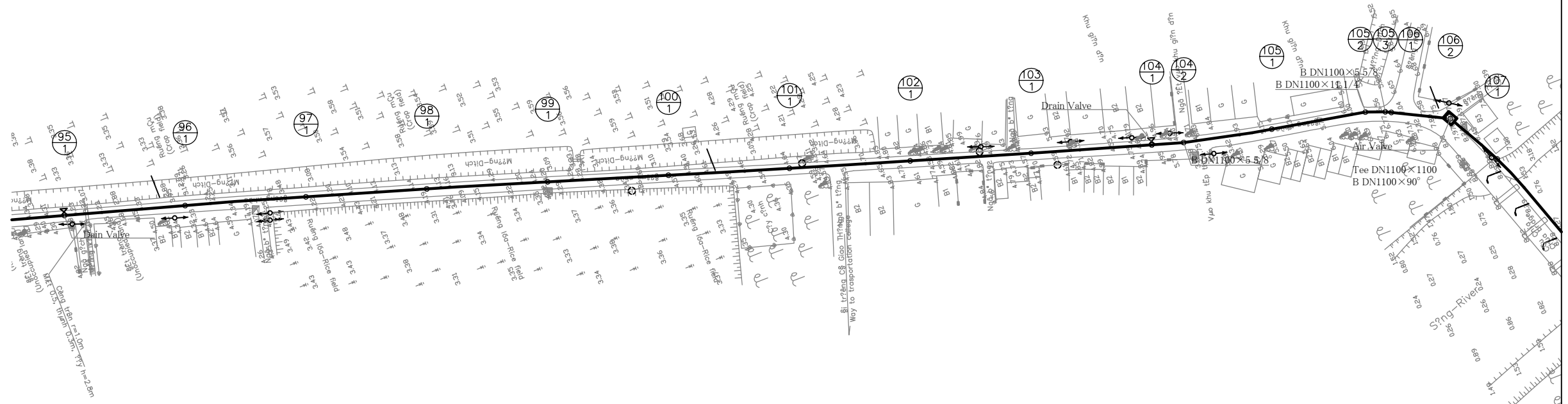
LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



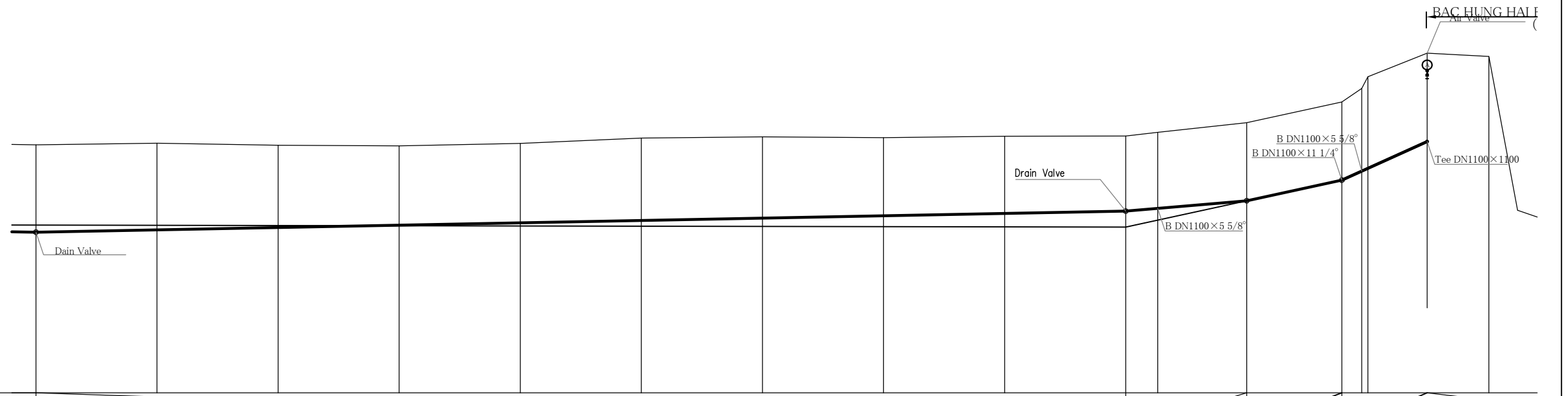
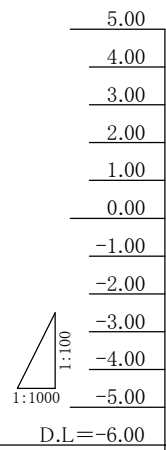
PIPE GRADIENT (%)	i=2.94										i=1.67											
EXCAVATION DEPTH (m)	3.20	6.89	7.02	7.25	3.70	3.29	3.31	3.35	3.25	3.10	3.22	3.18	3.29	3.50	3.62	3.64	3.72	3.63	3.60			
INVERT ELEVATION (m)	1.60	-1.19	-2.18	-1.18	1.88	1.83	1.69	1.55	1.41	1.27	1.13	1.05	0.97	0.88	0.82	0.80	0.74	0.72	0.63			
GROUND ELEVATION (m)	4.80	4.80	4.84	5.02	5.02	5.12	5.00	4.90	4.66	4.37	4.35	4.22	4.25	4.38	4.43	4.43	4.45	4.34	4.23			
ACCUMULATED DISTANCE (m)	4145.12	4147.67	4150.00	4164.30	4186.50	4192.33	4200.00	4250.00	4300.00	4350.00	4400.00	4450.00	4500.00	4550.00	4600.00	4650.00	4688.30	4700.00	4750.00			
ROTATION ANGLE	A 45°45' D 5 5/8' 45°45' A										5 5/8'											
STATION	82+2	82+3	82+4	83+1	83+2	83+3	83+4	83+5	84+1	85+1	86+1	87+1	88+1	89+1	90+1	91+1	92+1	92+2	93+1	93+2	94+1	95+1

KEY MAP

PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
②① ⑥	STATION

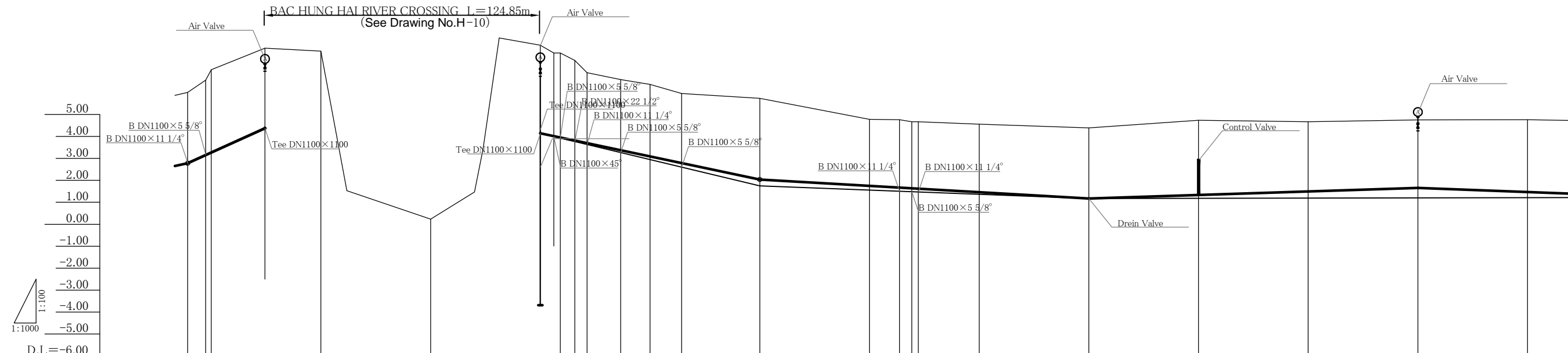
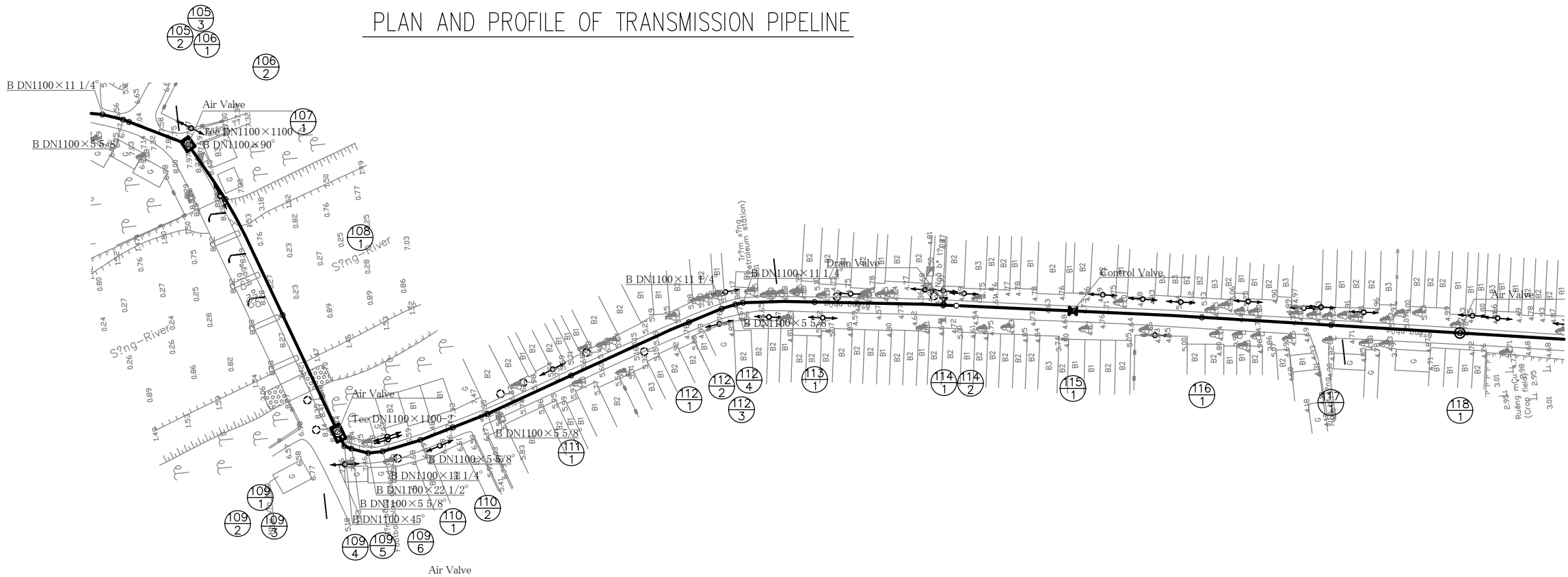


PIPE GRADIENT (%)	i=1.93															i=8.6			i=21.8		i=5.7	
EXCAVATION DEPTH (m)	3.60	3.58	3.40	3.27	3.28	3.40	3.35	3.23	3.19	3.10	3.14	3.23	3.22	3.98	3.78	3.65 (11.20)	11.06					
INVERT ELEVATION (m)	0.63	0.73	0.83	0.92	1.02	1.12	1.21	1.31	1.41	1.50	1.62	1.93	2.78	3.60	3.27	4.37 (-3.18)	-3.18					
GROUND ELEVATION (m)	4.23	4.30	4.22	4.19	4.29	4.51	4.56	4.53	4.59	4.60	4.75	5.15	6.00	6.56	7.04	8.02	7.88					
ACCUMULATED DISTANCE (m)	4750.00	4800.00	4850.00	4900.00	4950.00	5000.00	5050.00	5100.00	5150.00	5200.00	5213.20	5250.00	5288.30	5327.50	5360.00	5324.50	5350.00					
ROTATION ANGLE	DN1100 STEEL PIPE												D 5 5/8"		11 1/4 5/8"		A					
STATION	⑨⑤ ①	⑨⑥ ①	⑨⑦ ①	⑨⑧ ①	⑨⑨ ①	①①① ①	①①① ①	①①① ①	①①① ①	①①① ①	①①① ①	①①① ①	①①① ①	①①① ②	①①① ③	①①① ②	①①① ①					

# PLAN AND PROFILE OF TRANSMISSION PIPELINE

### KEY MAP

LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



PIPE GRADIENT (%)		$i=55.7$		$i=19.8$		$i=5.8$		$i=3.20$																			
EXCAVATION DEPTH (m)	3.22	3.28	3.65 (1.20)	11.08	3.42	11.30 (4.00)	3.65	3.22	3.28	3.17	3.70	3.03	3.09	3.19	3.10	3.22	3.40	3.18	3.18	3.30							
INVERT ELEVATION (m)	2.78	3.39	4.37 (-3.19)	-3.18	-3.19	-3.19 (4.14)	3.61	3.37	3.09	2.79	2.04	1.75	1.67	1.48	1.62	1.46	1.17	1.33	1.49	1.65	1.47						
GROUND ELEVATION (m)	6.00	6.67	8.02	7.88	0.23	8.15	7.46	6.59	6.37	5.95	5.73	4.78	4.76	4.67	4.56	4.39	4.73	4.67	4.75	4.76							
ACCUMULATED DISTANCE (m)	5989.30	5987.65	5987.00	5324.50	5350.00	5400.00	5450.00	5459.90	5469.80	5471.30	5486.60	5500.00	5514.40	5550.00	5600.00	5613.70	5619.70	5622.30	5650.00	5700.00	5750.00	5800.00	5850.00	5900.00			
ROTATION ANGLE	11 1/4 5/8"	A				A	45/22 1/2 1/4"	5 5/8"	5 5/8"							11 1/4 5/8"	D							A			
STATION	⊙ 105 2	⊙ 106 3	⊙ 106 2	⊙ 107 1	⊙ 108 1	⊙ 109 1	⊙ 109 2	⊙ 109 3	⊙ 109 4	⊙ 109 5	⊙ 109 6	⊙ 110 1	⊙ 110 2	⊙ 111 1	⊙ 112 1	⊙ 112 2	⊙ 112 3	⊙ 112 4	⊙ 113 1	⊙ 113 2	⊙ 113 3	⊙ 114 1	⊙ 114 2	⊙ 115 1	⊙ 116 1	⊙ 117 1	⊙ 118 1

JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale:  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

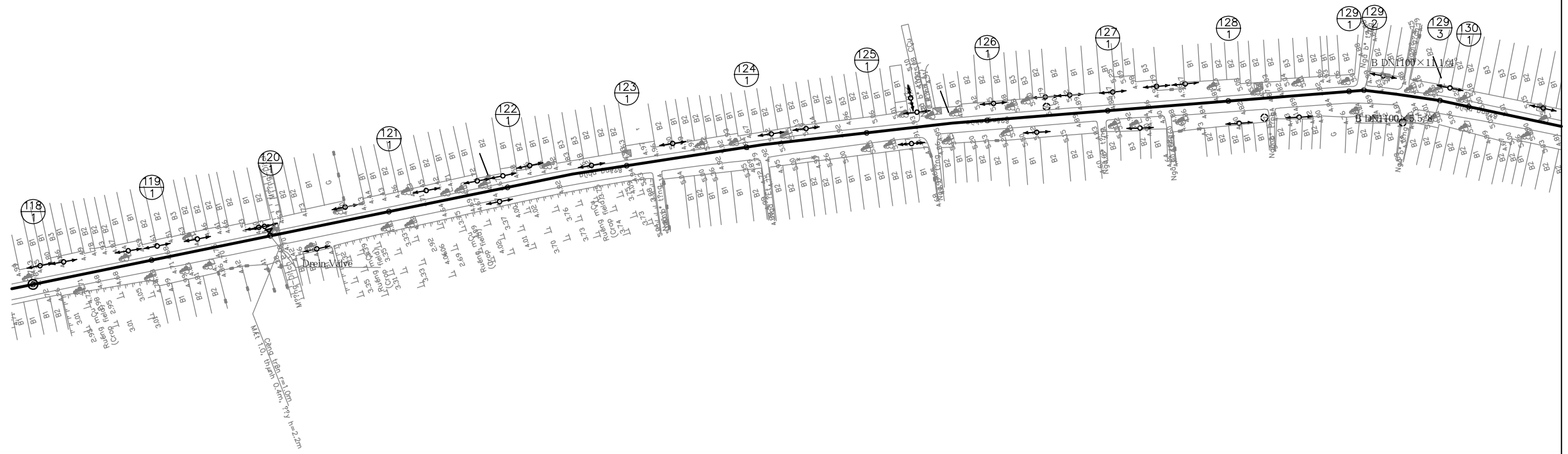
Drawing No

D-10

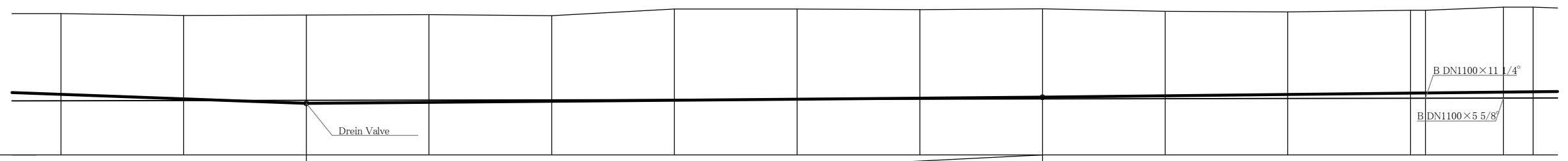
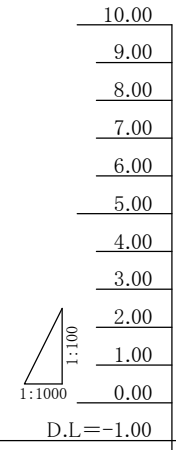
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



PIPE GRADIENT (%)	i=3.67		i=0.83													
EXCAVATION DEPTH (m)	3.30	3.40	3.60	3.57	3.49	3.72	3.68	3.61	3.60	3.45	3.36	3.38	3.37	3.47	3.46	
INVERT ELEVATION (m)	1.47	1.29	1.10	1.14	1.24	1.23	1.27	1.31	1.35	1.41	1.46	1.52	1.52	1.56	1.57	
GROUND ELEVATION (m)	4.76	4.68	4.70	4.71	4.67	4.94	4.94	4.92	4.95	4.85	4.82	4.89	4.89	5.02	5.02	
ACCUMULATED DISTANCE (m)	5900.00	5950.00	6000.00	6050.00	6100.00	6150.00	6200.00	6250.00	6300.00	6350.00	6400.00	6450.00	6456.15	6467.15	6500.00	
ROTATION ANGLE	0												11 1/4°		5 5/8°	
STATION	⊙ 118 1	⊙ 119 1	⊙ 120 1	⊙ 121 1	⊙ 122 1	⊙ 123 1	⊙ 124 1	⊙ 125 1	⊙ 126 1	⊙ 127 1	⊙ 128 1	⊙ 129 1	⊙ 129 2	⊙ 129 3	⊙ 130 1	
PIPE DIAMETER	DN1100 STEEL PIPE															

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
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Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

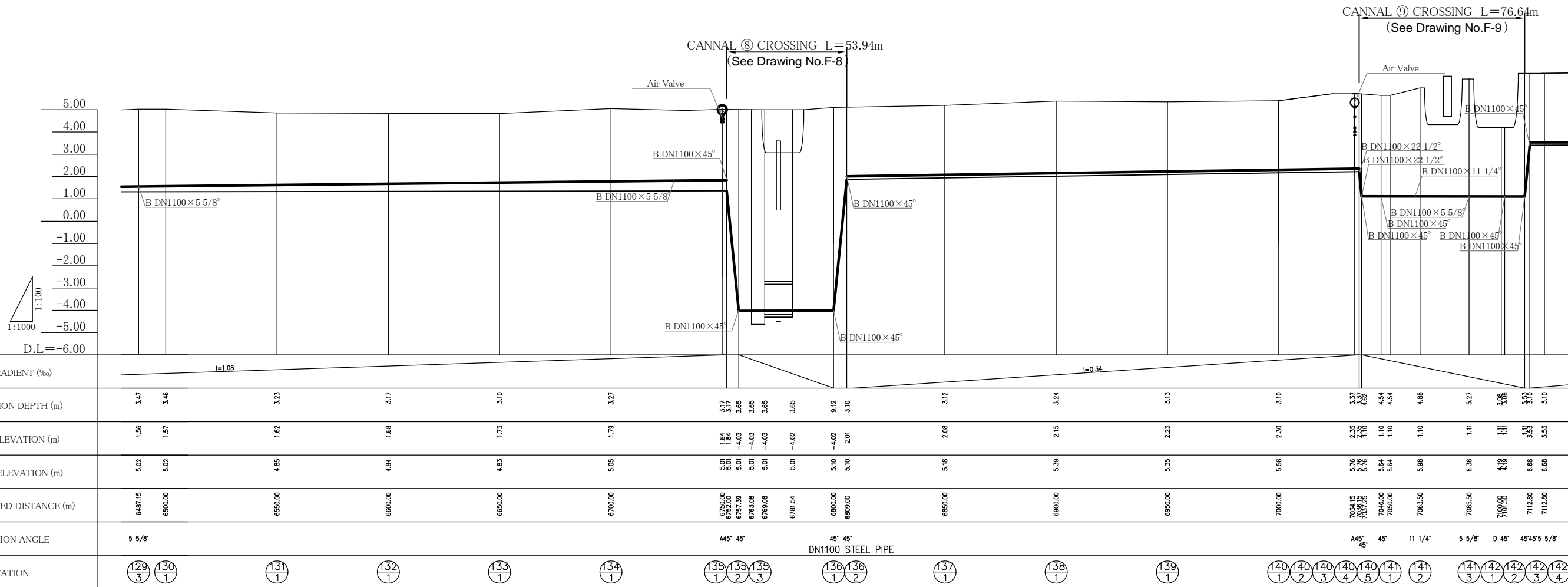
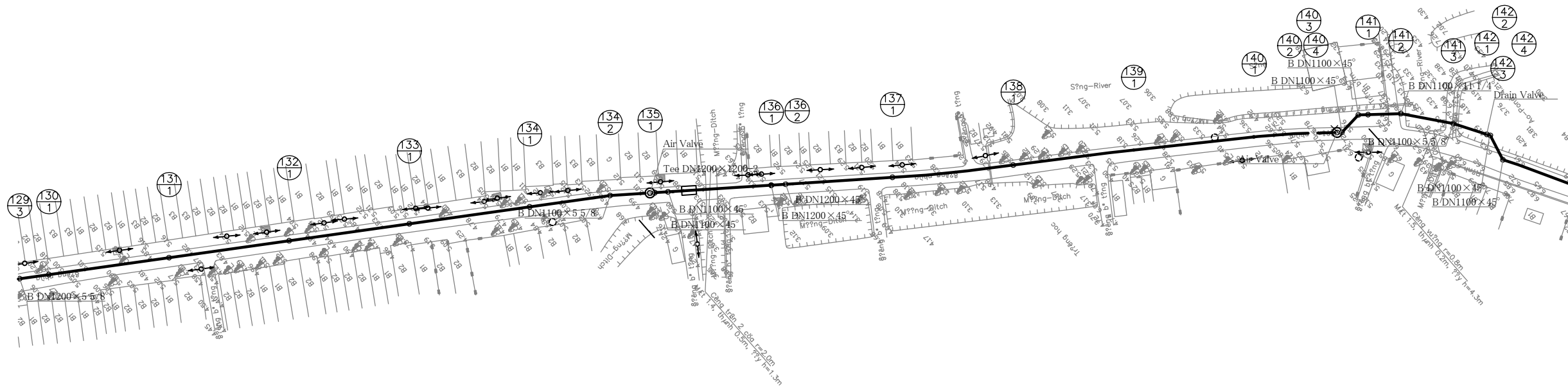
D-11

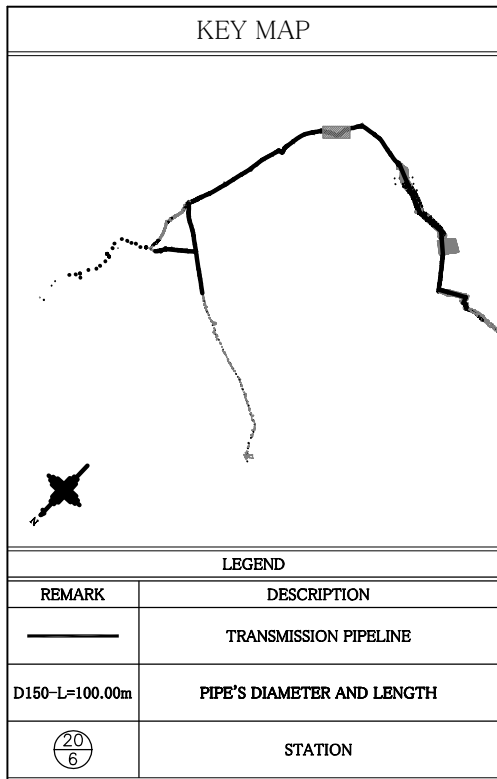
# PLAN AND PROFILE OF TRANSMISSION PIPELINE

**KEY MAP**

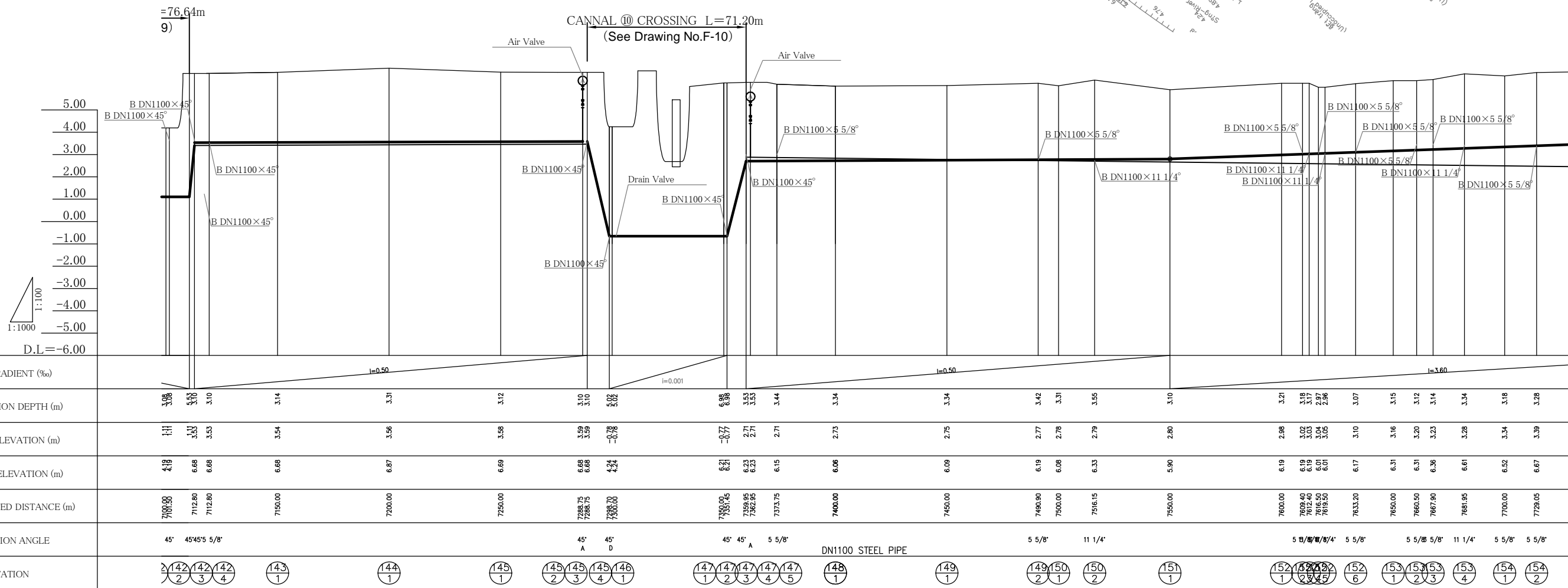
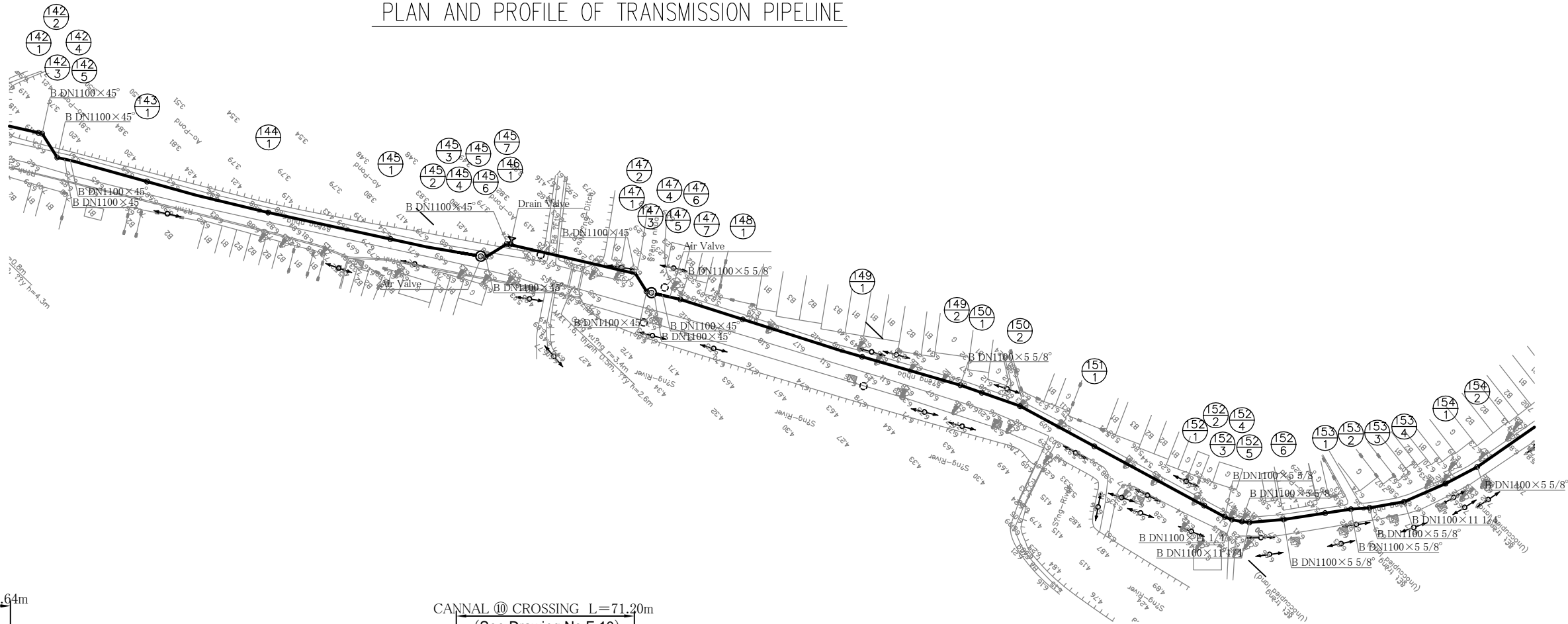
**LEGEND**

REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
②① ③⑥	STATION



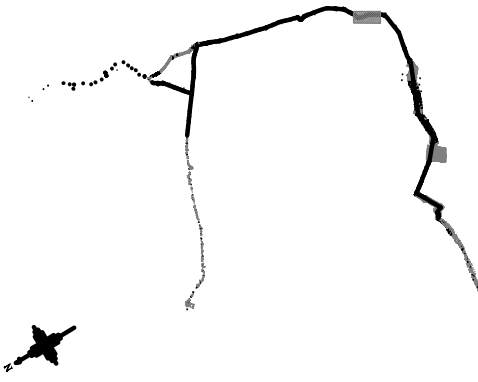


PLAN AND PROFILE OF TRANSMISSION PIPELINE

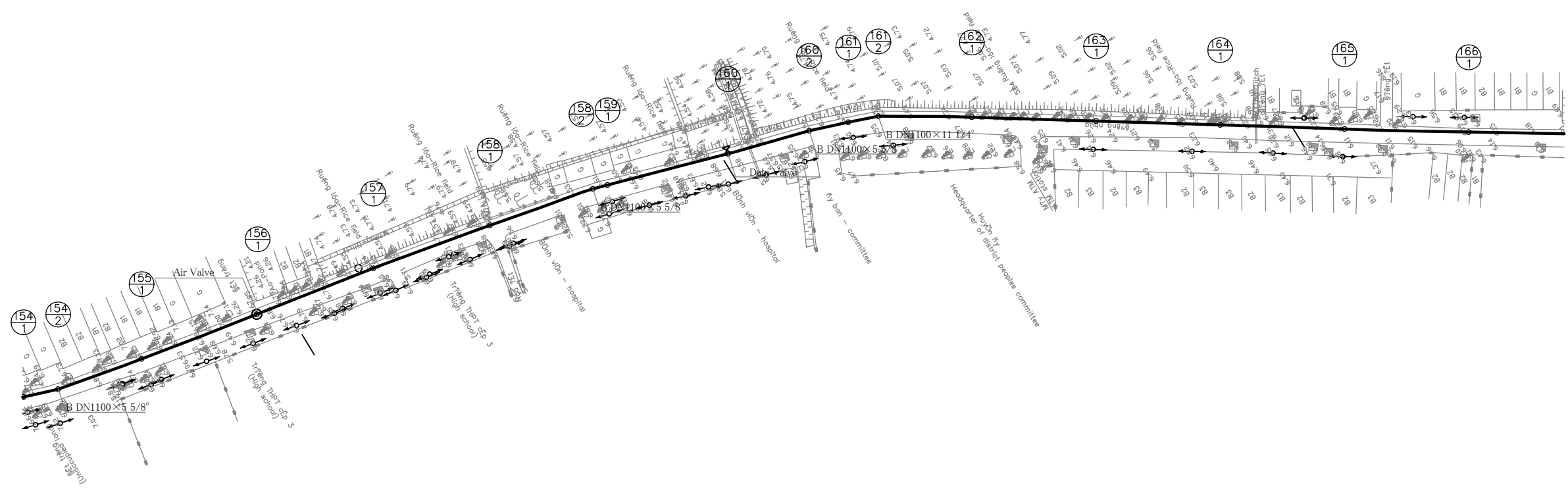




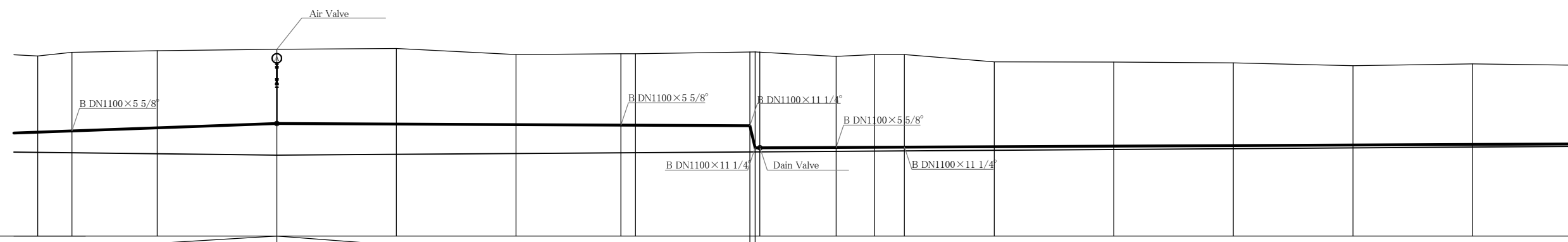
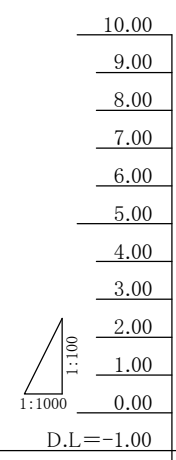
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



PIPE GRADIENT (%)	i=0.50																	
EXCAVATION DEPTH (m)	3.18	3.28	3.22	3.10	3.16	2.83	2.98	2.99	3.88	3.80	3.87	3.87	3.54	3.51	3.45	3.31	3.37	
INVERT ELEVATION (m)	3.34	3.39	3.52	3.70	3.68	3.65	3.63	3.63	3.69	2.70	2.71	2.72	2.73	2.76	2.78	2.80	2.83	
GROUND ELEVATION (m)	6.52	6.67	6.74	6.81	6.83	6.58	6.61	6.61	6.89	6.50	6.58	6.59	6.27	6.26	6.23	6.11	6.19	
ACCUMULATED DISTANCE (m)	7700.00	7729.05	7750.00	7800.00	7850.00	7900.00	7943.85	7950.00	8000.00	8033.90	8050.00	8077.25	8100.00	8150.00	8200.00	8250.00	8300.00	
ROTATION ANGLE	5 5/8°	5 5/8°		A			5 5/8°		11 1/4°	11 1/4°	5 5/8°	11 1/4°						
STATION	⊙ 154 1	⊙ 154 2	⊙ 155 1	⊙ 156 1	⊙ 157 1	⊙ 158 1	⊙ 158 2	⊙ 159 1	⊙ 160 1	⊙ 160 2	⊙ 161 1	⊙ 161 2	⊙ 162 1	⊙ 163 1	⊙ 164 1	⊙ 165 1	⊙ 166 1	
PIPE DIAMETER	DN1100 STEEL PIPE																	

JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
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Oct. 2011

Scale  
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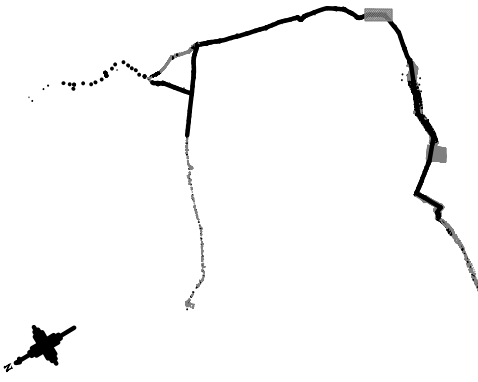
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

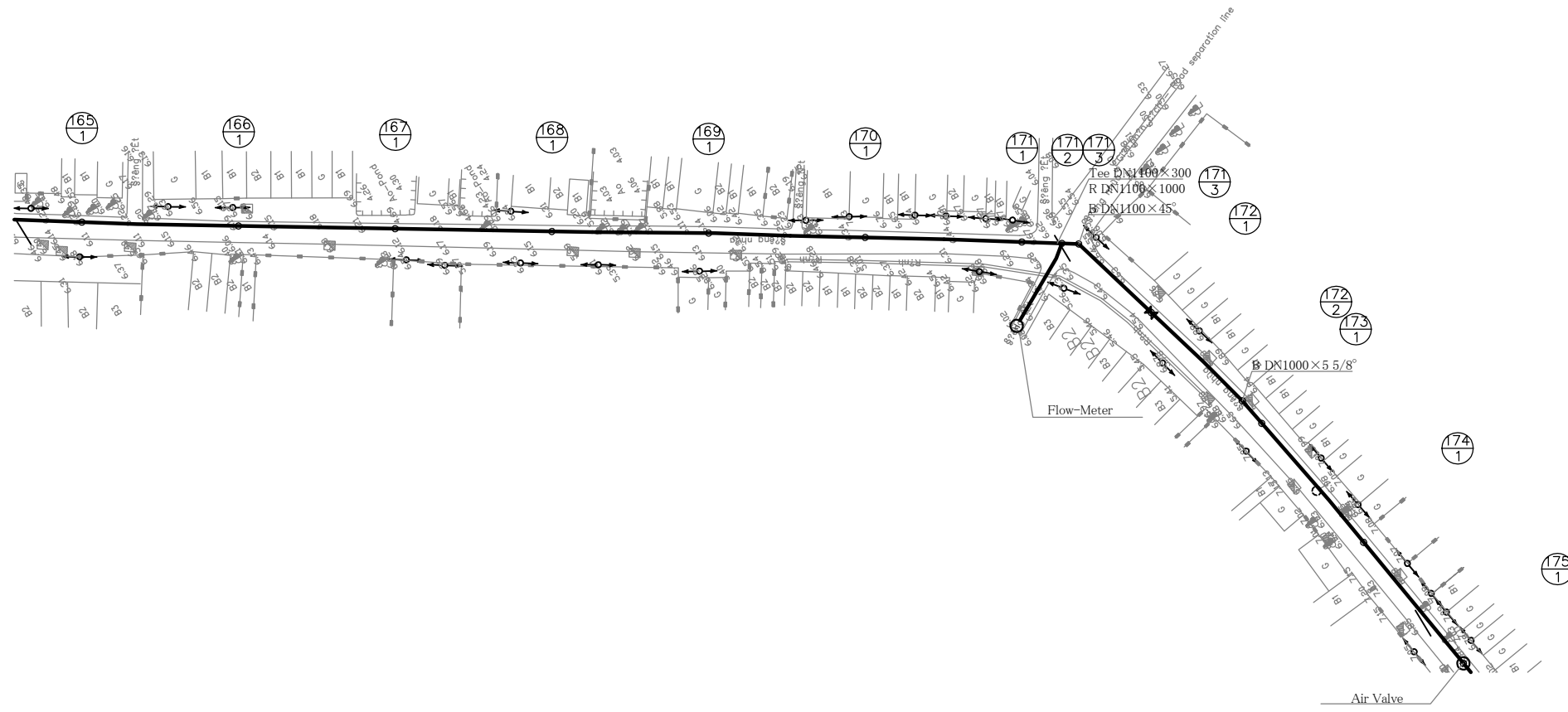
Drawing No

D-14

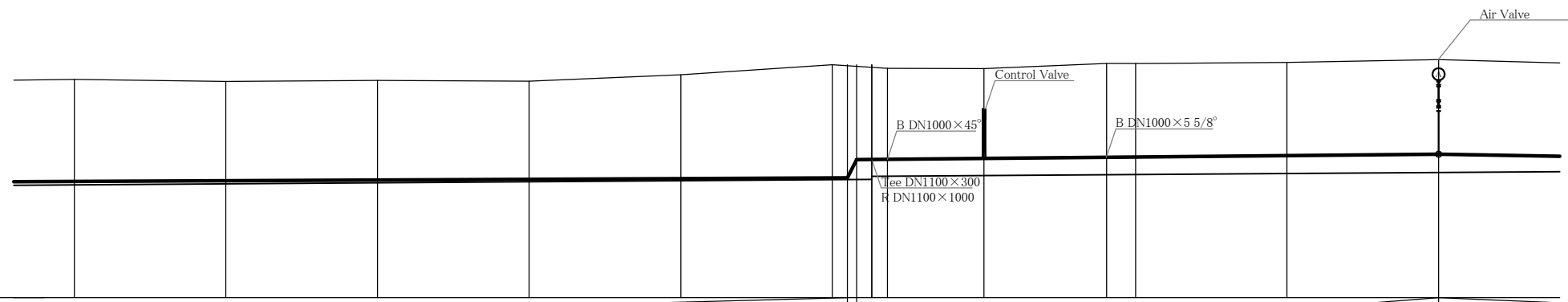
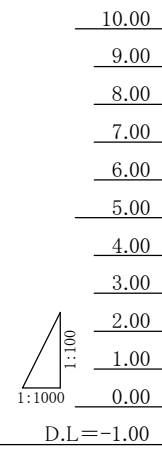
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
$\frac{20}{6}$	STATION



PIPE GRADIENT (%)	0.50										1.00					
EXCAVATION DEPTH (m)	3.37	3.27	3.28	3.24	3.42	3.73	3.78	3.78	3.04	3.00	2.96	3.09	3.08	3.07	3.12	
INVERT ELEVATION (m)	2.83	2.85	2.87	2.90	2.92	2.94	2.95	2.95	3.55	3.55	3.58	3.62	3.63	3.68	3.73	
GROUND ELEVATION (m)	6.19	6.12	6.15	6.13	6.34	6.67	6.65	6.59	6.59	6.55	6.54	6.71	6.71	6.75	6.84	
ACCUMULATED DISTANCE (m)	8300.00	8350.00	8400.00	8450.00	8500.00	8550.00	8550.00	8553.00	8598.15	8600.00	8640.45	8650.00	8700.00	8750.00		
ROTATION ANGLE											11 1/4°			5 5/8°		A
STATION	$\frac{166}{1}$	$\frac{167}{1}$	$\frac{168}{1}$	$\frac{169}{1}$	$\frac{170}{1}$	$\frac{171}{1}$	$\frac{171}{2}$	$\frac{171}{3}$	$\frac{172}{1}$	$\frac{172}{2}$	$\frac{173}{1}$	$\frac{174}{1}$	$\frac{175}{1}$			
PIPE DIAMETER	DN1100 STEEL PIPE										DN1000 STEEL PIPE					

JICA Study Team

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

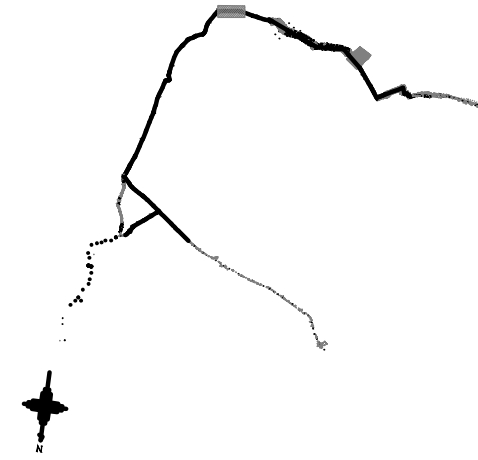
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

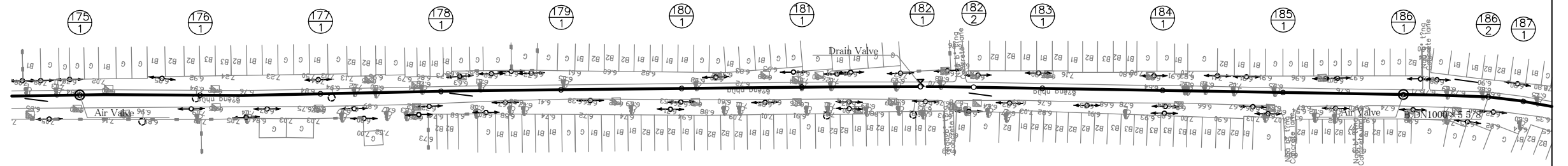
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D-15

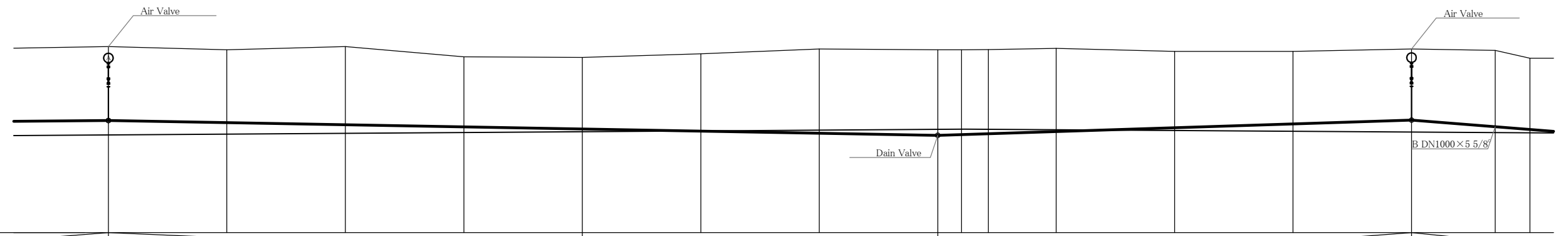
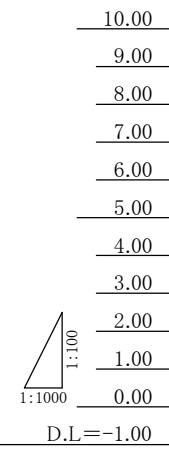
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 6	STATION



PIPE GRADIENT (%)	i=0.57													i=0					
EXCAVATION DEPTH (m)	3.12	3.07	3.30	2.96	3.01	3.35	3.53	3.45	3.36	3.42	3.33	3.36	3.50	3.46	3.14				
INVERT ELEVATION (m)	3.73	3.64	3.55	3.46	3.37	3.28	3.31	3.35	3.35	3.34	3.42	3.58	3.73	3.46	3.35				
GROUND ELEVATION (m)	6.84	6.70	6.84	6.41	6.38	6.53	6.74	6.70	6.71	6.76	6.64	6.64	6.74	6.68	6.35				
ACCUMULATED DISTANCE (m)	8750.00	8800.00	8850.00	8900.00	8950.00	9000.00	9050.00	9100.00	9136.15	9150.00	9200.00	9250.00	9300.00	9335.35	9350.00				
ROTATION ANGLE	A													D		V	A		5 5/8"
STATION	⊙ 175 1	⊙ 176 1	⊙ 177 1	⊙ 178 1	⊙ 179 1	⊙ 180 1	⊙ 181 1	⊙ 182 1	⊙ 182 2	⊙ 183 1	⊙ 184 1	⊙ 185 1	⊙ 186 1	⊙ 186 2	⊙ 187 1				
PIPE DIAMETER	DN1000 STEEL PIPE																		

