

SUPER-STRUCTURE

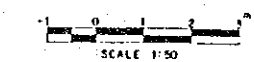
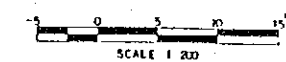
ITEM	CLASS	UNIT	ALT 1.(1)	ALT 1.(2)	ALT 2.(1)	ALT 2.(2)	REMARKS
<b>STEEL</b>							
GIRDER	SM450B	kg	27000	51000	42410	0	
OTHERS	SM450B	kg	33000	86000	53050	2610	
<b>SHOE</b>							
HANDRAIL	m		4	8	4	0	
CONCRETE	αck-300kg/cm <sup>2</sup>	m <sup>3</sup>	63.70	127.40	73.10	29.90	
FORM	m <sup>2</sup>		281.00	562.00	320.00	88.00	
ASPHALT PAVEMENT	m <sup>2</sup>		0	400.00	0	325.00	
EXPANSION JOIN	m		10.00	20.00	11.50	3.50	

• REINFORCEMENT BAR --- 250kg/m<sup>3</sup>

SUB-STRUCTURE

ITEM	CLASS	UNIT	ALT 1.(1)	ALT 1.(2)	ALT 2.(1)	ALT 2.(2)	REMARKS
EXCAVATION	m <sup>3</sup>		475.60	951.20	618.00	0	
CONCRETE	αck-210kg/cm <sup>2</sup>	m <sup>3</sup>	128.80	257.60	193.30	0	
FORM	m <sup>2</sup>		226.50	453.00	314.00	0	
REINFORCEMENT BAR	SD-235A	t	7.70	15.40	11.50	0	
GUARD BANK	m <sup>3</sup>		0	0	0	0	

DESIGN CONDITION	
TOTAL BRIDGE LENGTH	50.000
SPAN LENGTH	49.800
SPAN	48.800
WIDTH	4.000, 4.750, 6.500
TYPE ROAD	TK - 20
IMPACT COEFFICIENT	1.10, 2.02
SEISMIC COEFFICIENT	0.10, 0.18
ANGLE OF SKEW	0° - 90°
ANGLE OF CLAVATURE	
LONGITUDINAL SLOPE	1: - 2.0000 %



NOTE  
 ALT-1.(1) INITIAL STAGE - UNUSUAL ONE LANE PLAN  
 ALT-1.(2) 2ND STAGE - ADDITIONAL ONE LANE PLAN  
 ALT-2.(1) INITIAL STAGE - STANDARD ONE LANE PLAN  
 ALT-2.(2) 2ND STAGE - SUPERSTRUCTURE WIDENING PLAN

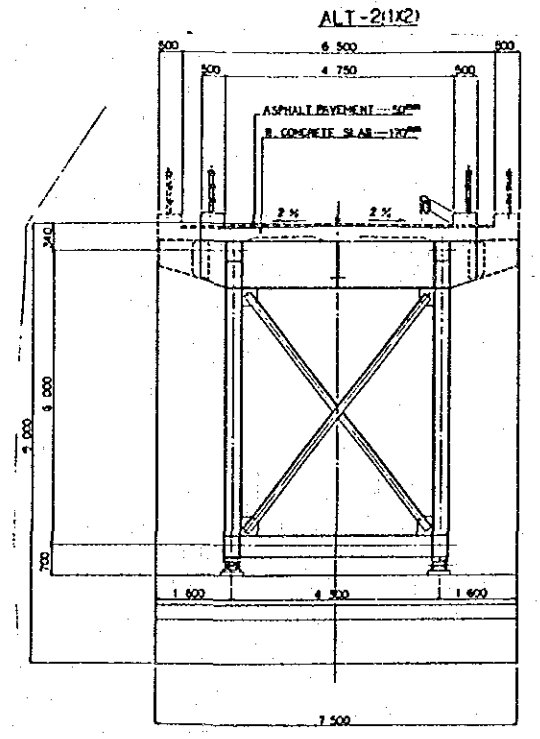
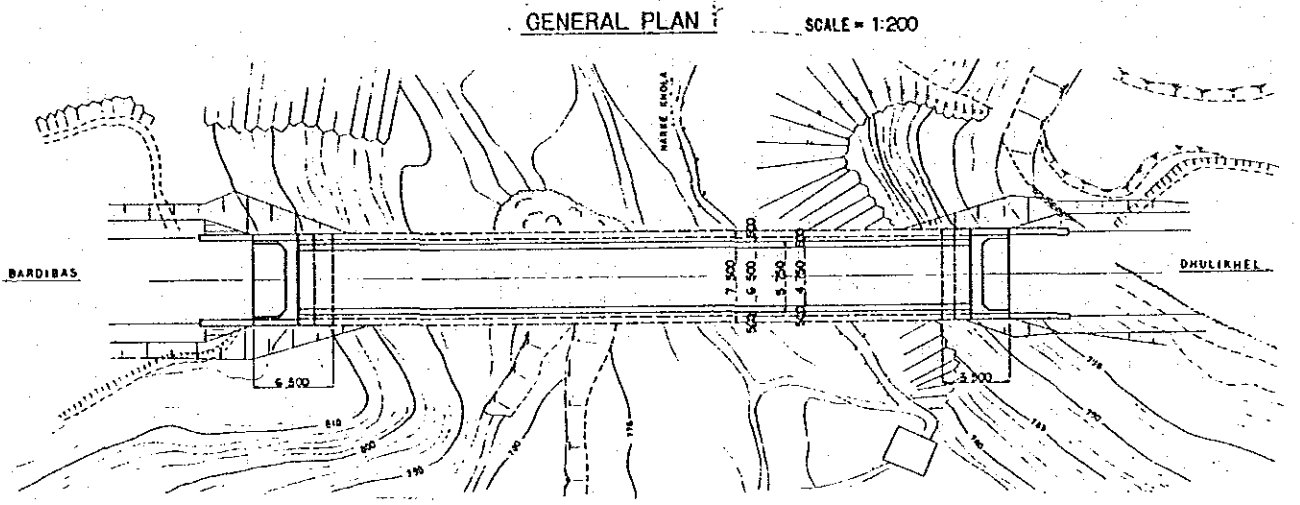
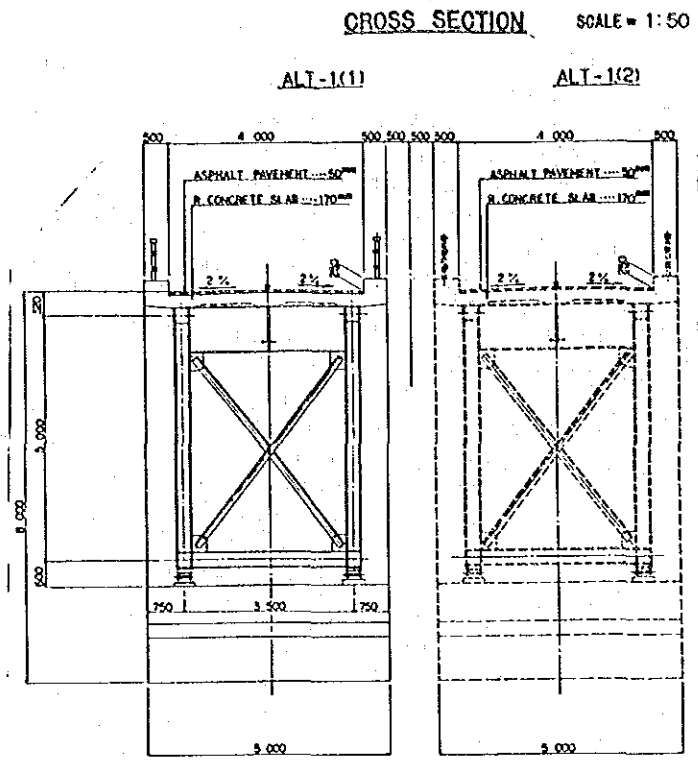
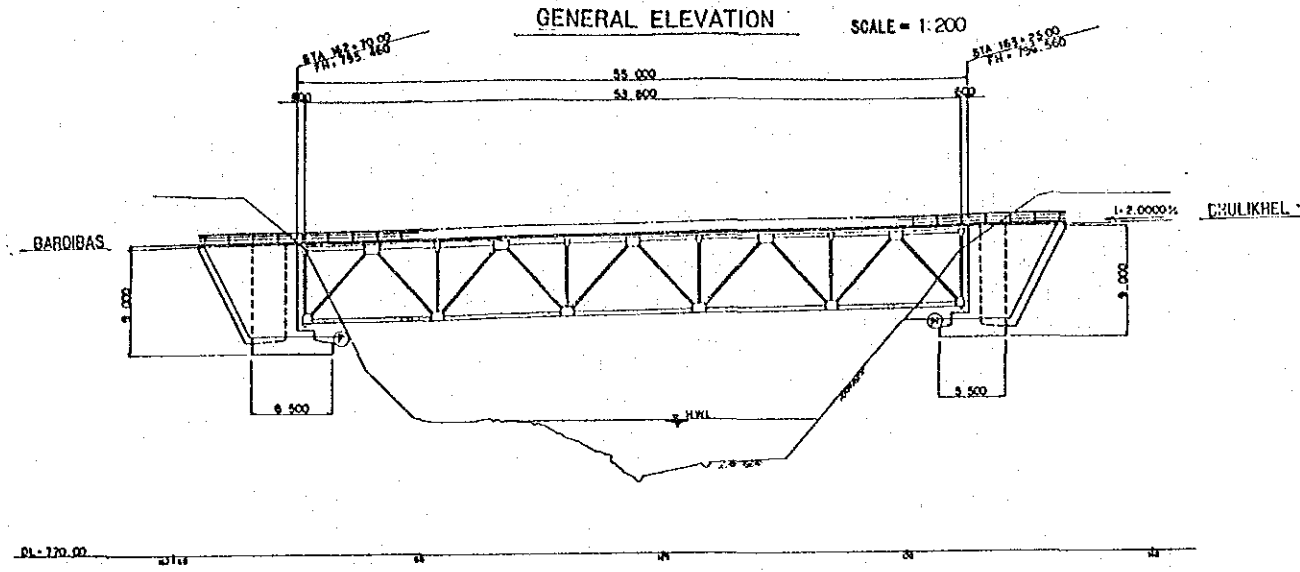
THE MAJESTY'S GOVERNMENT OF NEPAL  
 MINISTRY OF WORKS AND TRANSPORT  
 DEPARTMENT OF ROADS