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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

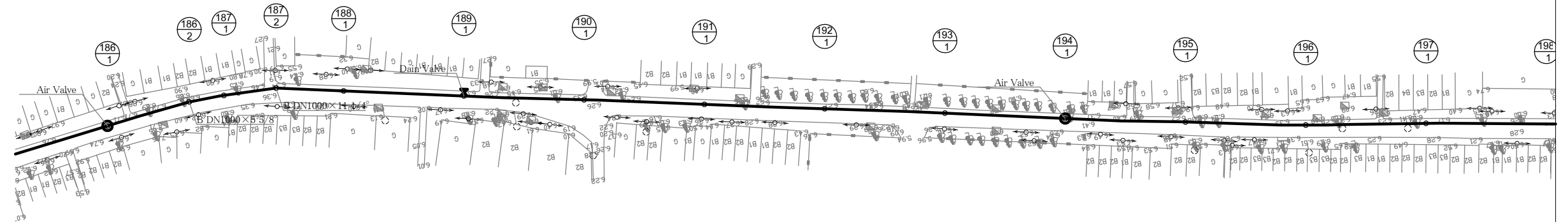
Drawing No

D-16

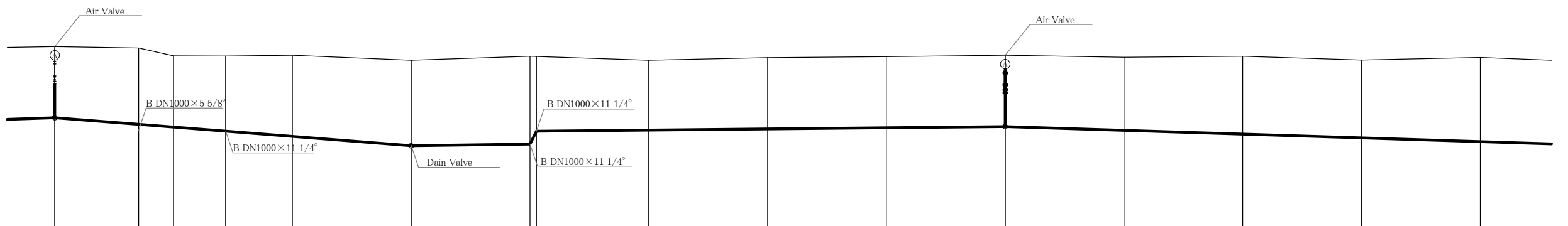
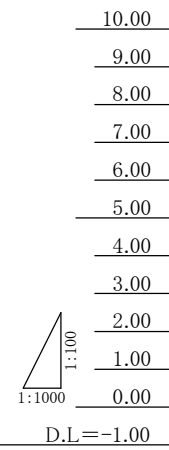
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
20/6	STATION



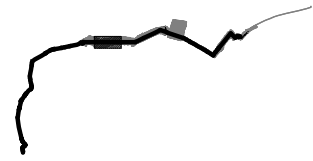
PIPE GRADIENT (%)																
EXCAVATION DEPTH (m)	3.50	3.46	3.14	3.17	3.42	3.00	3.70	3.15	2.84	3.00	2.89	3.00	3.06	3.26	3.26	3.54
INVERT ELEVATION (m)	3.24	3.22	3.21	3.18	2.86	2.86	2.83	3.18	3.22	3.27	3.32	3.37	3.21	3.06	2.80	2.74
GROUND ELEVATION (m)	6.74	6.68	6.35	6.34	6.27	6.16	6.53	6.33	6.16	6.27	6.31	6.37	6.29	6.33	6.17	6.28
ACCUMULATED DISTANCE (m)	8600.00	8635.35	8650.00	8671.80	8400.00	8400.00	8600.00	8602.71	8600.00	8600.00	8600.00	8700.00	8760.00	8800.00	8800.00	8800.00
ROTATION ANGLE	A	5 58"		11 14"		D	11 14"		11 14"		A					
STATION	186/1	186/2	187/1	187/2	188/1	189/1	190/1	191/1	192/1	193/1	194/1	195/1	196/1	197/1	198/1	
PIPE DIAMETER	DN1000 STEEL PIPE															

JICA Study Team	No.	THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM	Date: Oct. 2011	Duong River Water Treatment Plant Transmission Pipeline	Drawing No
			Scale: V=1/100 H=1/1000	PLAN AND PROFILE OF TRANSMISSION PIPELINE	D-17

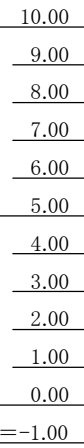
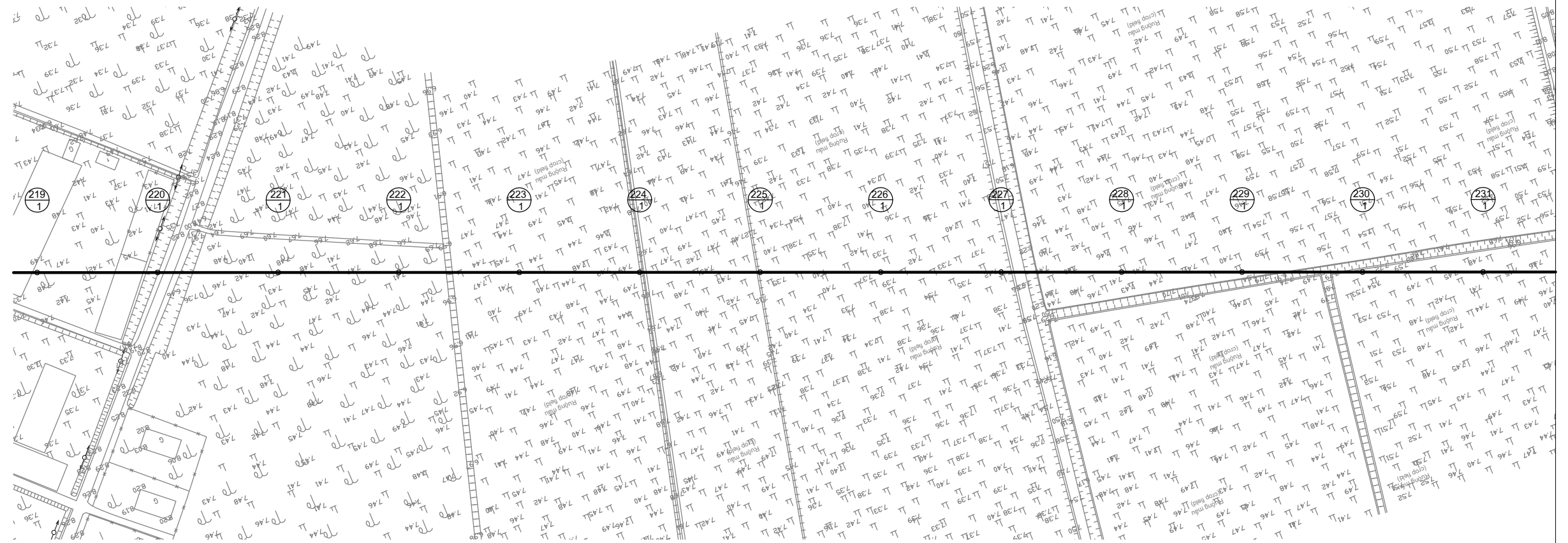




KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



1:1000  
1:1000

D.L = -1.00

PIPE GRADIENT (%)	i=0.50												
EXCAVATION DEPTH (m)	3.0	4.6	3.6	3.6	3.6	3.7	3.8	3.7	3.7	3.5	3.7	3.6	3.6
INVERT ELEVATION (m)	3.9	3.6	3.4	3.1	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.2	3.6
GROUND ELEVATION (m)	7.4	8.2	7.4	7.1	7.4	7.4	7.5	7.5	7.5	7.4	7.1	7.4	7.1
ACCUMULATED DISTANCE (m)	1000.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00
ROTATION ANGLE													
STATION	219+1	220+1	221+1	222+1	223+1	224+1	225+1	226+1	227+1	228+1	229+1	230+1	231+1
PIPE DIAMETER	DN1000 STEEL PIPE												

JICA Study Team

No.			
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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date:  
Oct. 2011

Scale  
V=1/100  
H=1/1000

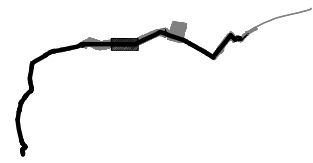
Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

D-20

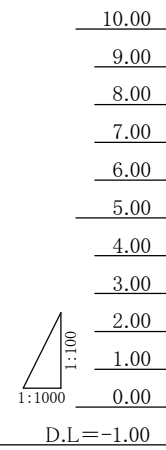
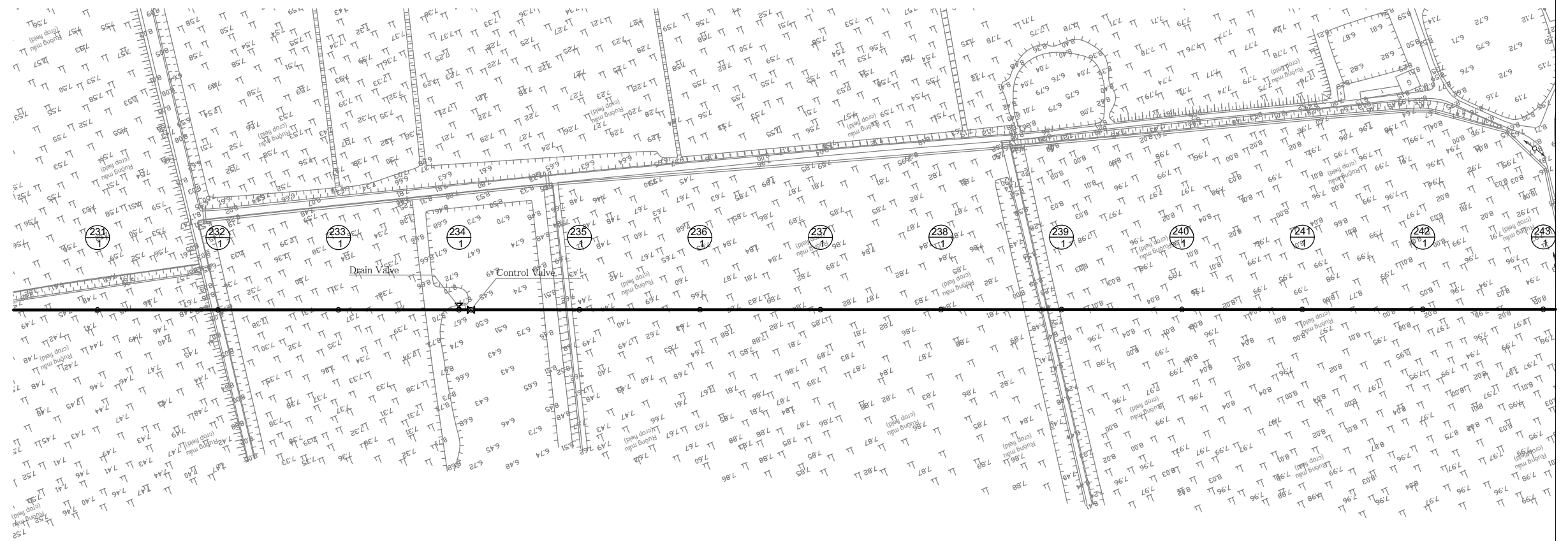
KEY MAP



LEGEND

REMARK	DESCRIPTION
	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
	STATION

PLAN AND PROFILE OF TRANSMISSION PIPELINE



PIPE GRADIENT (%)														
EXCAVATION DEPTH (m)	3.05	4.52	3.87	3.19	3.16	3.16	3.39	4.04	3.32	3.38	3.38	3.74	3.36	3.35
INVERT ELEVATION (m)	3.88	3.34	3.51	3.46	3.49	3.39	3.70	3.61	3.32	4.03	4.14	4.25	4.38	4.47
GROUND ELEVATION (m)	7.41	8.05	7.27	6.67	6.67	6.74	7.09	7.65	7.24	8.01	8.02	7.99	8.02	8.03
ACCUMULATED DISTANCE (m)	11600.00	11800.00	11900.00	11700.00	11700.00	11700.00	11800.00	11800.00	11900.00	11900.00	12000.00	12000.00	12100.00	12100.00
ROTATION ANGLE	D V													
STATION	231+00	232+00	233+00	234+00	234+50	235+00	236+00	237+00	238+00	239+00	240+00	241+00	242+00	243+00
PIPE DIAMETER	DN1000 STEEL PIPE													

JICA Study Team

No.			
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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date.  
Oct. 2011

Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No

D-21



KEY MAP

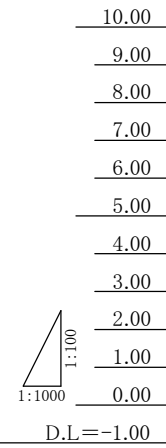
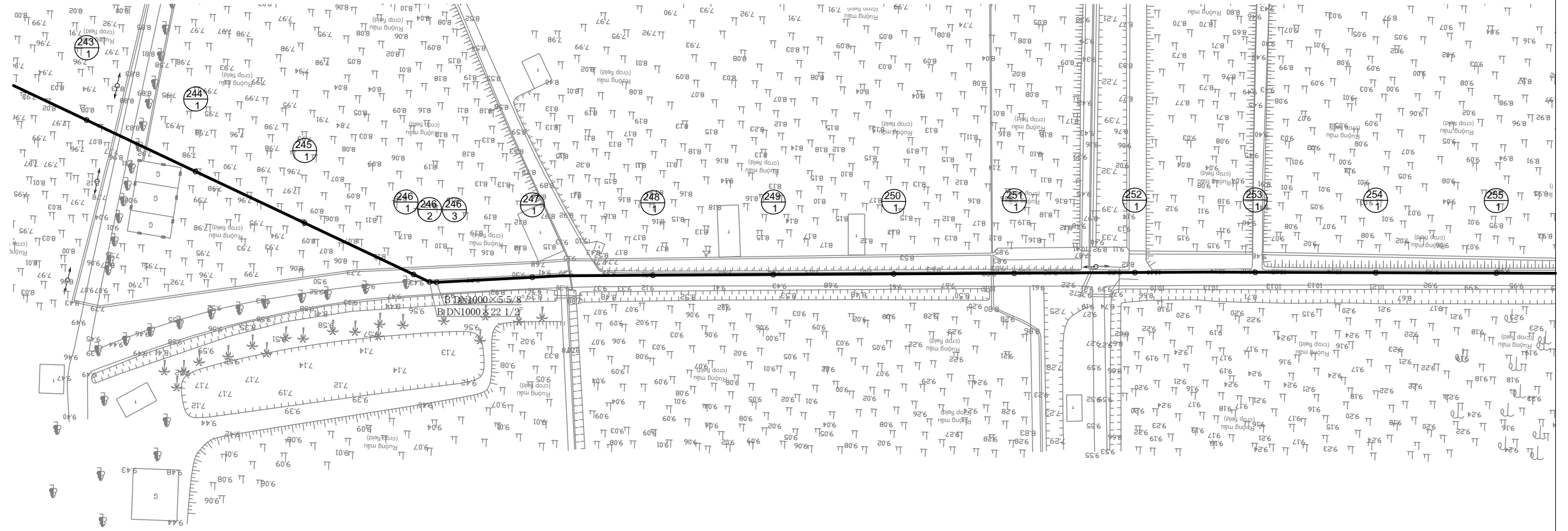


PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND

REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



PIPE GRADIENT (%)	i=22.0														
EXCAVATION DEPTH (m)	3.8	3.0	3.0	4.8	4.8	4.7	4.9	4.1	4.7	4.4	4.4	4.5	4.5	4.6	
INVERT ELEVATION (m)	4.7	4.8	4.8	4.9	4.8	4.8	5.0	5.3	5.3	5.3	5.4	5.7	5.8	5.7	
GROUND ELEVATION (m)	8.5	7.8	8.0	9.4	9.4	9.5	9.9	9.4	9.8	9.8	10.0	10.2	10.3	10.3	
ACCUMULATED DISTANCE (m)	12180.00	12200.00	12200.00	12300.00	12307.25	12310.25	12300.00	12400.00	12500.00	12500.00	12500.00	12600.00	12700.00	12700.00	
ROTATION ANGLE	22 1/2° 5 05"														
STATION	⊙ 243 1	⊙ 244 1	⊙ 245 1	⊙ 246 1	⊙ 246 2	⊙ 246 3	⊙ 247 1	⊙ 248 1	⊙ 249 1	⊙ 250 1	⊙ 251 1	⊙ 252 1	⊙ 253 1	⊙ 254 1	⊙ 255 1
PIPE DIAMETER	DN1000 STEEL PIPE														

JICA Study Team

No.			
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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date.  
Oct. 2011

Scale  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline

PLAN AND PROFILE OF TRANSMISSION PIPELINE

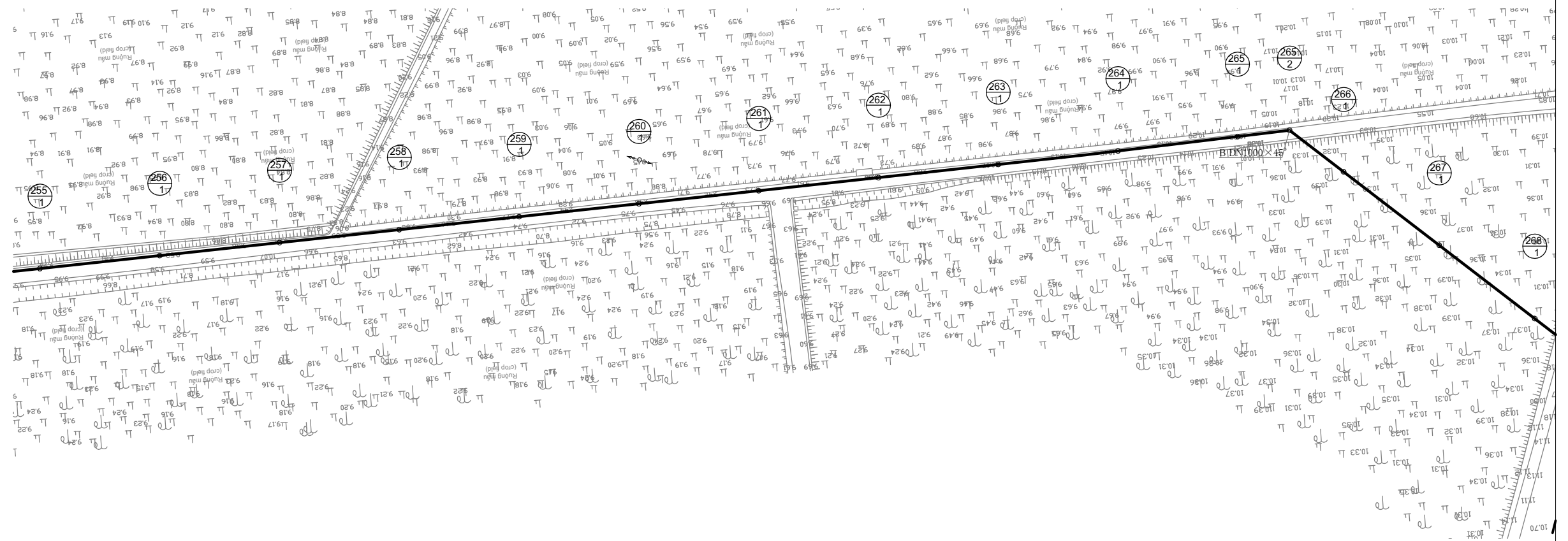
Drawing No

D-22

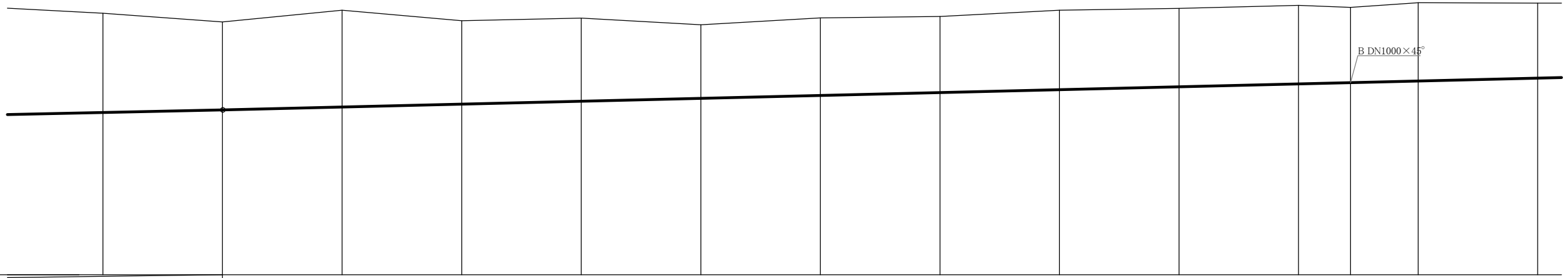
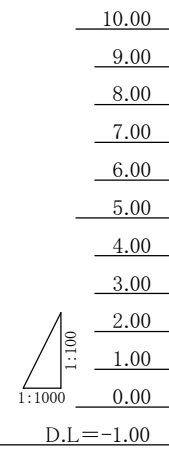
KEY MAP



PLAN AND PROFILE OF TRANSMISSION PIPELINE



LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



PIPE GRADIENT (%)	i=24.2													
EXCAVATION DEPTH (m)	4.18	3.08	4.05	3.49	3.49	3.08	3.25	3.18	3.32	3.29	3.30	3.15	3.28	3.14
INVERT ELEVATION (m)	6.79	6.90	6.92	6.14	6.28	6.39	6.51	6.63	6.75	6.87	6.89	7.04	7.11	7.23
GROUND ELEVATION (m)	10.95	10.98	11.07	9.63	9.74	9.46	9.75	9.81	10.07	10.15	10.29	10.19	10.39	10.37
ACCUMULATED DISTANCE (m)	12780.00	12900.00	12990.00	13000.00	13000.00	13000.00	13000.00	13100.00	13192.00	13200.00	13200.00	13271.70	13300.00	13300.00
ROTATION ANGLE	45°													
STATION	⊙ 255 1	⊙ 256 1	⊙ 257 1	⊙ 258 1	⊙ 259 1	⊙ 260 1	⊙ 261 1	⊙ 262 1	⊙ 263 1	⊙ 264 1	⊙ 265 1	⊙ 265 2	⊙ 266 1	⊙ 267 1
PIPE DIAMETER	DN1000 STEEL PIPE													

JICA Study Team

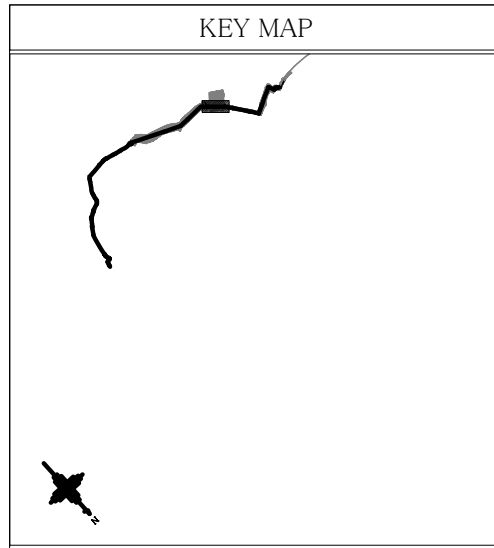
No.			
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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

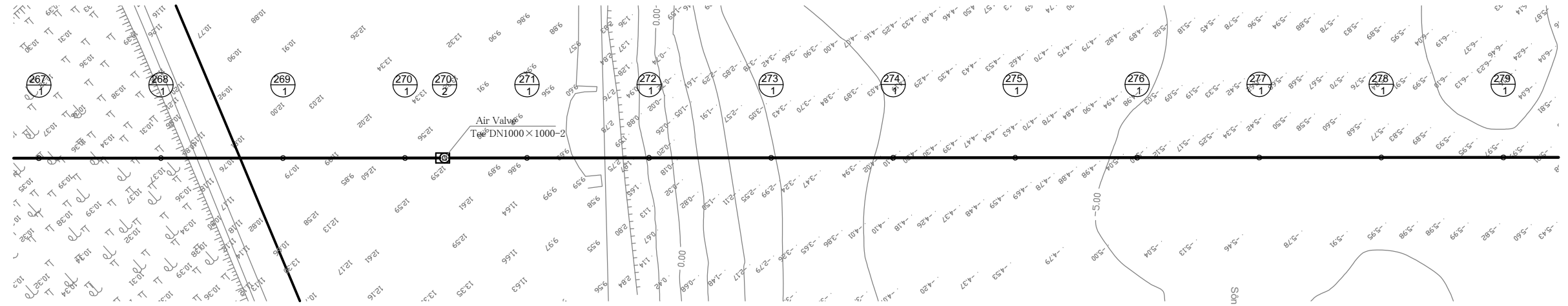
Date:  
Oct. 2011  
Scale:  
V=1/100  
H=1/1000

Duong River Water Treatment Plant Transmission Pipeline  
PLAN AND PROFILE OF TRANSMISSION PIPELINE

Drawing No  
D-23



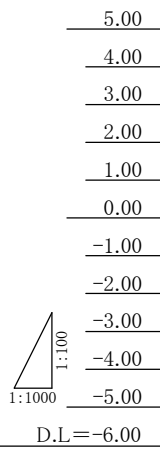
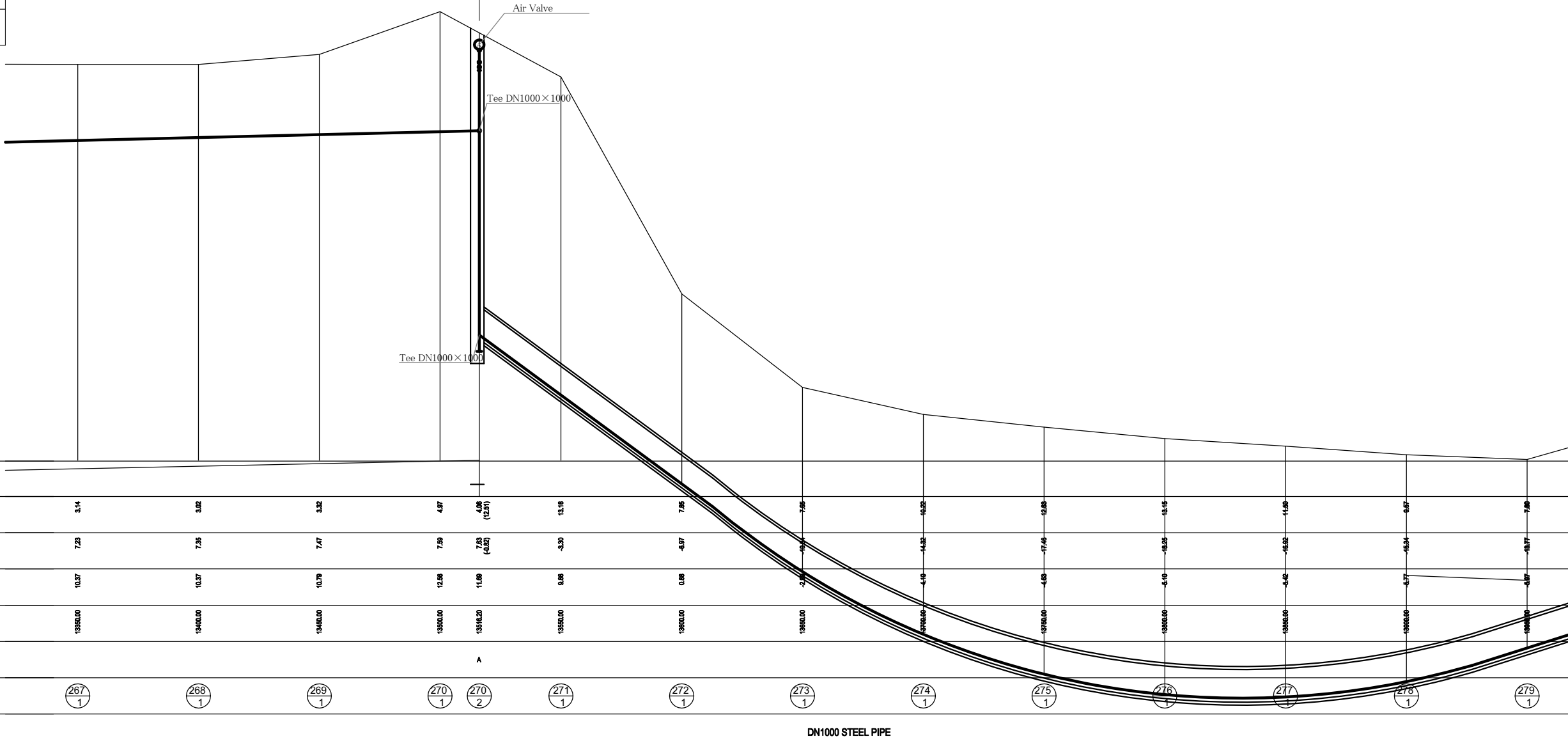
PLAN AND PROFILE OF TRANSMISSION PIPELINE



HUONG RIVER CROSSING L=595.00m  
(See Drawing No.I-6)

LEGEND

REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
②① ⑥	STATION

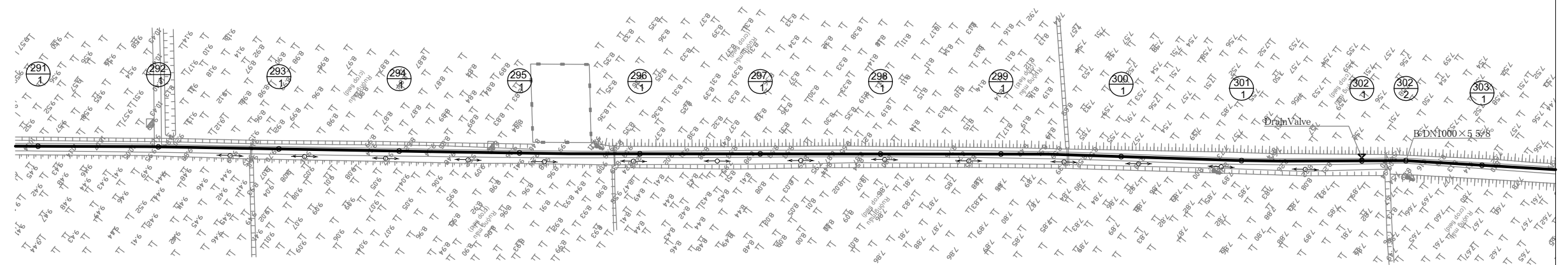
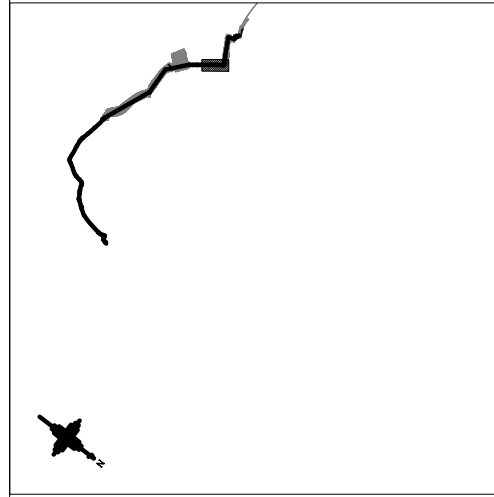


勾配 (%) SLOPE OF RAIN (%)																		
掘削深さ (m) THICKNESS (m)	3.14	3.02	3.32	4.97	4.08 (2.87)	13.19	7.85	7.85	10.52	10.52	10.52	10.52	10.52	10.52	10.52	10.52	10.52	10.52
管底高 (m) INVERT LEVEL (m)	7.23	7.25	7.47	7.59	7.83 (4.82)	3.30	4.87	4.87	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52
地盤高 (m) LEVELING GROUND ELEVATION (m)	10.37	10.37	10.79	12.25	11.89	8.85	8.85	9.37	14.19	14.19	14.19	14.19	14.19	14.19	14.19	14.19	14.19	14.19
追加距離 (m) DISTANCE - TOTAL (m)	13000.00	13400.00	13400.00	13900.00	13816.20	13900.00	13900.00	13900.00	13900.00	13900.00	13900.00	13900.00	13900.00	13900.00	13900.00	13900.00	13900.00	13900.00
回転角度 ROTATION ANGLE					A													
測点 NAME FILE	②⑥⑦ 1	②⑥⑧ 1	②⑥⑨ 1	②⑦① 1	②⑦② 2	②⑦① 1	②⑦② 1	②⑦③ 1	②⑦④ 1	②⑦⑤ 1	②⑦⑥ 1	②⑦⑦ 1	②⑦⑧ 1	②⑦⑨ 1				
管径 PIPE DIAMETER																		

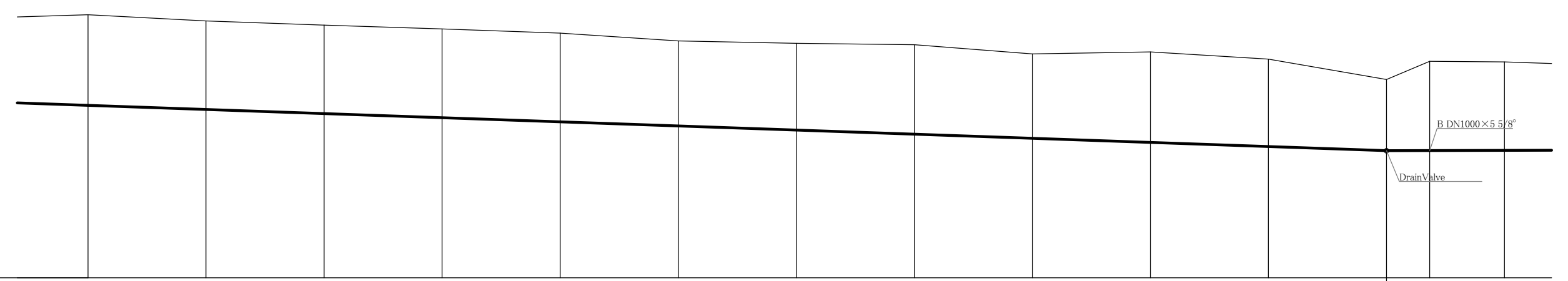
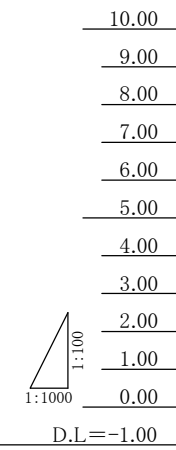


KEY MAP

PLAN AND PROFILE OF TRANSMISSION PIPELINE

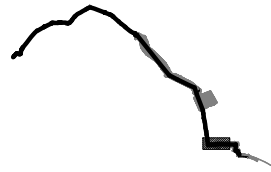


LEGEND	
REMARK	DESCRIPTION
—	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
⊙ 20 6	STATION



PIPE GRADIENT (%)	i=3.50													
EXCAVATION DEPTH (m)	3.04	3.25	3.25	3.29	3.29	3.00	3.08	3.29	3.08	3.04	3.21	3.02	3.29	3.25
INVERT ELEVATION (m)	8.31	8.13	8.08	8.29	8.01	5.43	8.28	5.08	4.81	4.73	4.88	4.38	4.39	4.40
GROUND ELEVATION (m)	11.34	8.08	8.29	8.54	8.28	8.03	8.38	8.57	8.48	8.57	8.28	7.40	8.17	8.14
ACCUMULATED DISTANCE (m)	14620.00	14800.00	14820.00	14700.00	14700.00	14800.00	14800.00	14800.00	14800.00	15000.00	15000.00	15100.00	15118.15	15102.00
ROTATION ANGLE	D 5.50°													
STATION	291+00	292+00	293+00	294+00	295+00	296+00	297+00	298+00	299+00	300+00	301+00	302+00	302+00	303+00
PIPE DIAMETER	DN1000 STEEL PIPE													

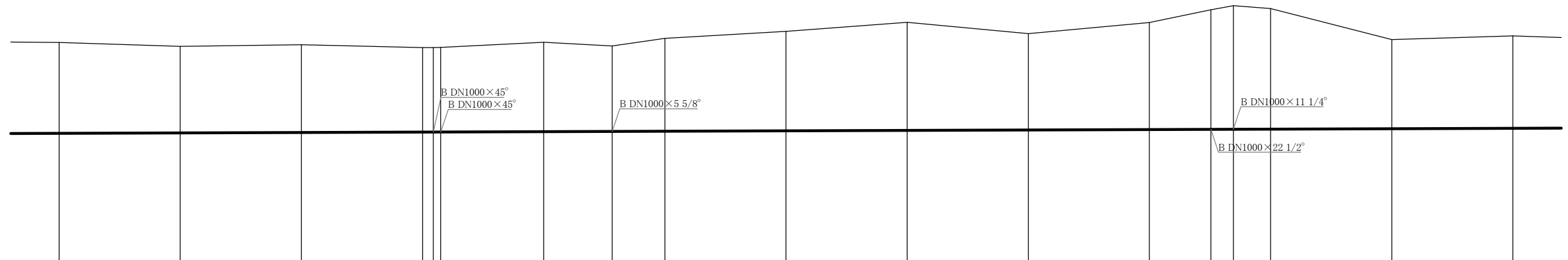
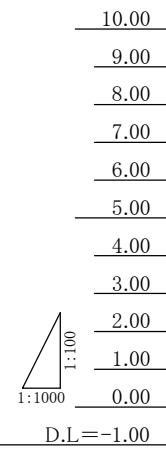
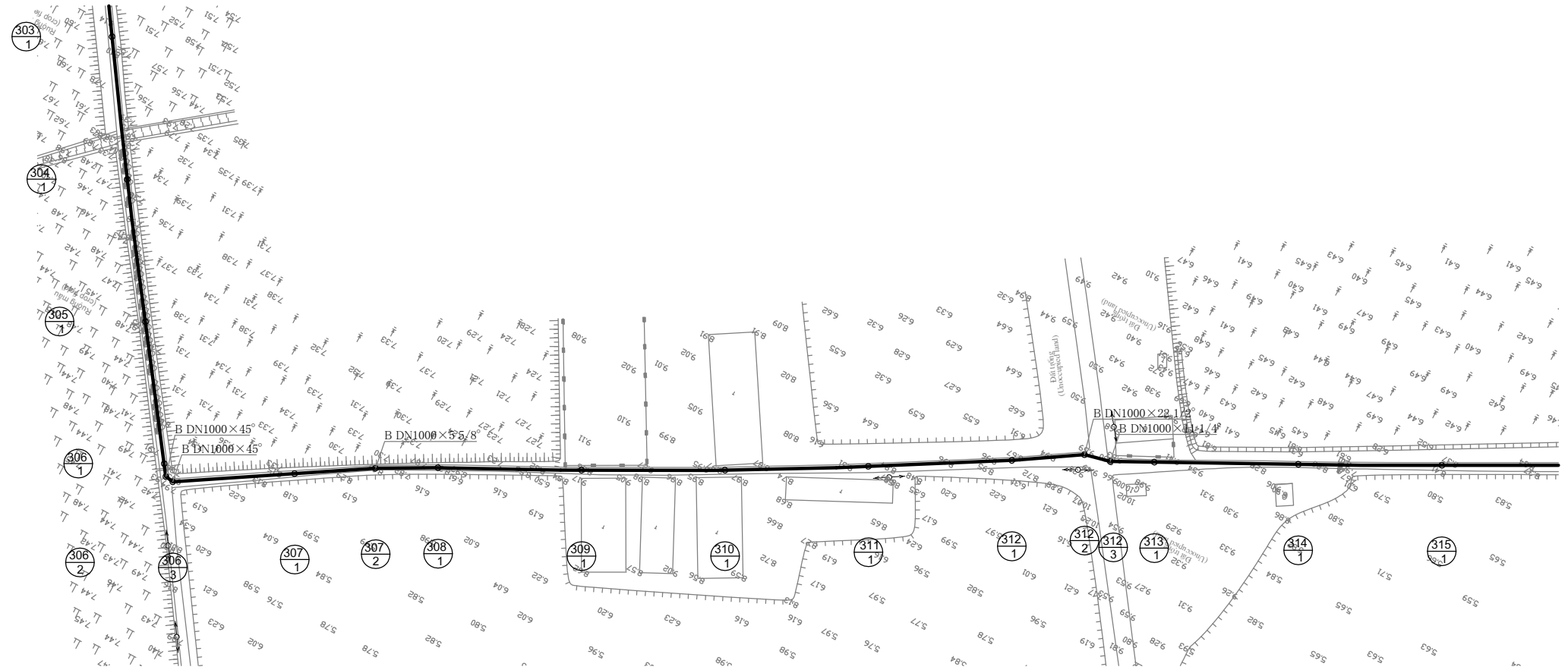
KEY MAP



LEGEND

REMARK	DESCRIPTION
	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
	STATION

PLAN AND PROFILE OF TRANSMISSION PIPELINE



PIPE GRADIENT (%)																		
EXCAVATION DEPTH (m)	3.75	3.57	3.82	3.48	3.46	3.48	3.89	3.39	3.35	4.10	4.46	3.98	4.41	4.83	5.10	4.98	3.88	3.81
INVERT ELEVATION (m)	4.40	4.42	4.43	4.45	4.46	4.45	4.47	4.48	4.48	4.50	4.52	4.54	4.55	4.58	4.58	4.57	4.59	4.60
GROUND ELEVATION (m)	8.14	7.99	8.05	7.93	7.92	7.94	8.15	8.00	8.31	8.60	8.97	8.51	8.98	8.69	8.68	8.54	8.23	8.41
ACCUMULATED DISTANCE (m)	15180.00	15200.00	15260.00	15304.45	15304.45	15307.45	15360.00	15376.25	15400.00	15400.00	15500.00	15500.00	15600.00	15626.40	15626.40	15650.00	15700.00	15700.00
ROTATION ANGLE				45°				5.98°						22.12°			11.14°	
STATION	303 1	304 1	305 1	306 1	306 2	306 3	307 1	307 2	308 1	309 1	310 1	311 1	312 1	312 2	313 3	313 1	314 1	315 1
PIPE DIAMETER	DN1000 STEEL PIPE																	

JICA Study Team				THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM	Date Oct. 2011	Duong River Water Treatment Plant Transmission Pipeline	Drawing No
	No.				Scale V=1/100 H=1/1000	PLAN AND PROFILE OF TRANSMISSION PIPELINE	D-27

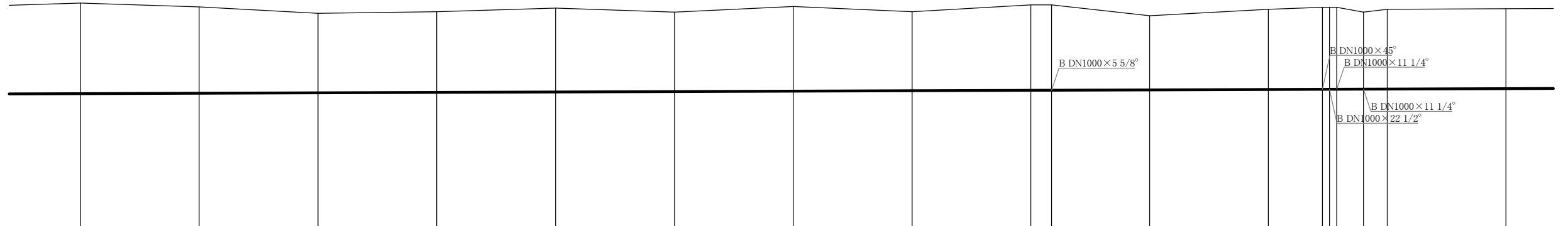
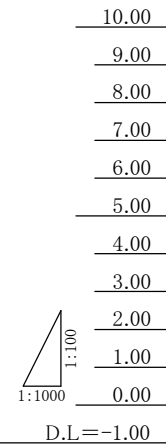
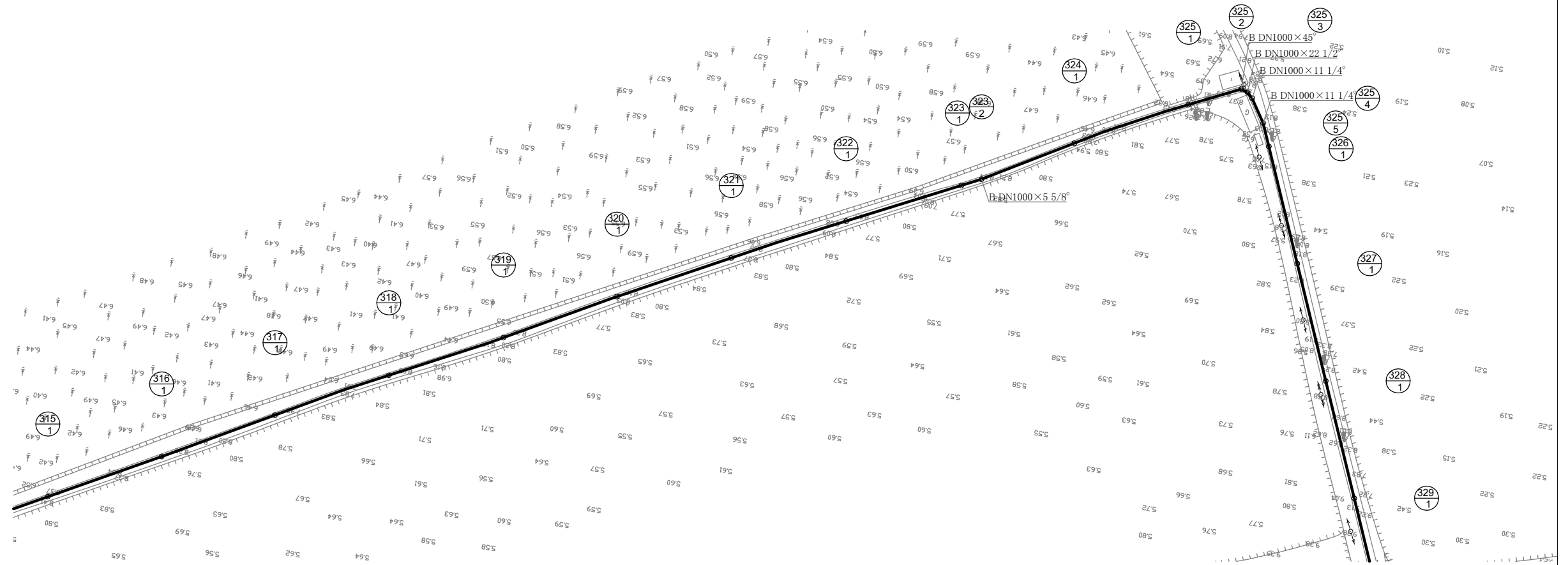
KEY MAP



LEGEND

REMARK	DESCRIPTION
	TRANSMISSION PIPELINE
D150-L=100.00m	PIPE'S DIAMETER AND LENGTH
	STATION

PLAN AND PROFILE OF TRANSMISSION PIPELINE



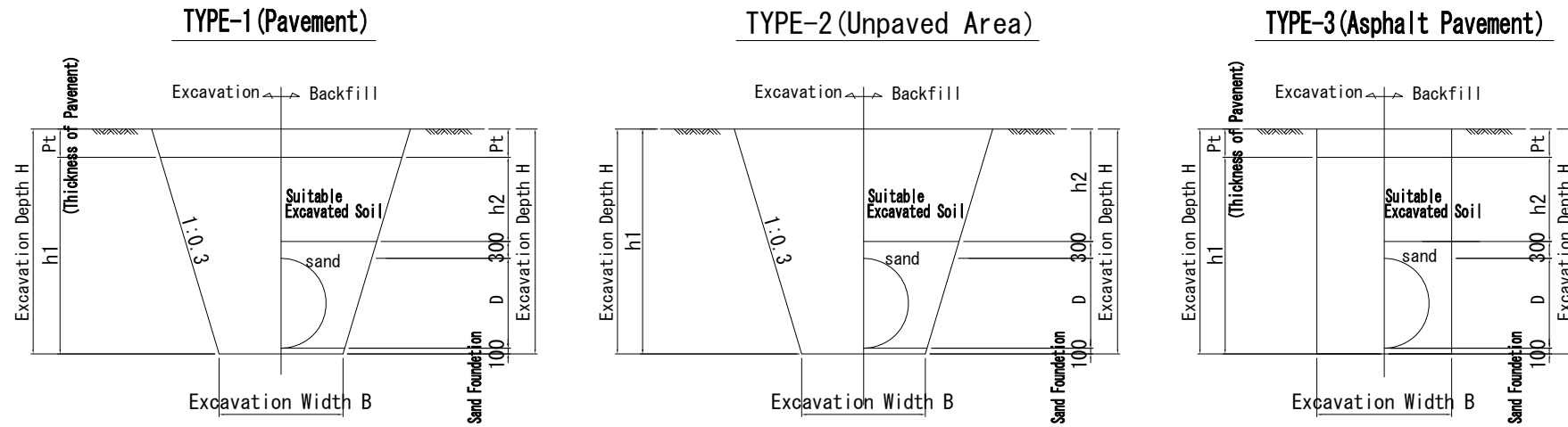
PIPE GRADIENT (%)	i=0.35																	
EXCAVATION DEPTH (m)	3.81	3.85	3.85	3.40	3.35	3.35	3.57	3.33	2.80	3.00	3.13	3.38	3.48	3.48	3.25	3.38	3.38	
INVERT ELEVATION (m)	4.80	4.82	4.84	4.88	4.87	4.88	4.71	4.72	4.74	4.74	4.78	4.77	4.78	4.78	4.79	4.79	4.81	
GROUND ELEVATION (m)	8.61	8.25	7.98	8.05	8.20	8.03	8.27	8.05	8.34	8.34	7.98	8.15	8.24	8.24	8.03	8.15	8.18	
ACCUMULATED DISTANCE (m)	15750.00	15800.00	15850.00	15900.00	15950.00	16000.00	16050.00	16100.00	16150.00	16187.5	16200.00	16200.00	16272.75	16272.75	16300.00	16300.00	16350.00	
ROTATION ANGLE											5.98°		47° 22' 1/2" 11' 1/2"					
STATION	315+1	316+1	317+1	318+1	319+1	320+1	321+1	322+1	323+1	323+2	324+1	325+1	325+2	325+3	325+4	325+5	326+1	327+1
PIPE DIAMETER	DN1000 STEEL PIPE																	