AFTER-CARE STUDY  
 FOR  
 SINDHULI ROAD CONSTRUCTION PROJECT

(SEC II-3) DAUNE BR. SHEETING D-8

SCALE DATE

JAPAN INTERNATIONAL COOPERATION AGENCY



**SUPER-STRUCTURE**

ITEM	CLASS	UNIT	ALT-1.(1)	ALT-1.(2)	ALT-2.(1)	ALT-2.(2)	REMARKS
<b>STEEL</b>							
GIRDER	SK45089	kg	3180	6360	5090	0	
OTHERS	SK45118	kg	38720	77440	62330	2160	
<b>SHOE</b>							
HANDRAIL	m		4	8	4	8	
CONCRETE	m <sup>3</sup>		110.00	220.00	110.00	110.00	
FORM	m <sup>2</sup>		70.00	140.00	20.30	27.98	
ASPHALT PAVEMENT	m <sup>2</sup>		318.00	636.00	352.00	37.00	
EXPANSION JOIN	m		0	440.00	0	357.50	
			16.00	20.00	11.50	3.50	

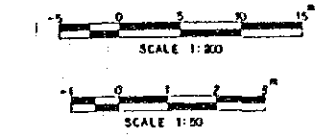
REINFORCEMENT BAR ... 250kg/m<sup>3</sup>

**SUB-STRUCTURE**

ITEM	CLASS	UNIT	ALT-1.(1)	ALT-1.(2)	ALT-2.(1)	ALT-2.(2)	REMARKS
EXCAVATION	m <sup>3</sup>		475.00	951.20	618.00	0	
CONCRETE	m <sup>3</sup>		128.80	257.60	193.30	0	
FORM	m <sup>2</sup>		226.50	453.00	314.00	0	
REINFORCEMENT BAR	t		7.70	15.40	11.50	0	
GUARD BANK	m <sup>3</sup>		0	0	0	0	

**DESIGN CONDITION**

TOTAL BRIDGE LENGTH	68.800
BRIDGE LENGTH	64.800
SPAN	33.800
WIDTH	4.000, 4.750, 6.500
LANE WIDTH	3.500
IMPACT COEFFICIENT	1.0
WIND COEFFICIENT	0.14
ANGLE OF VIEW	0 - 50°
RADIUS OF CURVATURE	
LONGITUDINAL SLOPE	1.2.0000%



NOTE  
 ALT-1.(1) INITIAL STAGE - BRIDGE ONE LANE PLAN  
 ALT-1.(2) 2ND STAGE - ADDITIONAL ONE LANE PLAN  
 ALT-2.(1) INITIAL STAGE - STANDARD ONE LANE PLAN  
 ALT-2.(2) 2ND STAGE - SUPERSTRUCTURE WIDTH PLAN

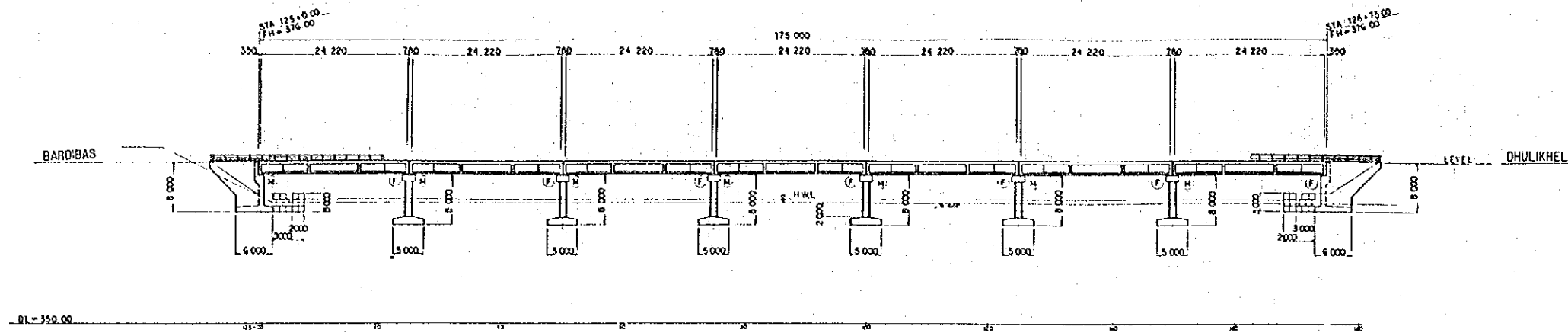
THE MAJESTY'S GOVERNMENT OF NEPAL  
 MINISTRY OF WORKS AND TRANSPORT  
 DEPARTMENT OF ROADS

AFTERCARE STUDY  
 FOR  
 SINDHULI ROAD CONSTRUCTION PROJECT  
 (SIC II-3) NARKE Br. SHEET NO. D-9

SCALE DATE

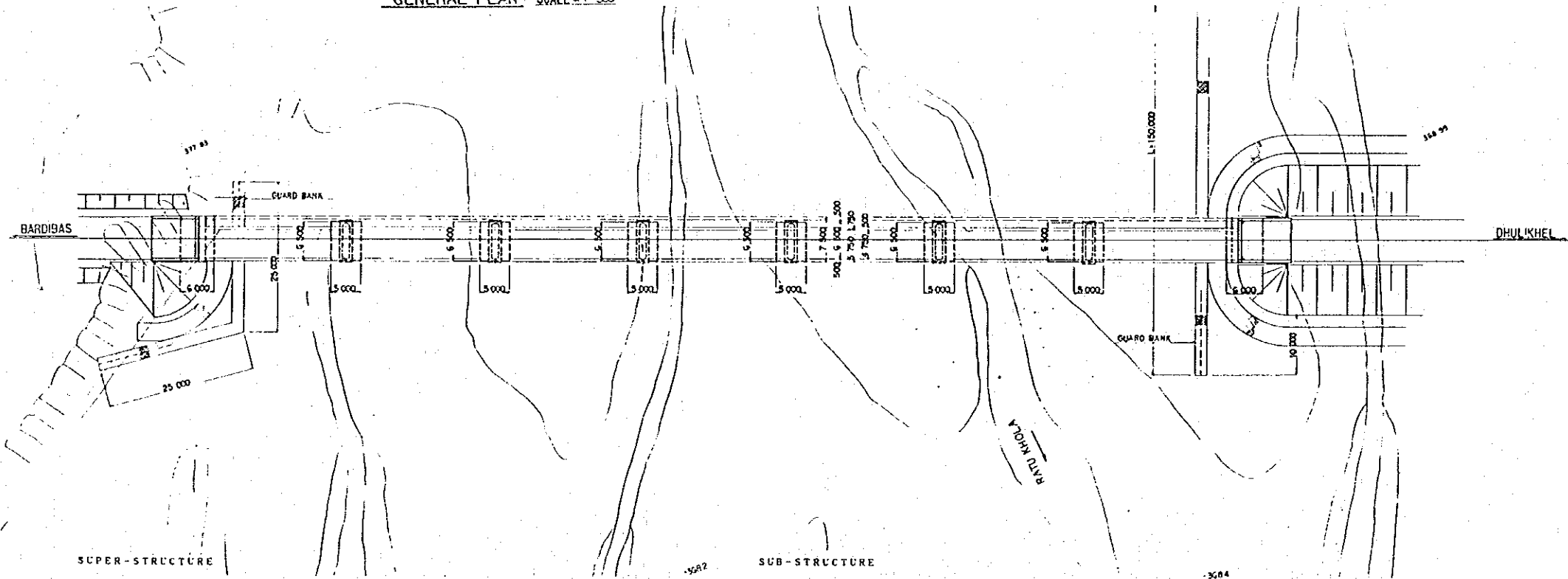
JAPAN INTERNATIONAL COOPERATION AGENCY

GENERAL ELEVATION SCALE = 1:300

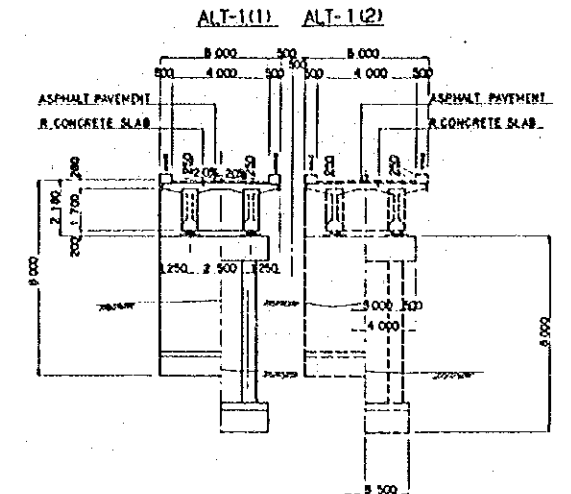


VCL = 40.000%
VCI = 3.000%

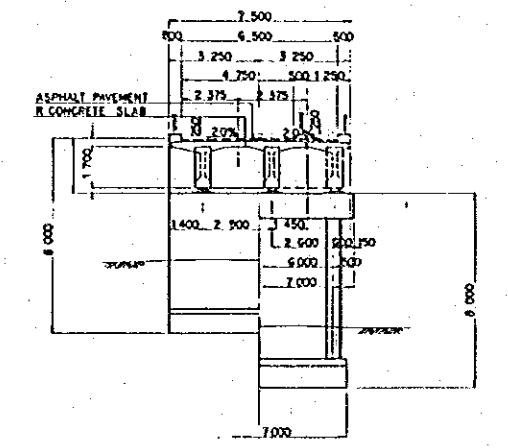
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CROSS SECTION SCALE = 1:100



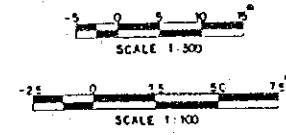
ALT-2(1X2)



NOTE  
 ALT-1(1) INITIAL STAGE - INITIAL ONE LANE PLAN  
 ALT-1(2) 2ND STAGE - ADDITIONAL ONE LANE PLAN  
 ALT-2(1) INITIAL STAGE - STANDARD ONE LANE PLAN  
 ALT-2(2) 2ND STAGE - SUPERSTRUCTURE WIDENING PLAN

ITEM	CLASS	UNIT	ALT-1.(1)	ALT-1.(2)	ALT-2.(1)	ALT-2.(2)	REMARKS
<b>CONCRETE</b>							
GIRDER	σck-400g/cm²	m³	252.28	504.56	252.28	126.14	
CAST IN PLACE	σck-300g/cm²	m³	35.28	70.56	43.19	35.98	
PLACE	σck-210g/cm²	m³	221.97	443.94	249.41	124.72	
CONCRETE	σck-210g/cm²	m³	63.21	126.42	63.21	31.61	
<b>FORM</b>							
GIRDER		m²	1452.64	2905.28	1452.64	726.32	
CAST IN PLACE		m²	1265.18	2530.36	1446.34	723.17	
<b>PRESTRESSING WIRE (BAR)</b>							
GIRDER	12112.4	kg	9369.04	18738.08	12452.20	6226.10	
LATERAL TIE	#23	kg	529.41	1058.82	602.42	301.21	
<b>REINFORCEMENT BAR</b>							
TOTAL	S2295A	kg	95068.30	190136.60	100671.90	49933.40	
SHOE		n	28	56	28	14	
EXPANSION JOINT		n	40.00	80.00	40.00	20.00	
HANDRAIL		n	350.00	700.00	350.00	175.00	
ASPHALT PAVEMENT		m²	0	1400.00	0	1157.50	

ITEM	CLASS	UNIT	ALT-1.(1)	ALT-1.(2)	ALT-2.(1)	ALT-2.(2)	REMARKS
EXCAVATION		m³	1548.40	3096.80	2100.80	0	
CONCRETE	σck-210g/cm²	m³	412.70	825.40	740.70	0	
FORM		m²	645.00	1290.00	895.20	0	
REINFORCEMENT BAR	S2295A	t	24.80	49.60	44.30	0	
GUARD BANK		m³	1200.00	0	1200.00	0	
			0	0	0	0	



DESIGN CONDITION	
TOTAL BRIDGE LENGTH	175.000
BRIDGE LENGTH	24.930
SPAN	24.930
WIDTH	4.000, 4.700, 5.500
LIVE LOAD	TL-20
IMPACT COEFFICIENT	1+0.203
WIND COEFFICIENT	0.8+0.14
ANGLE OF WIND	0-15°
RADIUS OF CURVATURE	
LONGITUDINAL SLOPE	LE-VL