JICA Study Team				THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM	Date: Oct. 2011	Duong River Water Treatment Plant Transmission Pipeline	Drawing No
	No.				Scale: V=1/100 H=1/1000	PLAN AND PROFILE OF TRANSMISSION PIPELINE	D-28





## CROSS SECTION OF TYPICAL EARTHWORKS FOR PIPE Laying



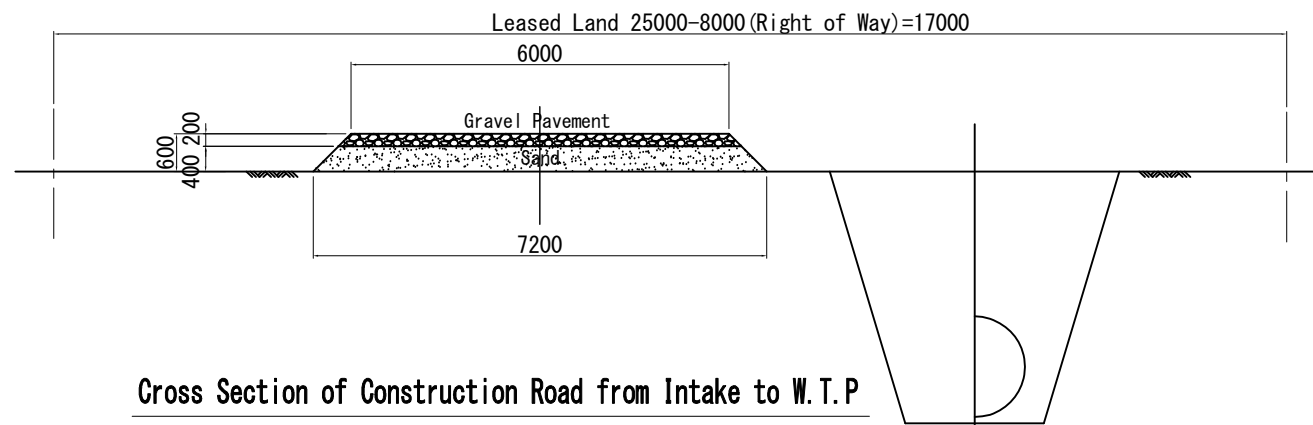
### Dimension

Diameter D	TYPE	Location of Pipe Laying	Excavation Width B	Thickness of Pavement	Layer *
DN450	TYPE-2	Cultivated Area	1050	—	—
DN700	TYPE-1	1 A/179	1300	520	D=50mm O=70mm P=1kg/m <sup>2</sup> B=150mm S=350mm
	TYPE-2	Water Treatment Plant	1300	—	—
	TYPE-3	1 A/179	1600	520	D=50mm O=70mm P=1kg/m <sup>2</sup> B=150mm S=350mm
DN1000	TYPE-1	197	1600	795	D=50mm O=70mm P=1kg/m <sup>2</sup> B=150mm S=350mm
	TYPE-2	Cultivated Area	1600	—	—
DN1100	TYPE-3	197	2000	795	Pa1=15mm Pa2=30mm B1=350mm S1=400mm
	TYPE-1	197	1700	795	Pa1=15mm Pa2=30mm B1=350mm S1=400mm
	TYPE-3	197	2100	795	Pa1=15mm Pa2=30mm B1=350mm S1=400mm
DN1200	TYPE-3	5	2100	530	D=50mm O=80mm P=1kg/m <sup>2</sup> B=150mm S=250mm
		5	2200	530	D=50mm O=80mm P=1kg/m <sup>2</sup> B=150mm S=250mm
DN1400	TYPE-2	Cultivated Area	2200	—	—
	TYPE-3	182	2400	670	D=50mm O=70mm P=1kg/m <sup>2</sup> B=150mm S=400mm

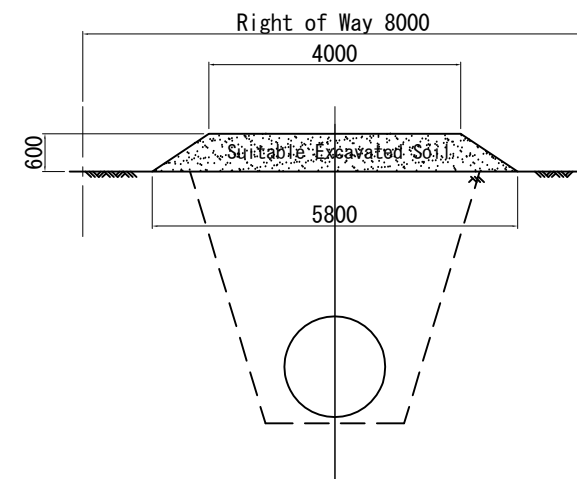
\*) D:Dense graded bituminous concrete (50mm)  
 O:Open-graded bituminous concrete (70mm)  
 B:Base course (250mm)  
 S:Subbase course (250mm)  
 Pa1:Penetration bituminous pavement (15mm 4kg/m<sup>2</sup>)  
 Pa2:Penetration bituminous pavement (30mm 4kg/m<sup>2</sup>)  
 B1:Base course (Grave40~60)  
 B2:Subbase course (Cobble)

## Cross Section of Construction Road and Maintenance Road

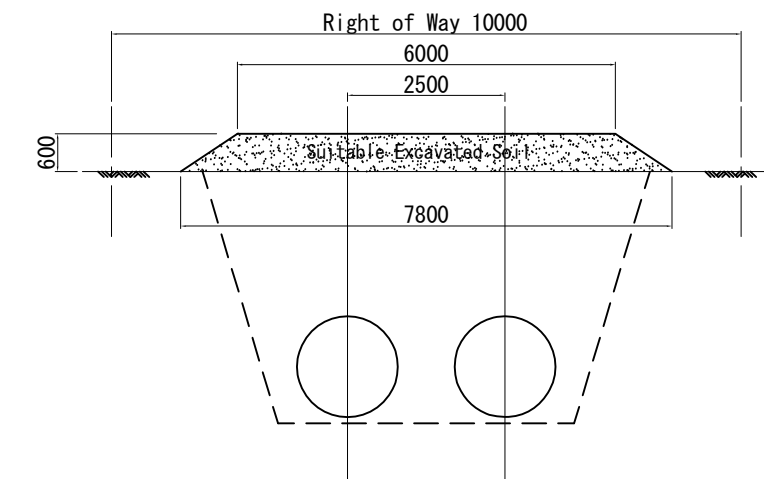
Cross Section of Construction Road  
(Area other than Road)



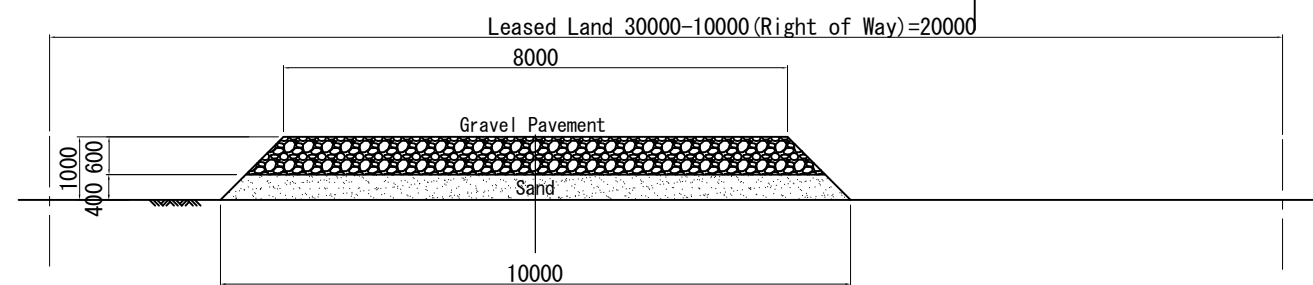
Cross Section of Maintenance Road  
(Area other than Road)



Cross Section of Maintenance Road  
(Intake to Water Treatment Plant)



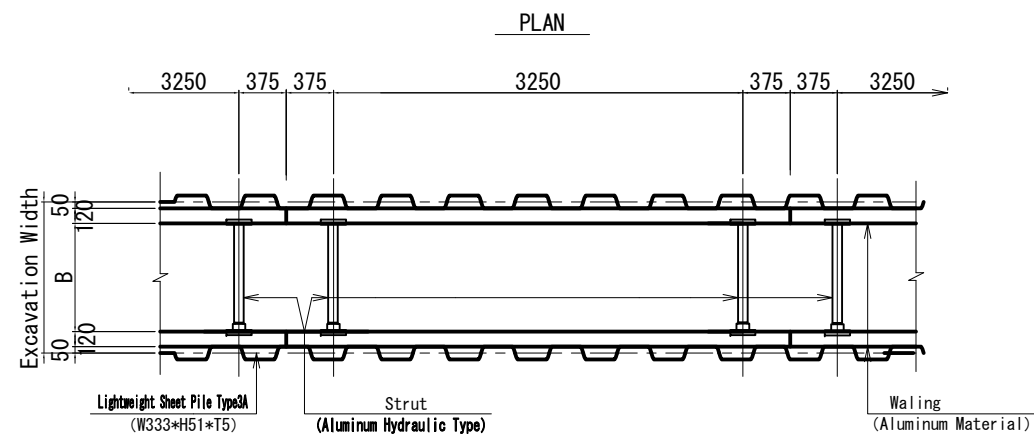
Cross Section of Construction Road from Intake to W.T.P



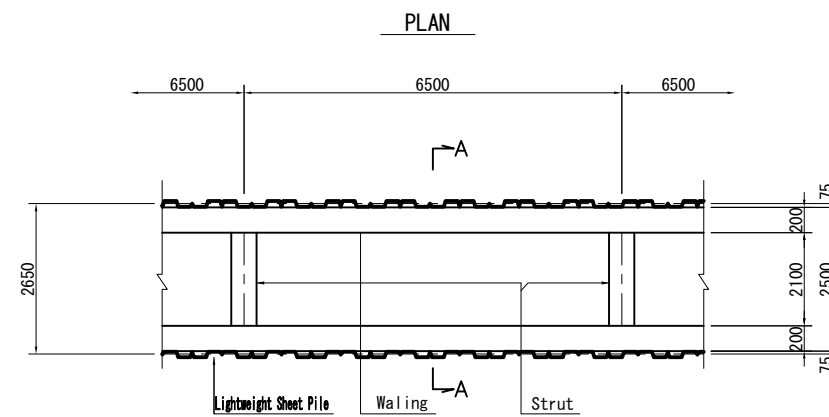
No.			
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TYPICAL SHEATHING WORKS S=NONE

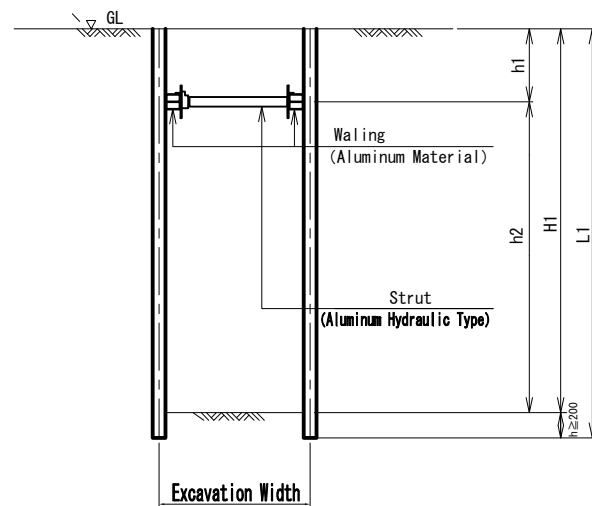
POSITIONING OF LIGHTWEIGHT SHEET PILE  
(DN  $\phi$  700~1400mm)



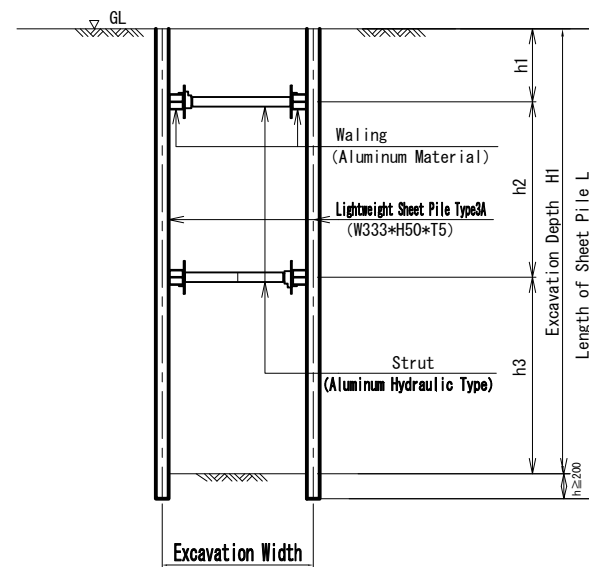
DRIVING OF RIGHTWEIGHT SHEET PILE  
(DN  $\phi$  1600mm)



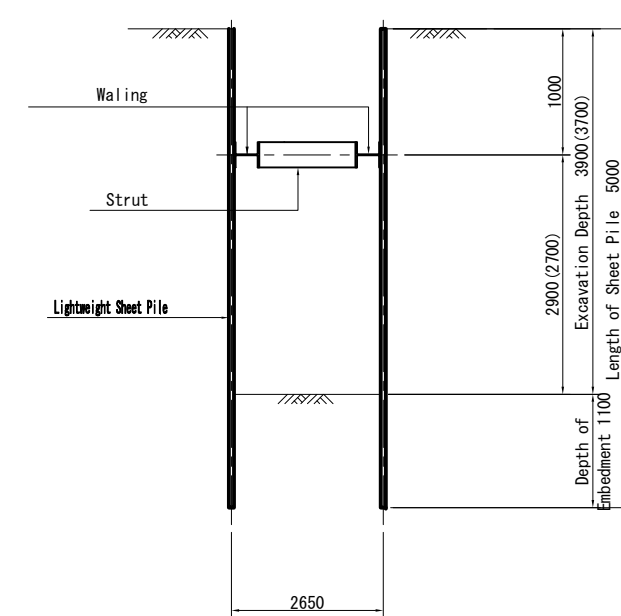
Cross Section (TYPE1 Excavation Depth Less than 3m)



Cross Section (TYPE2 Excavation Depth More than 3m)



CROSS SECTION A-A



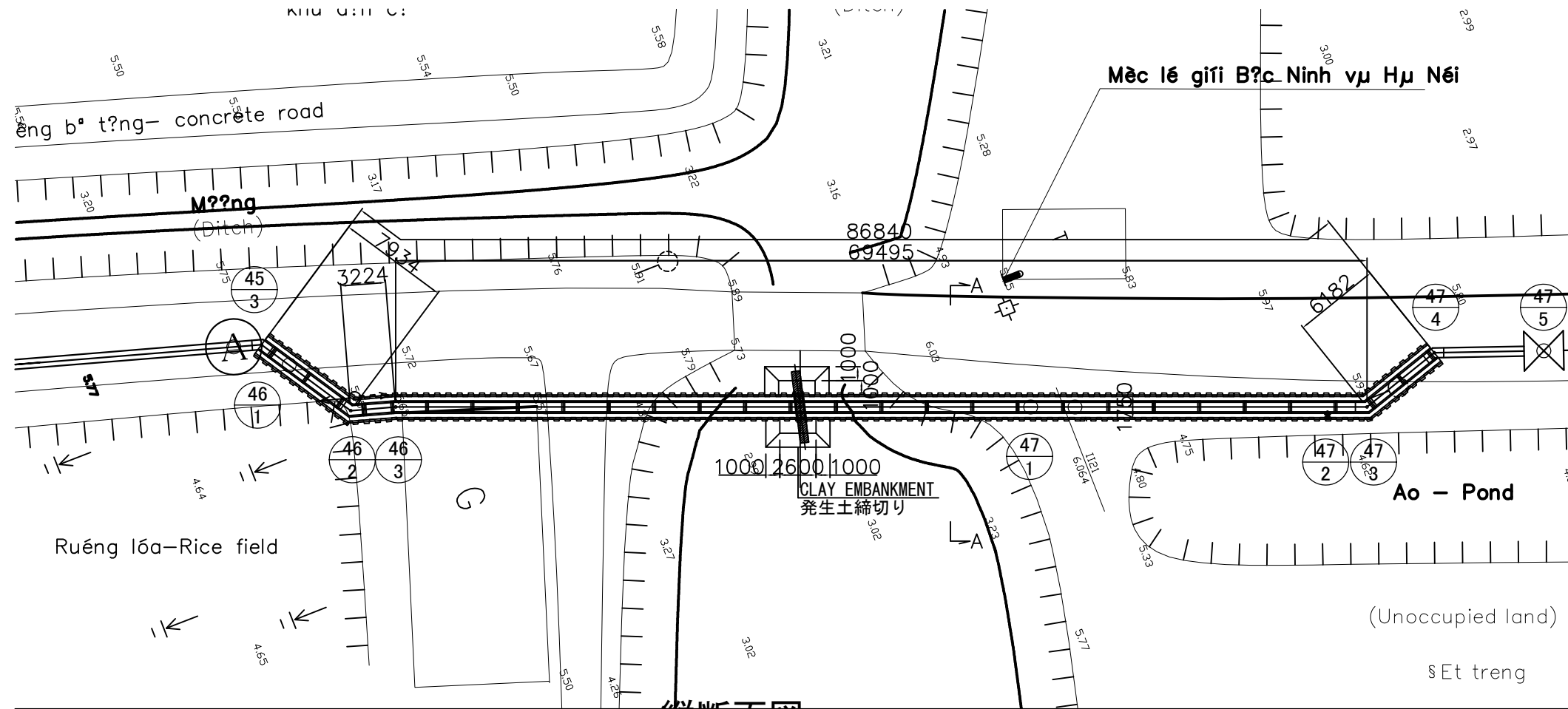
Dimension

Diameter	Excavation Width	B	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>
$\phi$ 700	1.60	0.80	0.50	(1.50)	
$\phi$ 1000	2.00	0.80	0.50	1.50	
$\phi$ 1100	2.10	0.80	0.50	1.50	
$\phi$ 1200	2.20	0.80	0.50	1.50	
$\phi$ 1400	2.40	0.80	0.50	1.50	

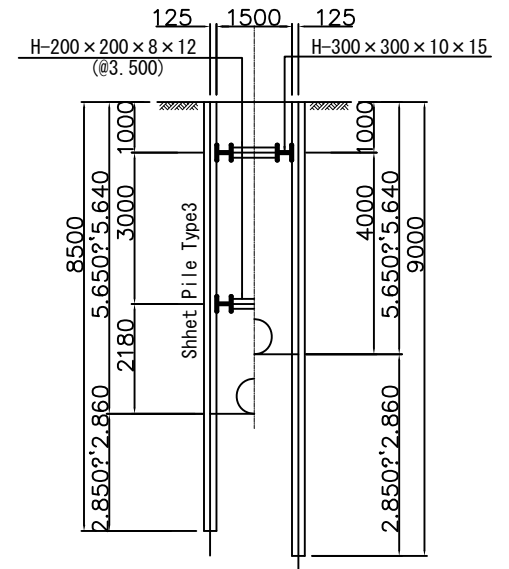
- ※ 1 Lightweight Sheet pile type3A (Width333mm \* height50mm \* Thickness5)  
Tengel strength 400N/mm more allowable bending Unit stress 210N/mm more 1m당 Section Modulus 144cm more
- ※ 2 Aluminum Waling Timbers (Width120mm \* 120mm)  
Allowable Bending Unit Stress 173N/mm more Allowable Shearing unit stress 100N/mm more Section Modulus 121cm more
- ※ 3 Hydraulic Jack  
Allowable Axial force 78.4KN/pcs more

# 179-1号線水路横断 仮設図 CANAL ① CROSSING PLAN ALONG ROUTE 179

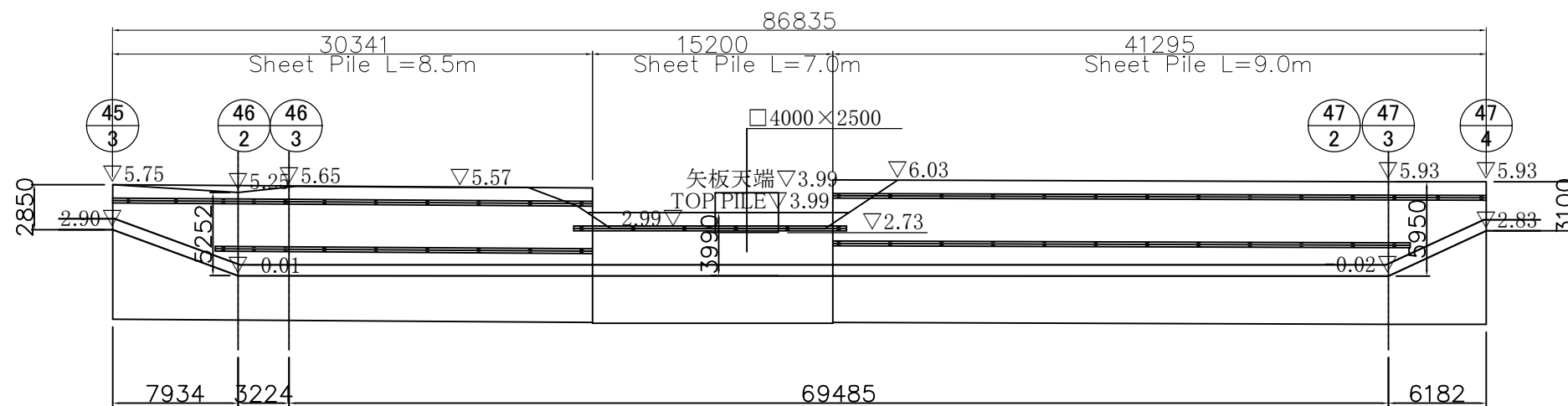
平面図  
PLAN SCALE: 1/400



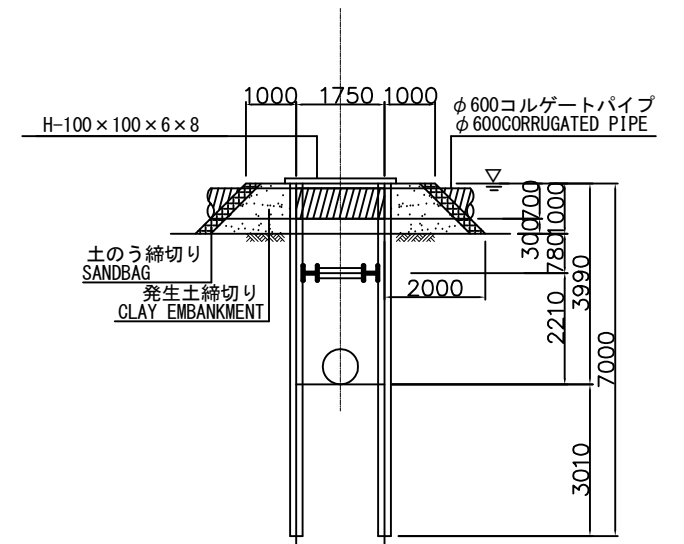
断面図  
CROSS SECTION A-A SCALE: 1/150



縦断面図  
PROFILE SCALE: 1/400



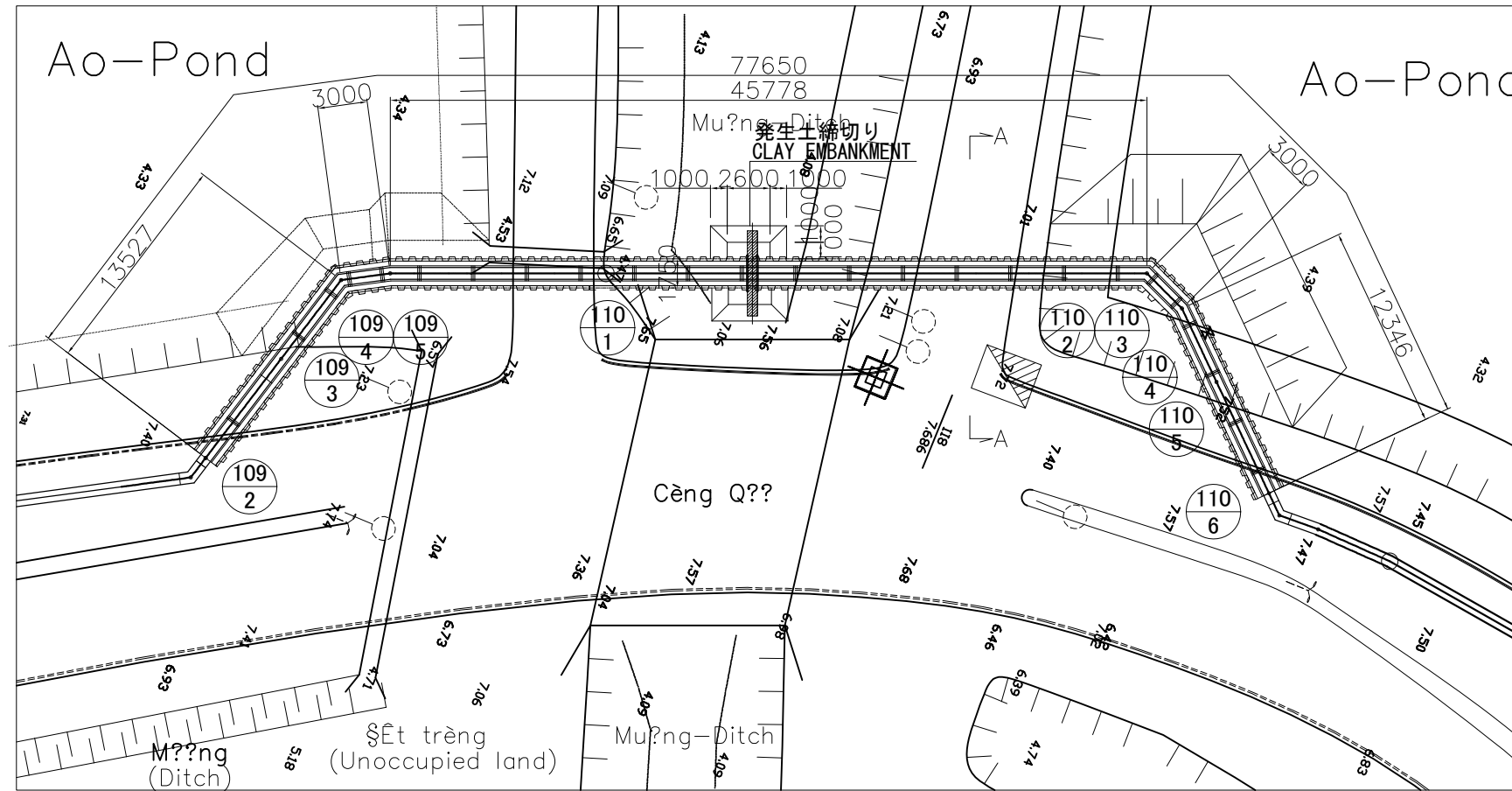
土のう一般図  
EMBANKMENT FOR STOPPING CANAL FLOW SCALE: 1/150



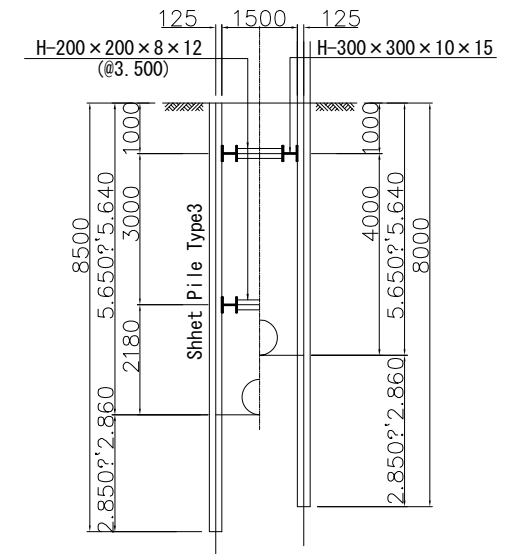
No.			
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# 179-2号線水路横断 仮設図 CANAL ② CROSSING PLAN ALONG ROUTE 179

平面図  
PLAN SCALE: 1/400

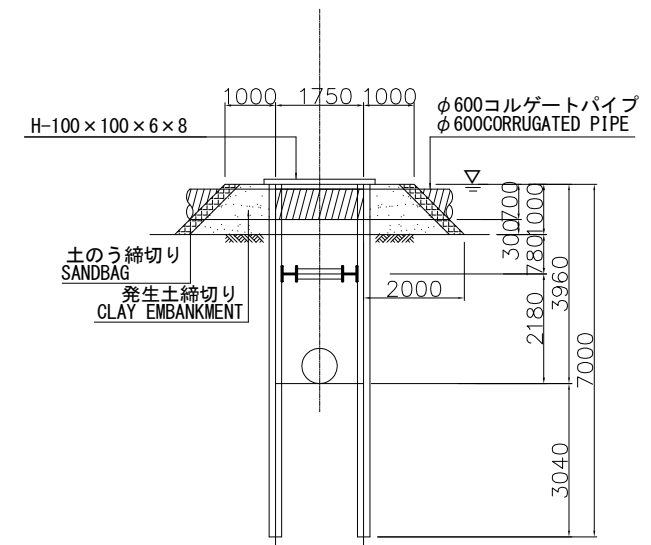
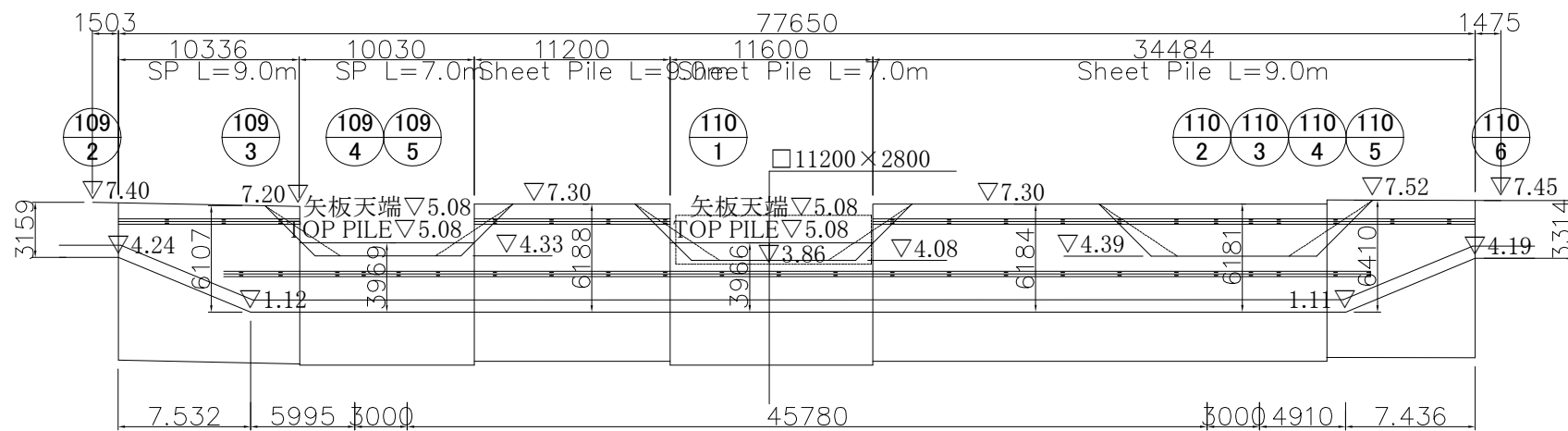


断面図  
CROSS SECTION A-A SCALE: 1/150



土のう一般図  
EMBANKMENT FOR STOPPING CANAL FLOW  
SCALE: 1/150

縦断面図  
PROFILE SCALE: 1/400

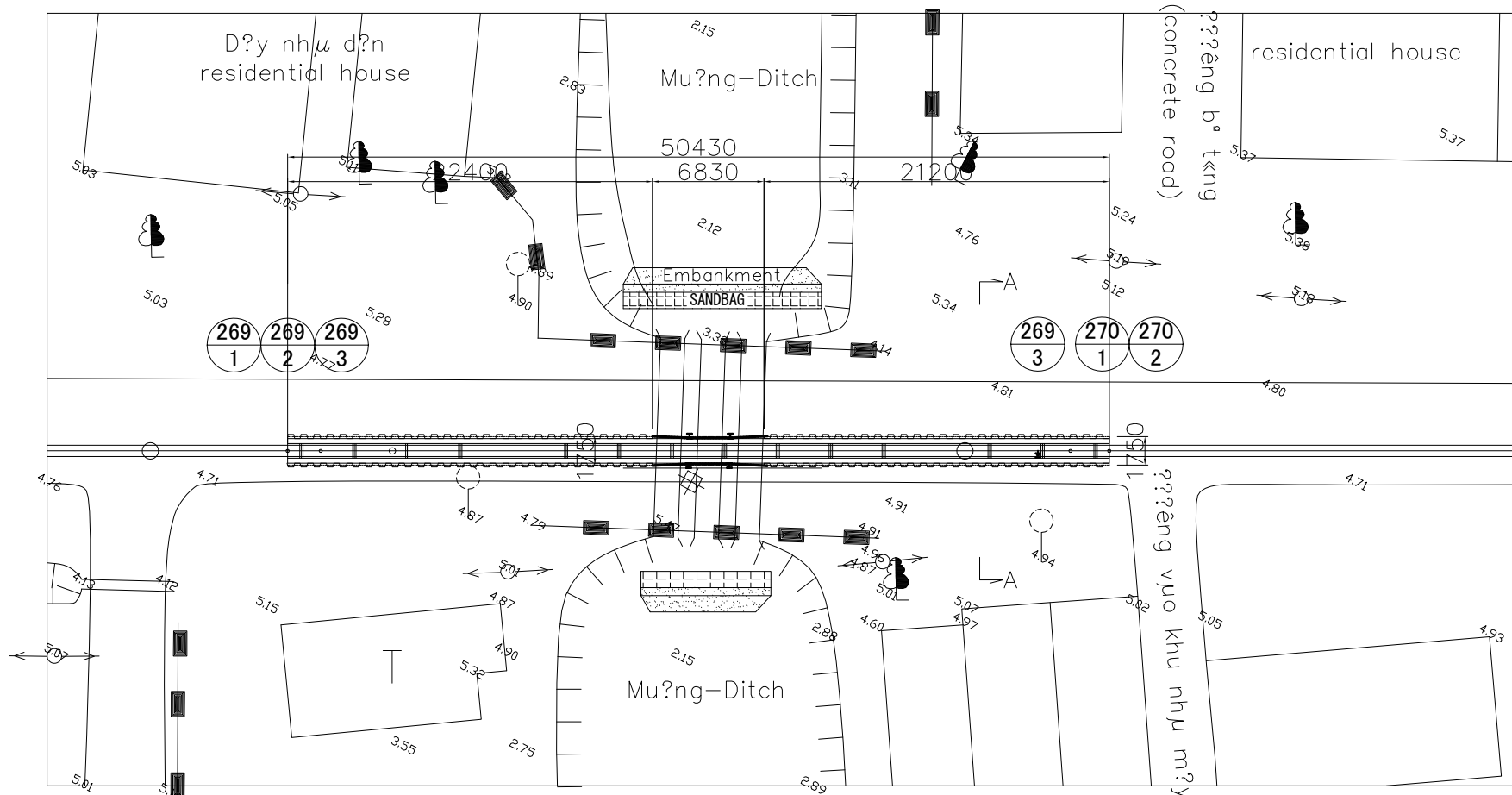


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# 1A号線水路横断 仮設図 CANAL ③ CROSSING PLAN ALONG ROUTE 1A

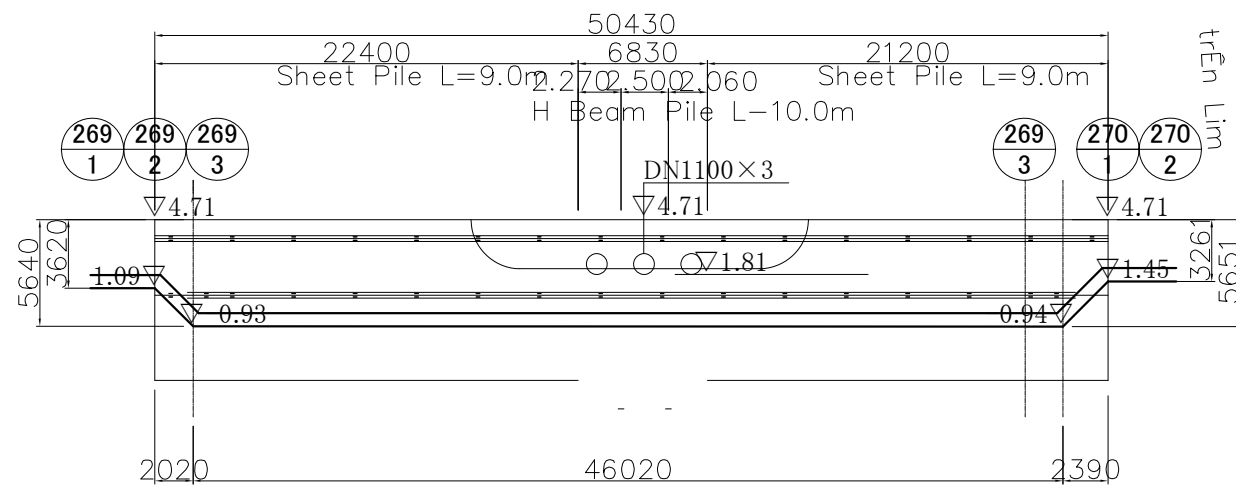
平面図  
PLAN

SCALE: 1/400



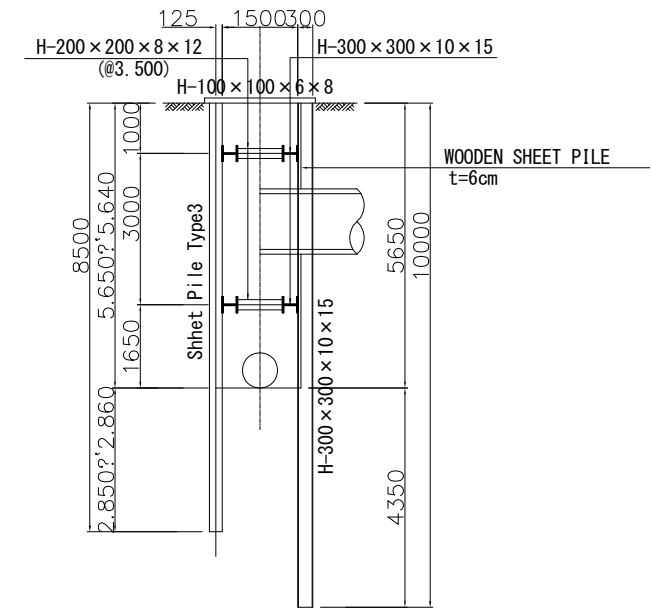
縦断面図  
PROFILE

SCALE: 1/400



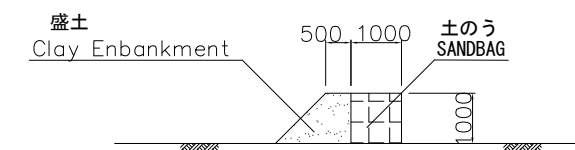
断面図

CROSS SECTION A-A SCALE: 1/150



土のう一般図  
EMBANKMENT FOR STOPPING CANAL FLOW

SCALE: 1/150

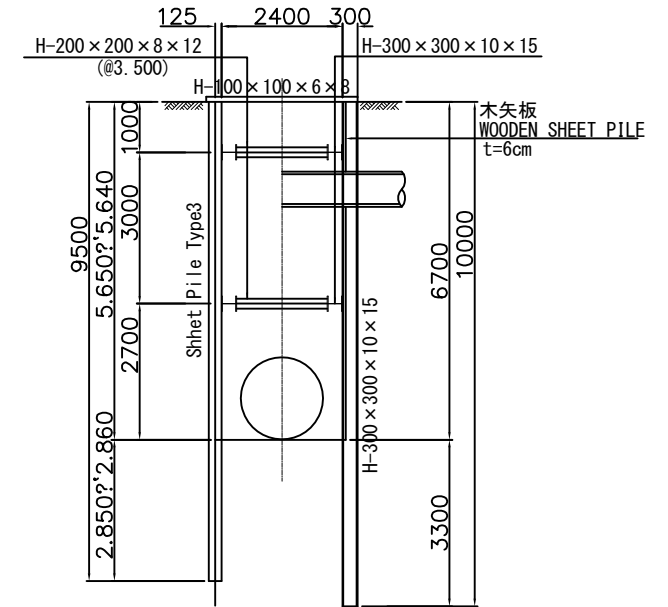
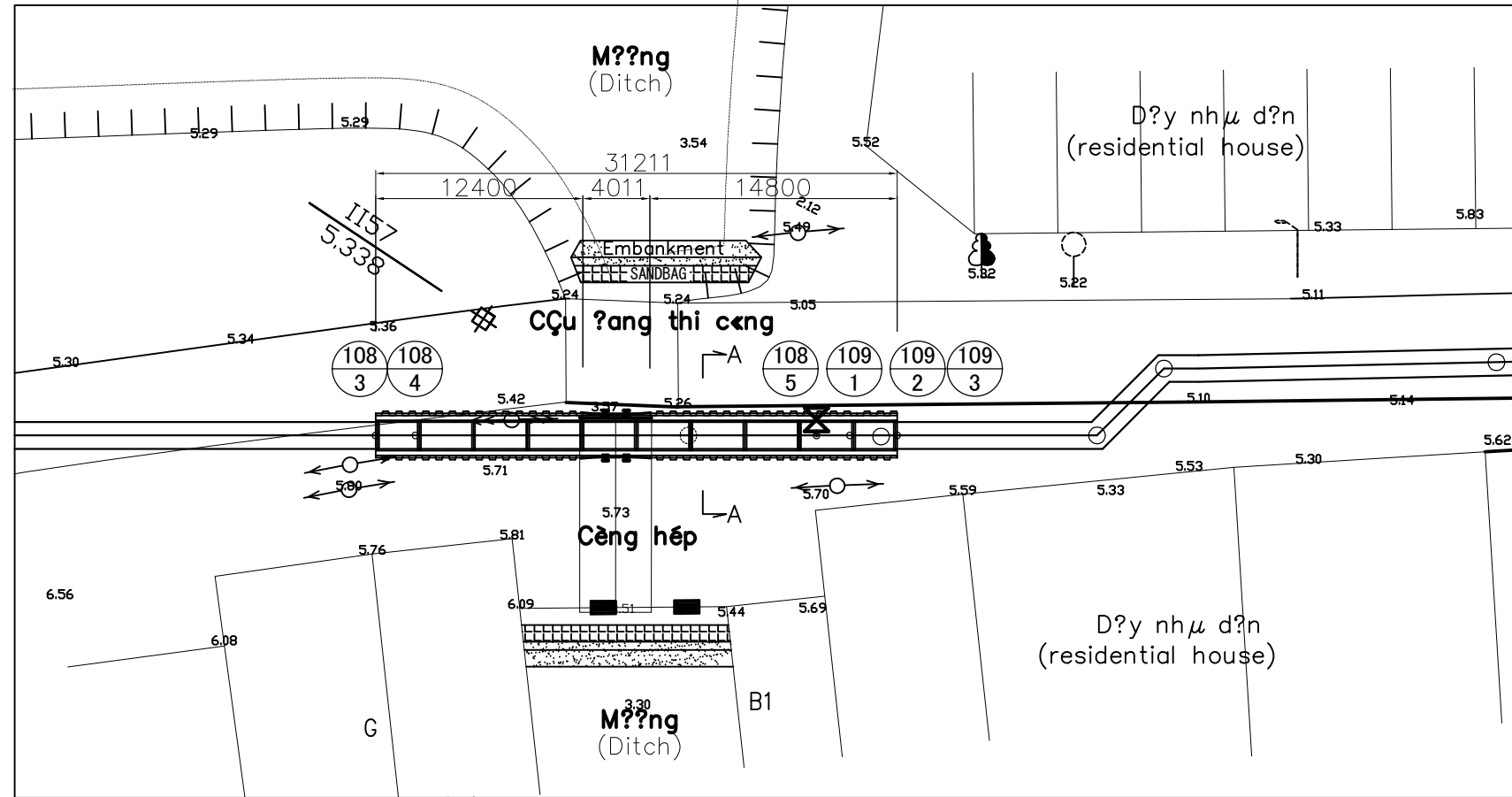


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# 182号線水路横断 仮設図 CANAL ④ CROSSING PLAN ALONG ROUTE 182

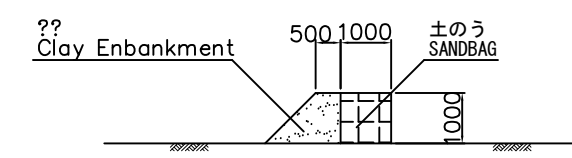
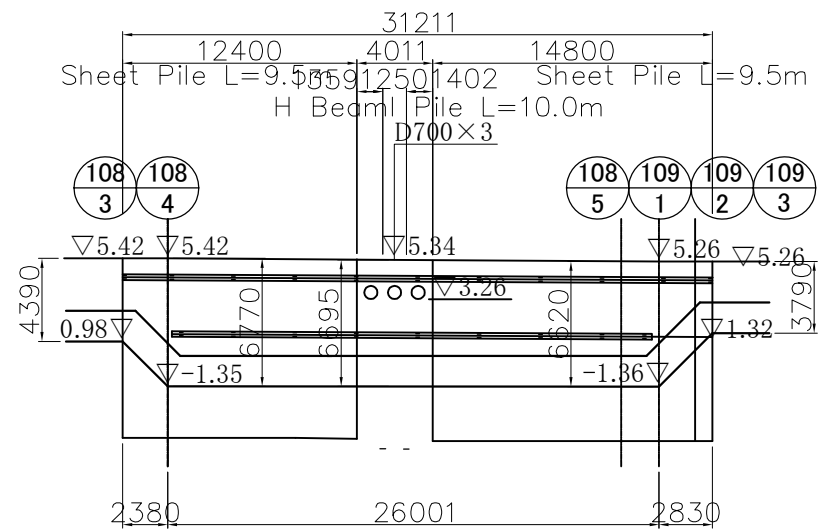
平面図  
PLAN SCALE: 1/400