HIS MAJESTY'S GOVERNMENT OF NEPAL  
 MINISTRY OF WORKS AND TRANSPORT  
 DEPARTMENT OF ROADS

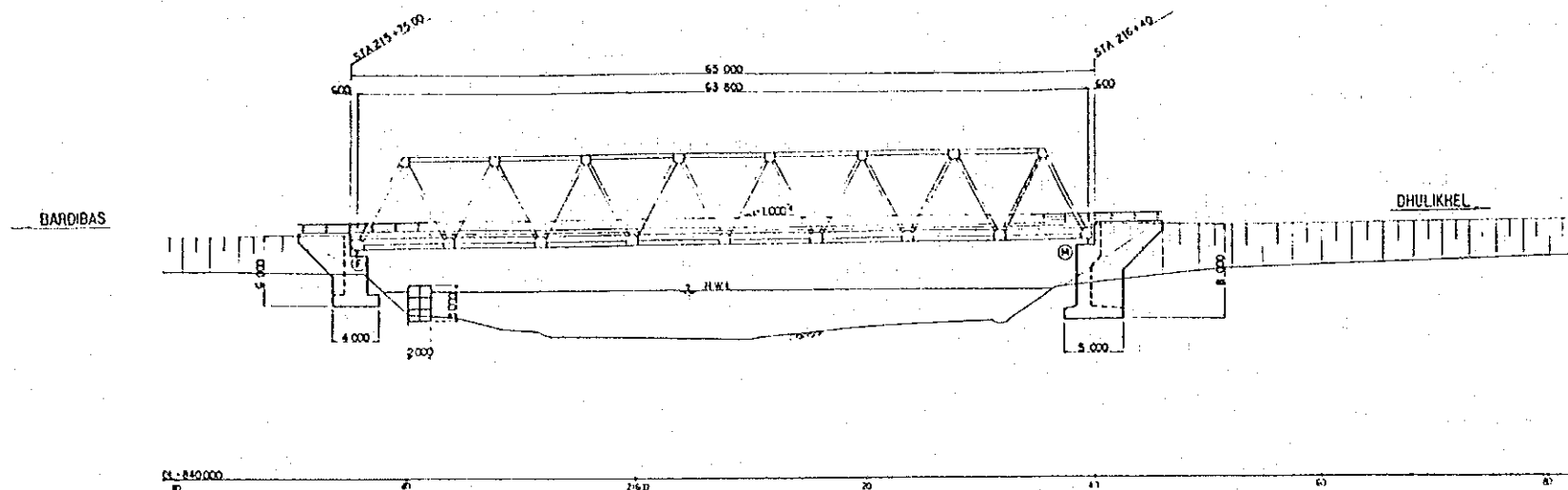
AFTRCARE STUDY  
 FOR  
 SINDHULI ROAD CONSTRUCTION PROJECT

(SEC - 1) RATU BE. SHEET NO. D-10

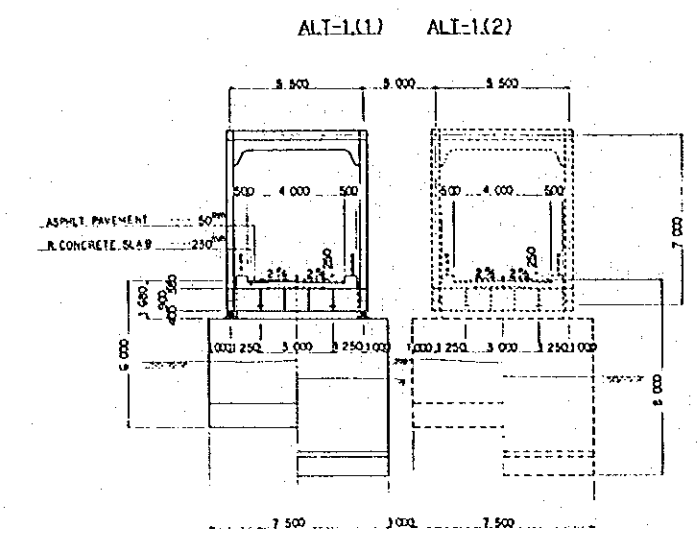
SCALE: DATE:

JAPAN INTERNATIONAL COOPERATION AGENCY

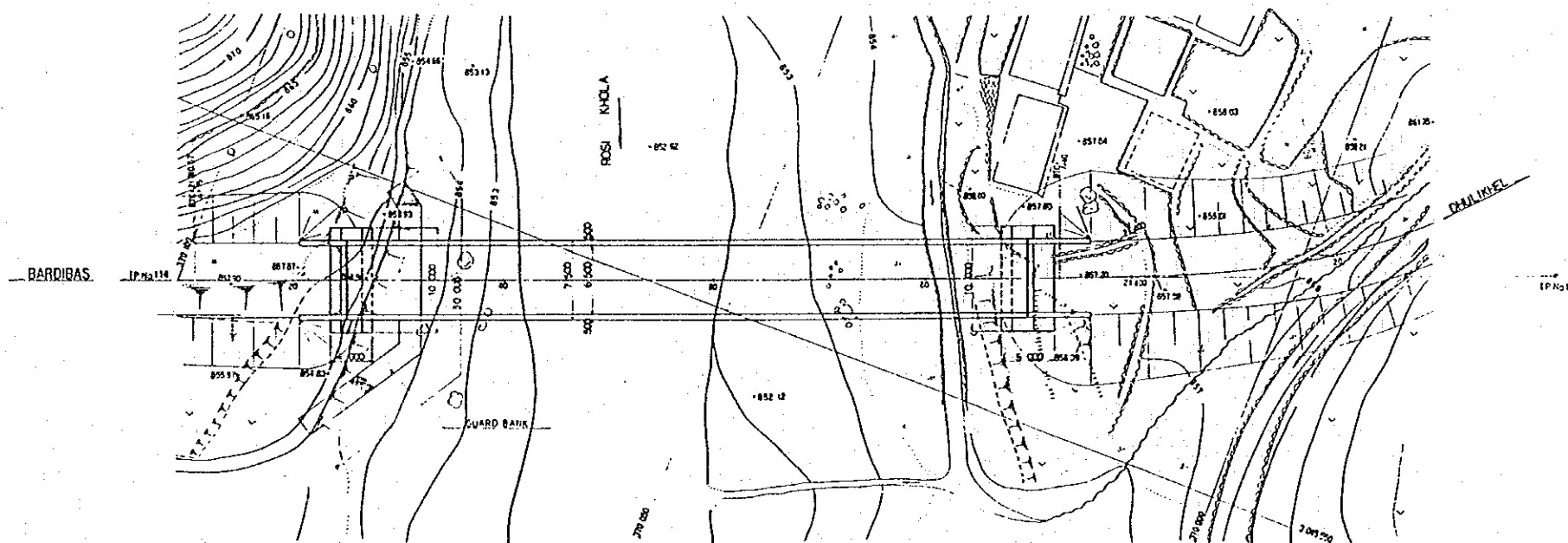
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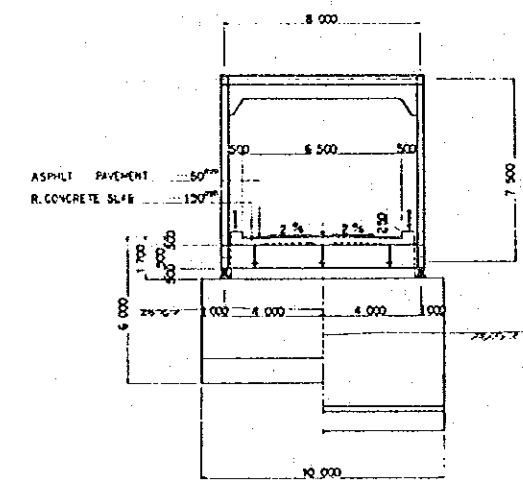
CROSS SECTION SCALE=1:100



GENERAL PLAN SCALE=1:200



ALT-2.(2)



NOTE  
 ALT-1.(1) INITIAL STAGE - ORIGINAL ONE LANE PLAN  
 ALT-1.(2) 2ND STAGE - ADDITIONAL ONE LANE PLAN  
 ALT-2.(1) INITIAL STAGE - STANDARD ONE LANE PLAN  
 ALT-2.(2) 2ND STAGE - SUPERSTRUCTURE WIDENING PLAN

SUPER-STRUCTURE

ITEM	CLASS	UNIT	ALT-1.(1)	ALT-1.(2)	ALT-2.(1)	ALT-2.(2)	REMARKS
<b>STEEL</b>							
GIRDER	SM450BF	kg	42120	84120		70310	
OTHERS	SM450BF	kg	51180	102360		85970	
<b>SHOE</b>							
HANDRAIL	m	m	130.00	260.00		130.00	
CONCRET	αck-300kg/cm <sup>2</sup>	m <sup>3</sup>	102.80	205.60		128.30	
FORM	m <sup>2</sup>	m <sup>2</sup>	354.00	708.00		532.00	
ASPHALT PAVEMEN	m <sup>2</sup>	m <sup>2</sup>	0	520.00		422.50	
EXPANSION JOIN	m	m	10.00	20.00		15.00	

\* REINFORCEMENT BAR --- 250kg m<sup>3</sup>

SUB-STRUCTURE

ITEM	CLASS	UNIT	ALT-1.(1)	ALT-1.(2)	ALT-2.(1)	ALT-2.(2)	REMARKS
EXCAVATION		m <sup>3</sup>	492.20	984.40	606.10	0	
CONCRETE	αck-210kg/cm <sup>2</sup>	m <sup>3</sup>	207.00	414.00	276.00	0	
FORM		m <sup>2</sup>	262.20	524.40	331.20	0	
REINFORCEMENT BAR	SD-2951	t	12.50	25.00	16.60	0	
GUARD BANK		m <sup>3</sup>	180.00	0	180.00	0	

DESIGN CONDITION

TOTAL BRIDGE LENGTH	65.000
SPAN LENGTH	64.000
SPAN	07.500
WIDTH	4.000, 4.750, 6.500
LIVE LOAD	TL-20
IMPACT COEFFICIENT	1+C/17.5
WIND COEFFICIENT	W=0.18
ANGLE OF WIND	θ=90°
ANGLE OF CLIFFURE	
LONGITUDINAL SLOPE	1:1.0000 %

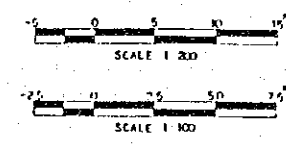
HIS MAJESTY'S GOVERNMENT OF NEPAL  
 MINISTRY OF WORKS AND TRANSPORT  
 DEPARTMENT OF ROADS

AFTERCARE STUDY  
 FOR  
 SINDHULI ROAD CONSTRUCTION PROJECT

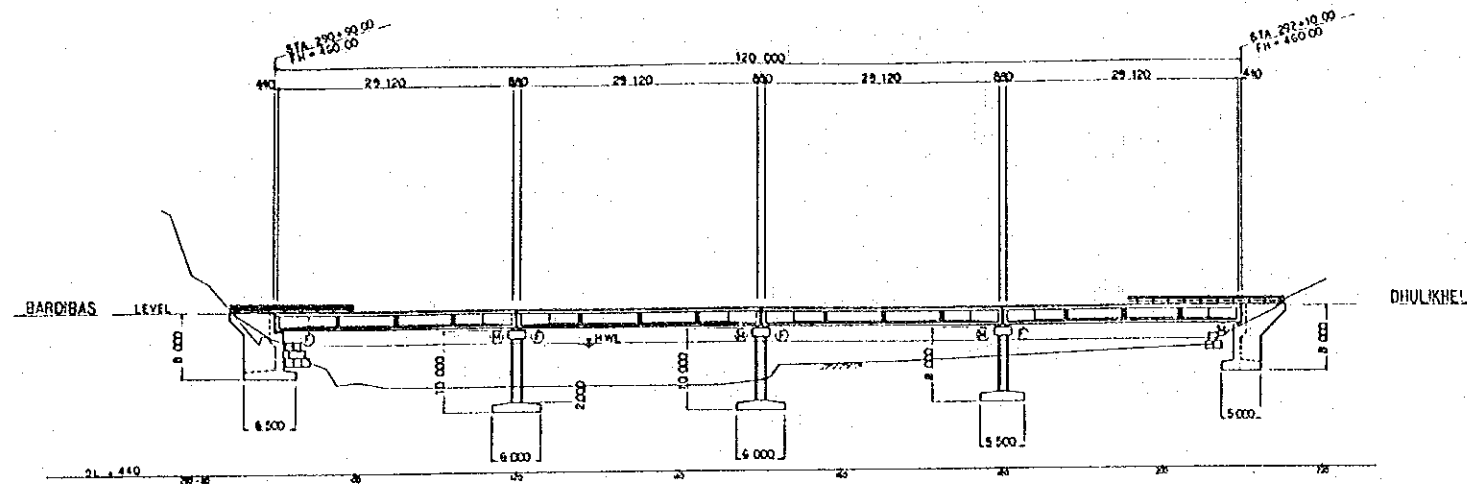
(SEC II-3) ROSI Br. SHEET NO. D-11

SCALE DATE

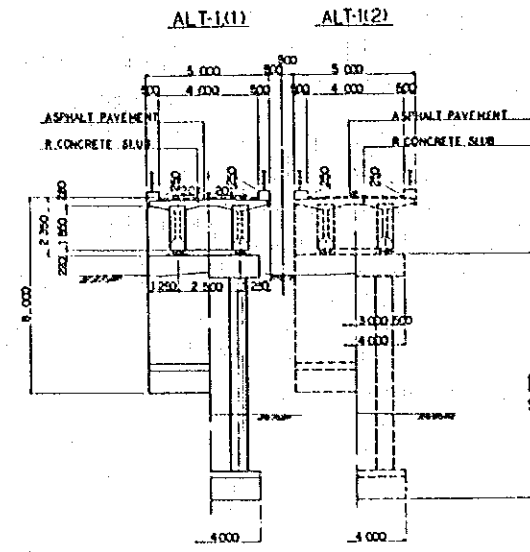
JAPAN INTERNATIONAL COOPERATION AGENCY



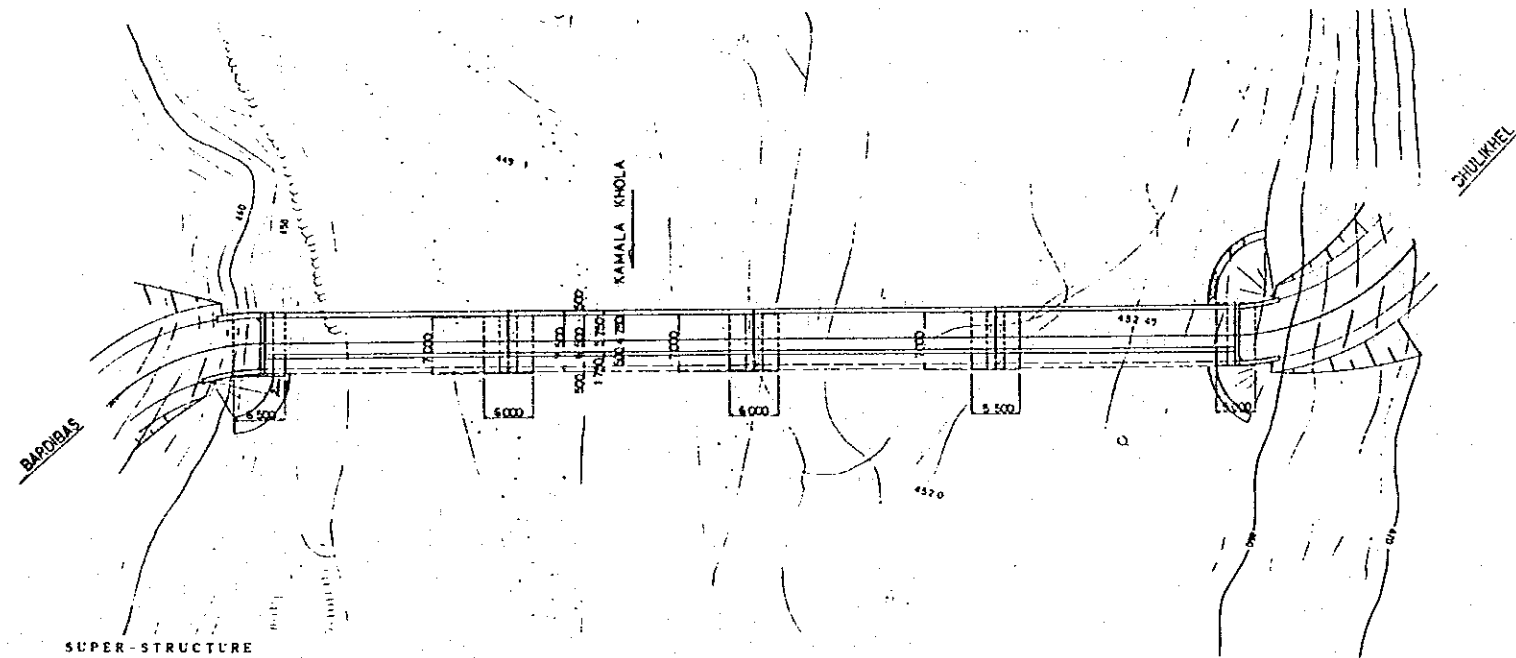
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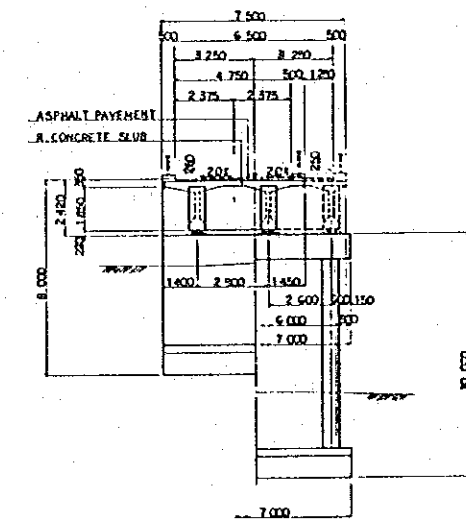
CROSS SECTION SCALE = 1:100