断面図  
CROSS SECTION A-A SCALE: 1/150



縦断面図  
PROFILE SCALE: 1/400

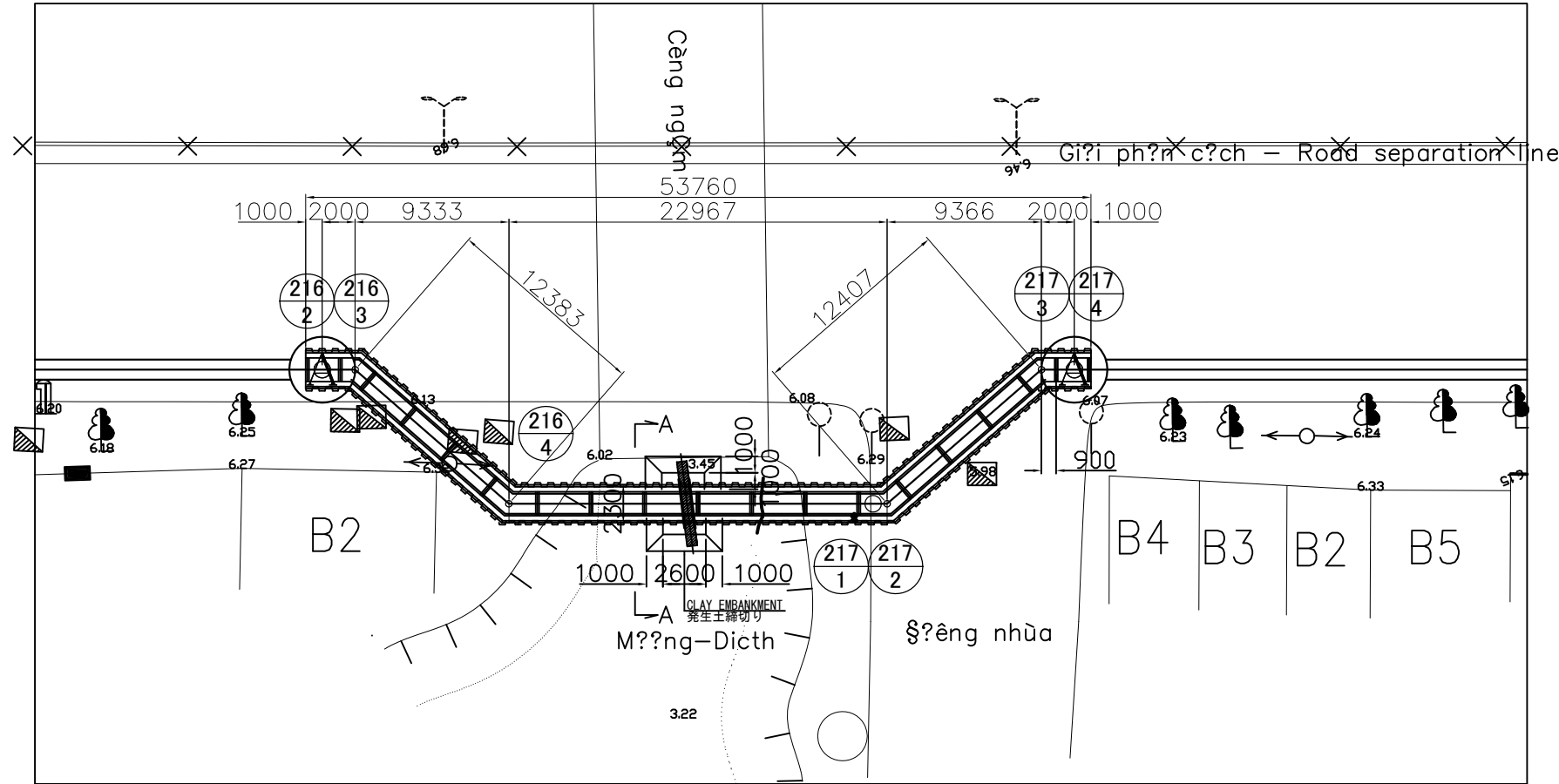
締切り詳細図  
EMBANKMENT FOR STOPPING CANAL FLOW  
SCALE: 1/150



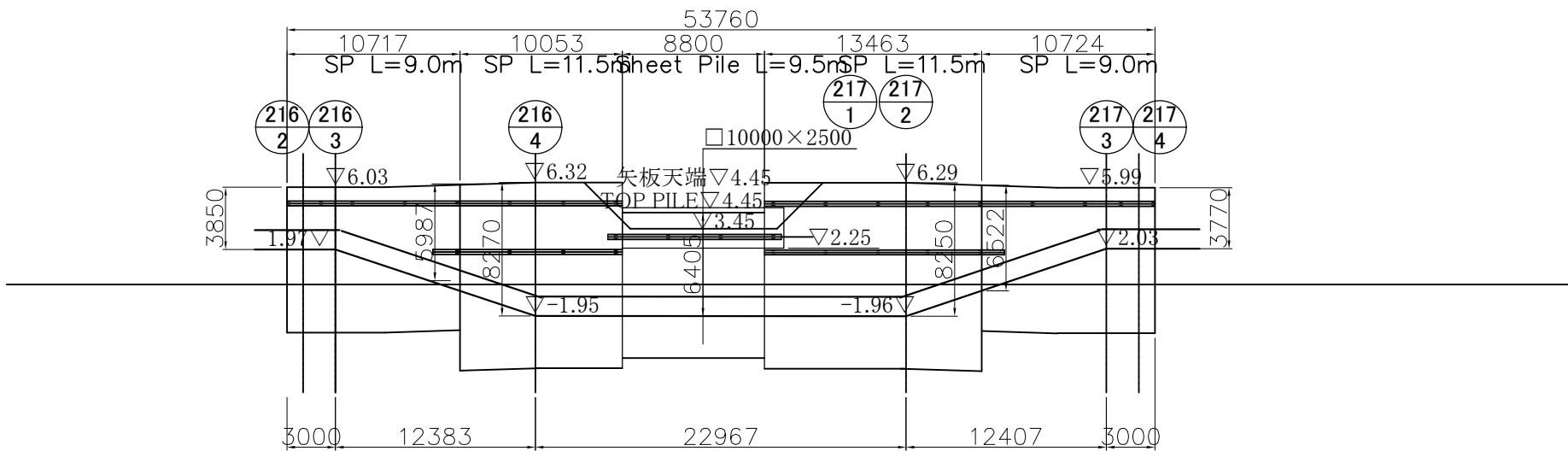
JICA Study Team									
	No.								
THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM					Date. Oct. 2011	Duong River Water Treatment Plant Transmission Pipeline			Drawing No F-4
					Scale S=1/400 S=1/150	CANAL ④ CROSSING PLAN ALONG ROUTE 182			

# 5号線水路横断 仮設図 CANAL ⑤ CROSSING PLAN ALONG ROUTE 5

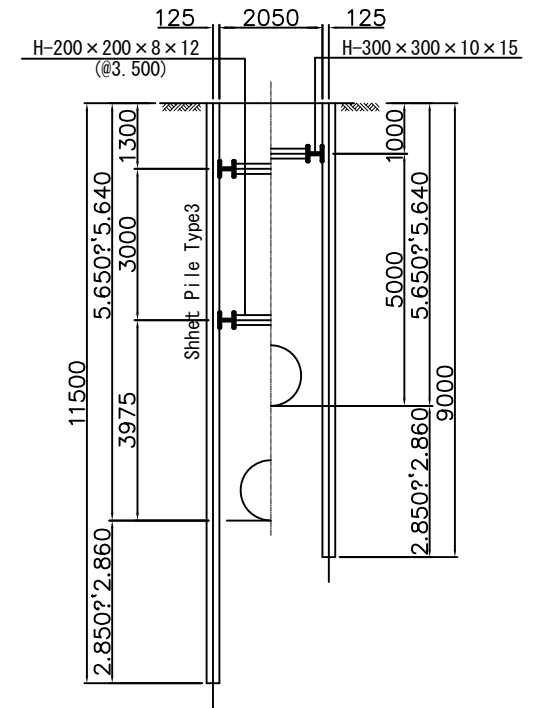
平面図  
PLAN SCALE: 1/400



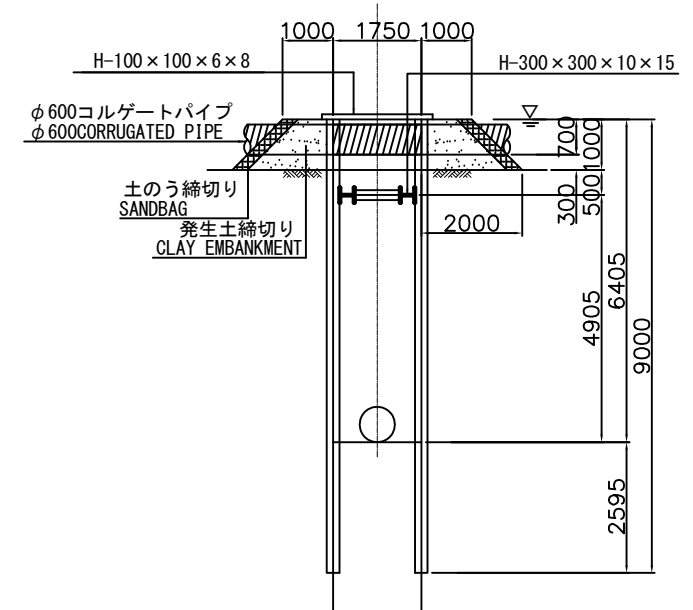
縦断面図  
PROFILE SCALE: 1/400



断面図  
CROSS SECTION A-A SCALE: 1/150



土のう一般図  
EMBANKMENT FOR STOPPING CANAL FLOW SCALE: 1/150



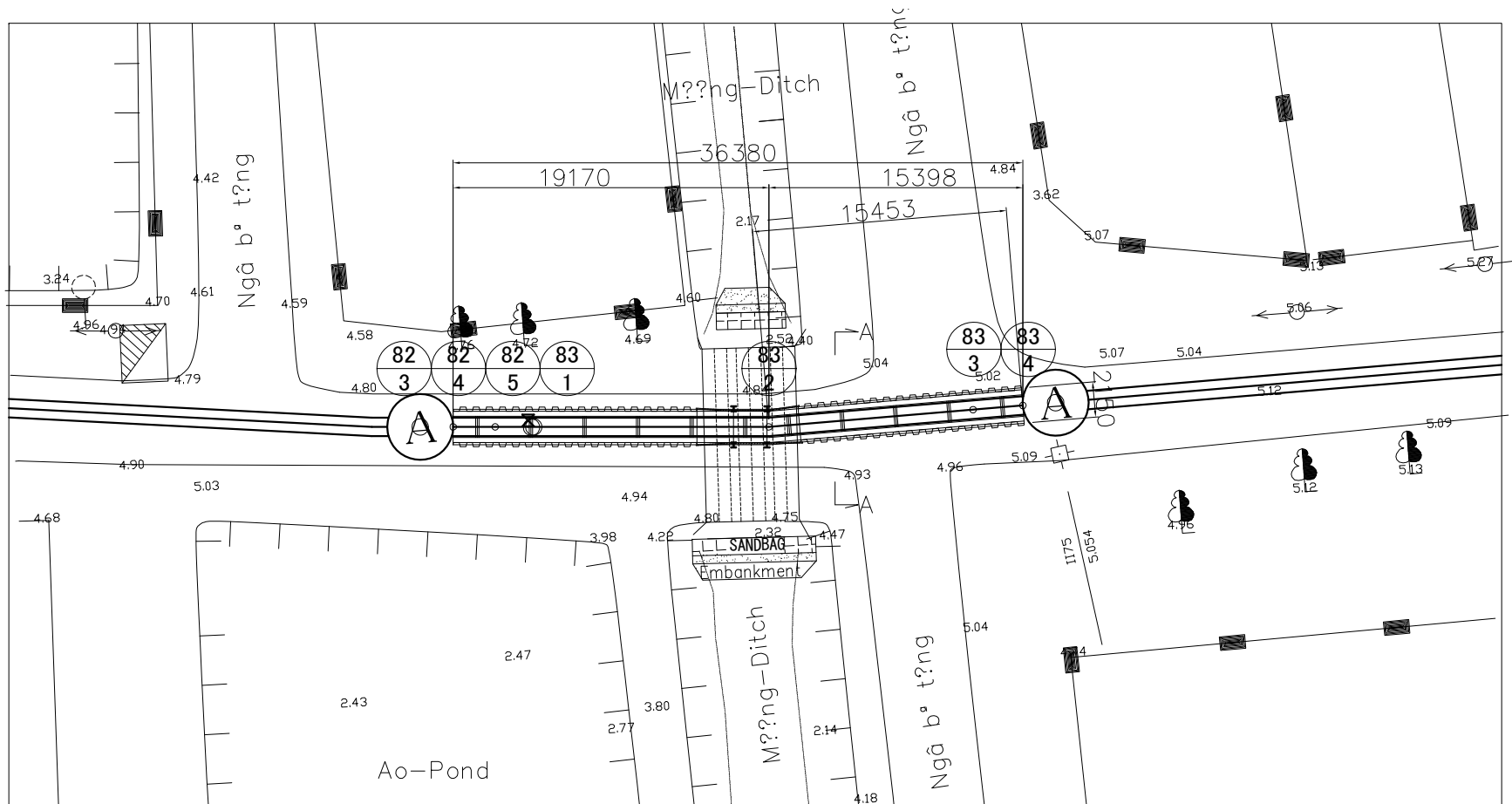
No.			
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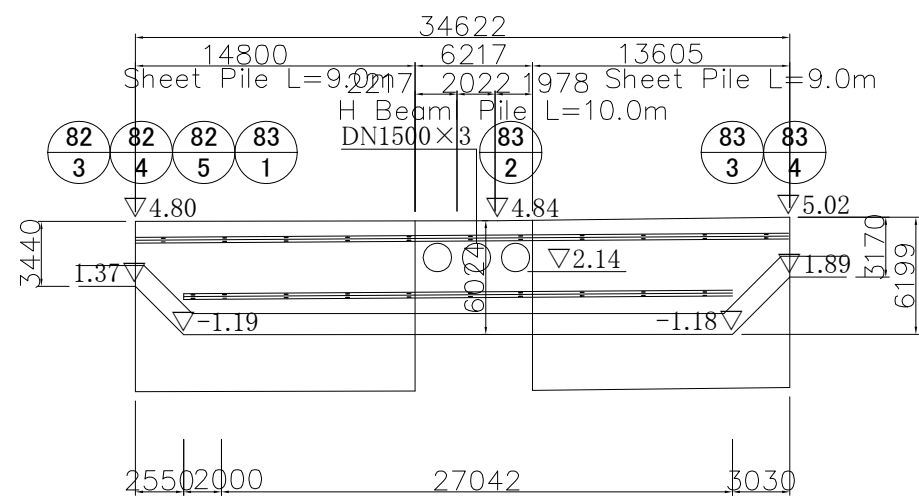


# CANAL ⑦ CROSSING PLAN ALONG ROUTE 197

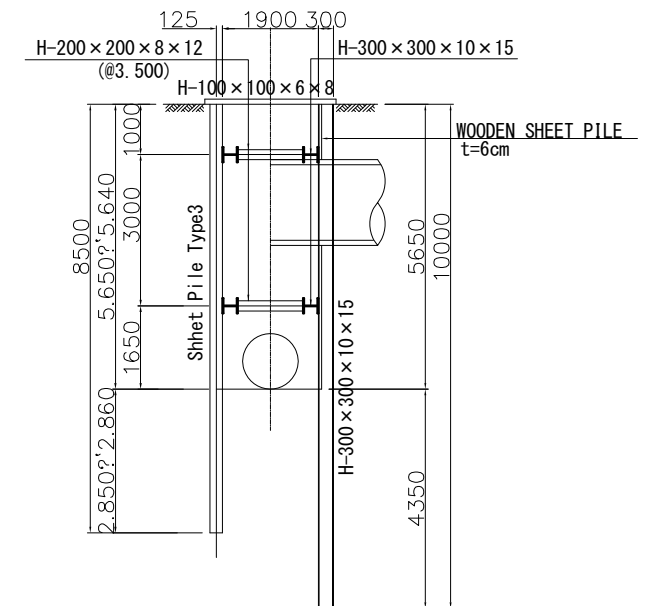
**PLAN** SCALE: 1/400



**PROFILE** SCALE: 1/400

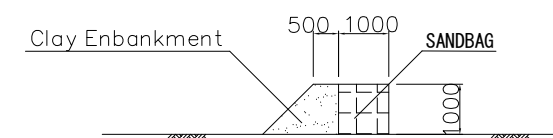


**CROSS SECTION A-A** SCALE: 1/150



**EMBANKMENT FOR STOPPING CANAL FLOW**

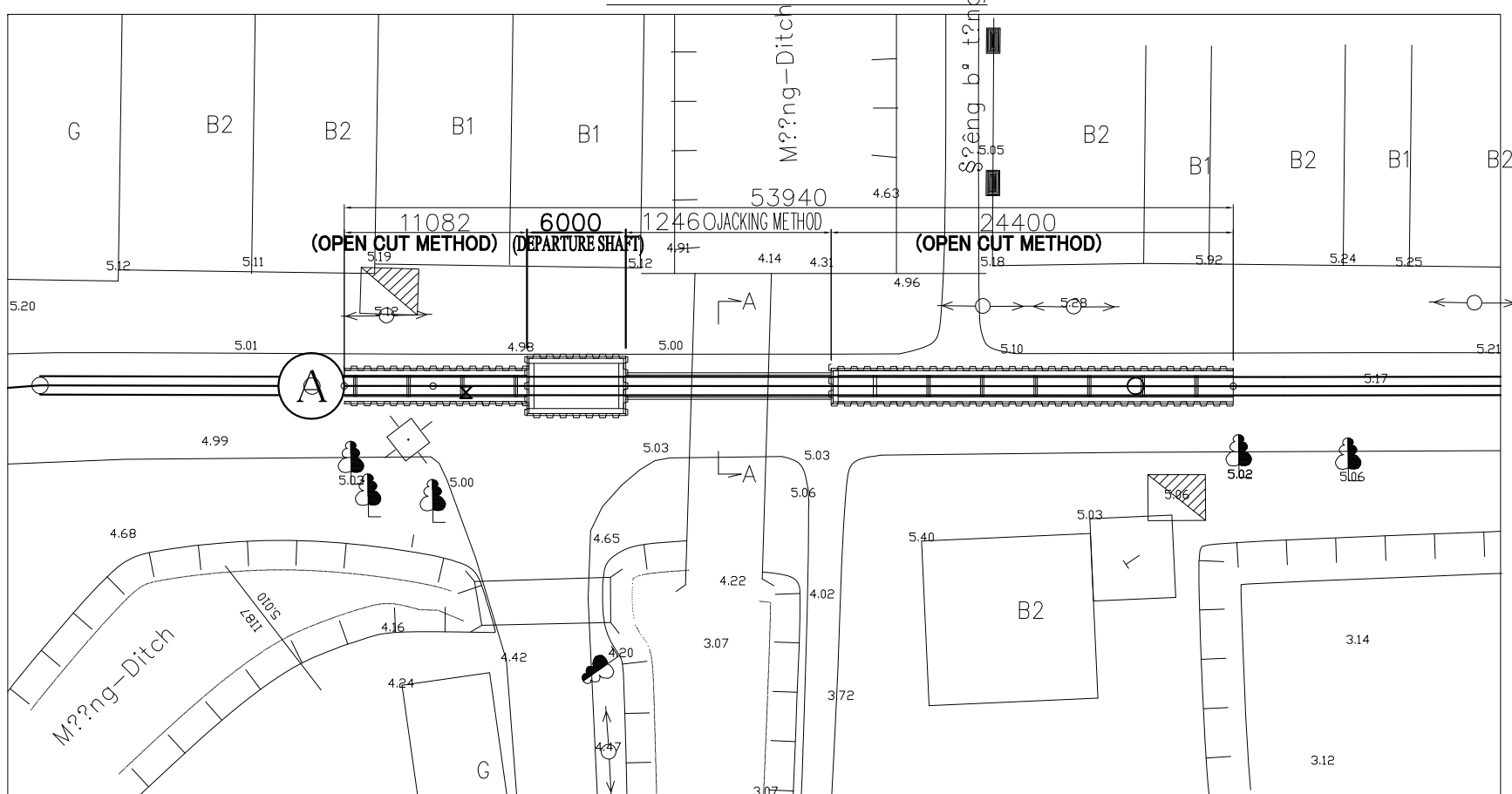
SCALE: 1/150



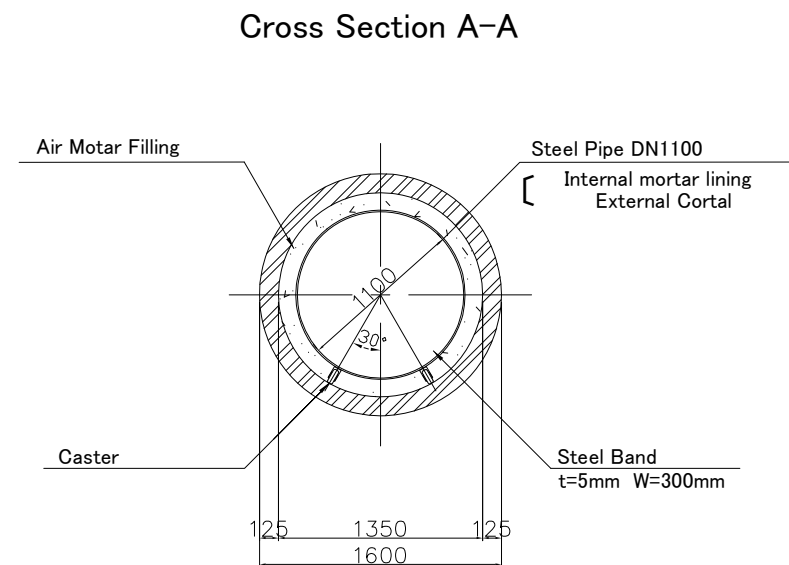
No.			
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# CANAL ⑧ CROSSING PLAN ALONG ROUTE 197

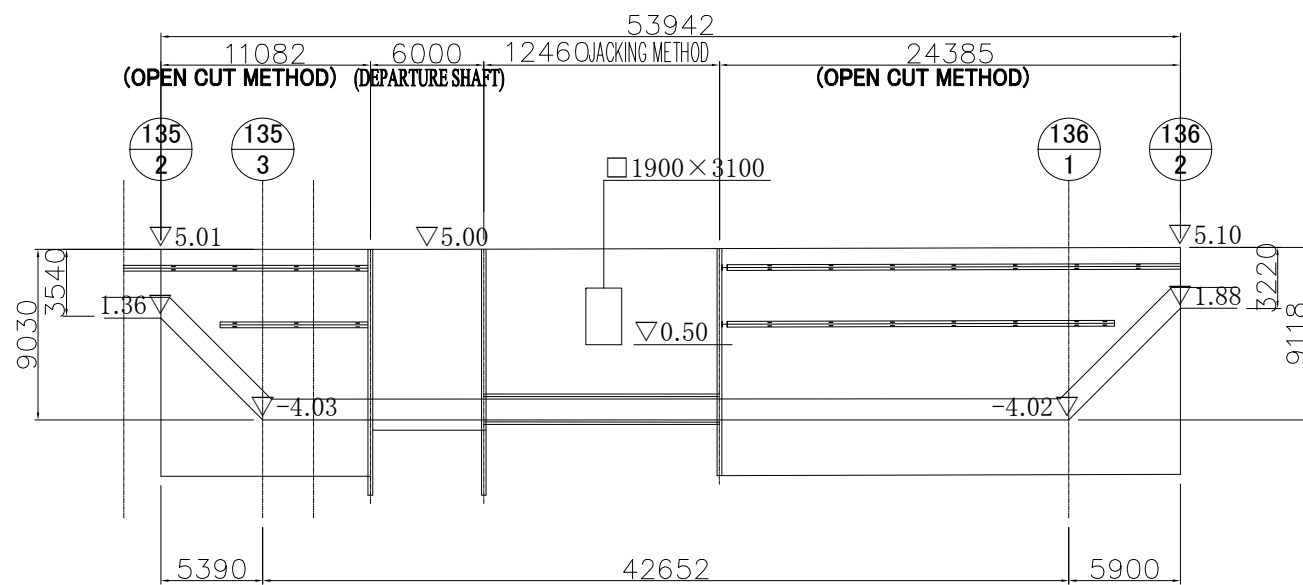
**PLAN** SCALE: 1/400



**CROSS SECTION A-A** SCALE: 1/50



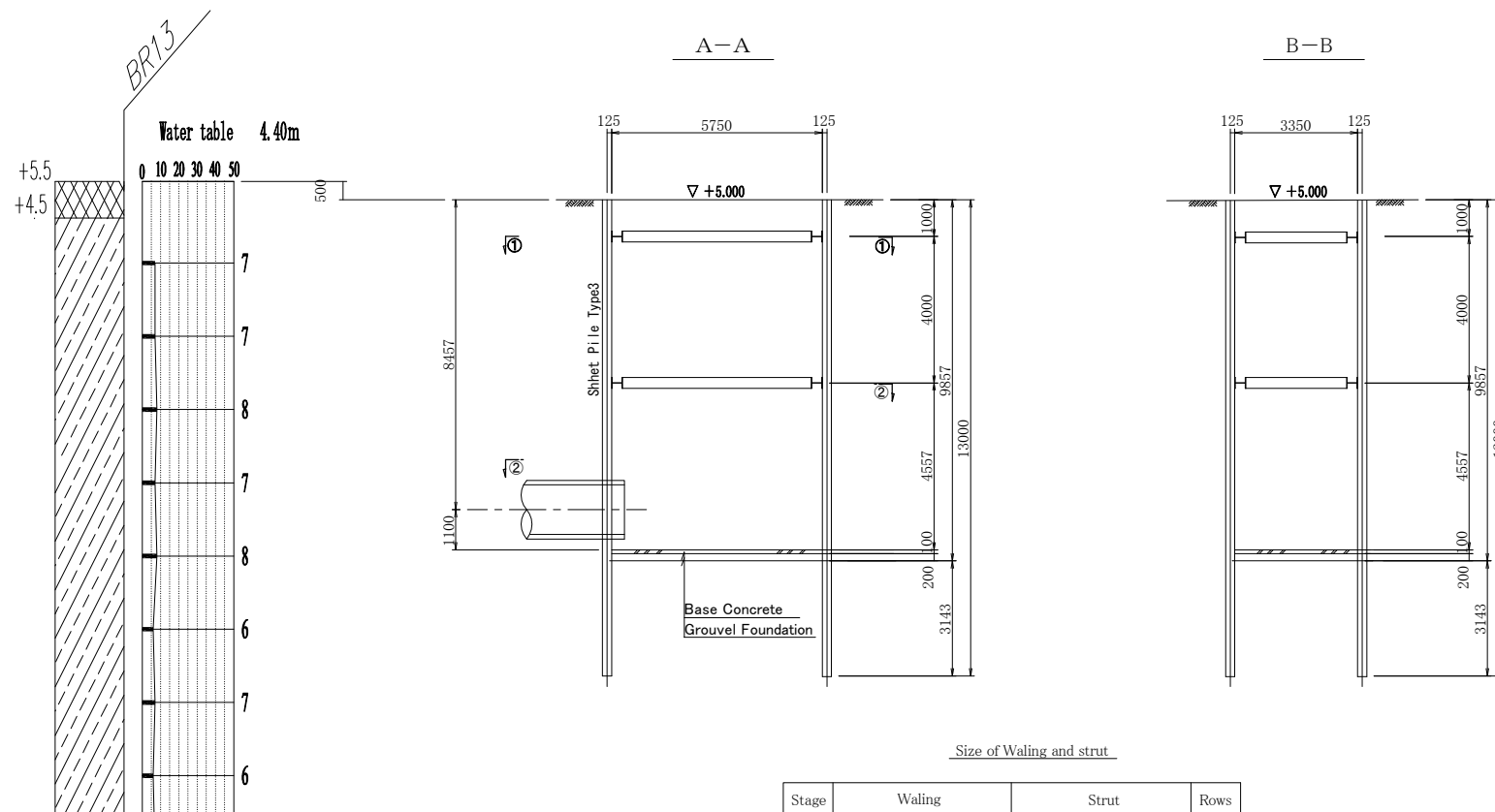
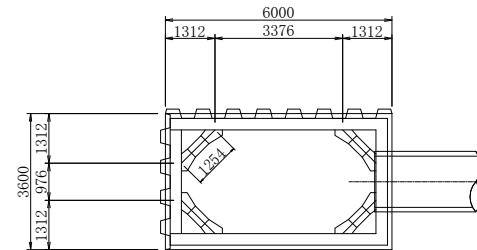
**PROFILE** SCALE: 1/400



No.			
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# PLAN OF SHAFT AT CANNAL ⑧ CROSSING ALONG ROUTE 197

## DEPARTURE SHAFT S= 1:100



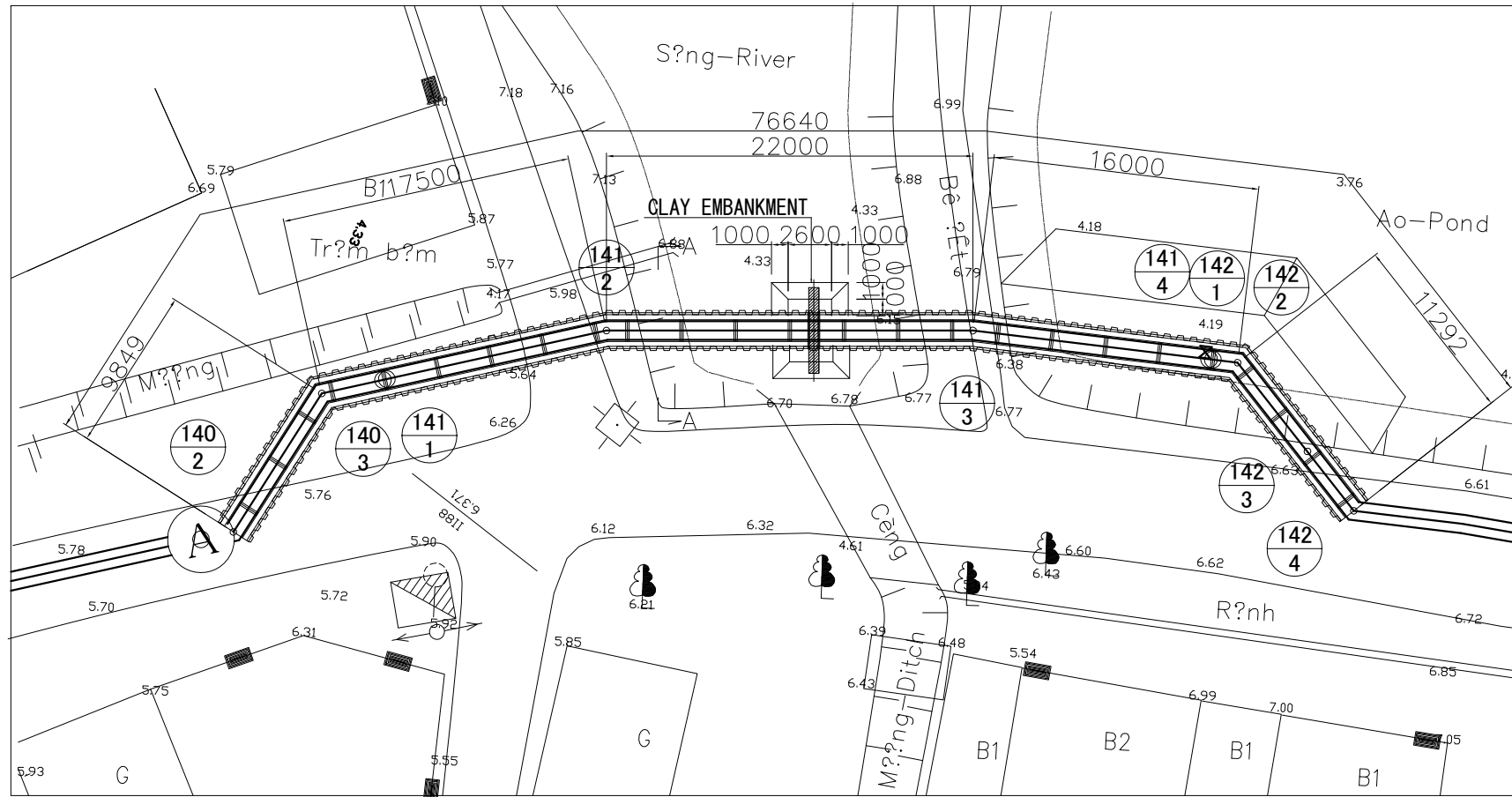
Size of Waling and strut

Stage	Waling	Strut	Rows
①	H-300×300×10×15	H-300×300×10×15	1
②	H-300×300×10×15	H-300×300×10×15	1

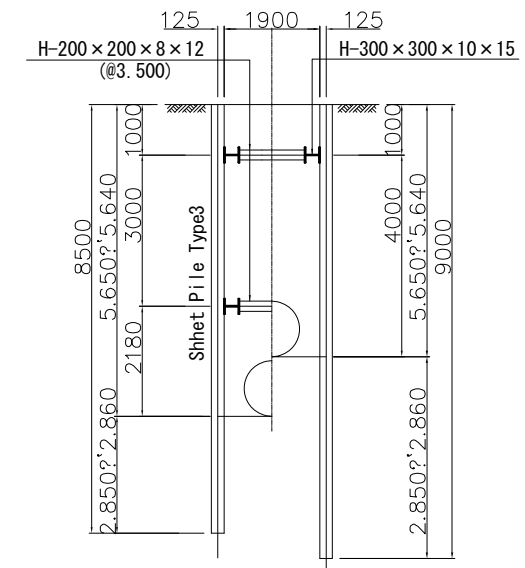
No.			
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# CANAL ⑨ CROSSING PLAN ALONG ROUTE 197

**PLAN** SCALE: 1/400

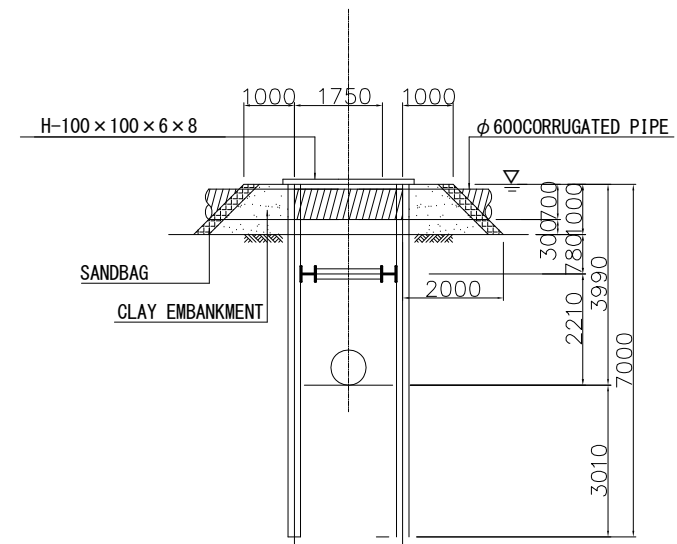


**CROSS SECTION A-A** SCALE: 1/150

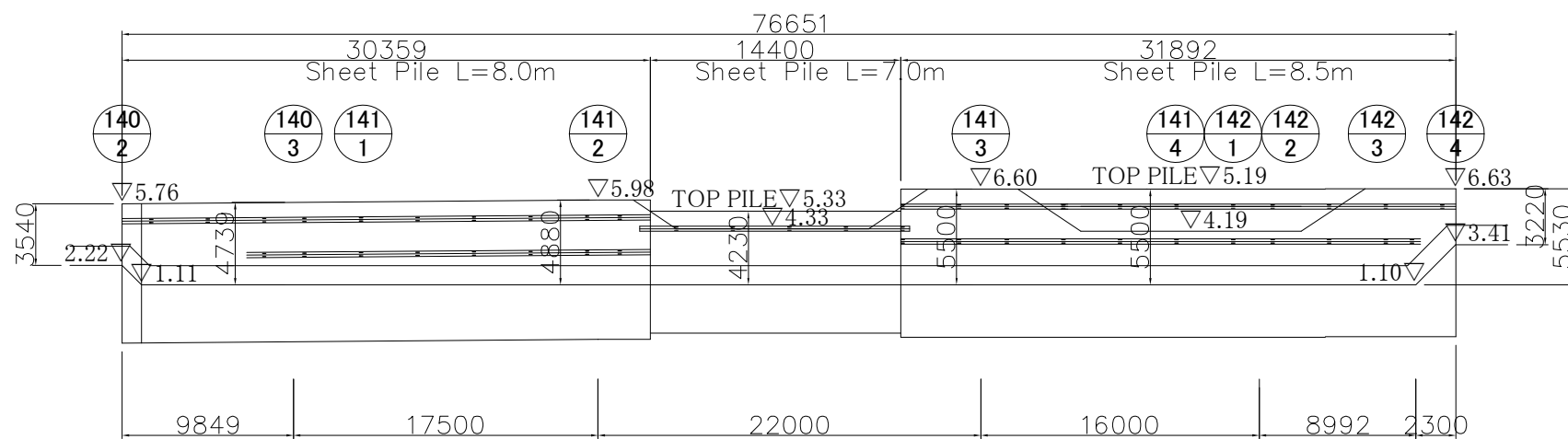


**EMBANKMENT FOR STOPPING CANAL FLOW**

SCALE: 1/150



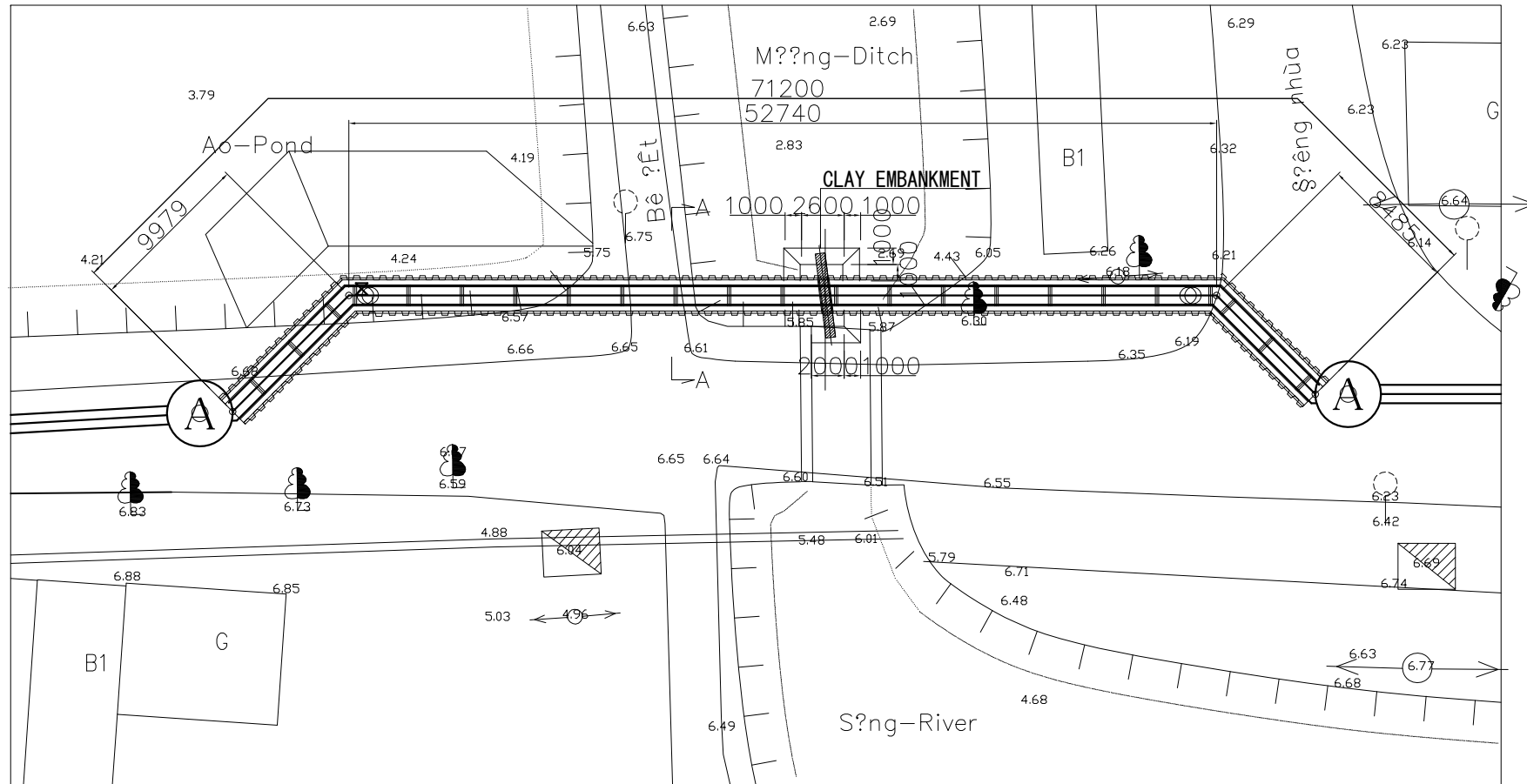
**PROFILE** SCALE: 1/400



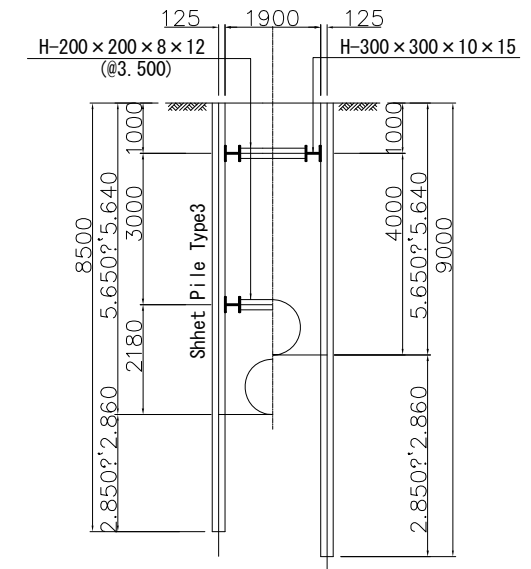
No.			
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# CANAL ⑩ CROSSING PLAN ALONG ROUTE 197

**PLAN** SCALE: 1/400



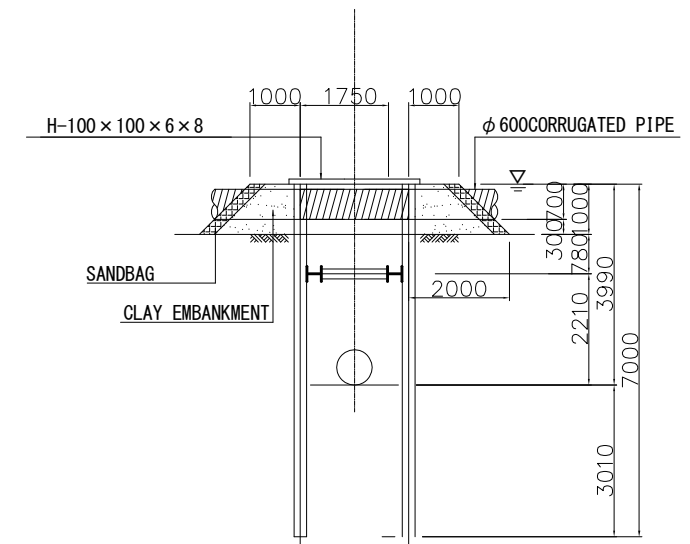
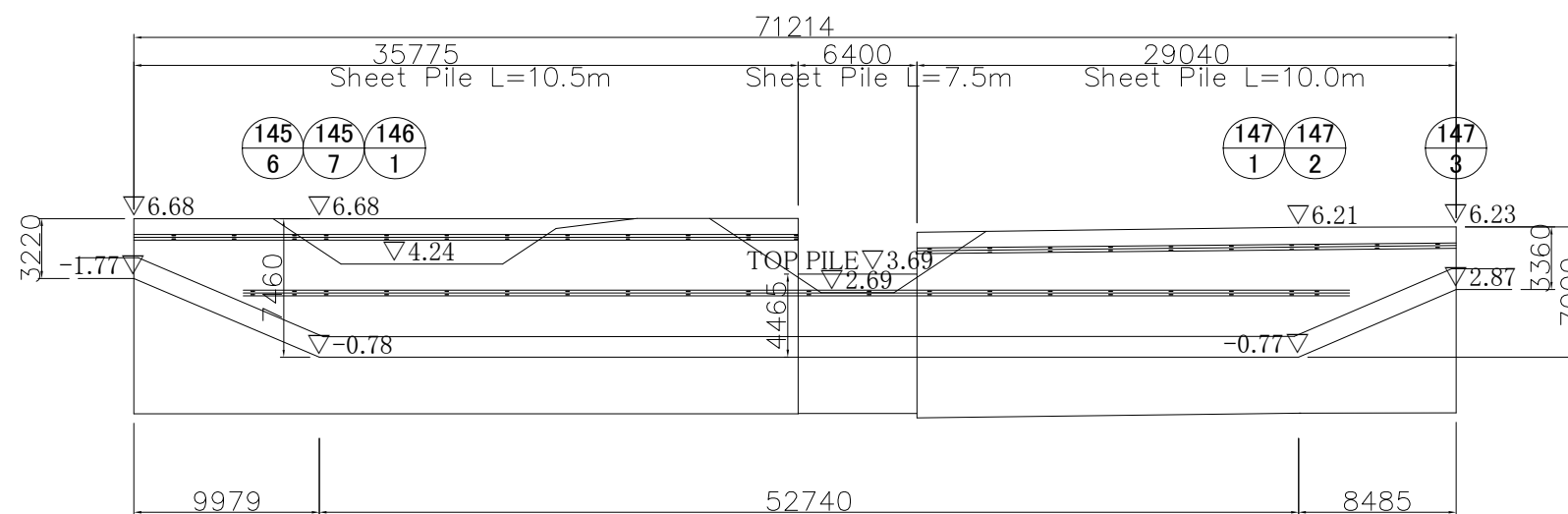
**CROSS SECTION A-A** SCALE: 1/150



**EMBANKMENT FOR STOPPING CANAL FLOW**

SCALE: 1/150

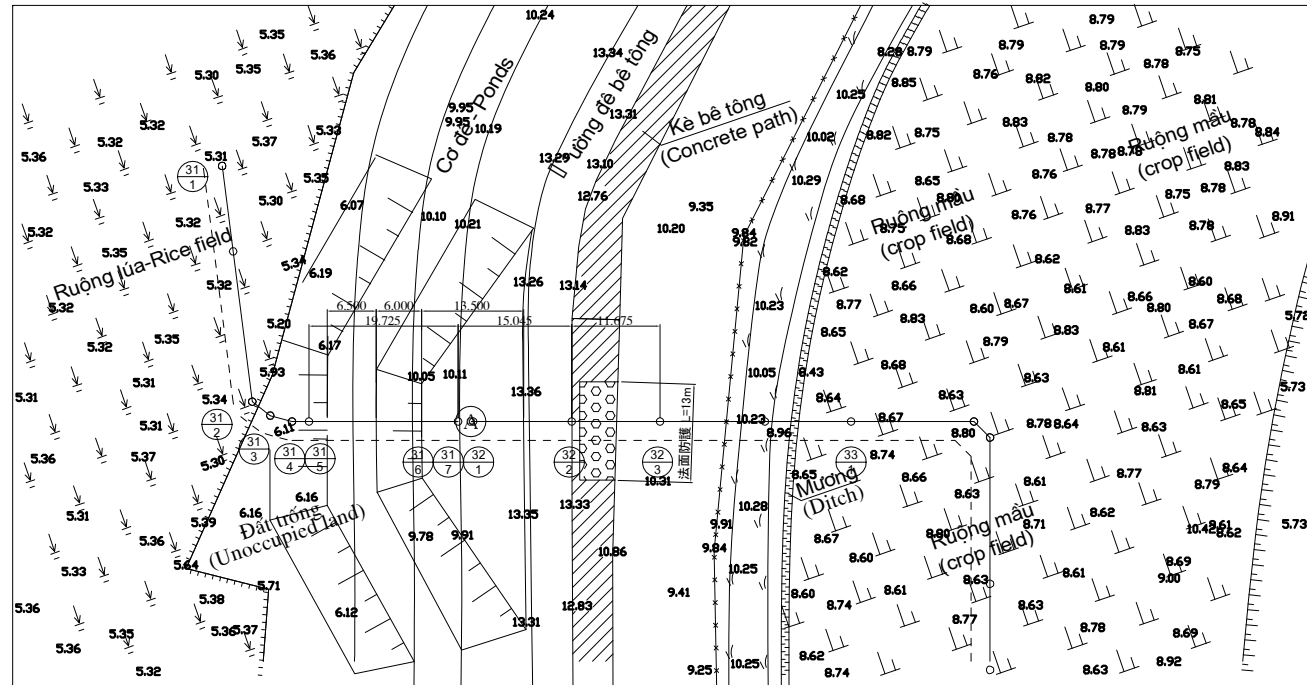
**PROFILE** SCALE: 1/400



No.			
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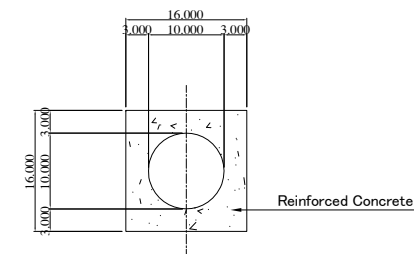
# DUONG RIVER 左岸堤防横断断面図 S=1 : 1000 PIPE CROSSING LEFT EMBANKMENT ON DUONG RIVER

PLAN H=1/1000



防護コンクリート詳細図  
Concrete Protection Structure

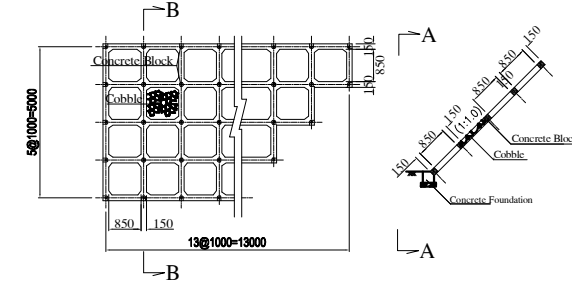
S=1 : 100



法枠ブロック構造図  
Concrete Block for Slope Protection

正面図  
A-A

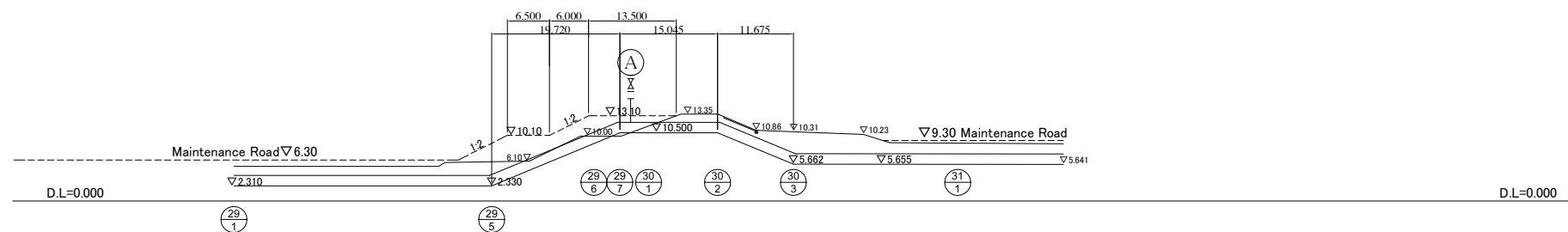
断面図  
B-B



基礎工詳細図  
Concrete Foundation



PROFILE H,V=1/1000



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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date.  
Oct. 2011

Scale  
H,V=1/1000

Duong River Water Treatment Plant Transmission Pipeline

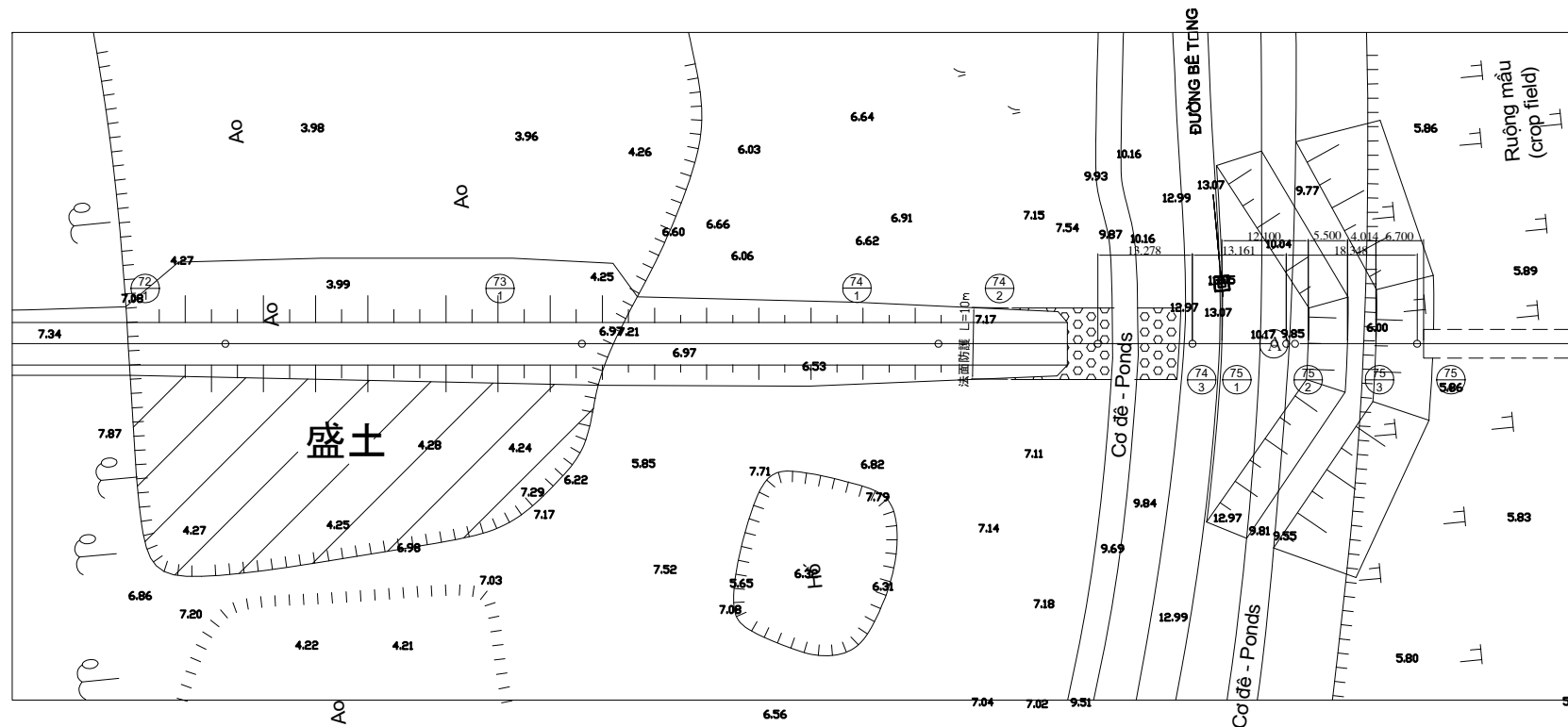
PIPE CROSSING LEFT EMBANKMENT ON DUONG RIVER

Drawing No

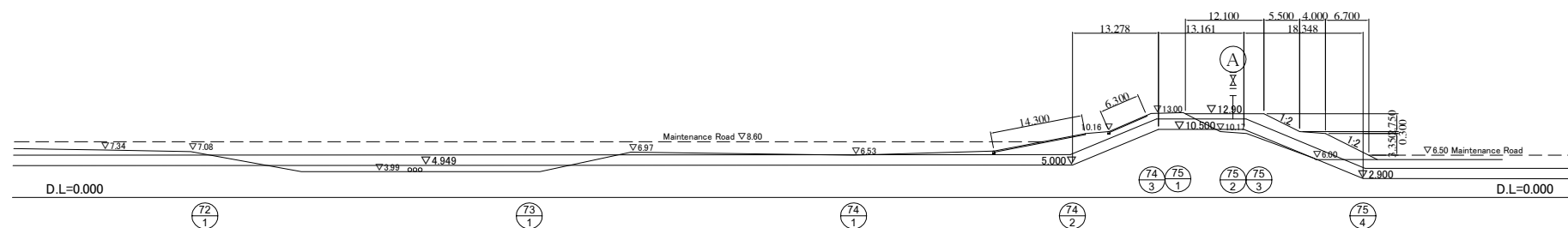
G-1

# DUONG RIVER 右岸堤防横断断面図 S=1 : 1000 PIPE CROSSING RIGHT EMBANKMENT ON DUONG RIVER

PLAN H=1/1000

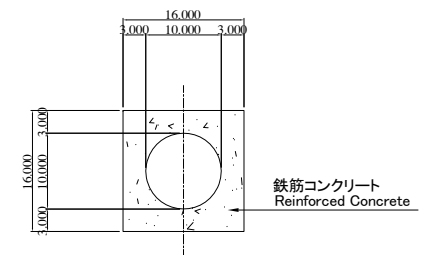


PROFILE H,V=1/1000

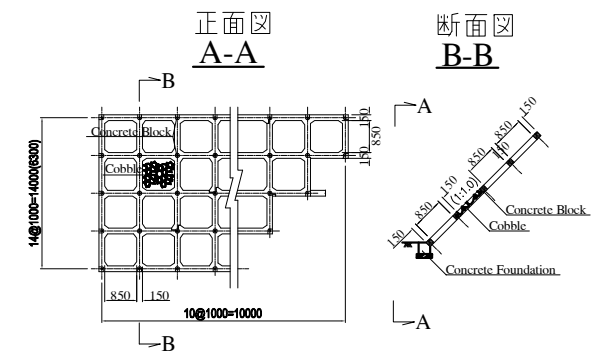


防護コンクリート詳細図  
Concrete Protection Structure

S=1 : 100



法枠ブロック構造図  
Concrete Block for Slope Protection



基礎工詳細図  
Concrete Foundation



JICA Study Team

No.			
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THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT  
IN THE SOCIALIST REPUBLIC OF VIET NAM

Date.  
Oct. 2011  
Scale  
H,V=1/1000

Duong River Water Treatment Plant Transmission Pipeline  
PIPE CROSSING RIGHT EMBANKMENT ON DUONG RIVER

Drawing No  
G-2

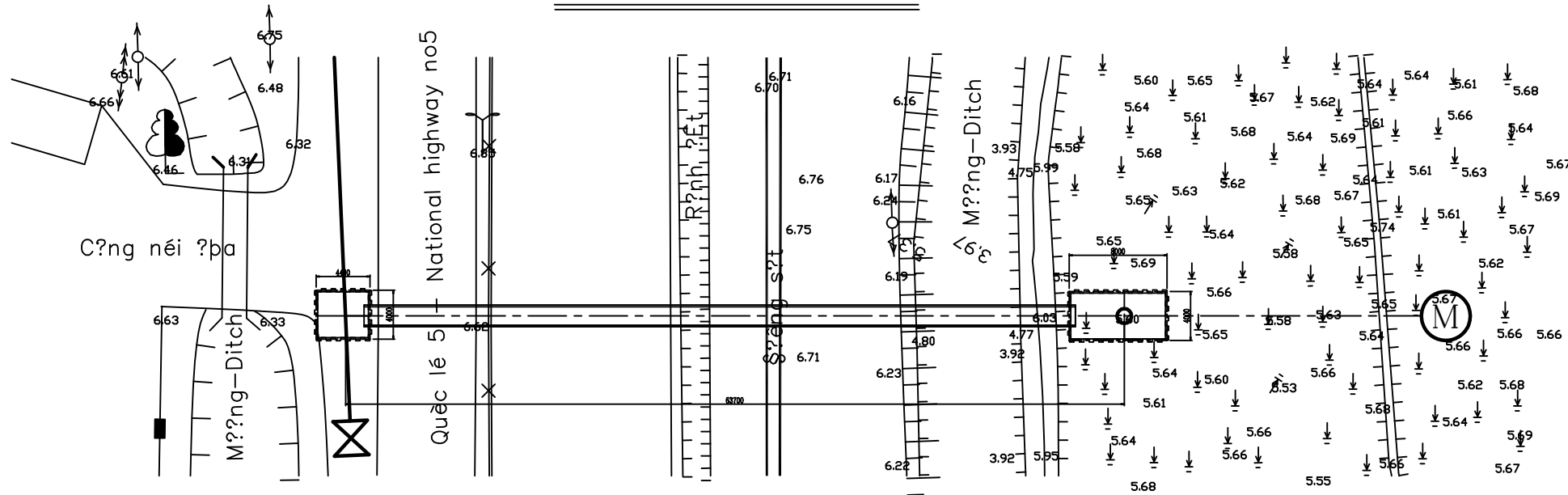




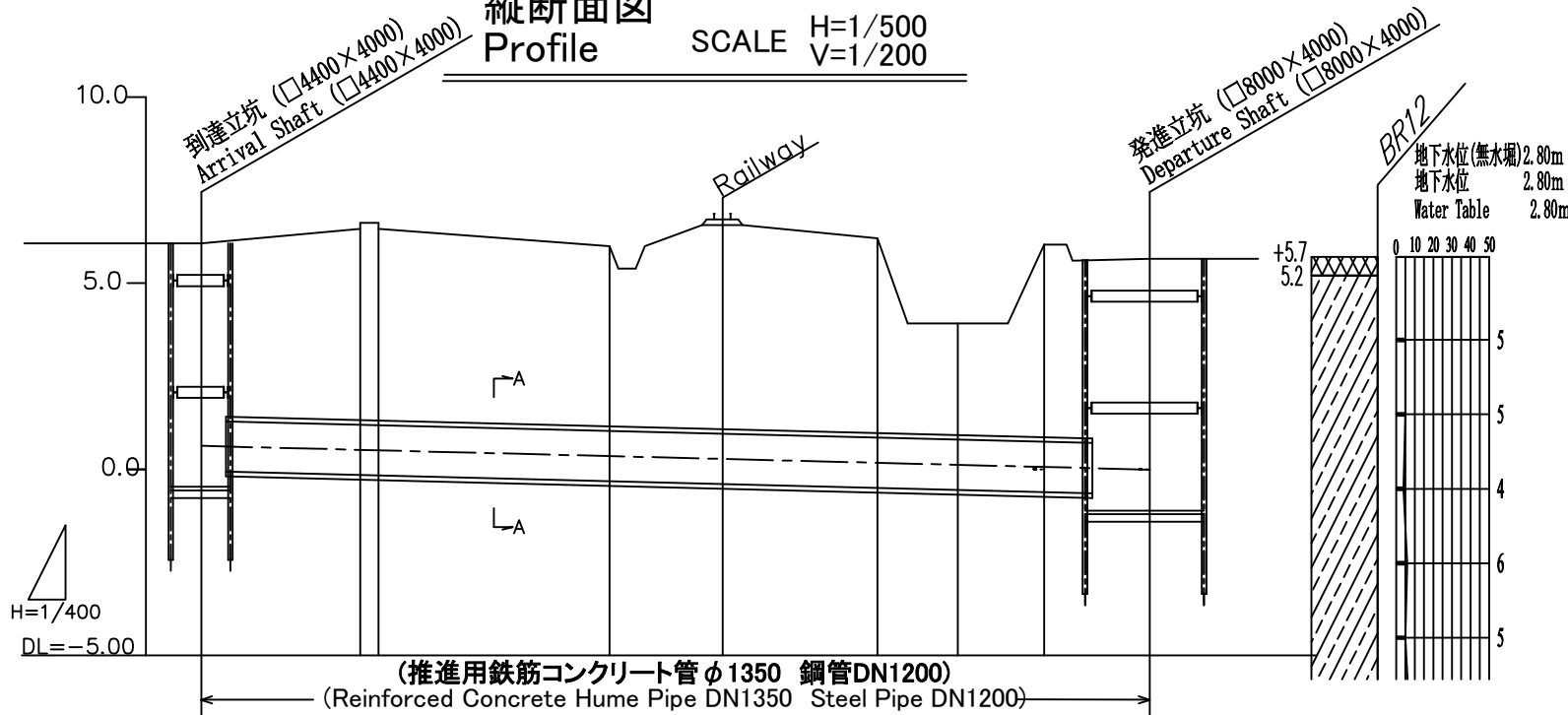


# Take Point 4 推進平面・縦断面図 PLAN AND PROFILE FOR JACKING METHOD AT LOCATION OF OFF-TAKE POINT 4

平面図  
PLAN SCALE: 1/500

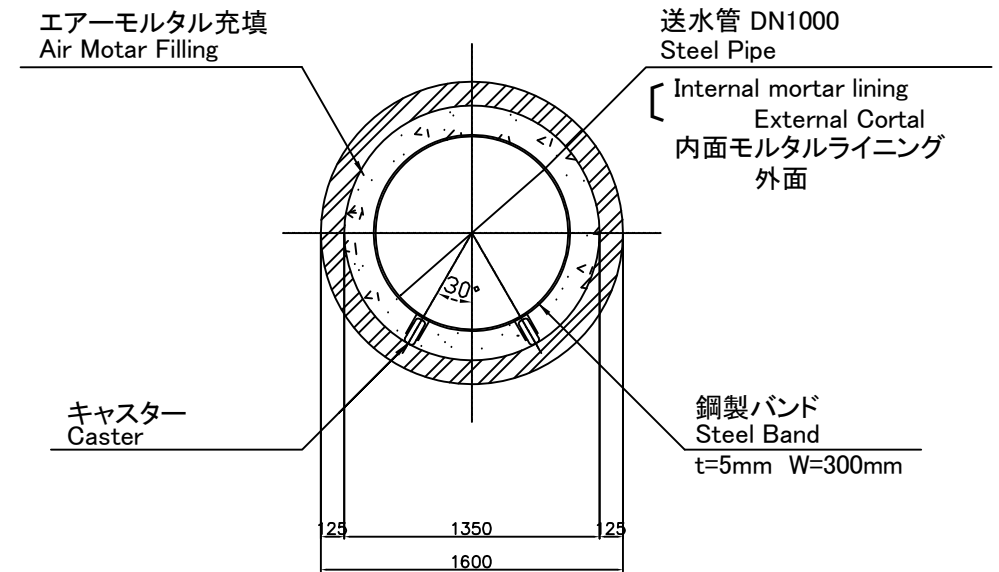


縦断面図  
Profile SCALE H=1/500 V=1/200



	0.00	10.67 11.90	27.41	35.02	45.41	50.80	56.61	63.70
Ground Elevation	6.07	6.62 6.62	5.99	6.71	6.19	3.92	6.03	5.65
Earth Covering	5.44	6.10 6.11	5.64	6.43	6.03	3.80	5.97	5.66
Center Elev of Pipeline	0.63	0.52 0.51	0.35	0.28	0.17	0.12	0.06	-0.01
Accumulated Distance	0.00	10.67 11.90	27.41	35.02	45.41	50.80	56.61	63.70

断面図  
Cross Section A-A



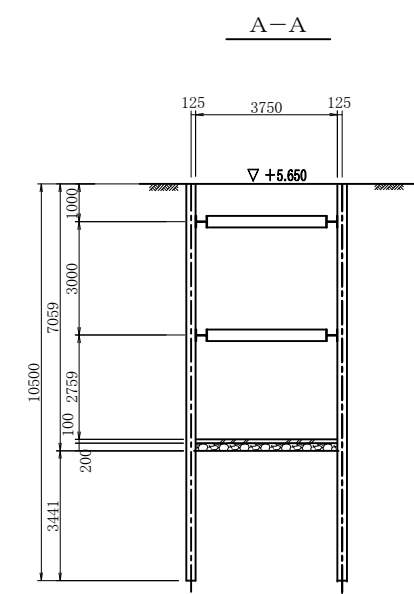
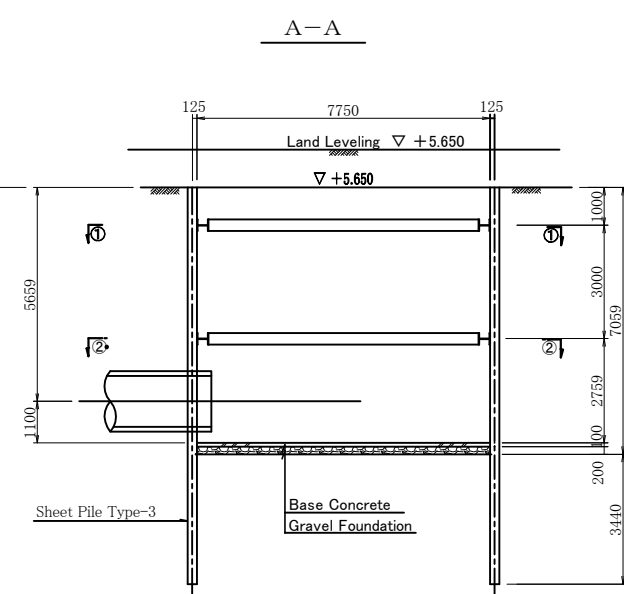
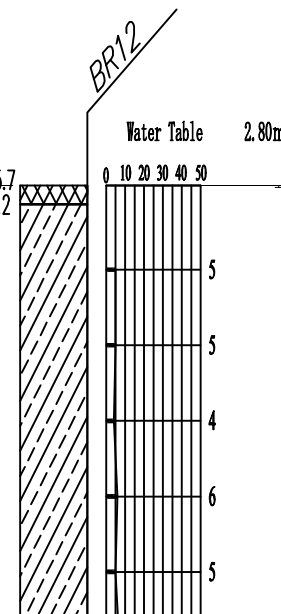
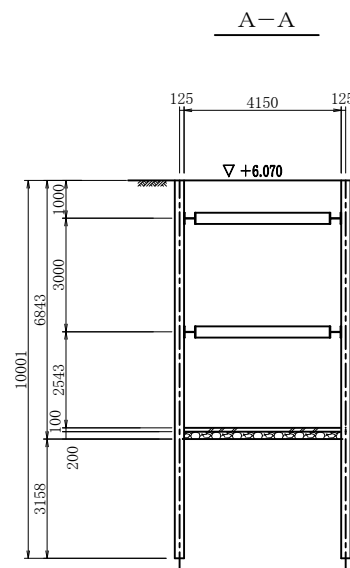
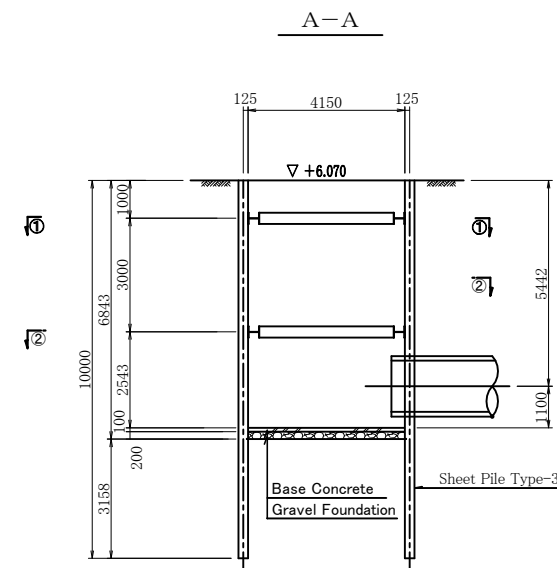
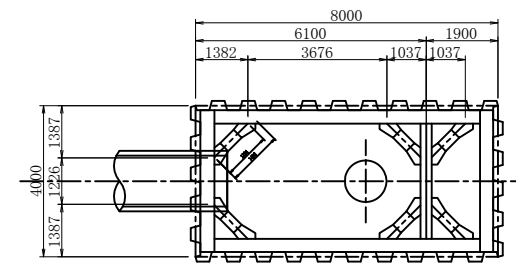
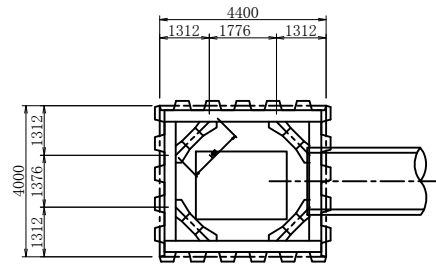
No.			
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# PLAN OF SHAFT AT LOCATION OF OFF-TAKE POINT 4

S = 1:100

## ARRIVAL SHAFT

## DEPARTURE SHAFT



Size of Waling and Strut

Stage	Waling	Strut	Rows
①	H-300×300×10×15	H-300×300×10×15	1
②	H-300×300×10×15	H-300×300×10×15	1

Size of Waling and Strut

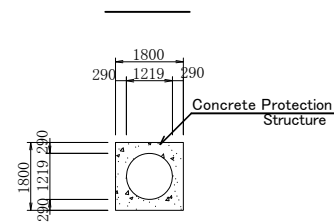
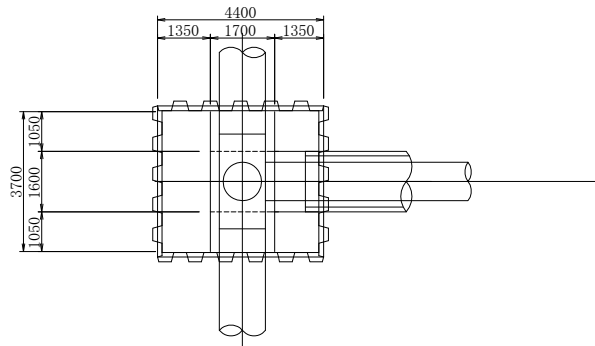
Stage	Waling	Strut	Rows
①	H-400×400×13×21	H-300×300×10×15	1
②	H-400×400×13×21	H-300×300×10×15	1

No.			
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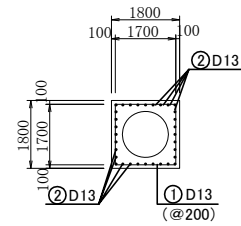
# REINFORCED CONCRETE STRUCTURE AT BEND OF OFF-TAKE POINT 4

SCALE 1:100

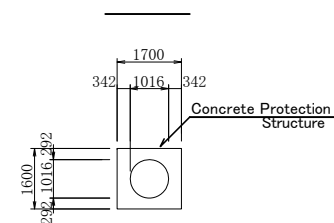
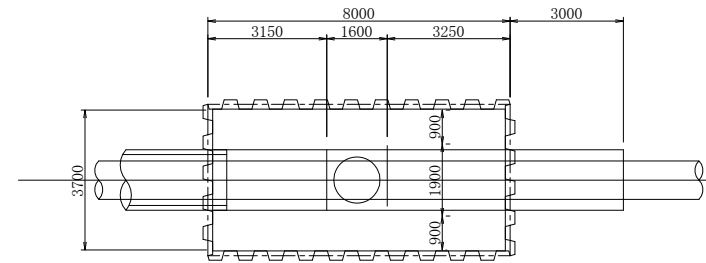
## ARRIVAL SHAFT



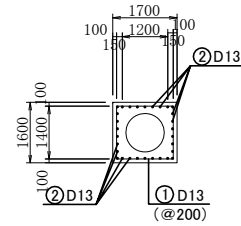
DN1200 STEEL BAR ARRANGEMENT



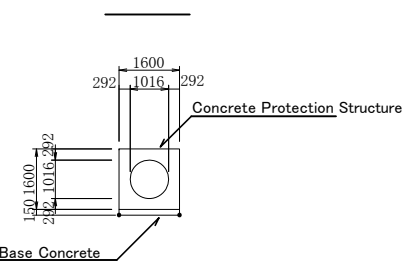
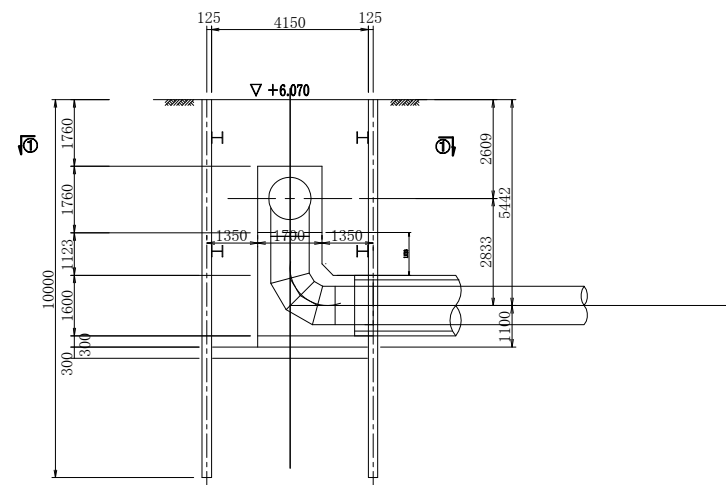
## DEPARTURE SHAFT



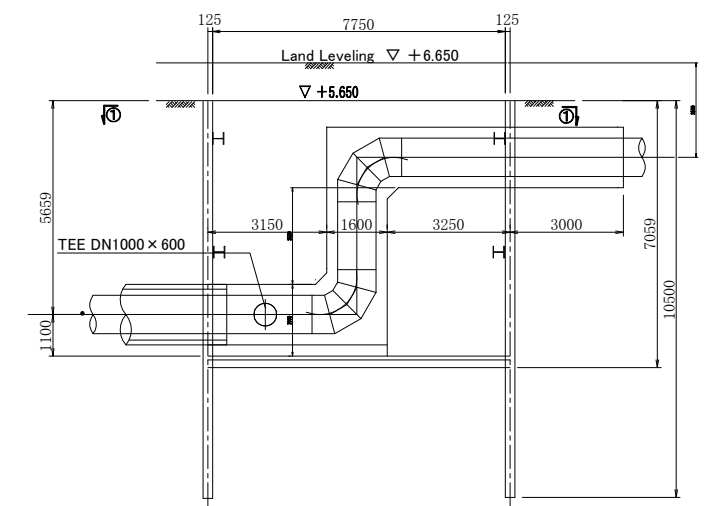
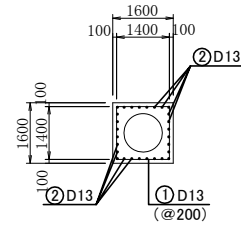
DN1000 STEEL BAR ARRANGEMENT



### A-A



DN1000 STEEL BAR ARRANGEMENT



No.			
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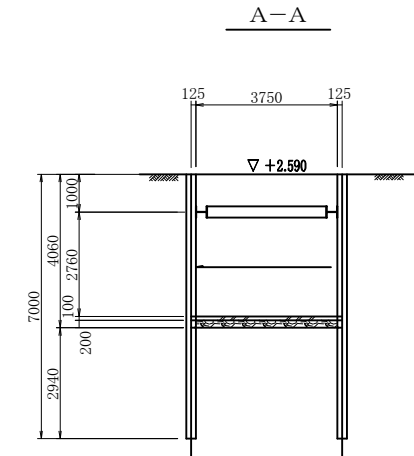
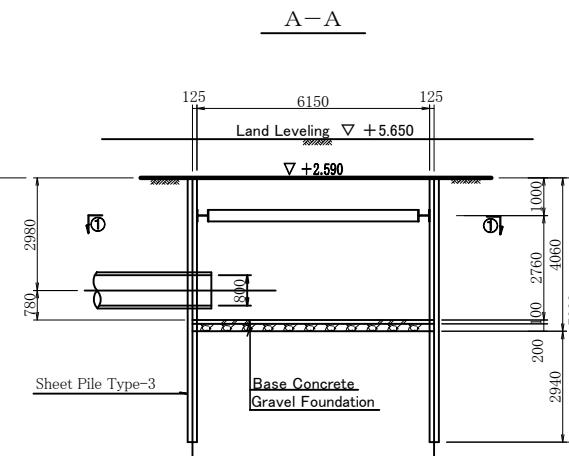
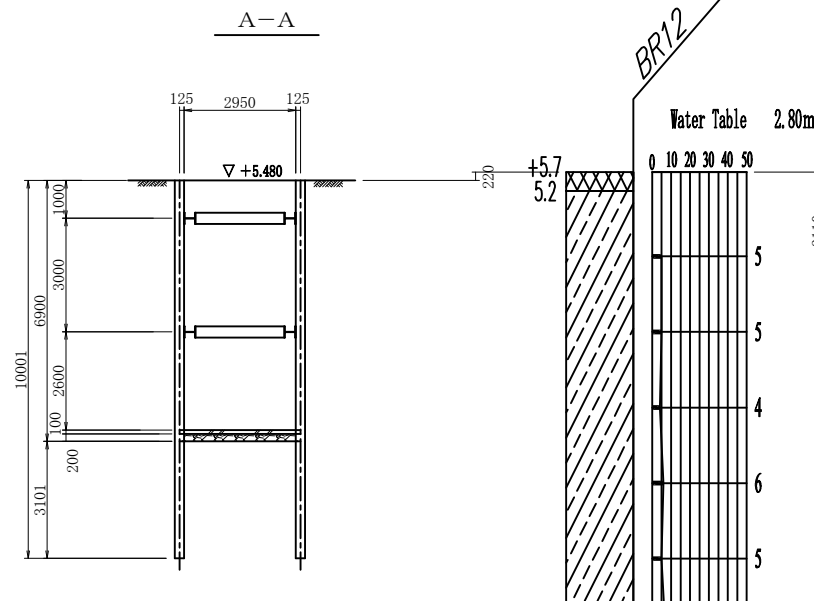
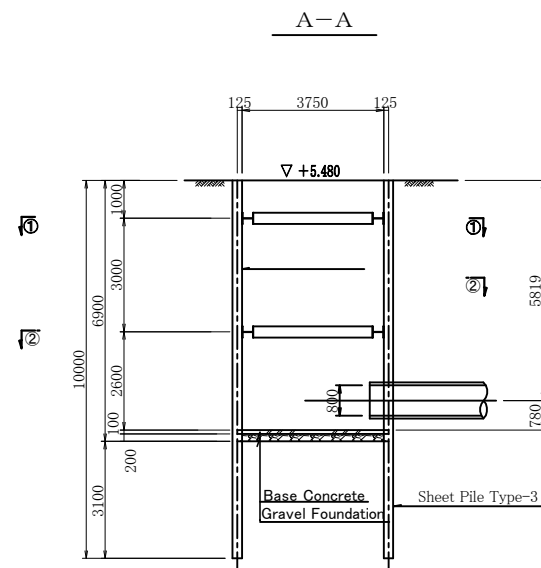
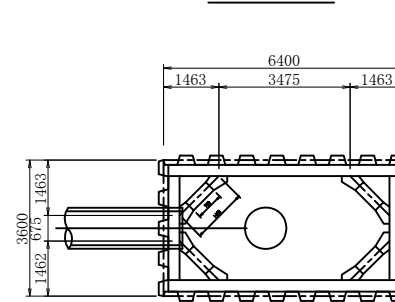
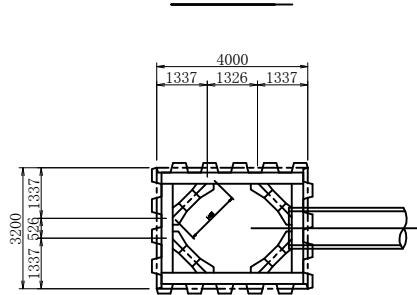


# PLAN OF SHAFT AT LOCATION OF OFF-TAKE POINT 3

S= 1:100

## ARRIVAL SHAFT

## DEPARTURE SHAFT



Size of Waling and Strut

Stage	Waling	Strut	Rows
①	H-300×300×10×15	H-300×300×10×15	1
②	H-300×300×10×15	H-300×300×10×15	1

Size of Waling and Strut

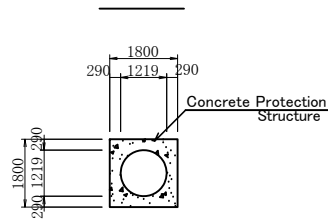
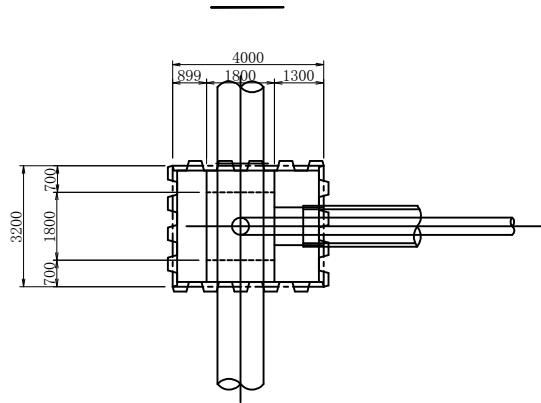
Stage	Waling	Strut	Rows
①	H-400×400×13×21	H-300×300×10×15	1

No.			
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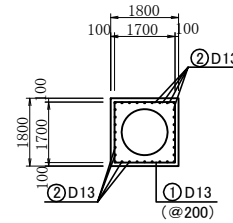
# REINFORCED CONCRETE STRUCTURE AT BEND OF OFF-TAKE POINT 3

S = 1:100

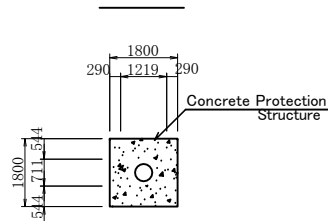
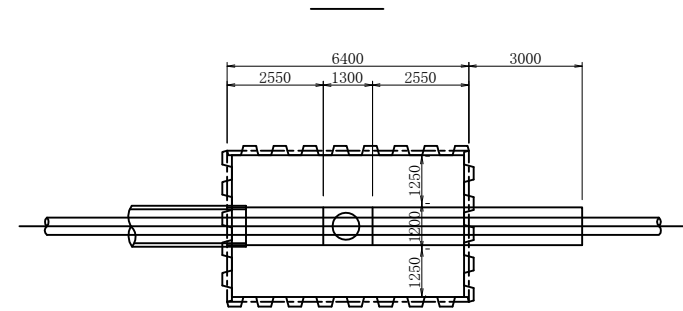
## ARRIVAL SHAFT



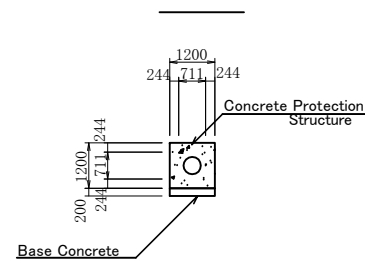
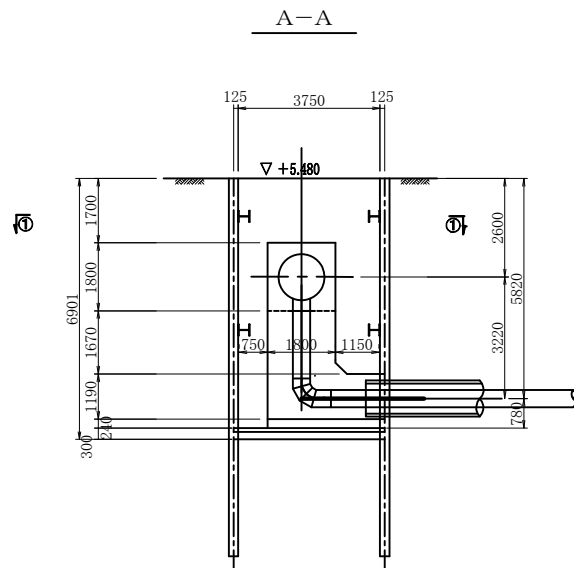
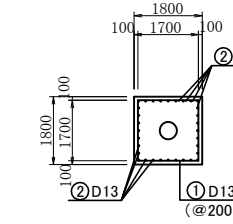
DN1200 STEEL BAR ARRANGEMENT



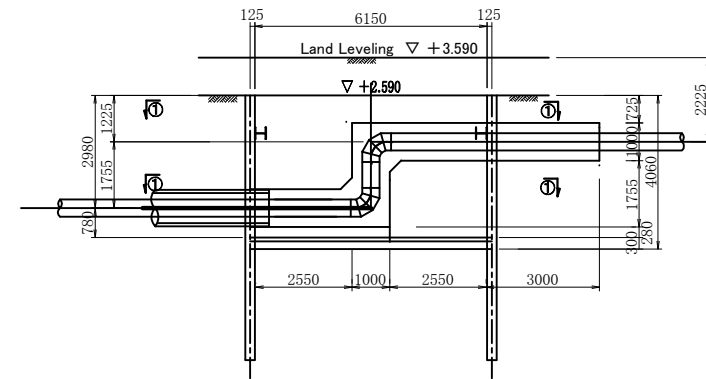
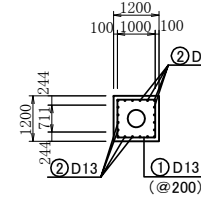
## DEPARTURE SHAFT



DN1200 STEEL BAR ARRANGEMENT



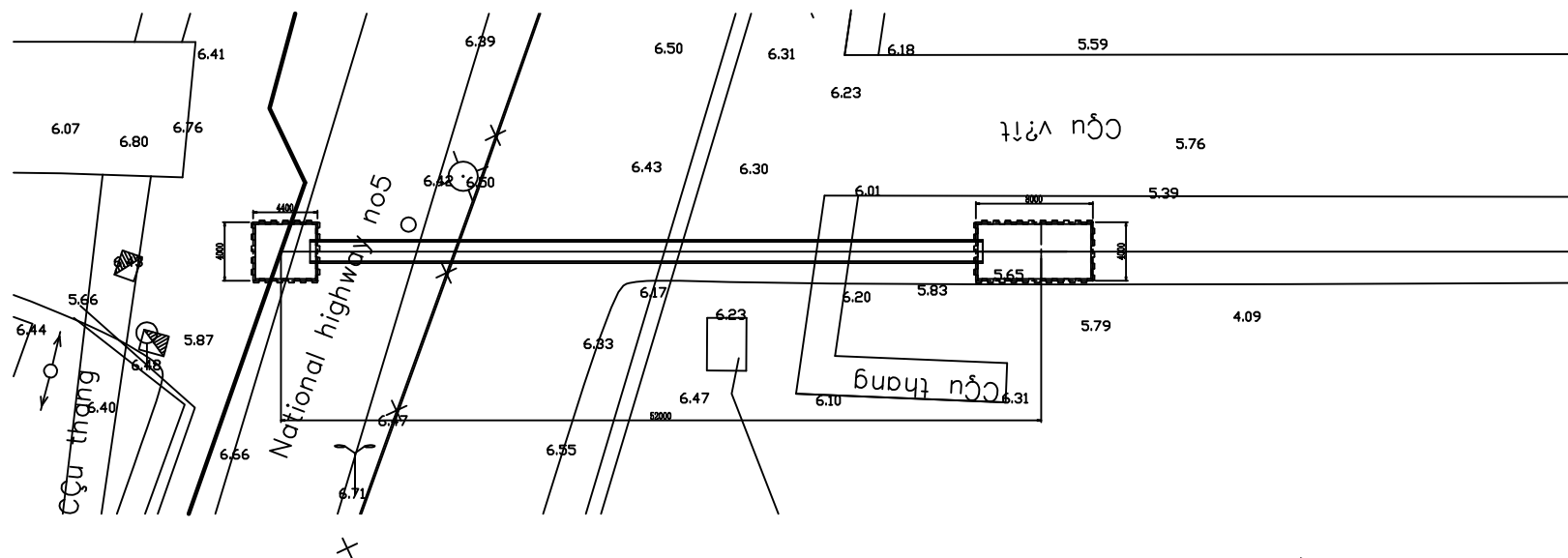
DN1200 STEEL BAR ARRANGEMENT



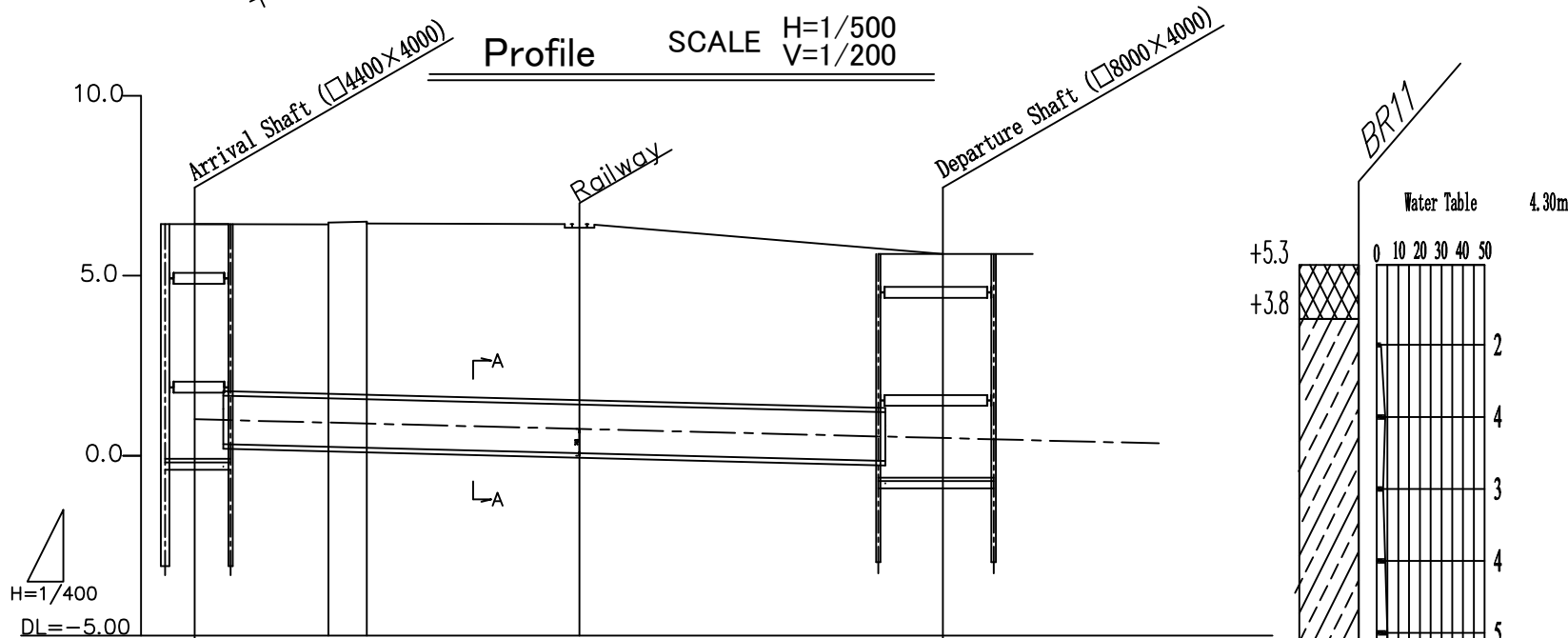
JICA Study Team				THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM	Date. Oct. 2011	Duong River Water Treatment Plant Transmission Pipeline	Drawing No
	No.				Scale S-1/100	REINFORCED CONCRETE STRUCTURE AT BEND OF OFF-TAKE POINT 3	H-6

# PLAN AND PROFILE FOR JACKING METHOD AT JUNCTION ON ROUTE 197

**PLAN SCALE: 1/500**

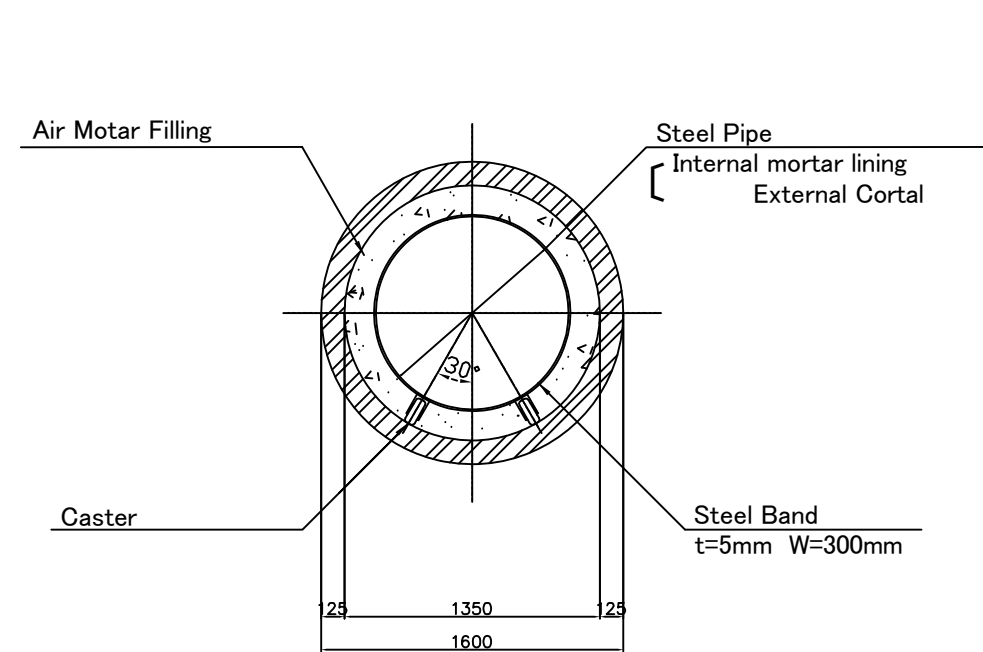


**Profile SCALE H=1/500 V=1/200**



Ground Elevation	6.40	6.42	6.50	6.43	5.60
Earth Covering	5.42	5.47	5.61	5.69	5.11
Center Elev of Pipeline	1.01	0.92	0.89	0.74	0.49
Accumulated Distance	0.00	9.30	11.97	26.75	52.00

**Cross Section A-A**



No.			
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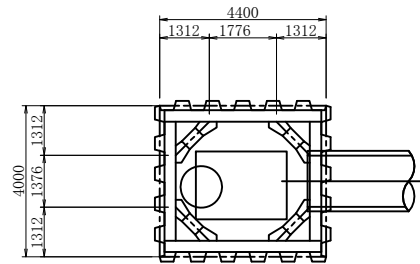
# 197号線横断 発進・到達仮設図 PLAN OF SHAFT AT JUNCTION ON ROUTE 197

S= 1:100

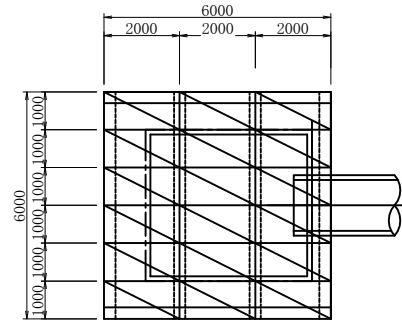
## 到達立坑 ARRIVAL SHAFT

## 発進立坑 DEPARTURE SHAFT

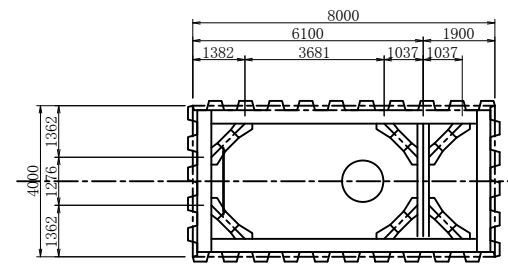
stage ②-②



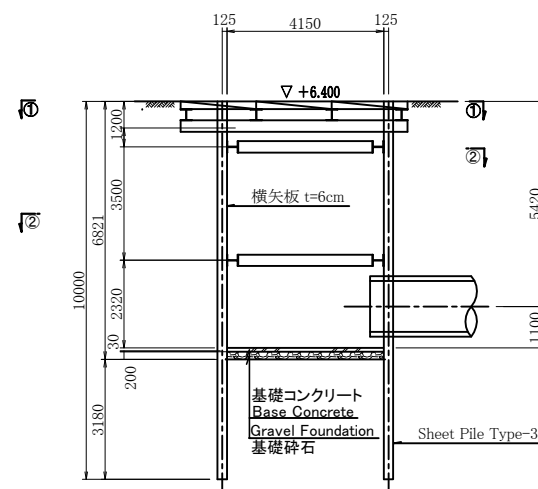
stage ①-①



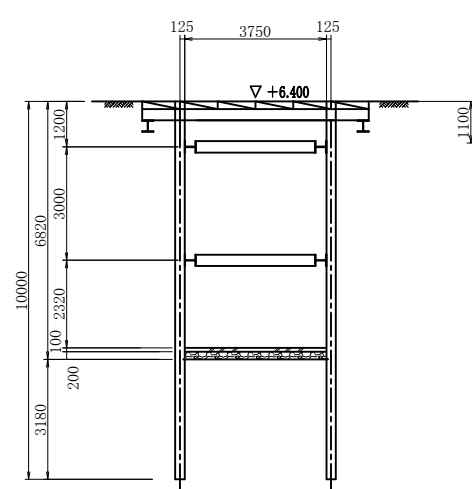
stage ①-②



A-A

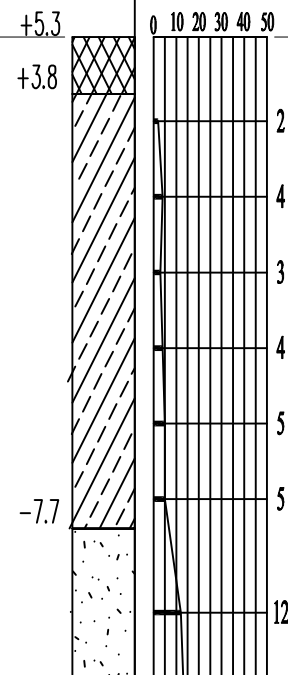


A-A

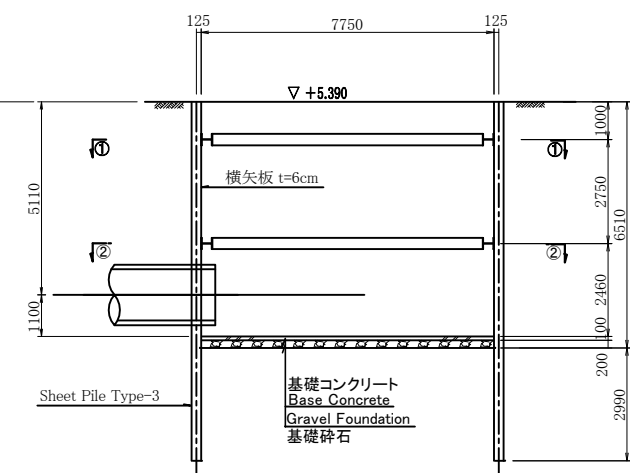


BR11

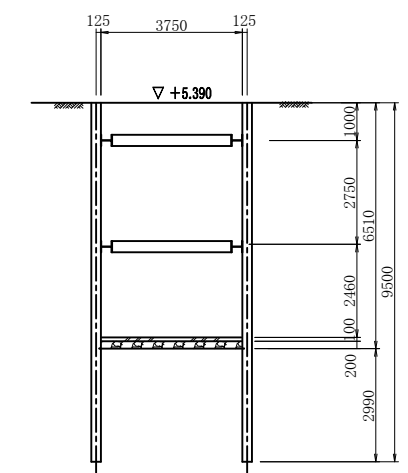
地下水位(無水堀) 4.50m  
地下水位 4.30m  
Water Table 4.30m



A-A



A-A



仮設材寸法表  
Size of Waling and Strut

段目	腹起	切梁・火打ち	段数
Stage	Waling	Strut	Rows
①	H-300×300×10×15	H-300×300×10×15	1
②	H-300×300×10×15	H-300×300×10×15	1

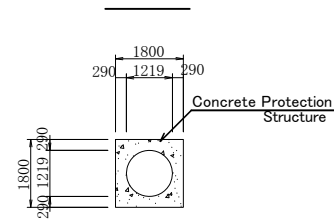
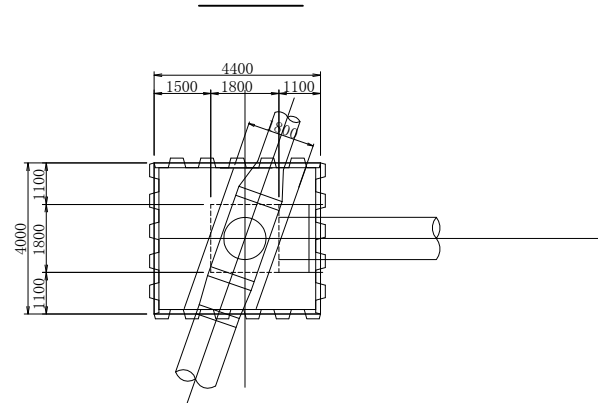
仮設材寸法表  
Size of Waling and Strut

段目	腹起	切梁・火打ち	段数
Stage	Waling	Strut	Rows
①	H-400×400×13×21	H-300×300×10×15	1
②	H-400×400×13×21	H-300×300×10×15	1

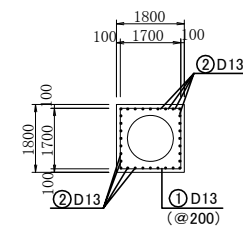
# REINFORCED CONCRETE STRUCTURE AT BEND ON ROUTE 197

S= 1:100

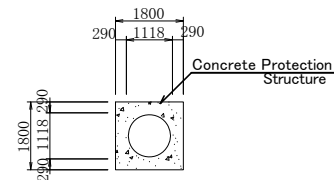
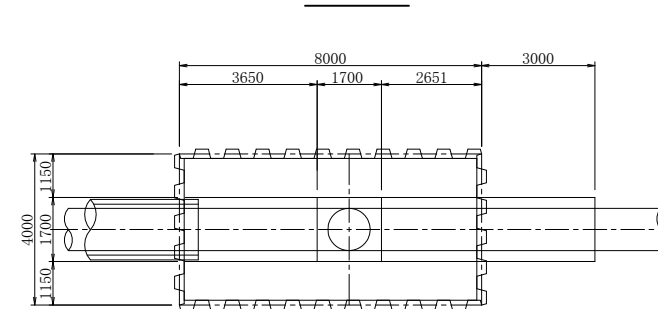
## ARRIVAL SHAFT



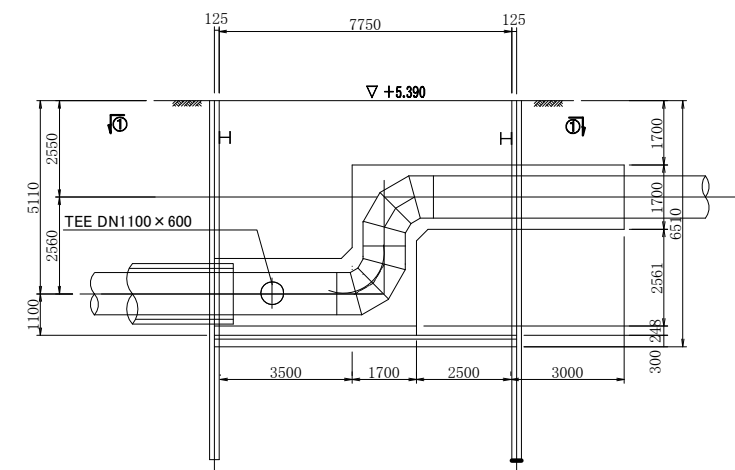
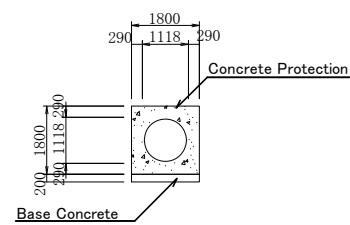
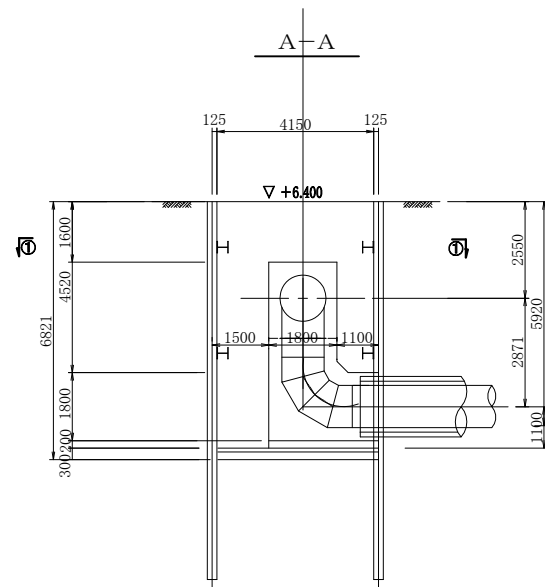
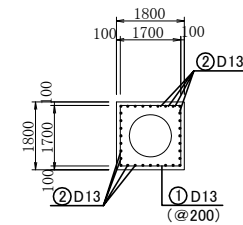
DN1200 STEEL BAR ARRANGEMENT



## DEPARTURE SHAFT



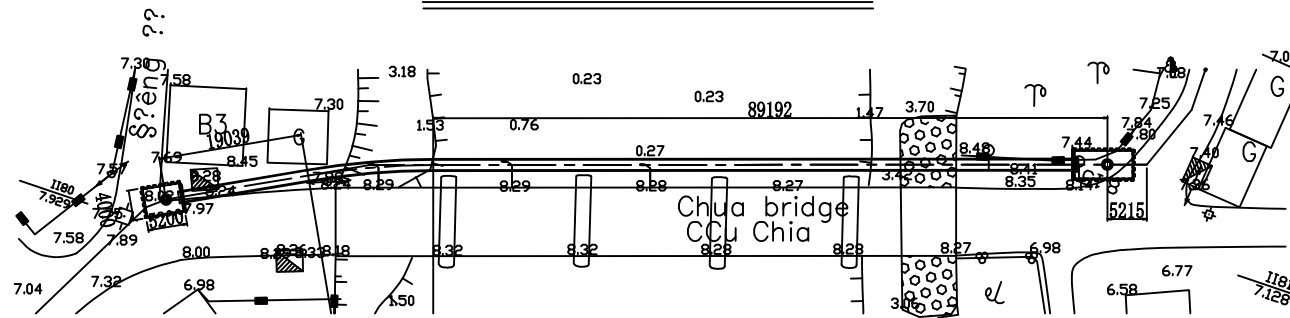
DN1000 STEEL BAR ARRANGEMENT



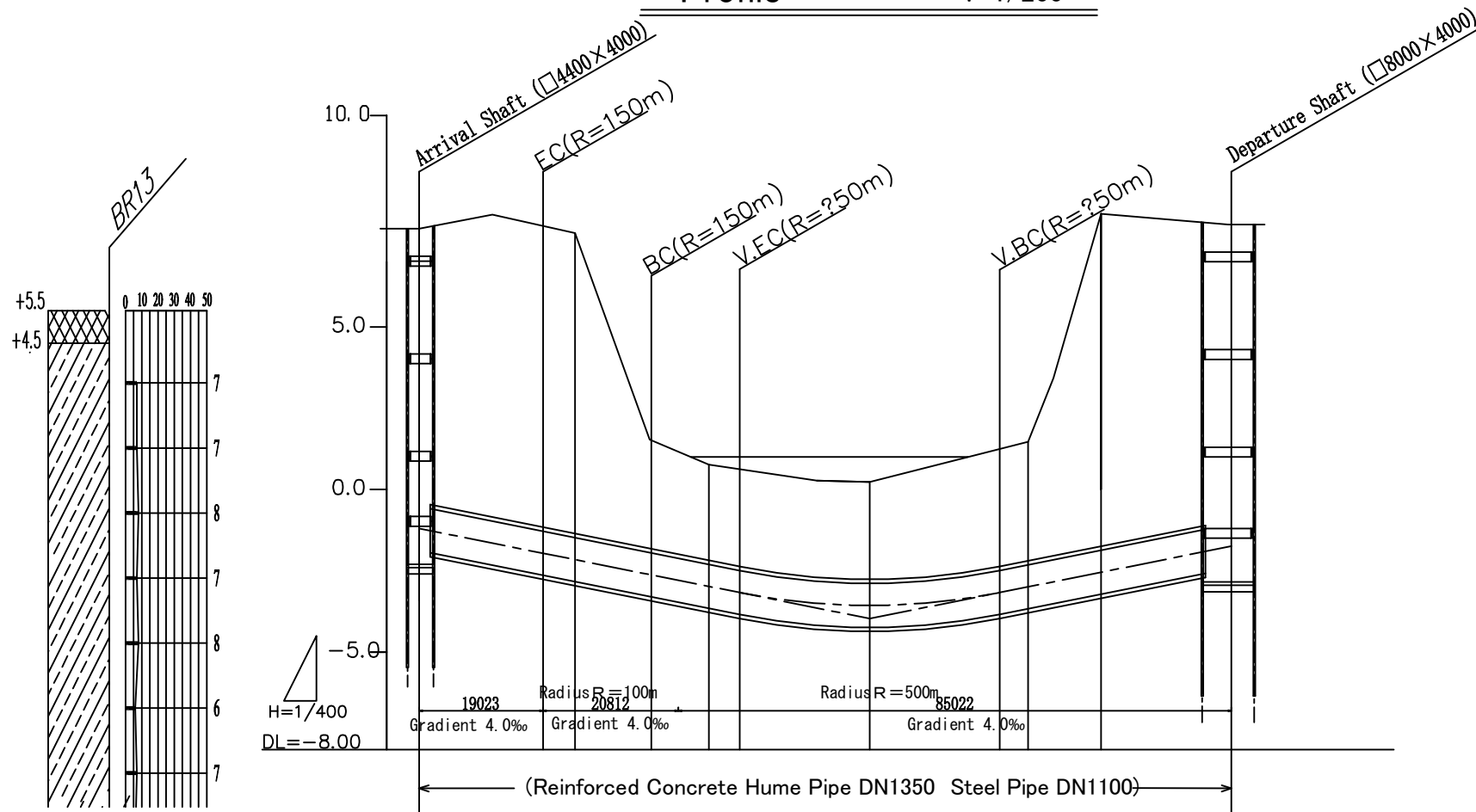
No.			
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# PLAN AND PROFILE FOR JACKING METHOD AT LOCATION ON BAC HUNG HAI RIVER

**PLAN** SCALE: 1/1000

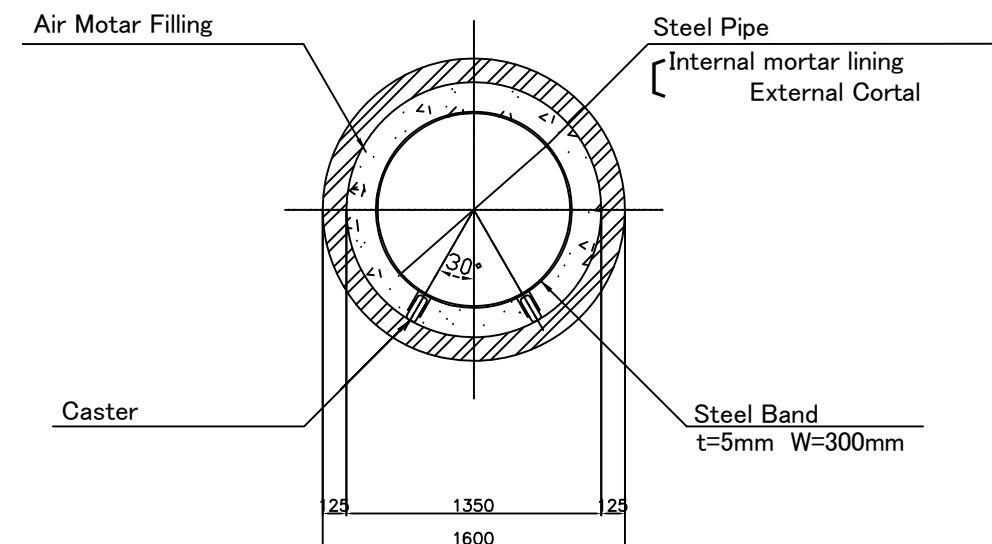


**Profile** SCALE H=1/1000  
V=1/200



Ground Elevation	8.02	8.45	7.88	1.53	0.76	0.62	0.23	1.25	1.47	8.48	8.15
Earth Covering	9.22	10.01	10.04	4.14	3.74	3.79	3.80	4.42	4.47	11.03	9.90
Center Elev of Pipeline	-1.20	-1.96	-2.16	-2.63	-2.98	-3.17	-3.57	-3.17	-3.00	-2.55	-1.75
Accumulated Distance	0.00	19.04	23.96	35.68	44.53	49.27	69.25	89.23	93.62	104.84	124.85

**Cross Section A-A**



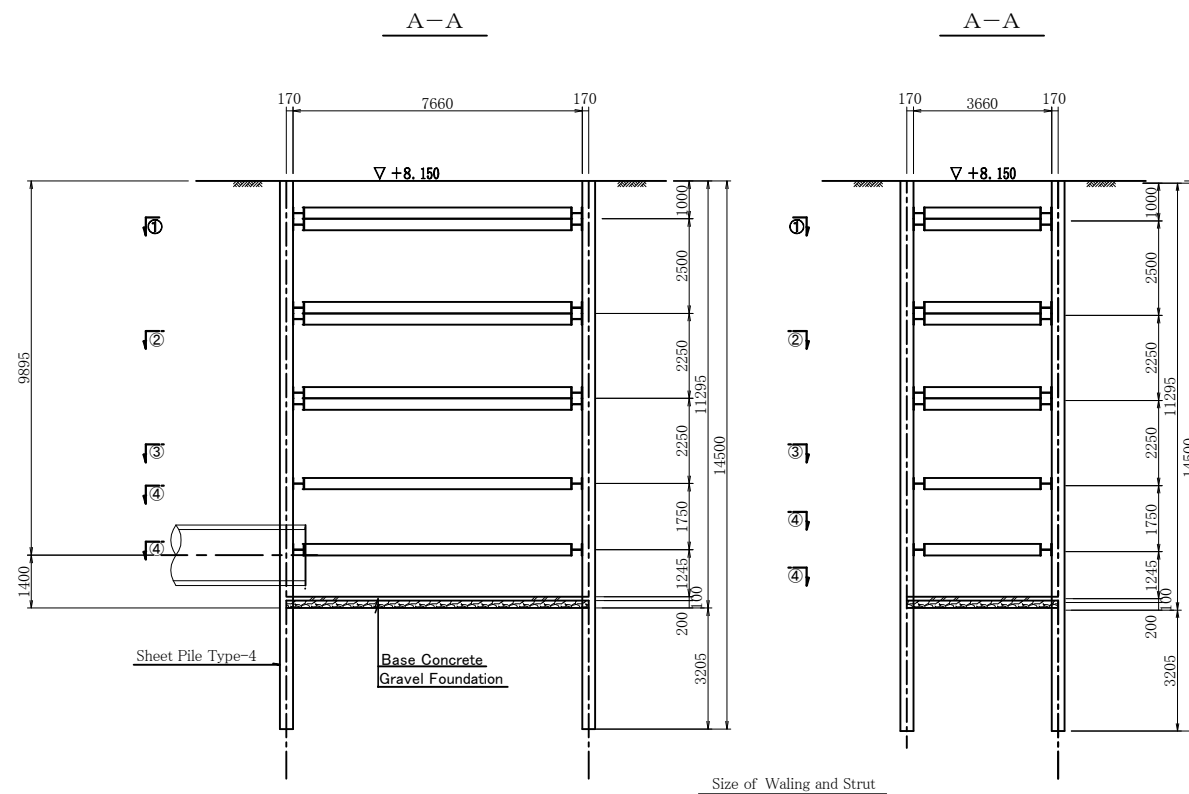
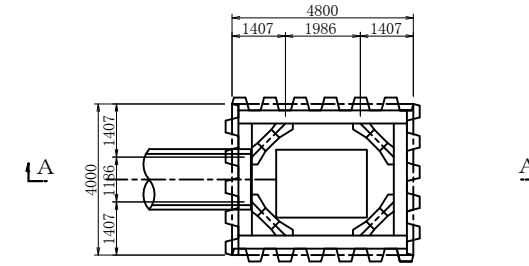
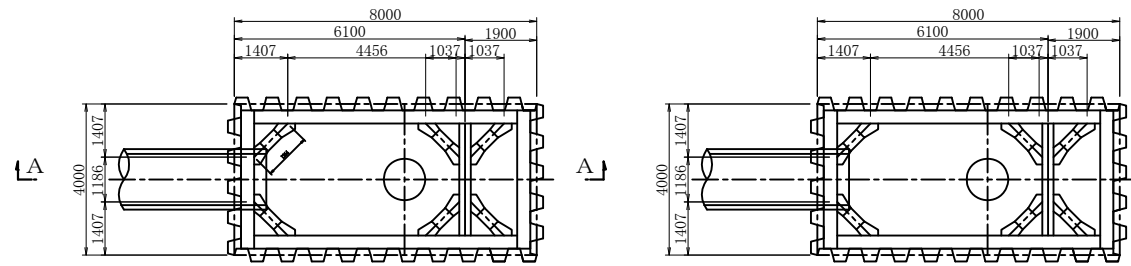
No.			
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# PLAN OF SHAFT AT LOCATION OF BAC HUNG HAI RIVER

S= 1:100

## DEPARTURE SHAFT

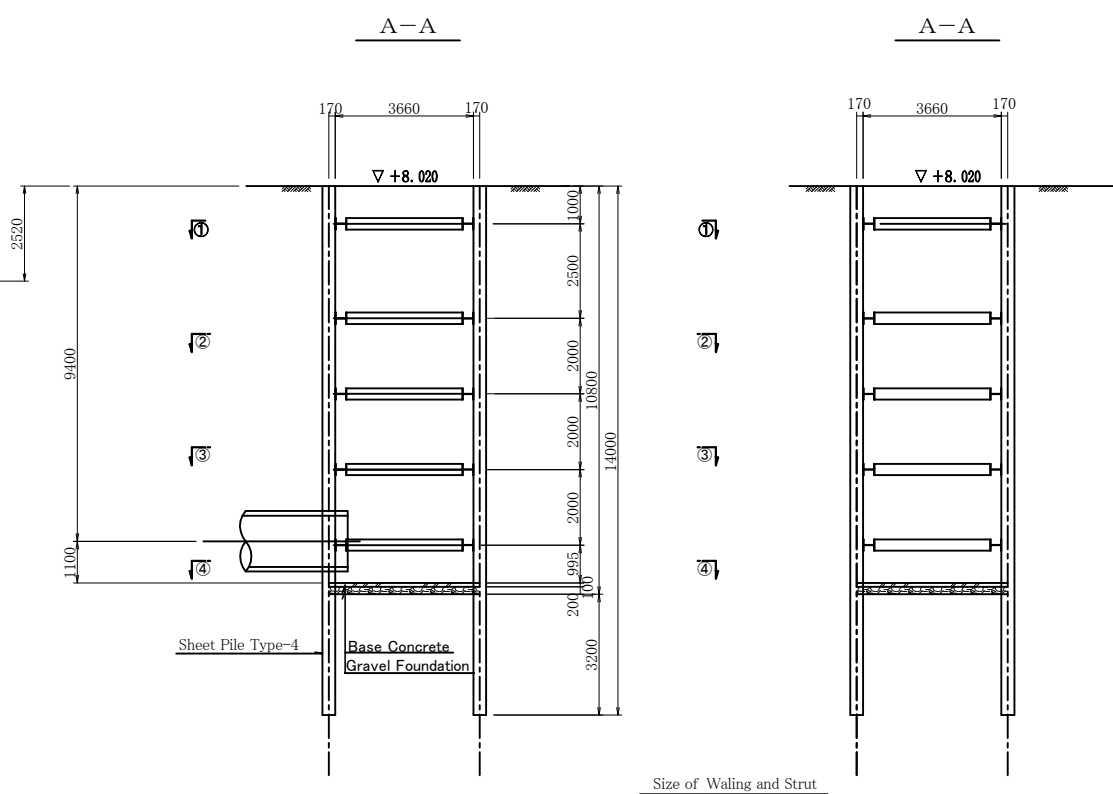
## ARRIVAL SHAFT



BR13

+5.5  
+4.5

Water Table 4.40m



Stage	Waling	Strut	Rows
①	H-350×350×12×19	H-300×300×10×15	2
②	H-350×350×12×19	H-300×300×10×15	2
③	H-350×350×12×19	H-300×300×10×15	2
④	H-400×400×13×21	H-300×300×10×15	1
⑤	H-400×400×13×21	H-300×300×10×15	1

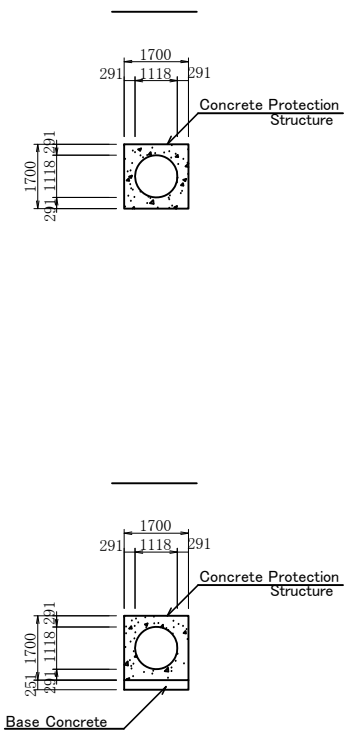
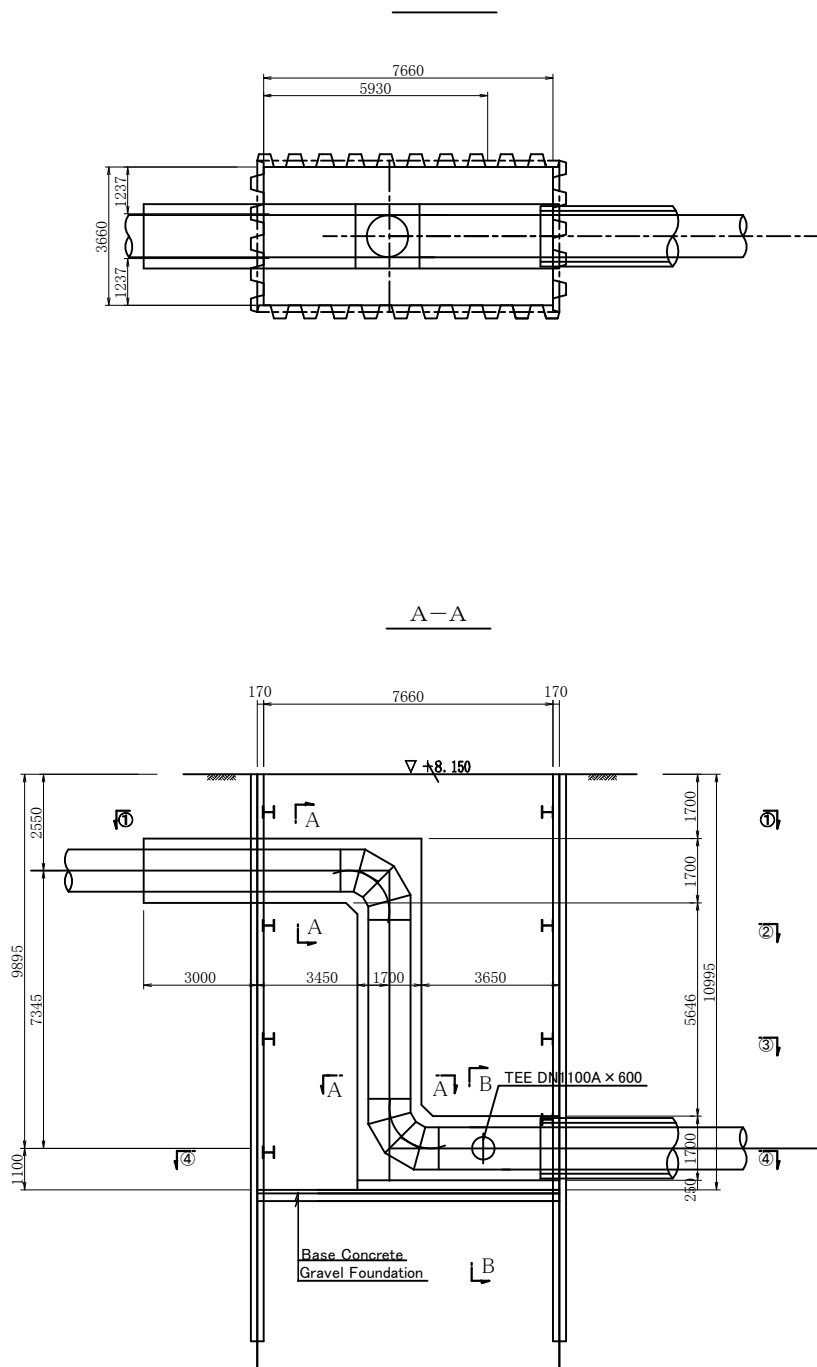
Stage	Waling	Strut	Rows
①	H-300×300×10×15	H-300×300×10×15	1
②	H-300×300×10×15	H-300×300×10×15	1
③	H-300×300×10×15	H-300×300×10×15	1
④	H-300×300×10×15	H-300×300×10×15	1
⑤	H-300×300×10×15	H-300×300×10×15	1

No.			
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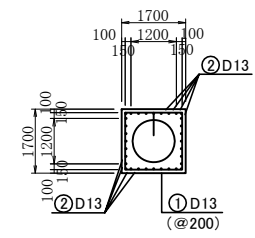
# REINFORCED CONCRETE STRUCTURE AT BEND OF BAC HUNG HAI RIVER

S= 1:100

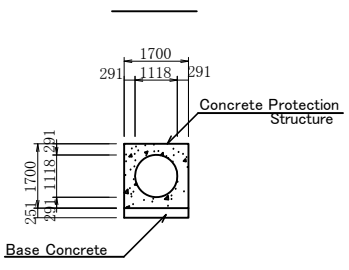
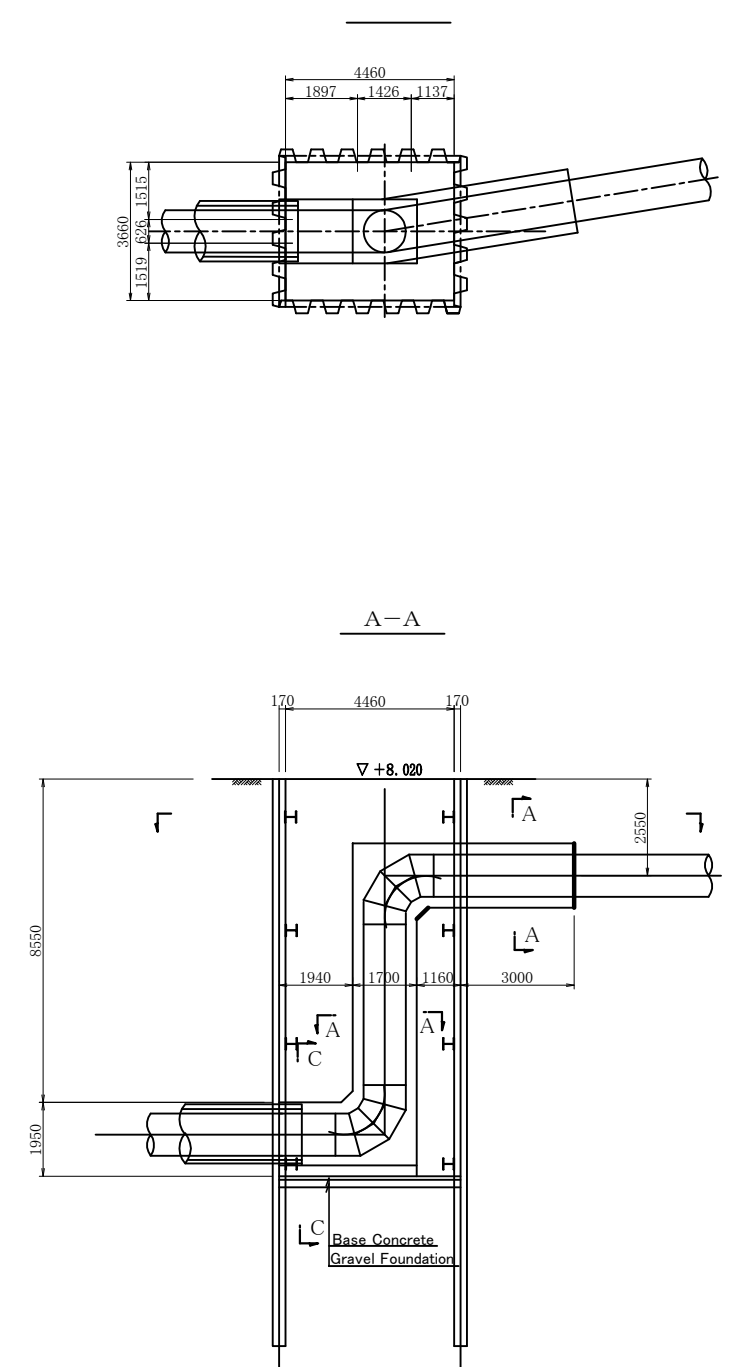
## DEPARTURE SHAFT



### STEEL BAR ARRANGEMENT



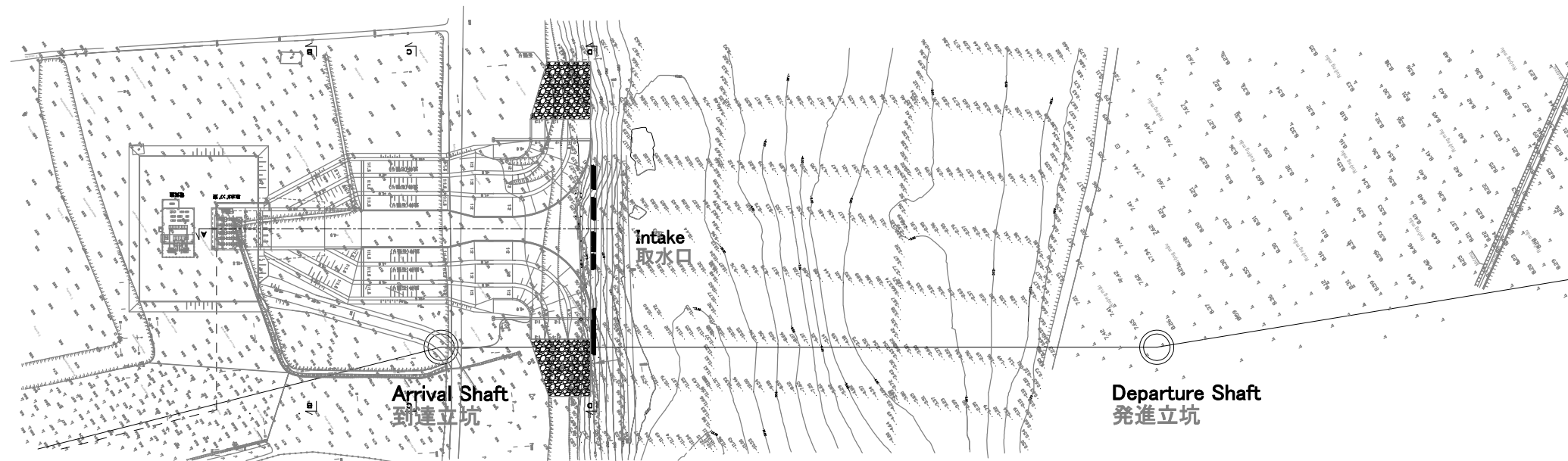
## ARRIVAL SHAFT



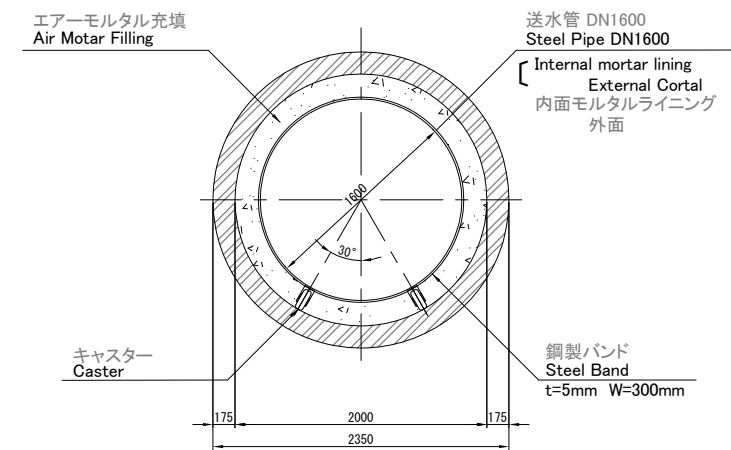
No.			
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# PLAN AND PROFILE FOR JACKING METHOD AT LOCATION OF DUONG RIVER

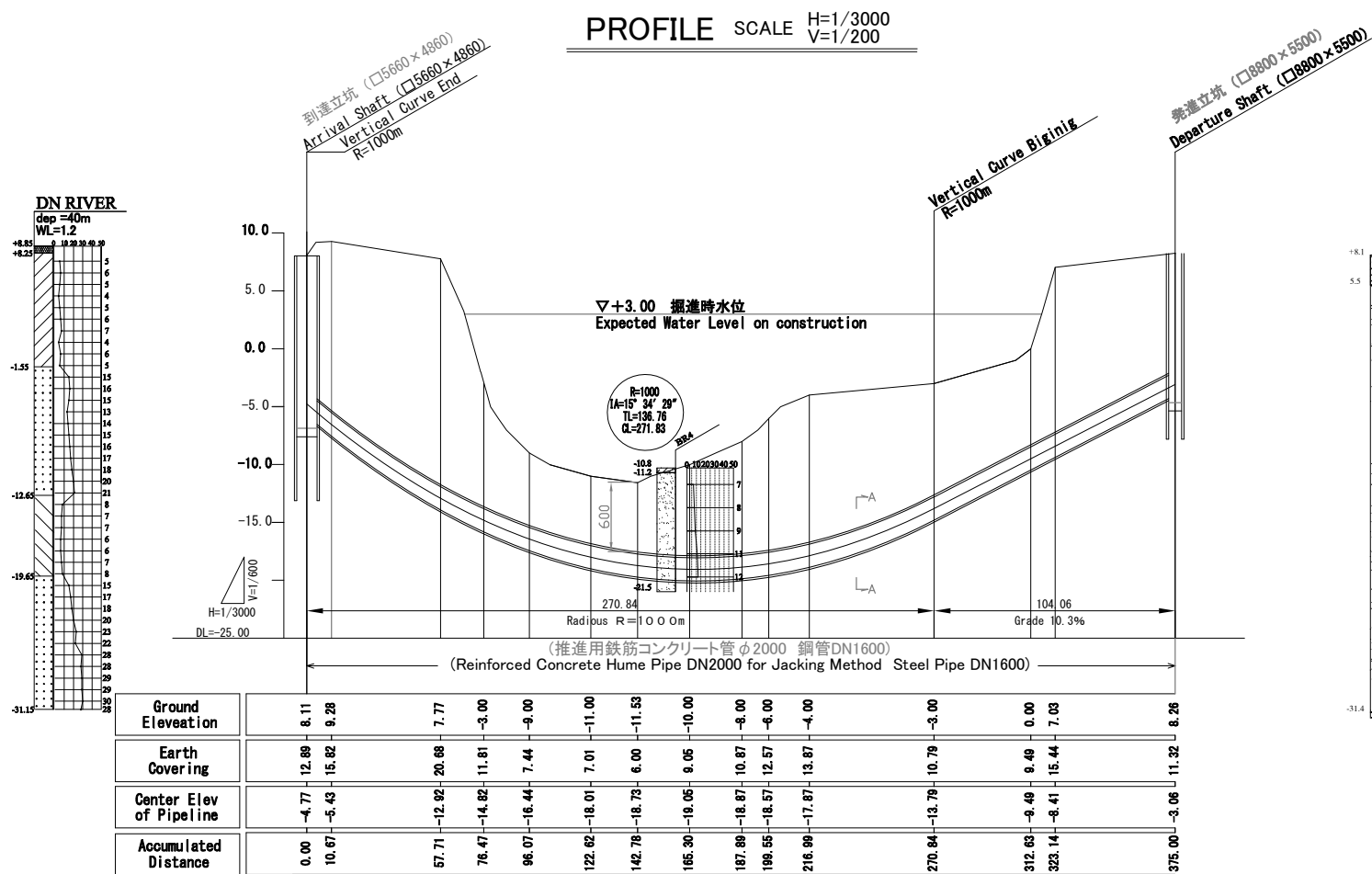
PLAN SCALE: 1/3000



断面図  
Cross Section A-A  
S=1/60

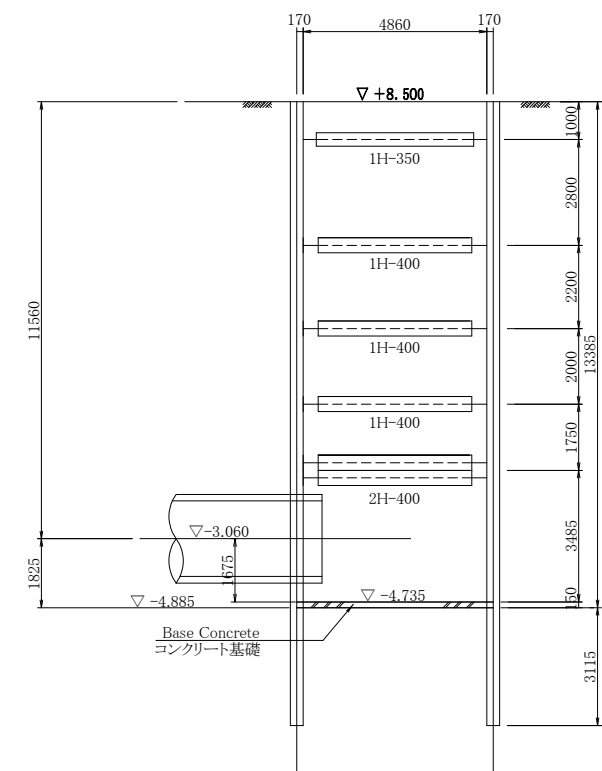
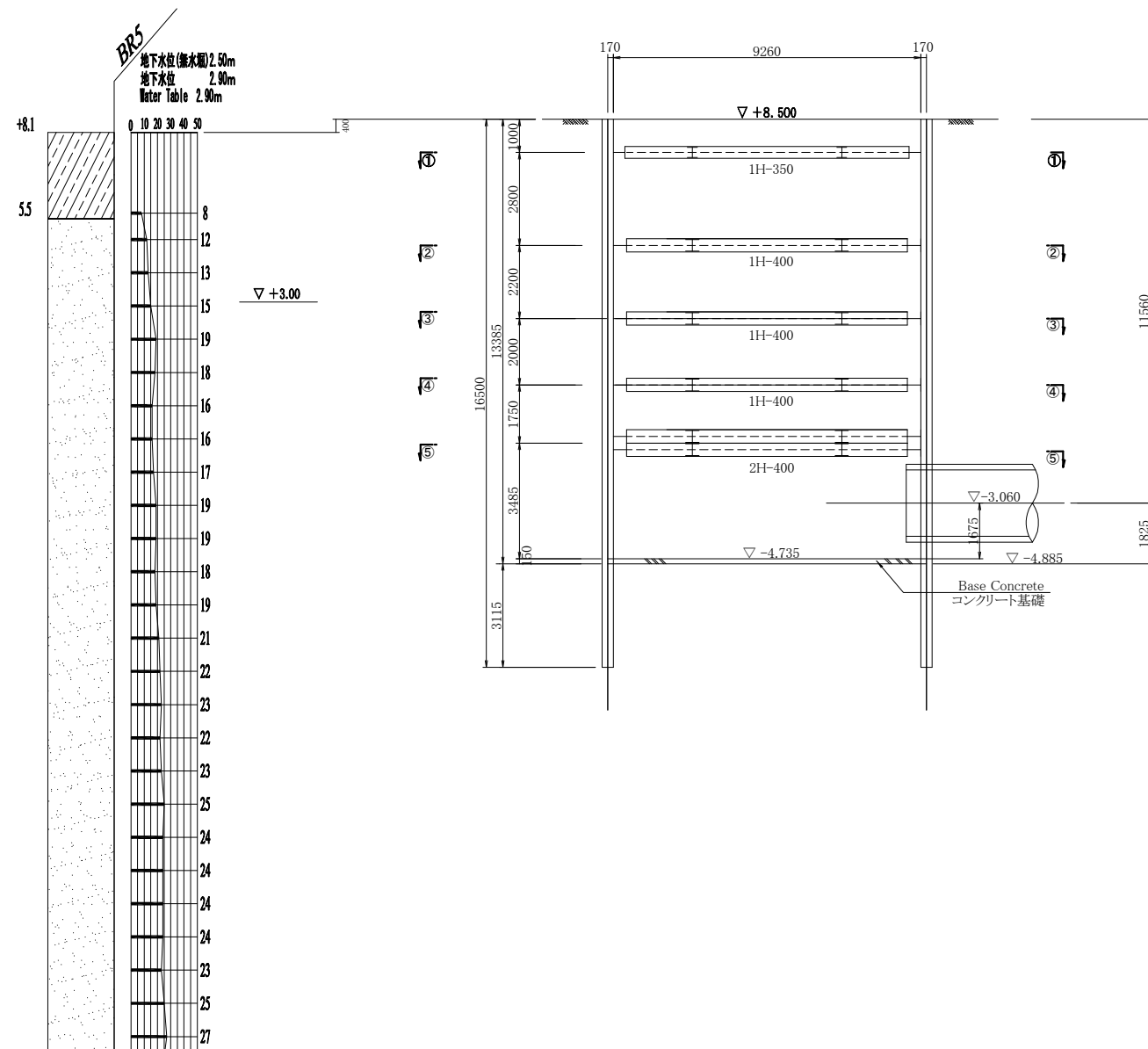
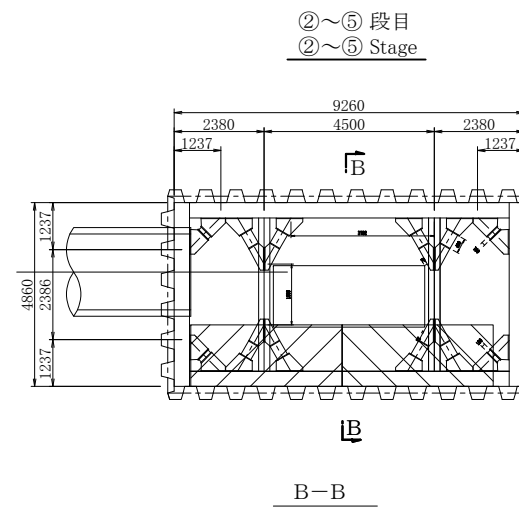
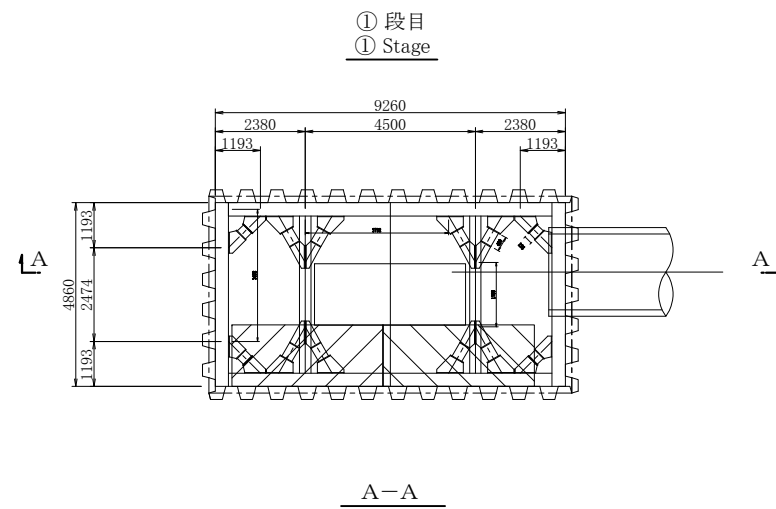


PROFILE SCALE H=1/3000  
V=1/200



No.		
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# PLAN OF DEPARTURE SHAFT ON DUONG RIVER S= 1:100



仮設材寸法表  
Size of waling and Strut

段目 Stage	腹起 Waling	切梁・火打ち Strut	段数 Rows
①	H-350×350×12×19	H-300×300×10×15	1
②	H-400×400×13×21	H-300×300×10×15	1
③	H-400×400×13×21	H-300×300×10×15	1
④	H-400×400×13×21	H-300×300×10×15	1
⑤	H-400×400×13×21	H-300×300×10×15	2

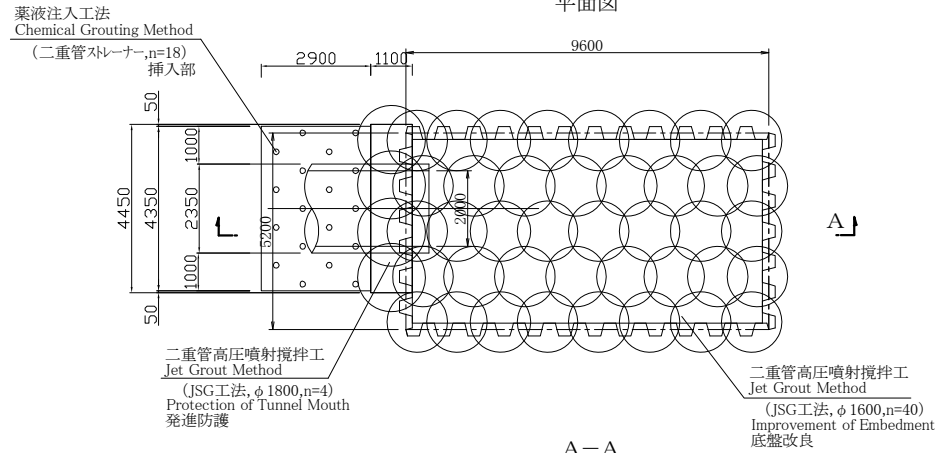
No.			
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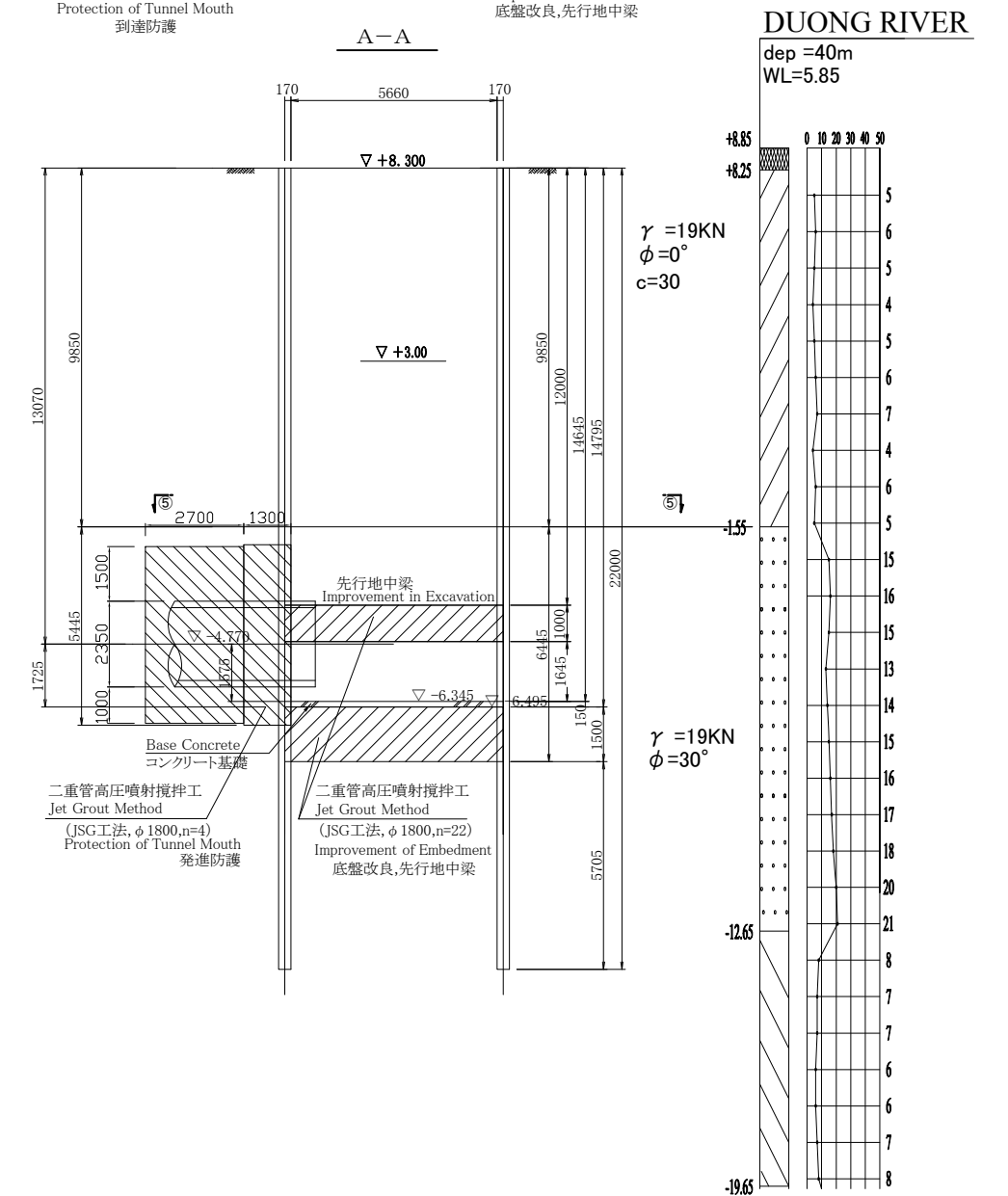
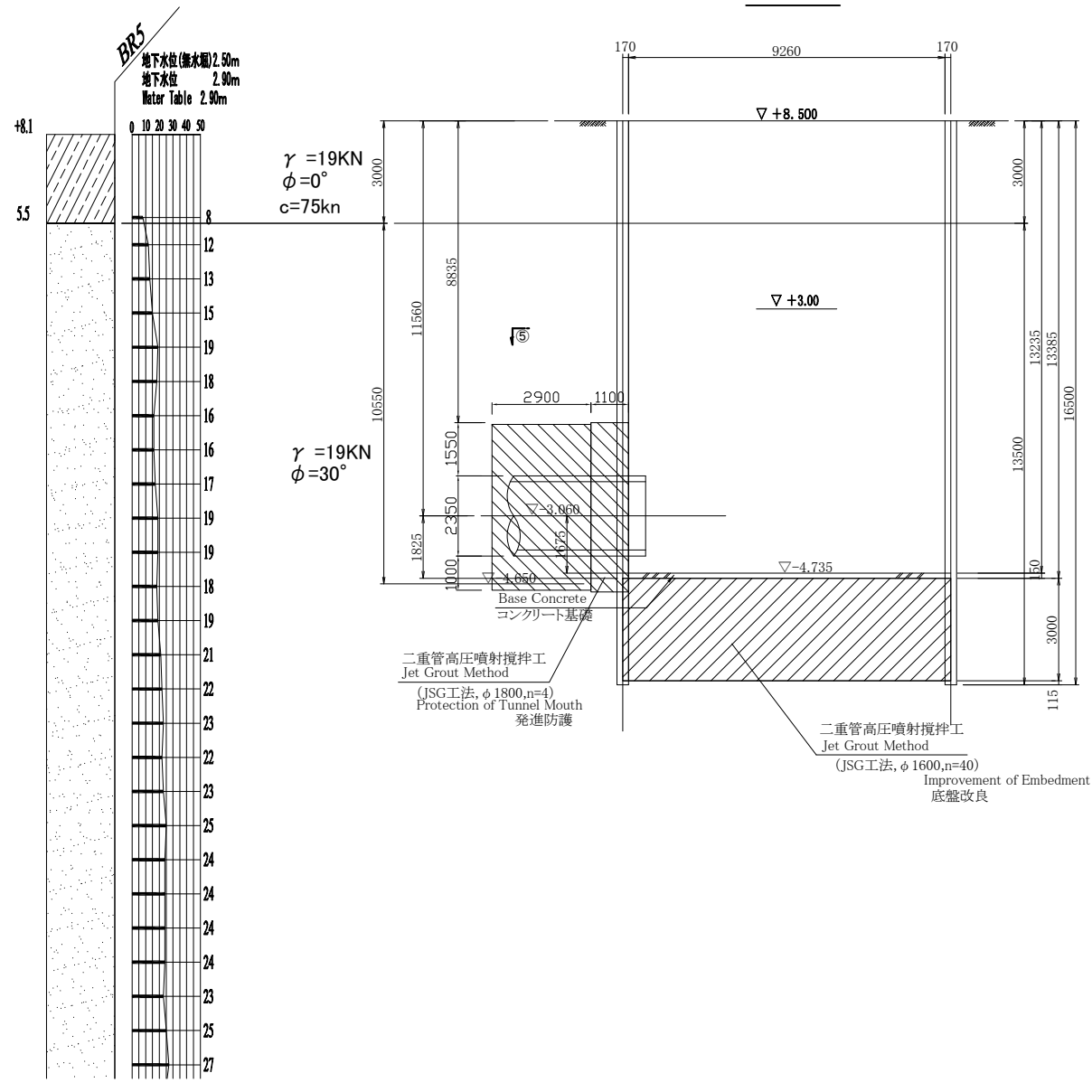
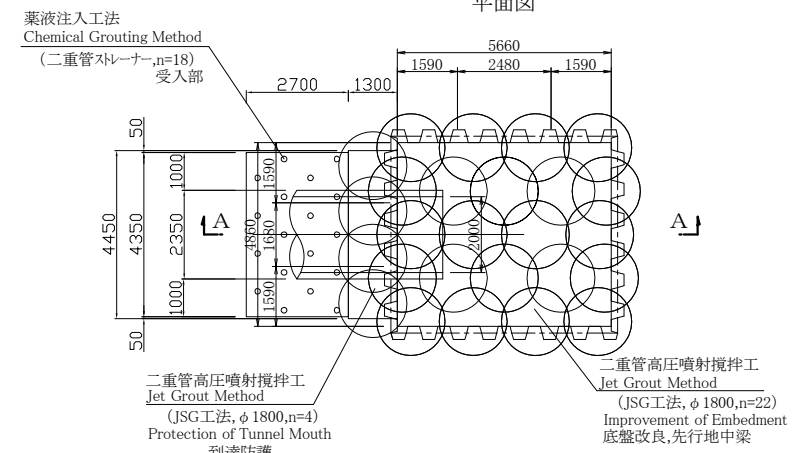


# SOIL IMPROVEMENT FOR JACKING METHOD ON DUONG RIVER S= 1:100

発進立坑  
DEPARTURE SHAFT  
PLAN  
平面図



到達立坑  
ARRIVAL SHAFT  
PLAN  
平面図

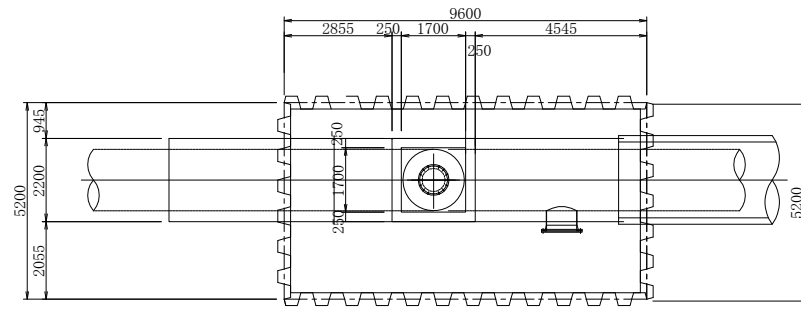


DUONG RIVER  
dep = 40m  
WL = 5.85

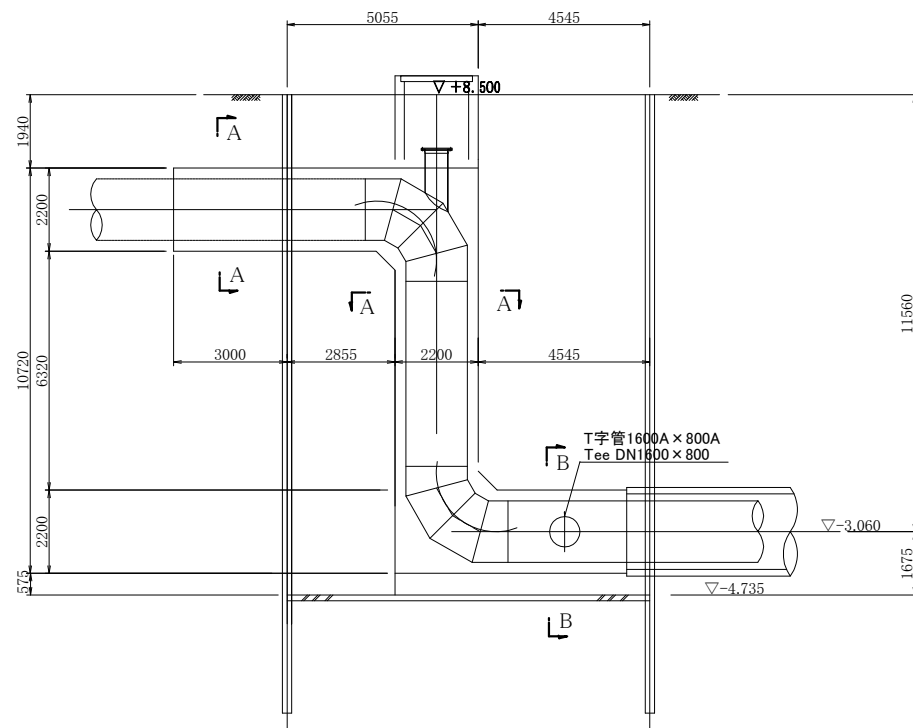
No.			

# REINFORCED CONCRETE STRUCTURE AT BEND ON DUONG RIVER S= 1:100

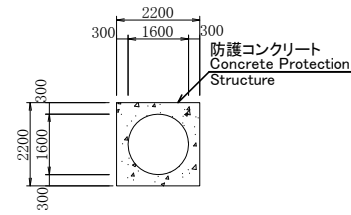
発進立坑部  
DEPARTURE SHAFT  
PLAN  
平面図



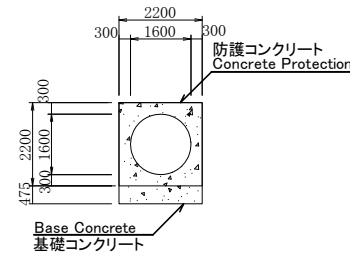
縦断面図  
PROFILE



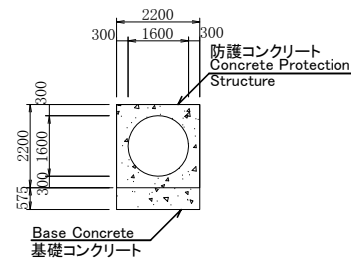
A-A



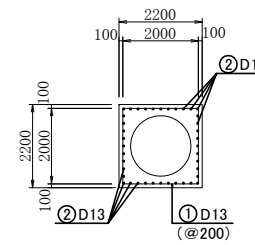
C-C



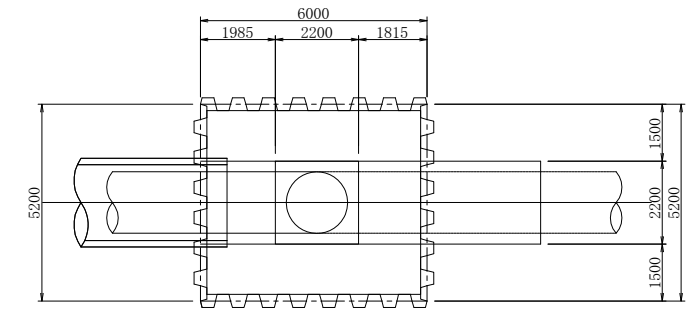
B-B



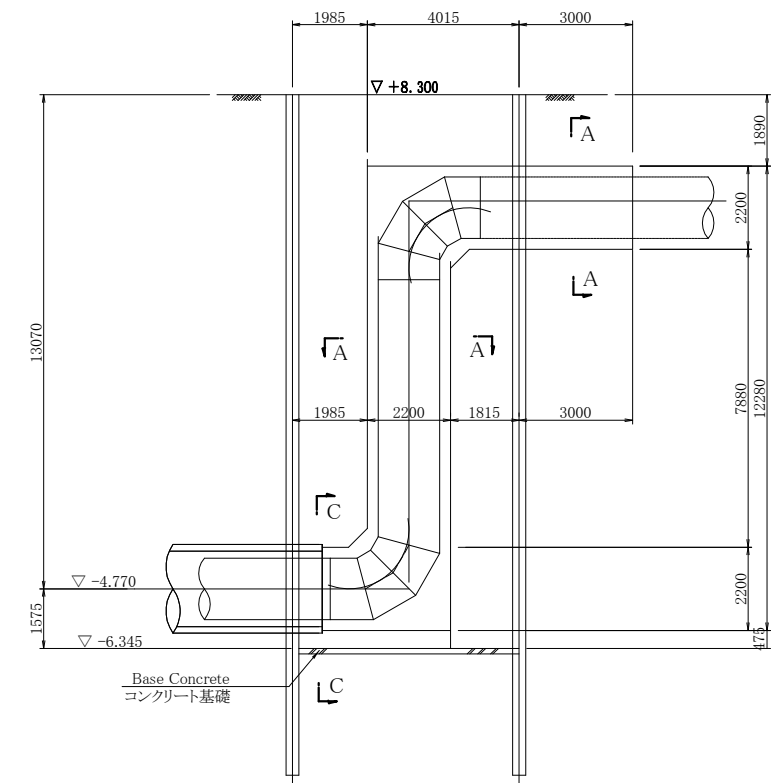
配筋断面図  
STEEL BAR ARRANGEMENT



到達立坑部  
ARRIVAL SHAFT  
PLAN  
平面図



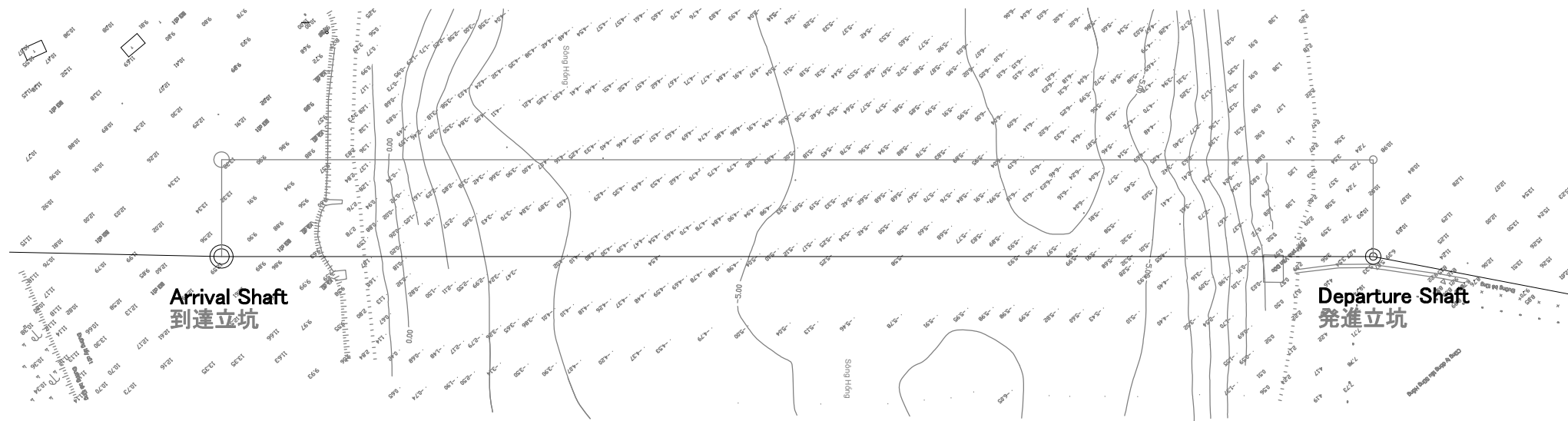
縦断面図  
PROFILE



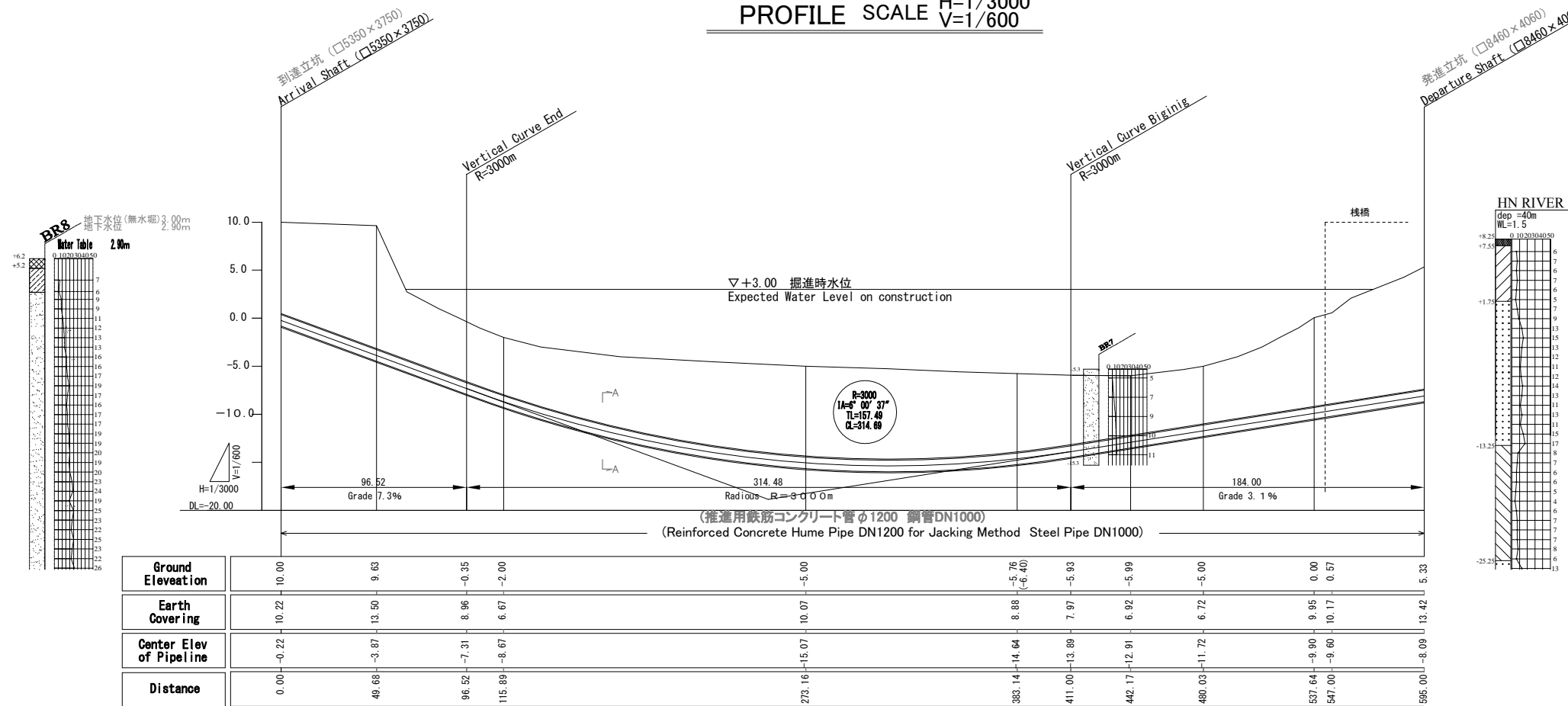
No.			
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# PLAN AND PROFILE FOR JACKING METHOD AT LOCATION OF HONG RIVER

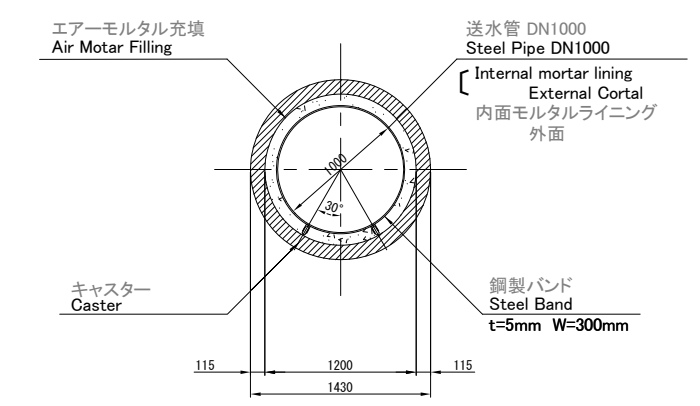
PLAN SCALE: 1/3000



PROFILE SCALE H=1/3000 V=1/600



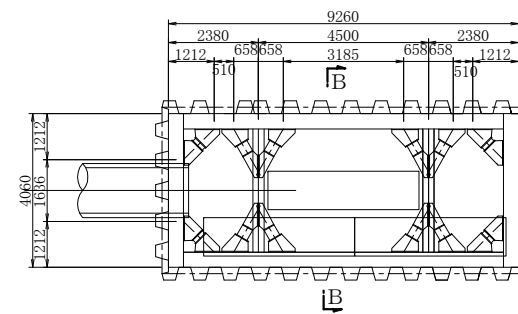
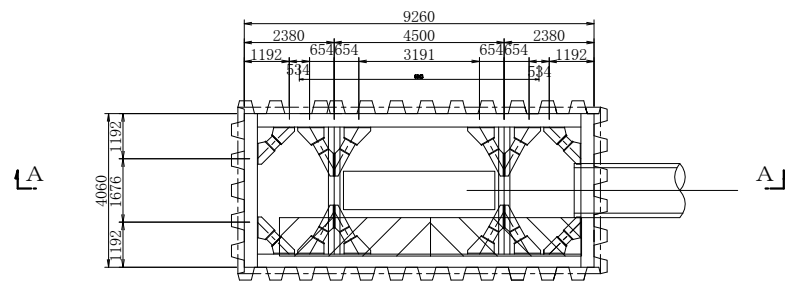
断面図 S=1/60



# PLAN OF DEPARTURE SHAFT ON HONG RIVER S= 1:100

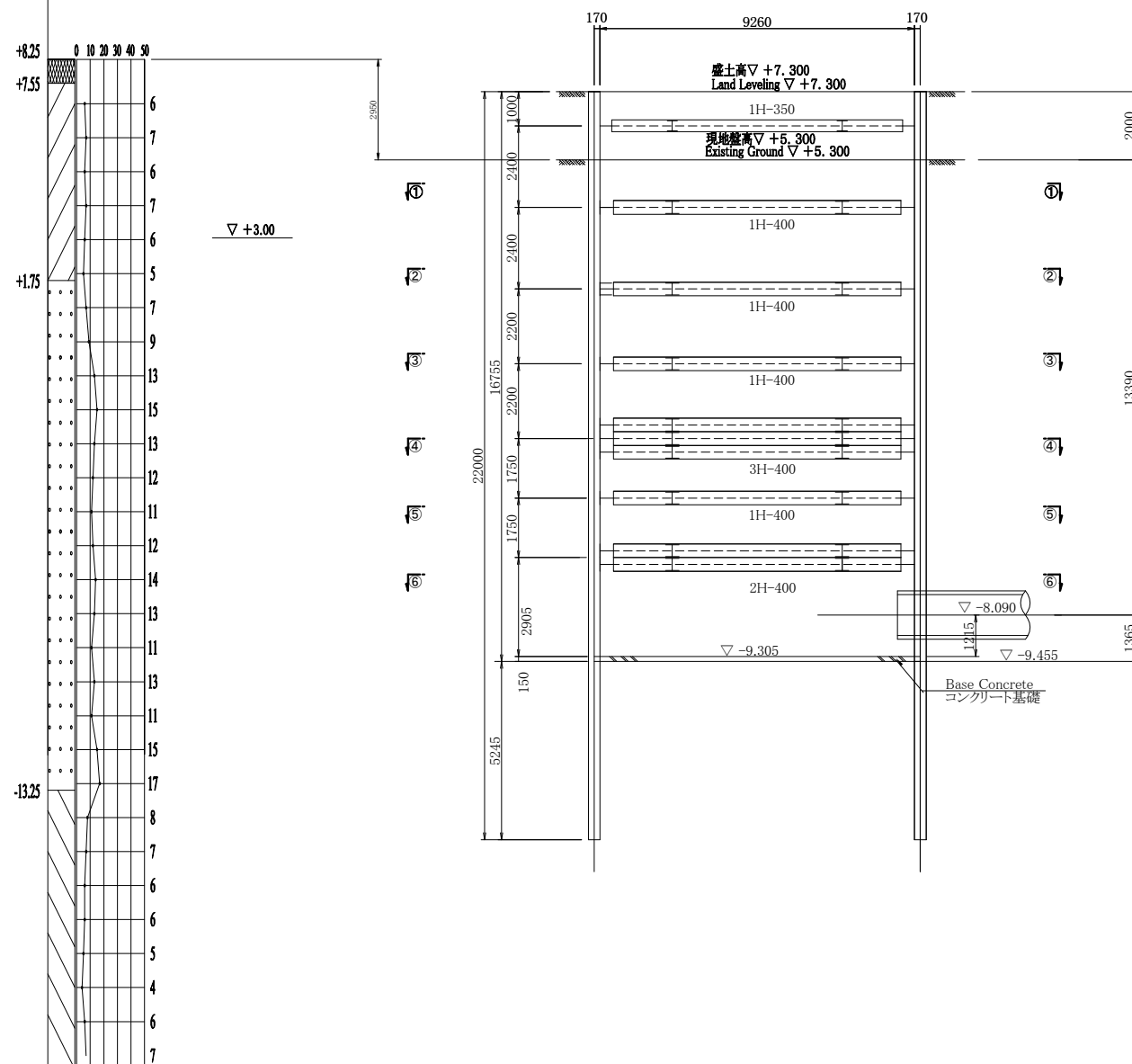
① 段目  
① Stage

②~⑤ 段目  
②~⑤ Stage

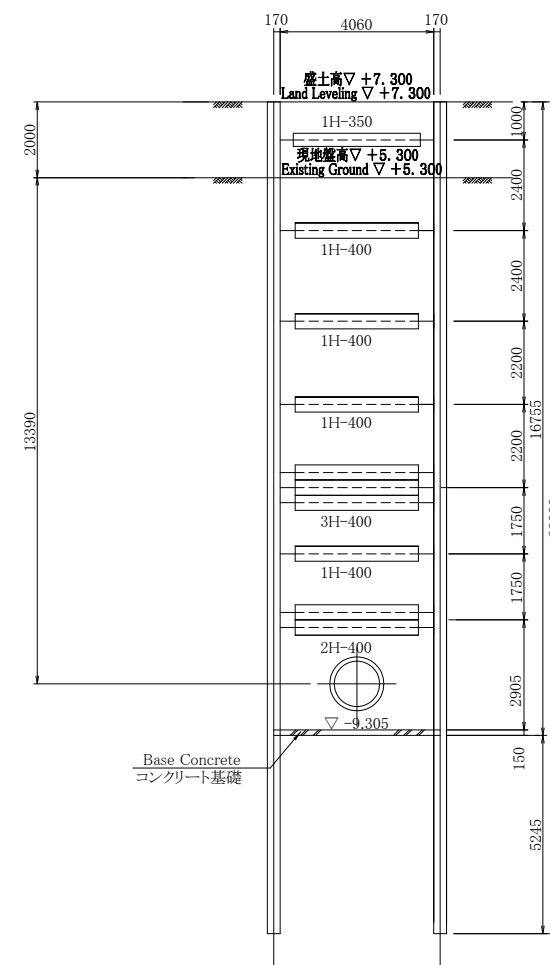


## HONG RIVER

dep = 40m  
WL = 5.25



## B-B

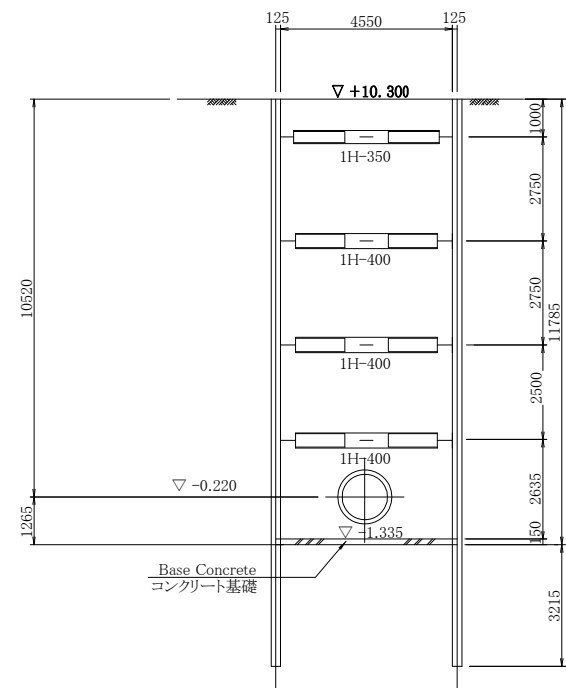
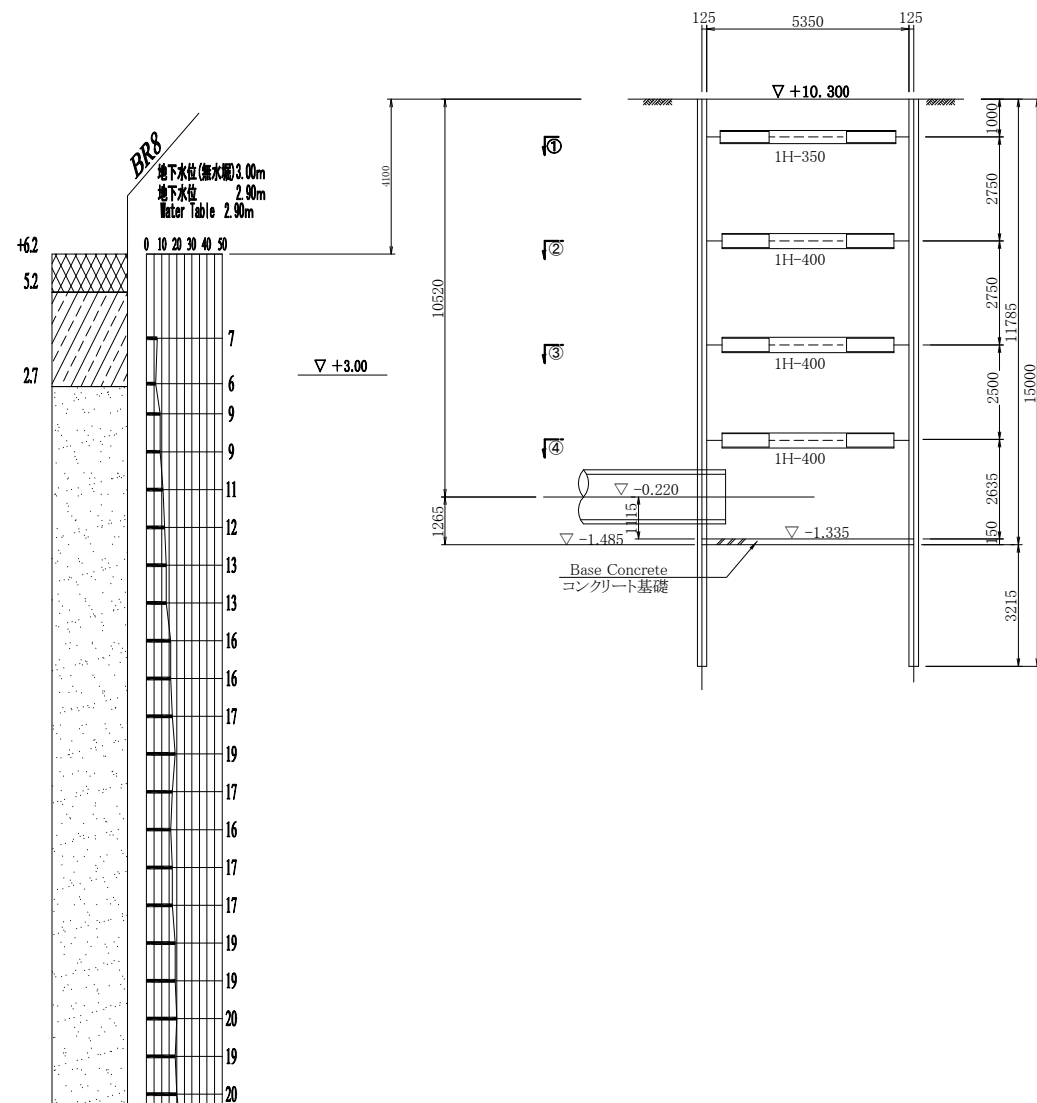
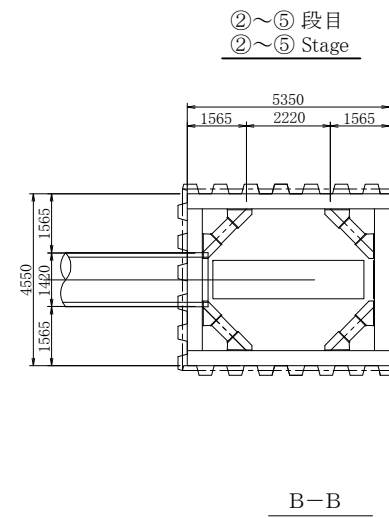
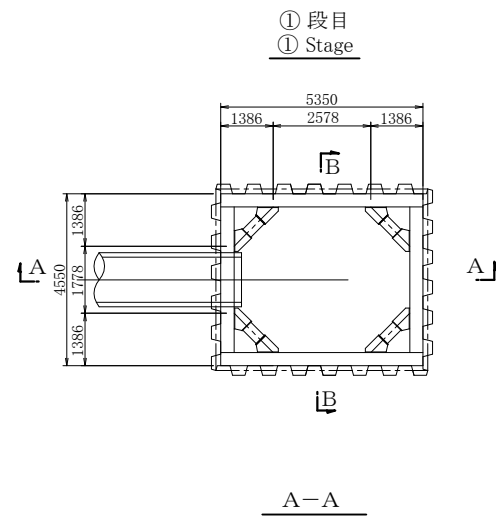


仮設材寸法表  
Size of waling and Strut

段目 Stage	腹起 Waling	切梁・火打ち Strut	段数 Rows
①	H-350×350×12×19	H-300×300×10×15	1
②	H-400×400×13×21	H-300×300×10×15	1
③	H-400×400×13×21	H-300×300×10×15	1
④	H-400×400×13×21	H-300×300×10×15	1
⑤	H-400×400×13×21	H-300×300×10×15	3
⑥	H-400×400×13×21	H-300×300×10×15	1
⑦	H-400×400×13×21	H-300×300×10×15	2

No.			
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# PLAN OF ARRIVAL SHAFT ON HONG RIVER S= 1:100



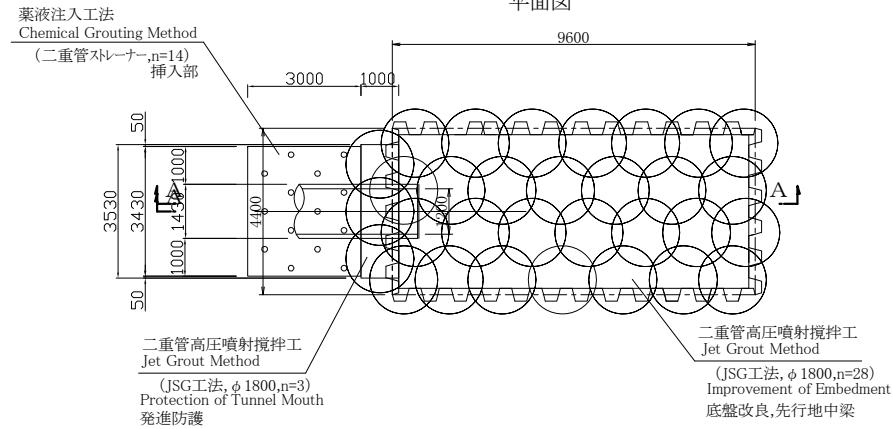
仮設材寸法表  
Size of waling and Strut

段目 Stage	腹起 Waling	切梁・火打ち Strut	段数 Rows
①	H-350×350×12×19	H-300×300×10×15	1
②	H-400×400×13×21	H-300×300×10×15	1
③	H-400×400×13×21	H-300×300×10×15	1
④	H-400×400×13×21	H-300×300×10×15	1

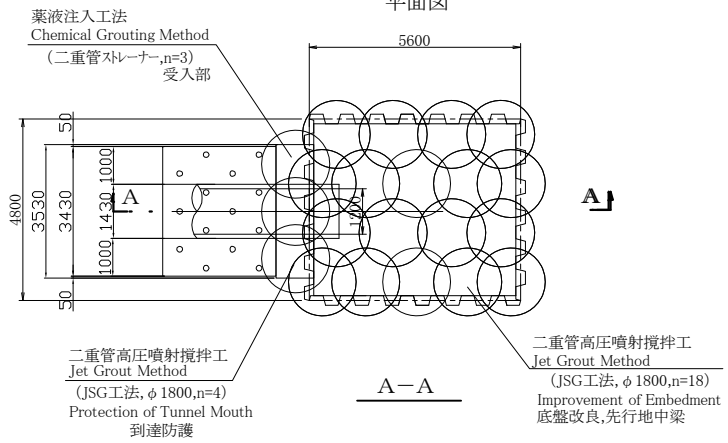
No.			
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# SOIL IMPROVEMENT FOR JACKING METHOD ON HONG RIVER S= 1:100

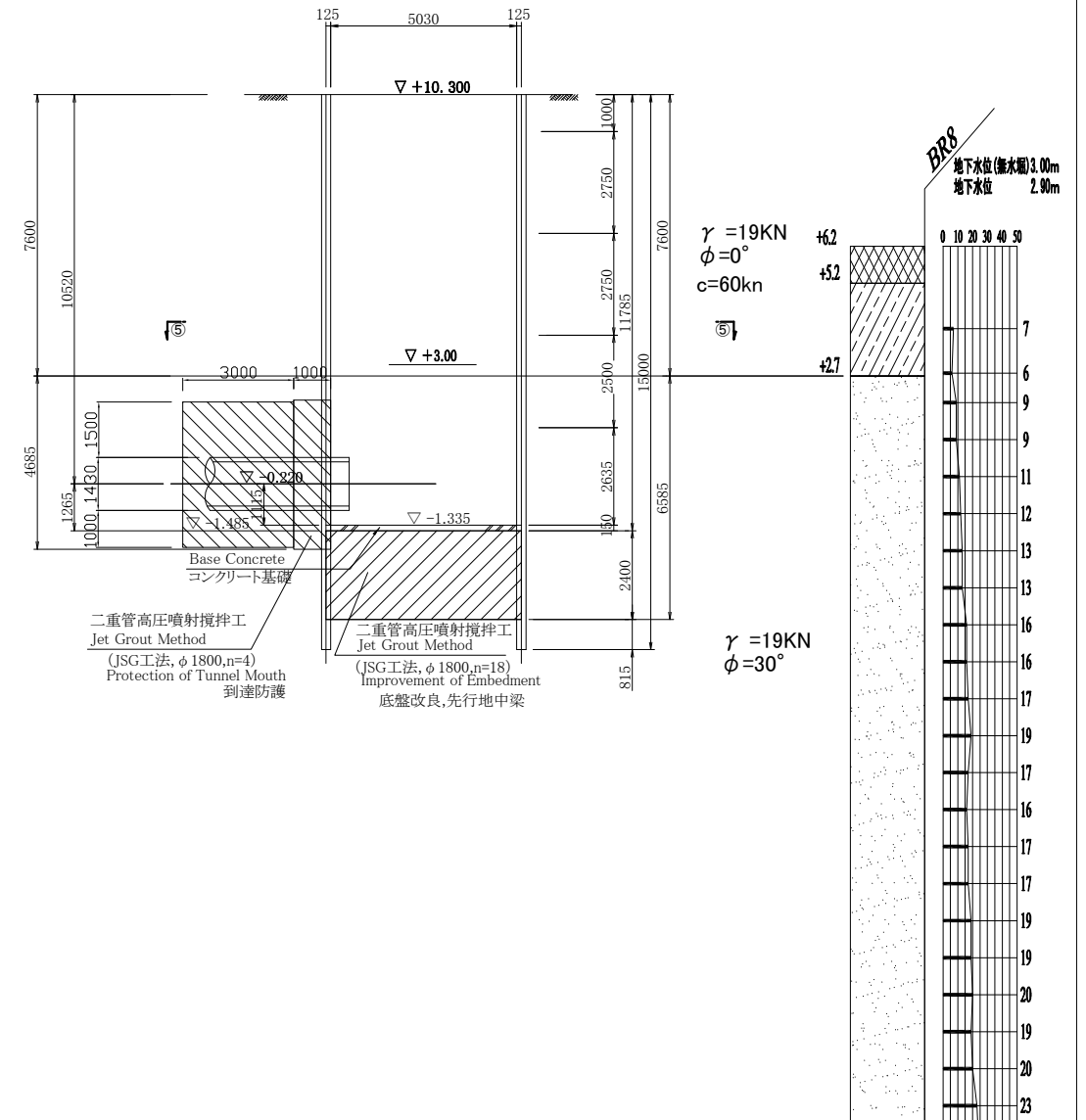
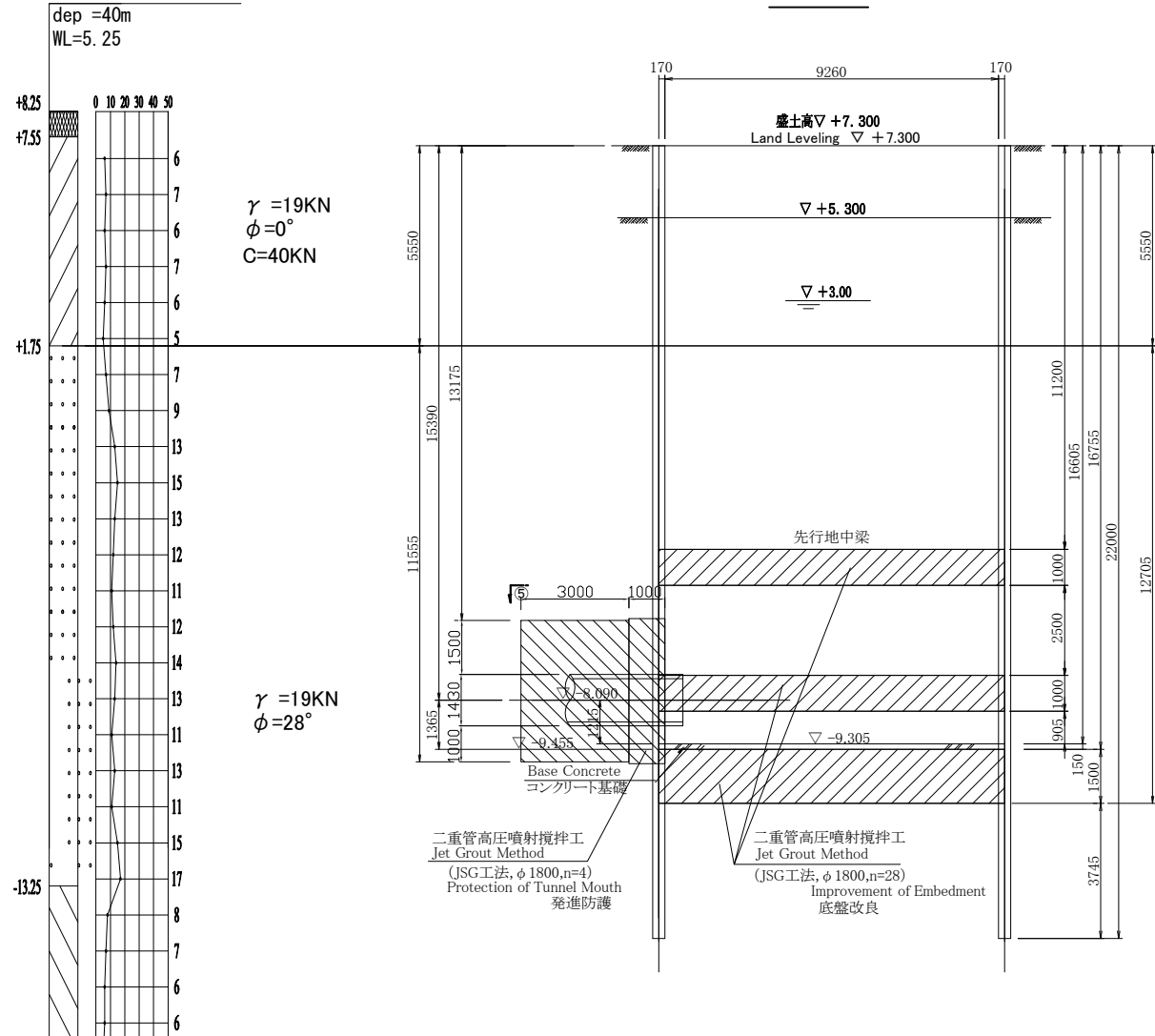
**発進立坑  
DEPARTURE SHAFT  
PLAN  
平面図**



**到達立坑  
ARRIVAL SHAFT  
PLAN  
平面図**



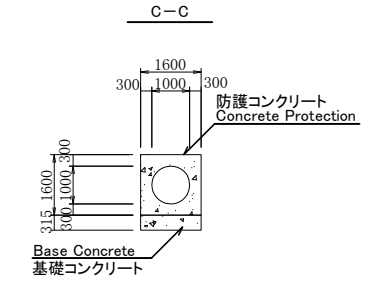
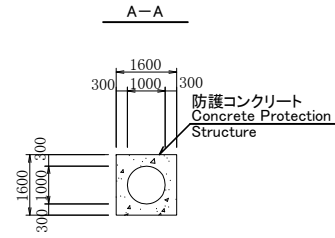
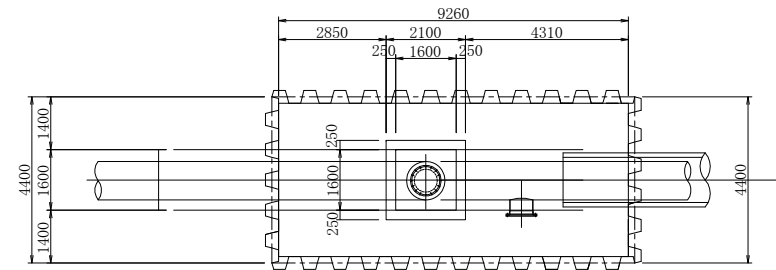
**HONG RIVER**



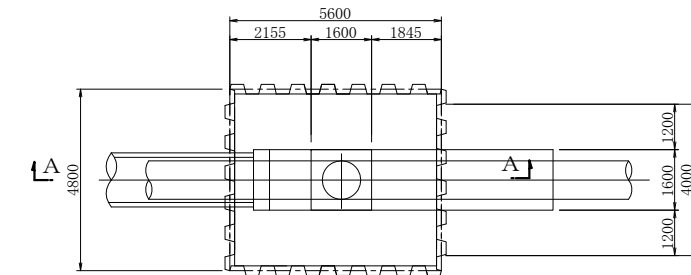
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# REINFORCED CONCRETE STRUCTURE AT BEND ON HONG RIVER S= 1:100

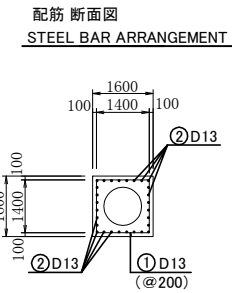
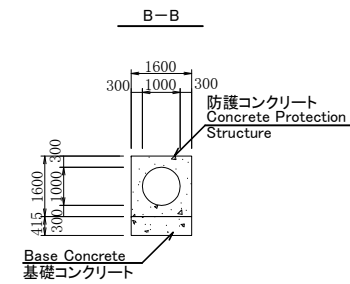
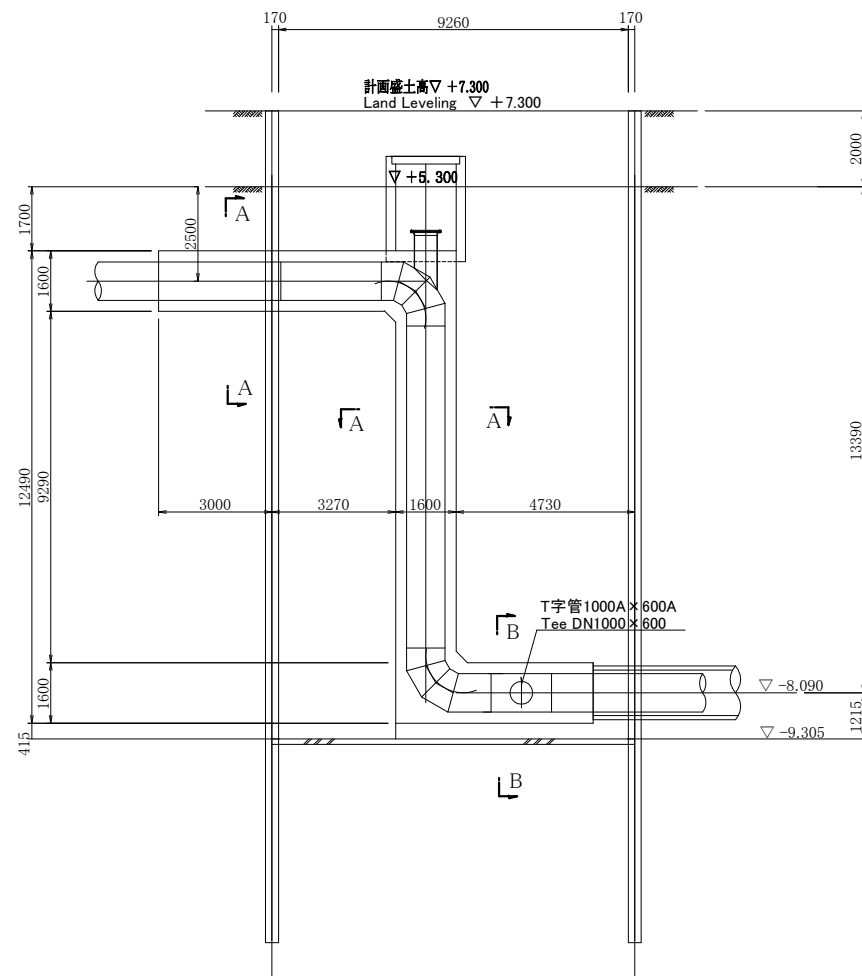
発進立坑部  
**DEPARTURE SHAFT**  
PLAN  
平面図



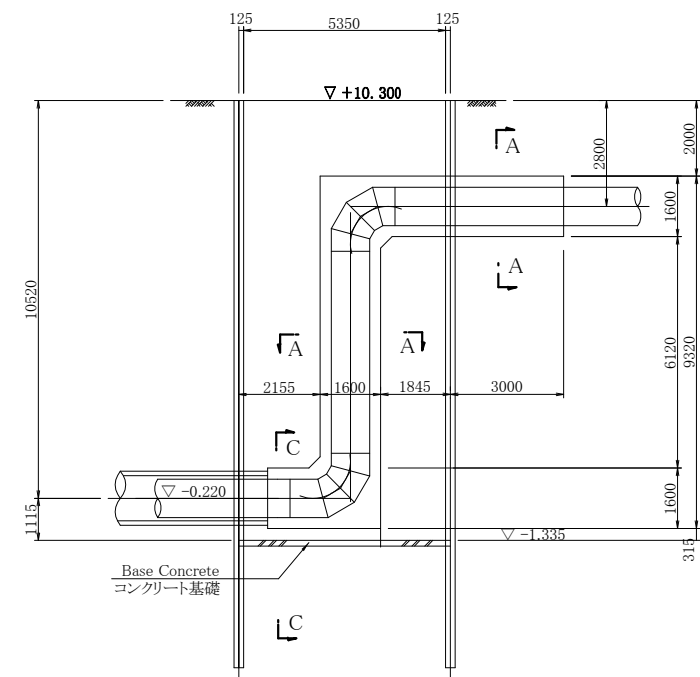
到達立坑部  
**ARRIVAL SHAFT**  
PLAN  
平面図



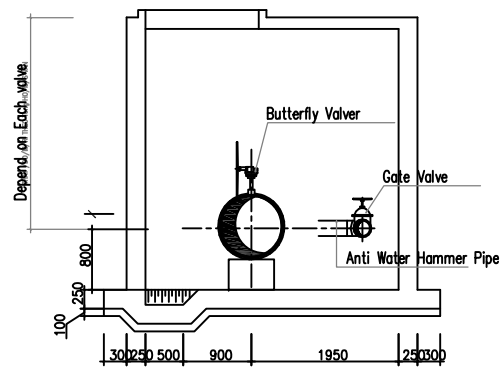
縦断面図  
PROFILE



縦断面図  
PROFILE

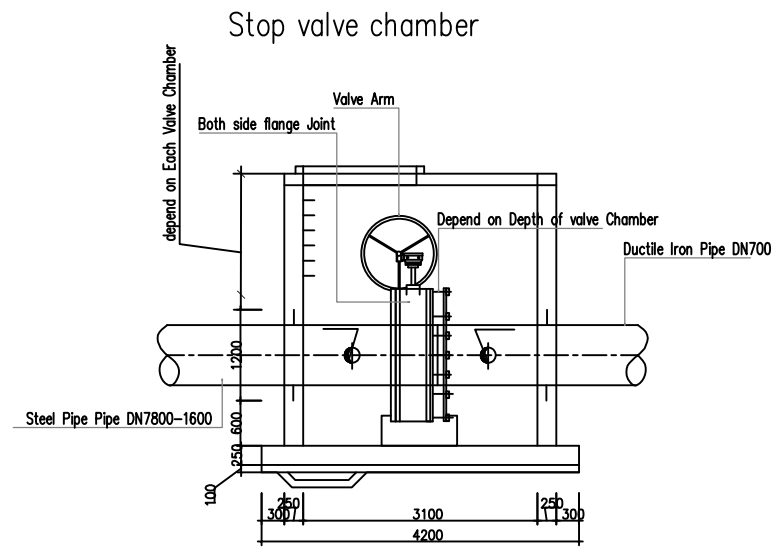


No.			
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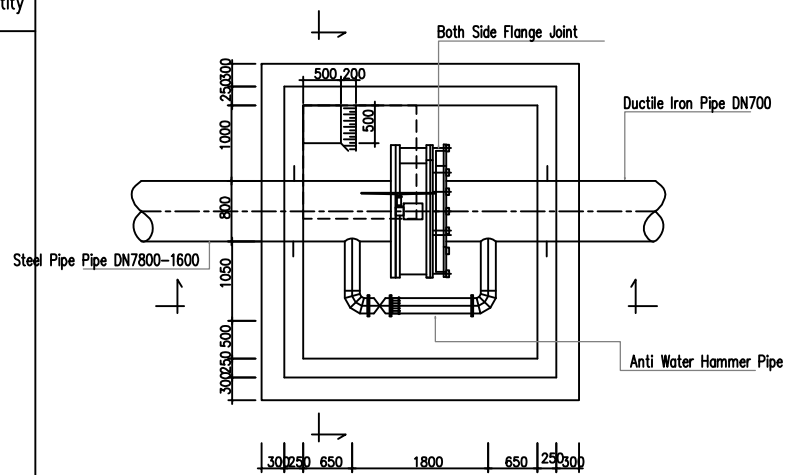


Stop Valve Component

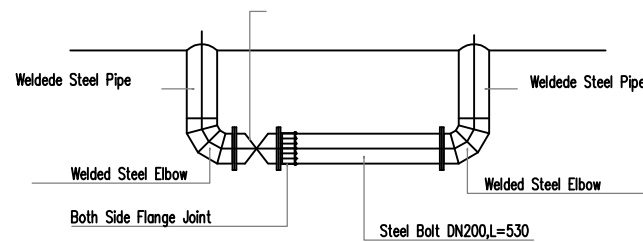
No.	Material	Type	Unit	Quantity
1	Butterfly Valve	Depend on Pipe		
2	Hollow Steel Flange			
3	Bolt			
4	Rubber Joint			
5	Both Side Joint			
6	Flexible Joint			
7	gate Valve			
8	Hollow Steel Flange			
9	Bolt			
10	Rubber Joint			
11	Inter Lock Flange			
12	Steel Bolt			
13	Short Steel Pipe			
14	Welded Steel Elbow			
15	Steel Stop Foil			



section a-a



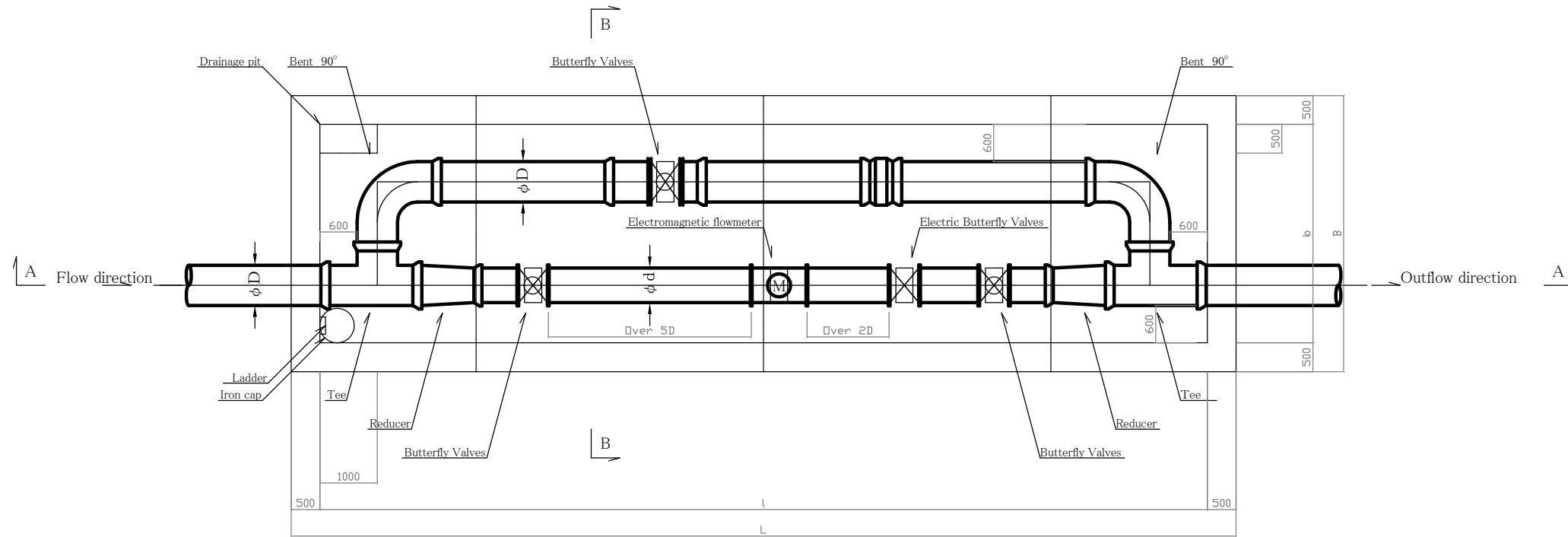
Section b-b  
detail anti water Hammer pipe



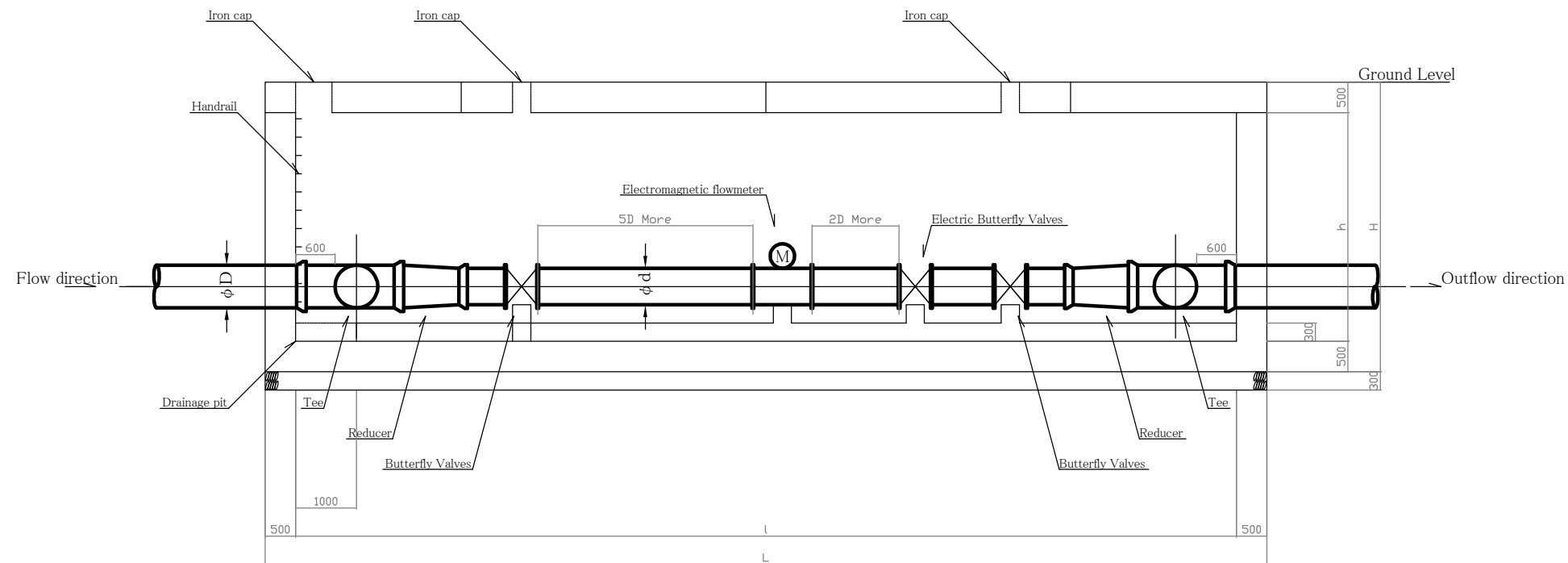
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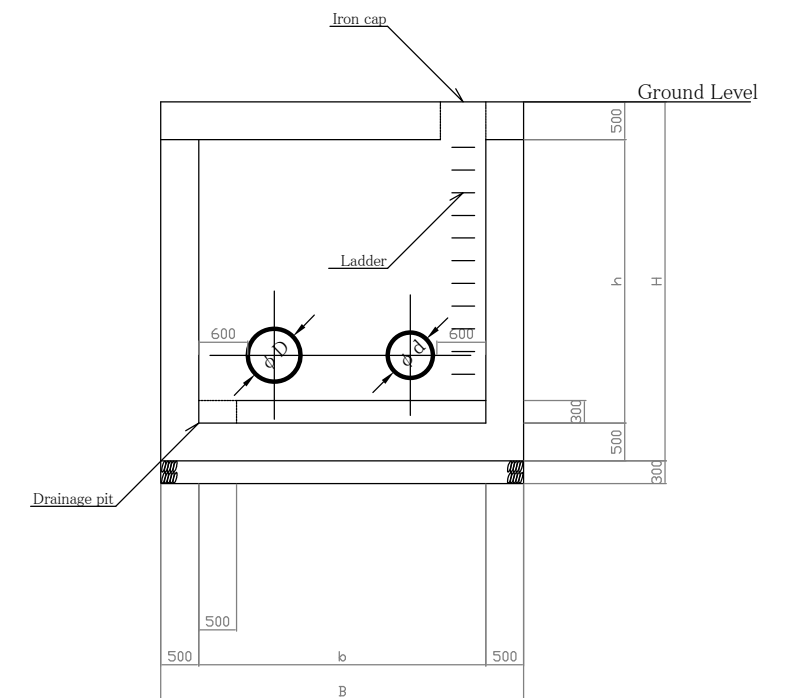
PLAN OF FLOWMETER CHAMBER



Section A-A

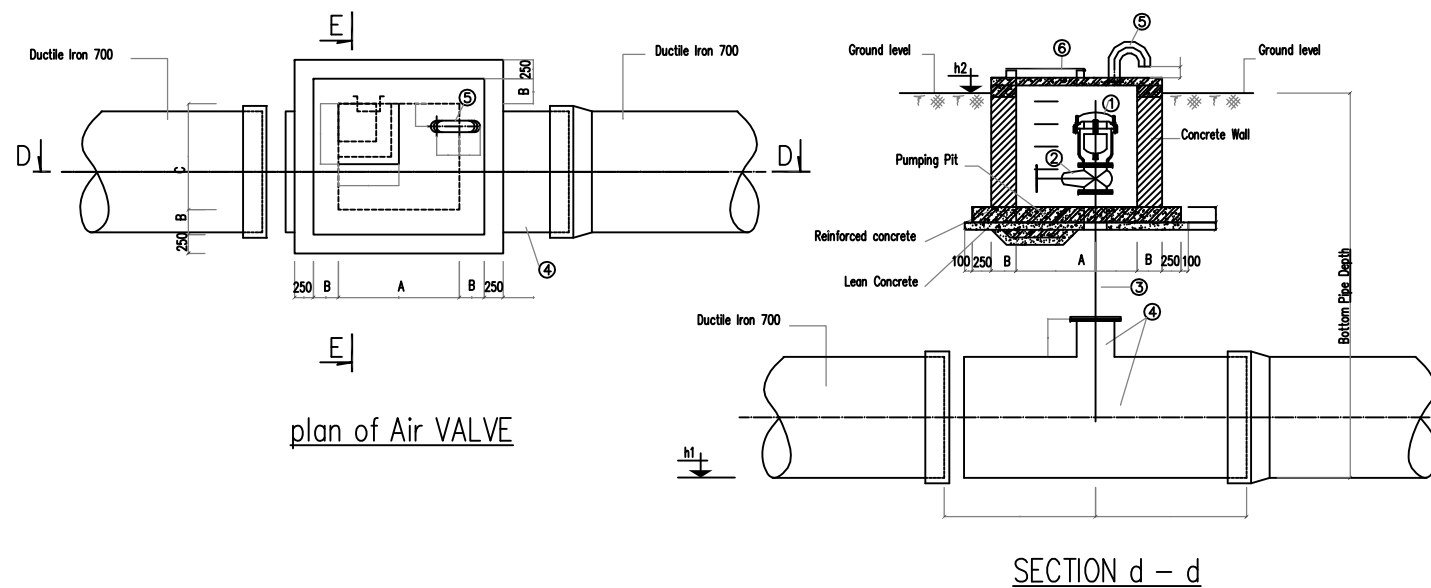


Section B-B



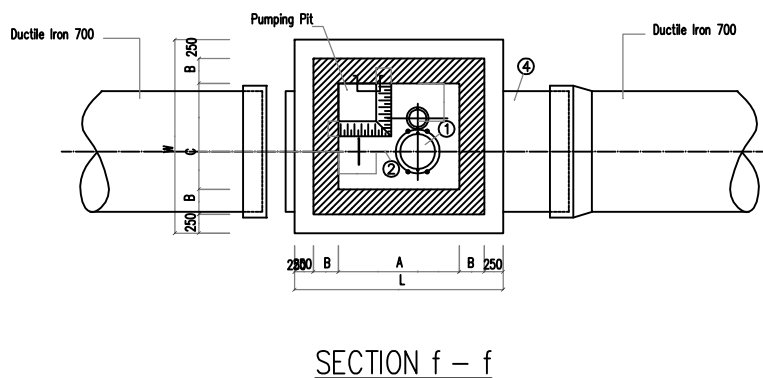
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## Detail of dn700 Air valve chamber



plan of Air VALVE

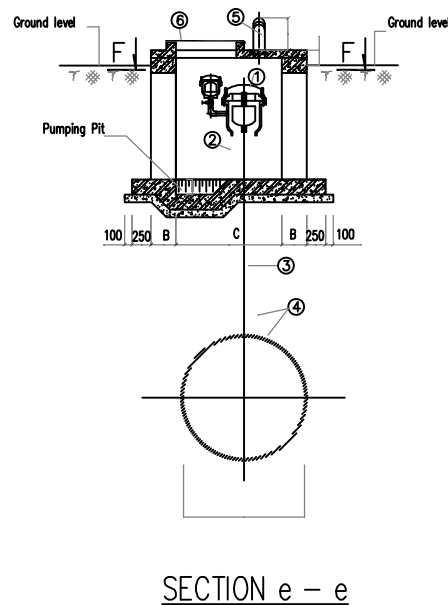
SECTION d - d



SECTION f - f

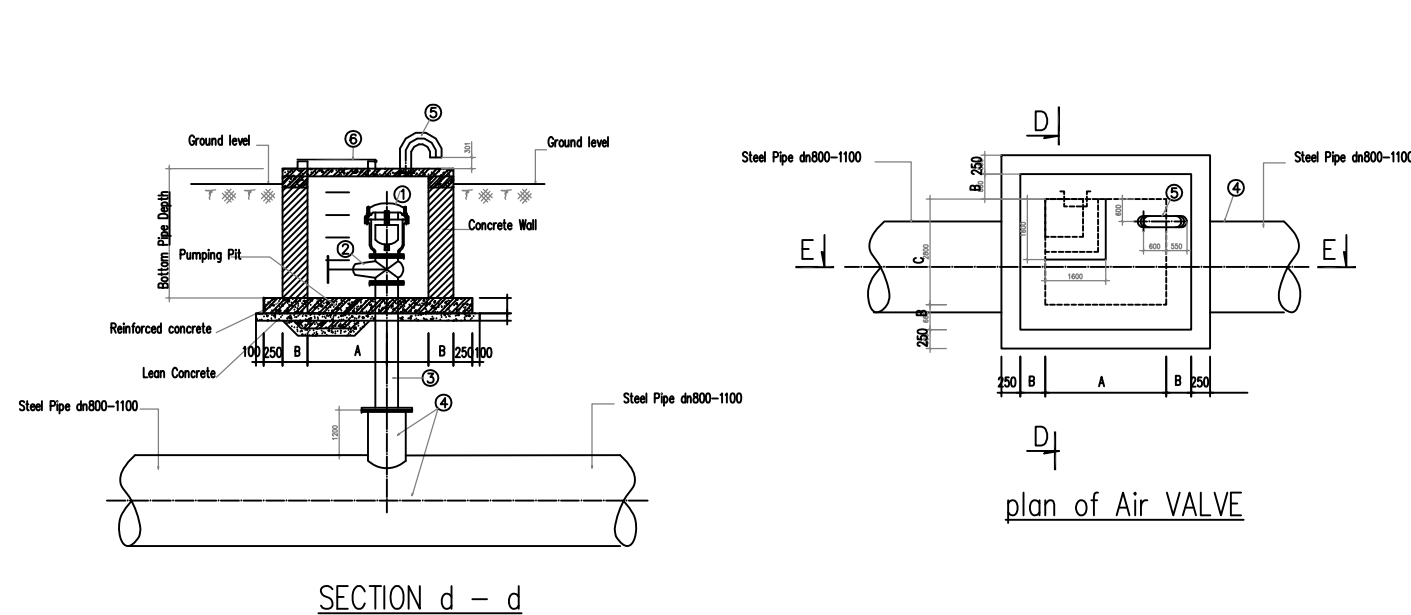
AIR VALVE COMPONENT

No.	Material	UNIT	QUANTITY
①	Flange Air Valve dn300	set	1
②	Both Side Flange Gate Valve	piece	1
③	Stainless Steel Bolt dn300	piece	1
④	Tee dn700 x500	piece	1
⑤	Airduct dn150	piece	1
⑥	Cap	piece	1



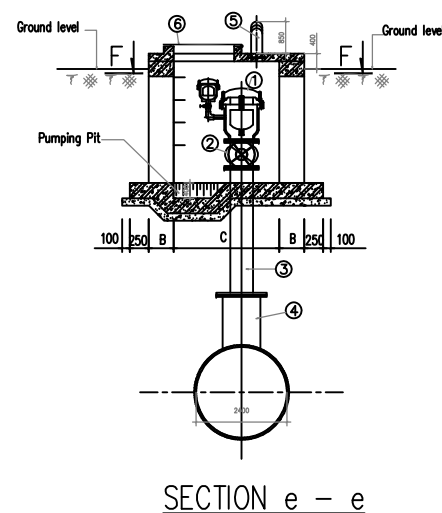
SECTION e - e

## Detail of Dn800-1100 Air valve chamber

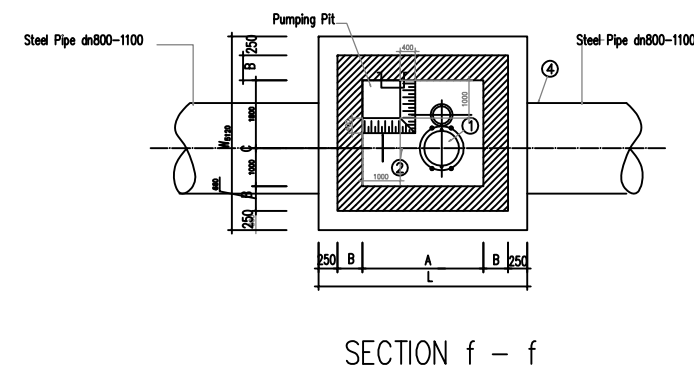


plan of Air VALVE

SECTION d - d



SECTION e - e



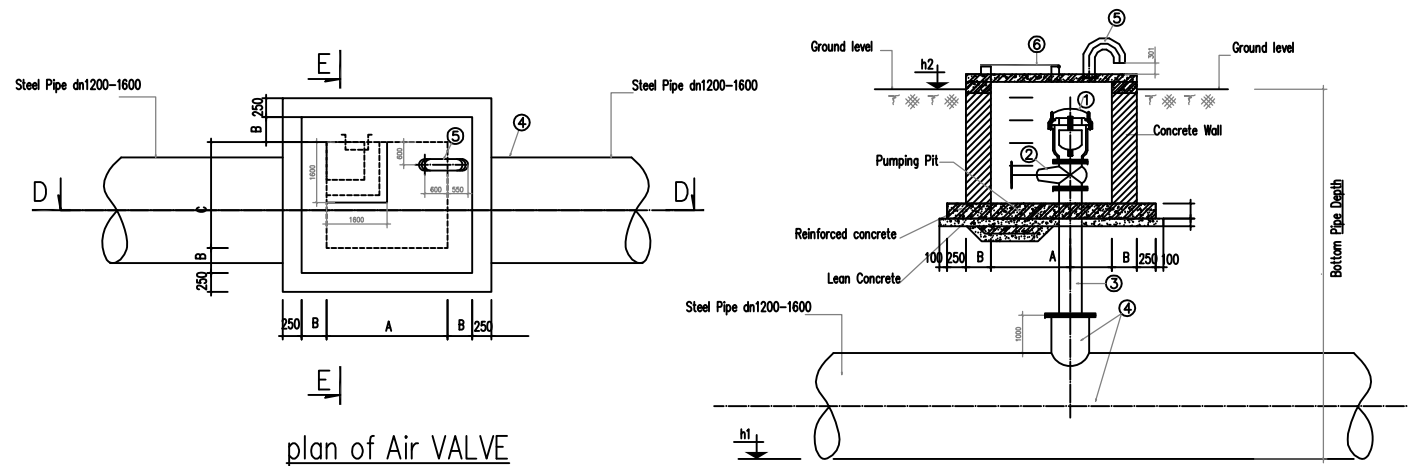
SECTION f - f

AIR VALVE COMPONENT

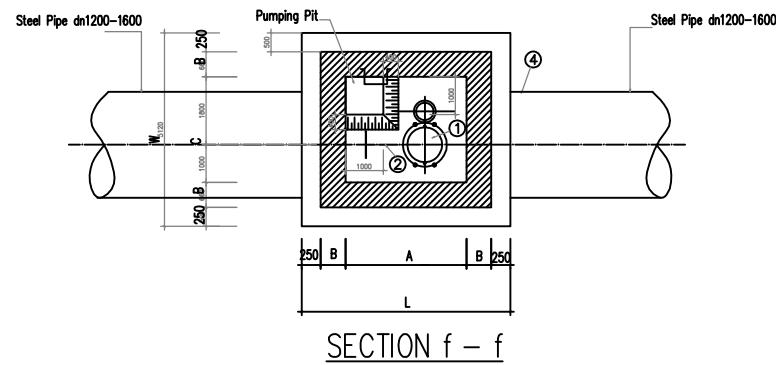
No.	Material	UNIT	QUANTITY
①	Flange Air Valve dn300	set	1
②	Both Side Flange Gate Valve	piece	1
③	Stainless Steel Bolt dn300	piece	1
④	Tee dn800-1600 x500	piece	1
⑤	Airduct dn150	piece	1
⑥	Cap	piece	1

SECTION e - e

# Detail of DN1200-1600 Air valve chamber



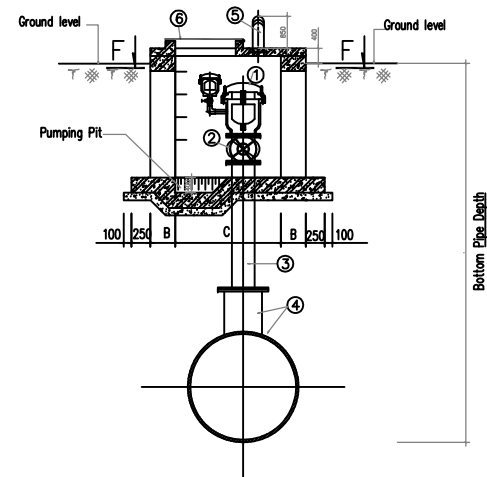
SECTION d - d



SECTION f - f

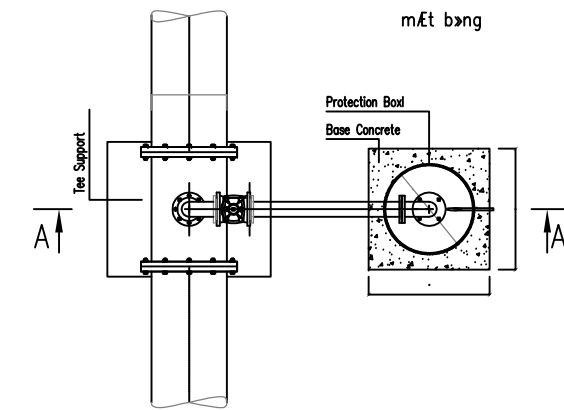
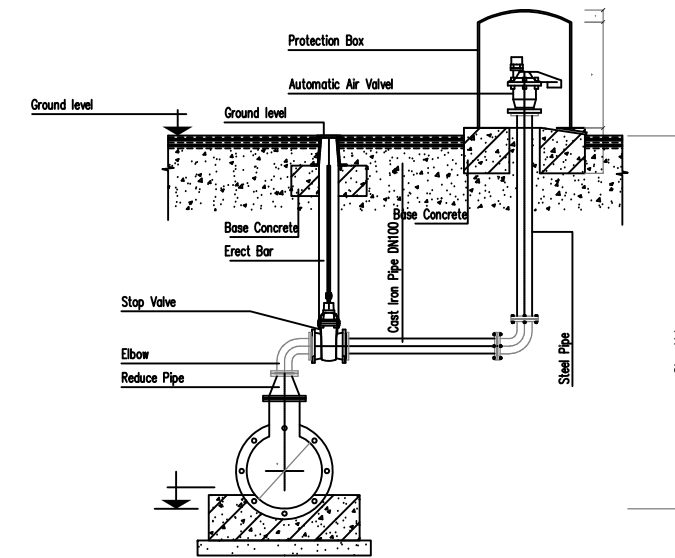
AIR VALVE COMPONENT

No.	Material	UNIT	QUANTITY
①	Flange Air Valve dn300	set	1
②	Both Side Flange Gate Valve	piece	1
③	Stainless Steel Bolt dn300	piece	1
④	Tee dn1400-1600 x500	piece	1
⑤	Air duct dn150	piece	1
⑥	Cap	piece	1



SECTION e - e

# Detail of Air Valve

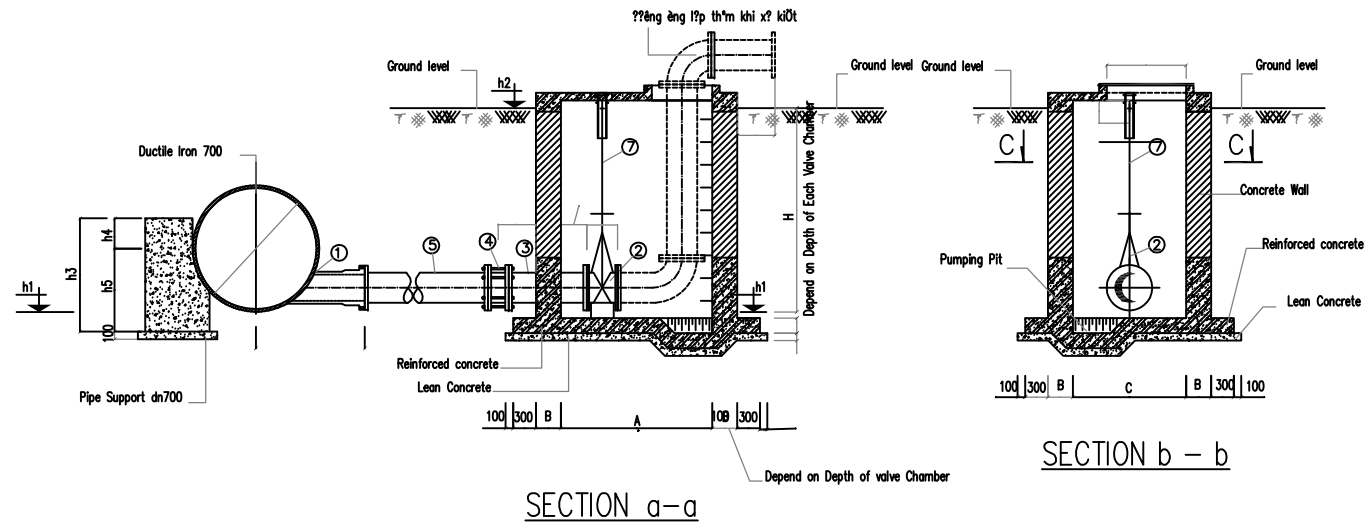


Air VALVE COMPONENT

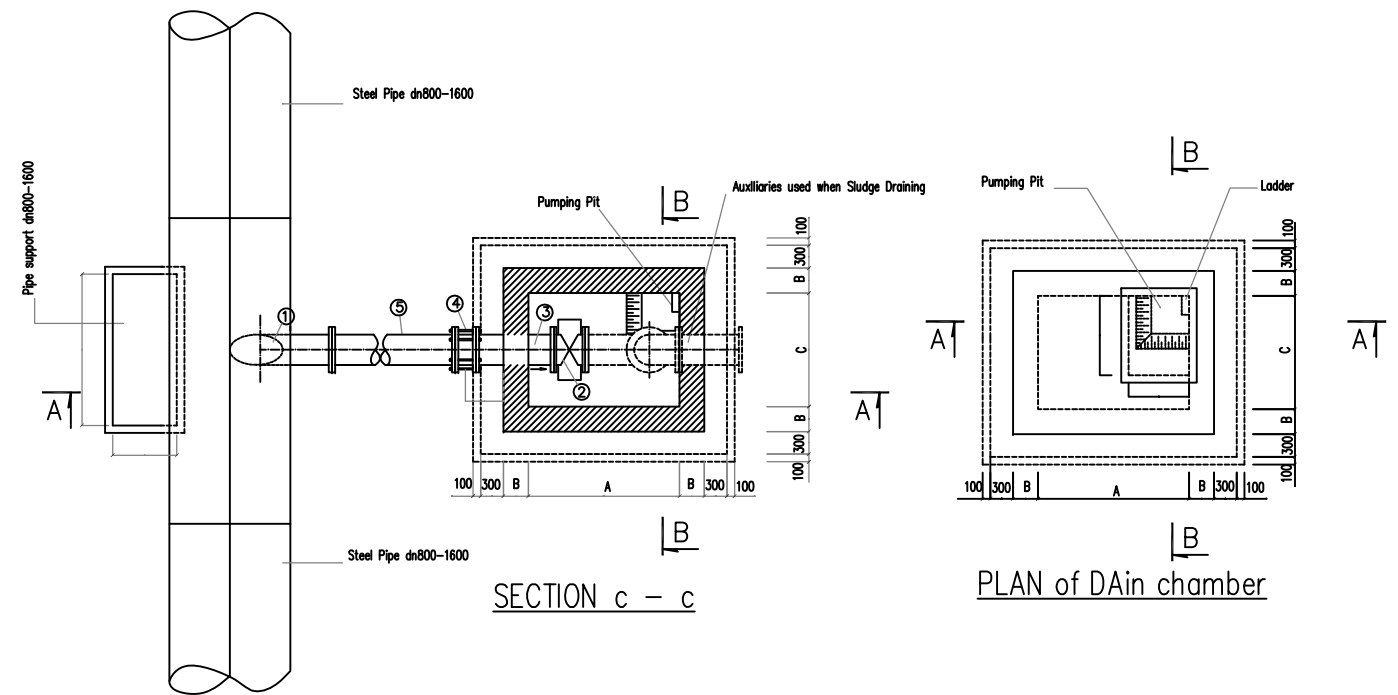
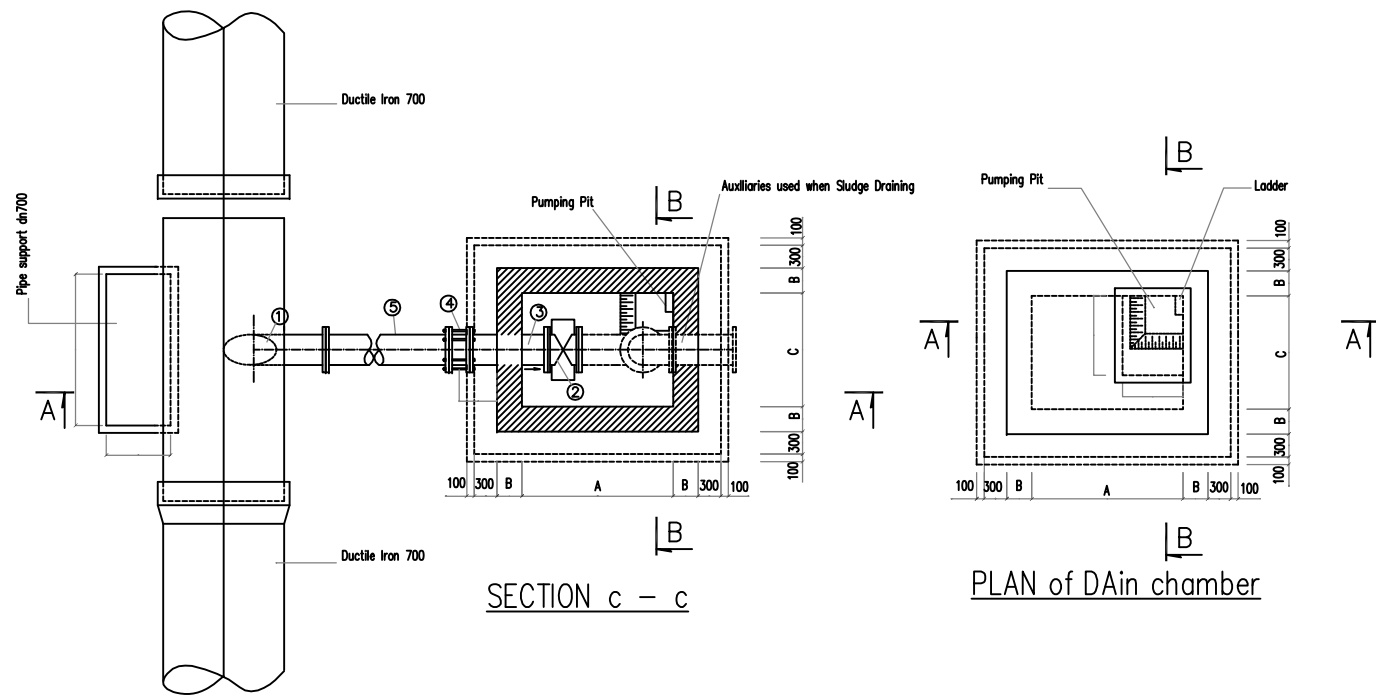
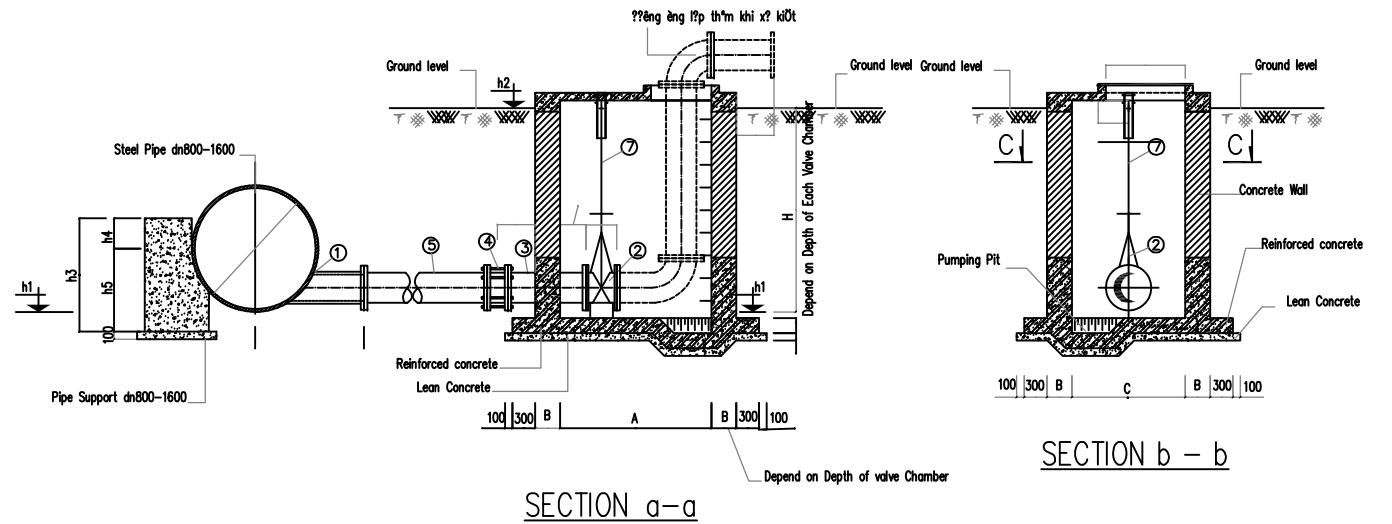
No.	Material	UNIT	QUANTITY
1	Cast Iron or Steel Tee	piece	1
2	Butterfly Valve +Hollow Flange	piece	1
3	Air Valve	piece	1
4	Protection box	piece	1

No.			
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### Detail of dn700 Drain pit



### Detail of dn800-1600 Drain pit



DRAIN VALVE COMPONENT

No.	Material	UNIT	QUANTITY
①	Sludge Drain Tee d8700 x d7n400	set	1
②	Stoop Valve dn400	piece	1
③	Both Side Flange Bolt dn400	piece	2
④	Flexible joint dn400	piece	2

DRAIN VALVE COMPONENT

No.	Material	UNIT	QUANTITY
①	Sludge Drain Tee d87800-1600 x d7n400	set	1
②	Stoop Valve dn400	piece	1
③	Both Side Flange Bolt dn400	piece	2
④	Flexible joint dn400	piece	2

No.			
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