GENERAL PLAN SCALE = 1:300



ALT-2(1)(2)



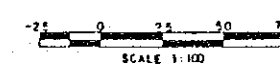
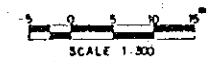
SUPER-STRUCTURE

ITEM	CLASS	UNIT	ALT-1.(1)	ALT-1.(2)	ALT-2.(1)	ALT-2.(2)	REMARKS
<b>CONCRETE</b>							
GIRDER	ack-400g/cm <sup>3</sup>	m <sup>3</sup>	189.60	379.20	189.60	94.80	
CAST IN PLACE	ack-300g/cm <sup>3</sup>	m <sup>3</sup>	24.80	49.60	30.48	25.41	
CONCRETE	ack-210g/cm <sup>3</sup>	m <sup>3</sup>	150.80	301.60	189.80	53.16	
FORM			43.12	86.24	43.12	21.56	
GIRDER		m <sup>2</sup>	1081.84	2163.68	1081.84	540.92	
CAST IN PLACE		m <sup>2</sup>	858.64	1717.28	969.12	271.64	
<b>PRESTRESSING WIRE (BAR)</b>							
GIRDER	12712.4	kg	8538.08	17176.16	10672.56	5336.28	
LATERAL TIE	φ23	kg	378.18	756.32	436.84	339.04	
<b>REINFORCEMENT BAR</b>							
TOTAL	502854	kg	65109.20	130218.40	88916.80	12356.60	
SHOE	n		16	32	16	8	
EXPANSION JOINT	n		25.00	50.00	28.75	8.75	
HANDRAIL	n		240.00	480.00	240.00	120.00	
ASPHALT PAVEMENT	n <sup>2</sup>		0	960.00	0	780.00	

SUB-STRUCTURE

ITEM	CLASS	UNIT	ALT-1.(1)	ALT-1.(2)	ALT-2.(1)	ALT-2.(2)	REMARKS
EXCAVATION		m <sup>3</sup>	1056.10	2112.20	1496.10	0	
CONCRETE	ack-210g/cm <sup>3</sup>	m <sup>3</sup>	319.70	639.40	553.80	0	
FORM		m <sup>2</sup>	477.20	954.40	718.30	0	
REINFORCEMENT BAR	50-2554	t	19.10	38.20	33.30	0	
GUARD BANK		m <sup>3</sup>	0	0	0	0	

DESIGN CONDITION	
TOTAL BRIDGE LENGTH	120 <sup>m</sup> STD
SPAN LENGTH	29 <sup>m</sup> STD
SPAN	29 <sup>m</sup> STD
SPANS	4 <sup>m</sup> STD : 4 <sup>m</sup> STD, 6 <sup>m</sup> STD
LANE LOAD	TL - 70
IMPACT COEFFICIENT	I = 0.185
SEISMIC COEFFICIENT	88 = 0.14
WIND SPEED	87.5C
WIND OF CURVATURE	---
LONGITUDINAL SLOPE	LEVEL



NOTE  
 ALT-1.(1) INITIAL STAGE - MINIMAL ONE LANE PLAN  
 ALT-1.(2) 2ND STAGE - ADDITIONAL ONE LANE PLAN  
 ALT-2.(1) INITIAL STAGE - STANDARD ONE LANE PLAN  
 ALT-2.(2) 2ND STAGE - SUPERSTRUCTURE WIDENING PLAN

THIS MAJESTY'S GOVERNMENT OF NEPAL  
 MINISTRY OF WORKS AND TRANSPORT  
 DEPARTMENT OF ROADS

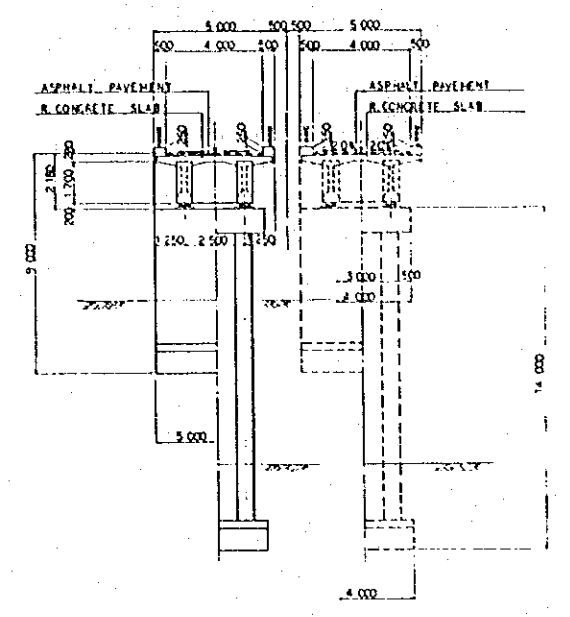
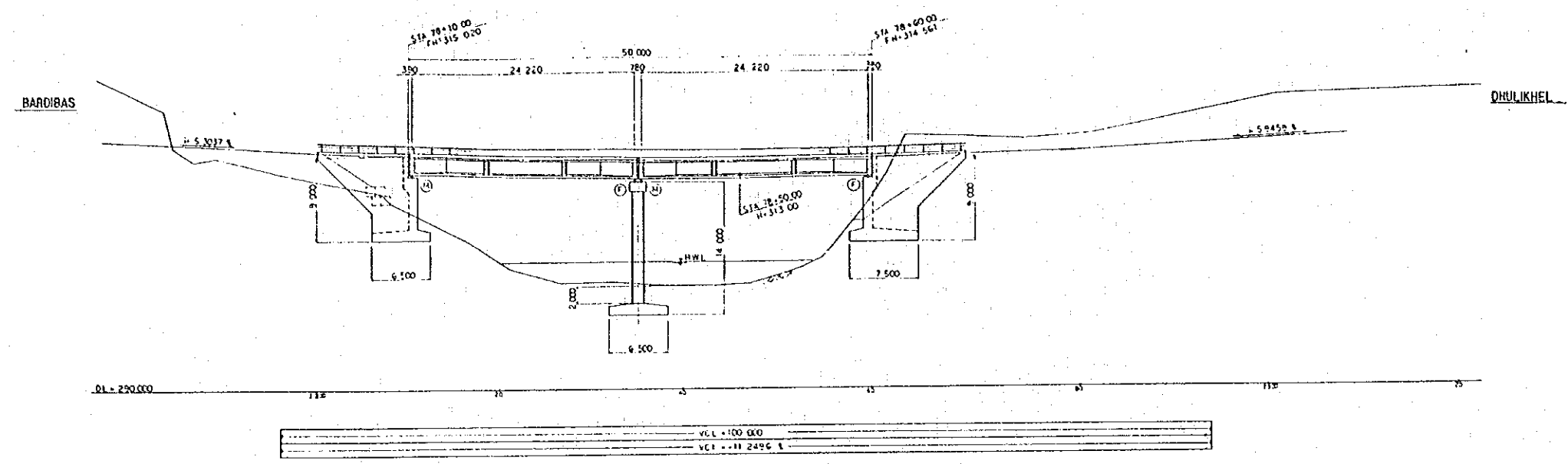
APPROPRIATE STUDY  
 FOR  
 SINDHULI ROAD CONSTRUCTION PROJECT  
 (SEC - 1) KAMALA Bc. SHEET NO. D-12

SCALE: DATE:

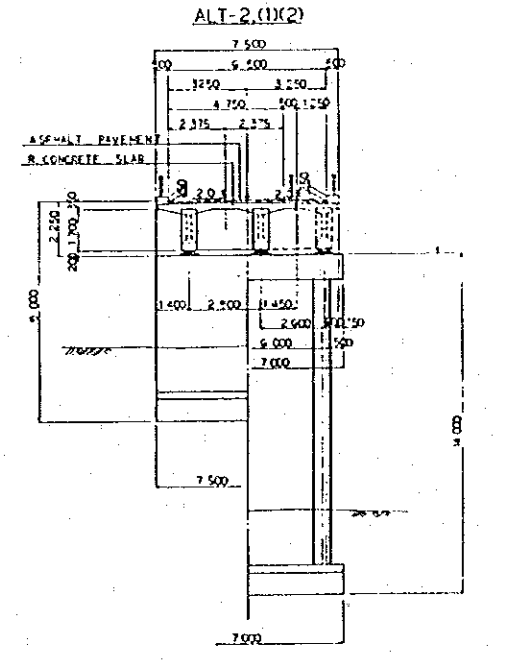
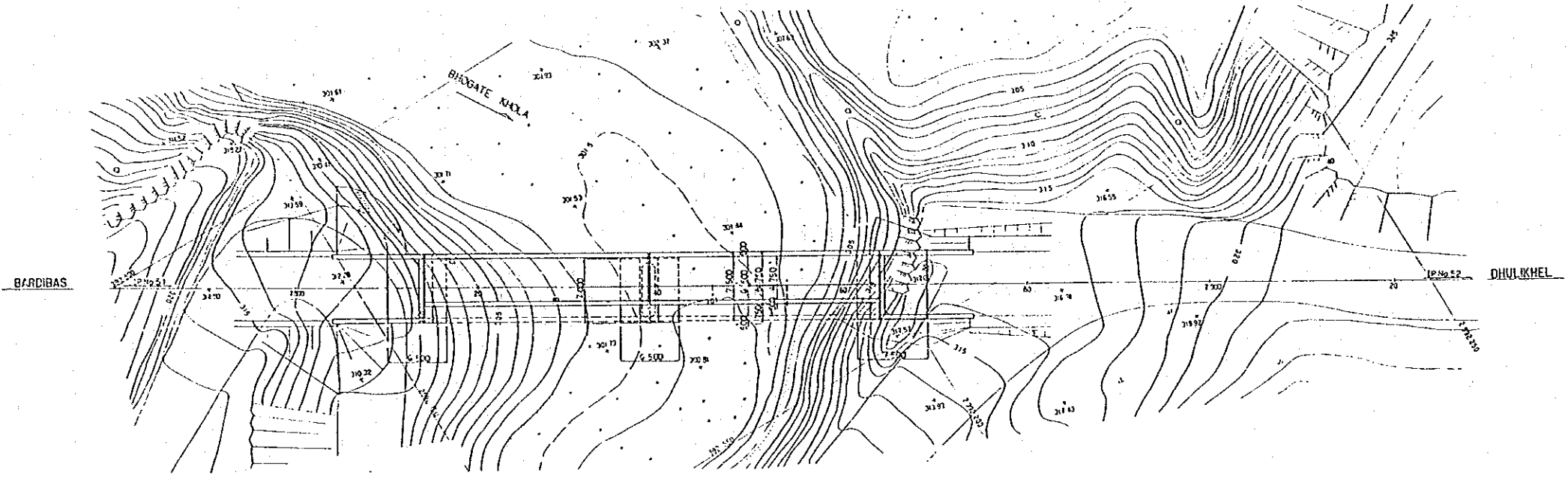
JAPAN INTERNATIONAL COOPERATION AGENCY

GENERAL ELEVATION SCALE=1:200

CROSS SECTION SCALE=1:100  
ALT-1.(1) ALT-1.(2)



GENERAL PLAN SCALE=1:200



SUPER-STRUCTURE

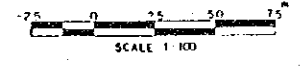
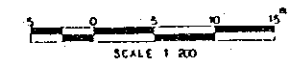
ITEM	CLASS	UNIT	ALT-1.(1)	ALT-1.(2)	ALT-2.(1)	ALT-2.(2)	REMARKS
<b>CONCRETE</b>							
GIRDER	ack-400kg/cm <sup>2</sup>	m <sup>3</sup>	72.08	144.16	72.08	36.04	
CAST IN PLACE	ack-300kg/cm <sup>2</sup>	m <sup>3</sup>	10.08	20.16	12.34	10.25	
	ack-210kg/cm <sup>2</sup>	m <sup>3</sup>	63.12	126.24	71.26	22.12	
CONCRETE	ack-210kg/cm <sup>2</sup>	m <sup>3</sup>	18.06	36.12	18.06	9.03	
<b>FORM</b>							
GIRDER		m <sup>2</sup>	415.04	830.08	415.04	207.52	
CAST IN PLACE		m <sup>2</sup>	361.48	722.96	413.24	169.04	
<b>PRESTRESSING WIRE (BAR)</b>							
GIRDER	12T12.4	kg	2676.88	5353.76	3569.20	1784.60	
LATERAL TIE	φ23	kg	151.26	302.52	172.12	135.62	
<b>REINFORCEMENT BAR</b>							
TOTAL	S0-2954	kg	27161.80	54323.60	28763.40	11832.00	
SHOE		n	8	16	8	4	
EXPANSION JOINT		m	15.00	30.00	17.25	5.25	
HANDRAIL		m	190.00	290.00	100.00	50.00	
ASPHALT PAYMENT		m <sup>2</sup>	0	490.00	0	325.00	

SUB-STRUCTURE

ITEM	CLASS	UNIT	ALT-1.(1)	ALT-1.(2)	ALT-2.(1)	ALT-2.(2)	REMARKS
EXCAVATION		m <sup>3</sup>	718.70	1437.40	958.40	0	
CONCRETE	ack-210kg/cm <sup>2</sup>	m <sup>3</sup>	227.10	454.20	376.70	0	
FORM		m <sup>2</sup>	338.30	676.60	458.00	0	
REINFORCEMENT BAR	S0-2954	t	13.60	27.20	22.50	0	
GUARD BANK		m <sup>3</sup>	0	0	0	0	

DESIGN CONDITION

TOTAL BRIDGE LENGTH	50.000
GIRDER LENGTH	24.220
SPAN	24.220
WIDTH	4.000 - 4.750 - 6.500
LIVE LOAD	TL-20
IMPACT COEFFICIENT	1+0.253
SOILING COEFFICIENT	1.0+C/14
ANGLE OF SKEW	0.30°
ANGLE OF CLIMATE	
LONGITUDINAL SLOPE	VCL-11.2496%



NOTE  
 ALT-1.(1) INITIAL STAGE - NORMAL ONE LANE PLAN  
 ALT-1.(2) 2ND STAGE - ADDITIONAL ONE LANE PLAN  
 ALT-2.(1) INITIAL STAGE - STANDARD ONE LANE PLAN  
 ALT-2.(2) 2ND STAGE - SUPERSTRUCTURE WIDTHENING PLAN

HIS MAJESTY'S GOVERNMENT OF NEPAL  
 MINISTRY OF WORKS AND TRANSPORT  
 DEPARTMENT OF ROADS

AFTERCARE STUDY  
 FOR  
 SINDHULI ROAD CONSTRUCTION PROJECT

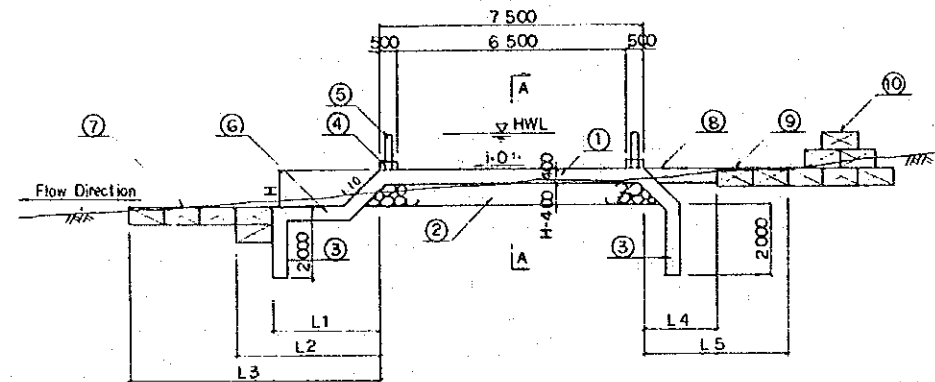
(SEC - 1) BHOOGATE Br. SHEET NO. D-13

SCALE: DATE:

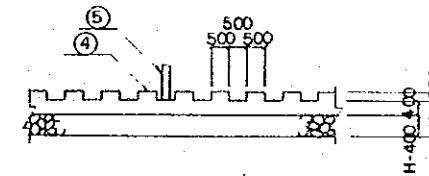
JAPAN INTERNATIONAL COOPERATION AGENCY

TYPICAL SECTION OF CAUSEWAY SCALE 1:100

TYPICAL SECTION OF RIVER BED LEVEL CAUSEWAY



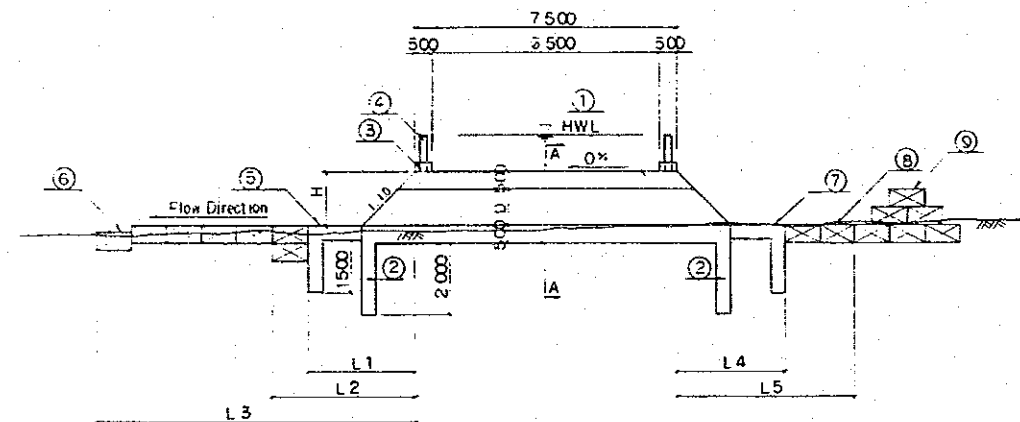
SECTION A - A



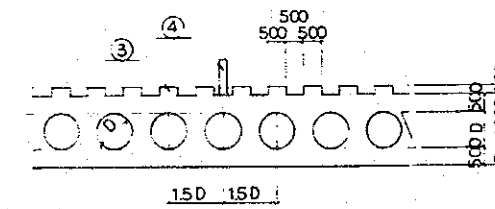
NOTES

- ① 40cm thickness concrete surfacing, grade=180kg/cm<sup>2</sup> with re-bar by D13 ctc 300mm
- ② 30cm random rubble masonry set in concrete, grade=180kg/cm<sup>2</sup>
- ③ Cut-off-wall by reinforced concrete (h=2.0m, t=40cm)
- ④ Concrete curb 1=500mm, h=250mm Ø1.0m
- ⑤ Reinforced concrete delineators Ø10.0m
- ⑥ Down stream apron  
L1=0.60\*4/√H, t=40cm
- ⑦ Down stream river bed protection, gabion mattress  
L2=0.30\*4/√H\*Q, T=1.0m  
L3=0.63\*4/√H\*Q, T=0.5m
- ⑧ Up stream apron  
L4=L1/2, t=40cm
- ⑨ Up stream river bed protection, gabion mattress  
L5=L3/2, T=0.5m
- ⑩ Checkdam, gabion mattress Tmax=2.0m on river bed protection
- ⑪ Apron concrete, grade 180kg/cm<sup>2</sup> with re-bar by D13 ctc 300mm
- ⑫ "q" means run-off discharge per a liner meter(m<sup>3</sup>/sec).
- ⑬ River bed protection and checkdam shall be provided only on main water course.
- ⑭ Minimum concrete cover to re-bar 5cm.

TYPICAL SECTION OF VENTED CAUSEWAY



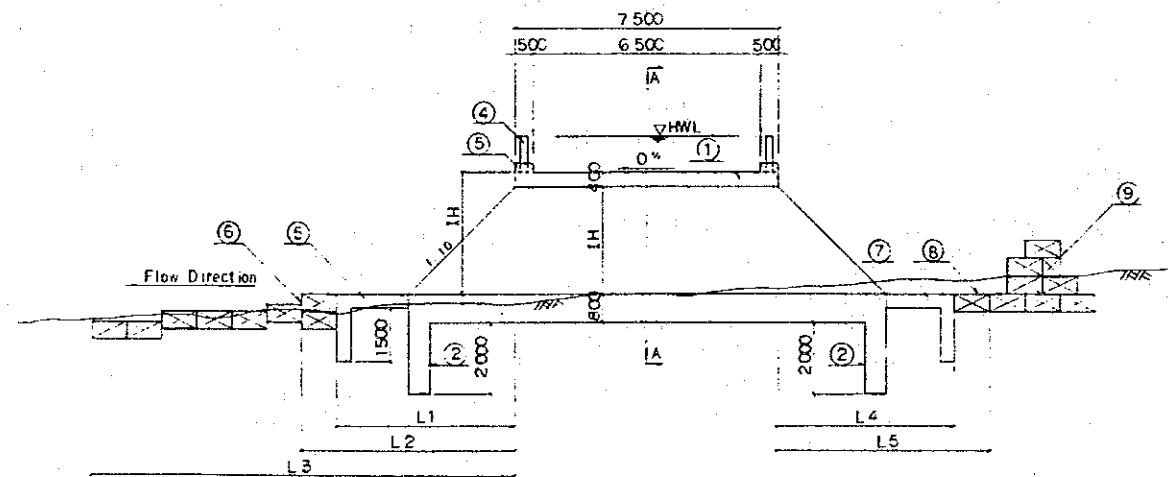
SECTION A - A



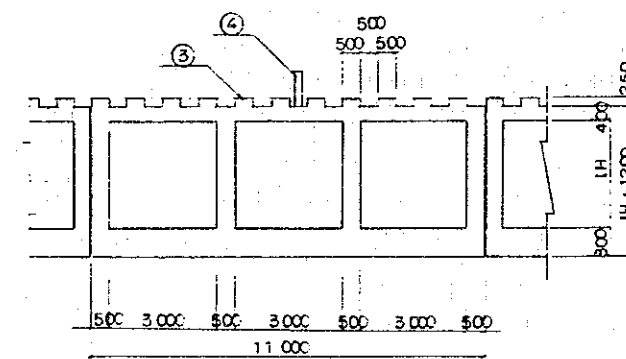
NOTES

- ① Concrete grade=180kg/cm<sup>2</sup> with re-bar by D13
- ② Cut-off-wall by reinforced concrete (h=2.0m, t=40cm)
- ③ Concrete curb 1=500mm, h=250mm Ø1.0m
- ④ Reinforced concrete delineators Ø10.0m
- ⑤ Down stream apron  
L1=0.60\*4/√H, t=40cm
- ⑥ Down stream river bed protection, gabion mattress  
L2=0.30\*4/√H\*Q, T=1.0m  
L3=0.63\*4/√H\*Q, T=0.5m
- ⑦ Up stream apron  
L4=L1, t=40cm
- ⑧ Up stream river bed protection, gabion mattress  
L5=L3/2, T=0.5m
- ⑨ Checkdam, gabion mattress Tmax=2.0m on river bed protection
- ⑩ Apron concrete, grade 180kg/cm<sup>2</sup> with re-bar by D13 ctc 300mm
- ⑪ Vent diameter is either 1.0m or 1.5m, depending on run off discharge.
- ⑫ This type of causeway is applicable to principal stream.
- ⑬ "q" means run-off discharge per a liner meter(m<sup>3</sup>/sec).
- ⑭ River bed protection and checkdam shall be provided only on main water course.
- ⑮ Minimum concrete cover to re-bar 5cm.

TYPICAL SECTION OF SUBMERSIBLE BRIDGE



SECTION A - A

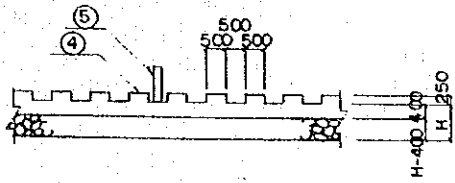


NOTES

- ① Concrete grade=240kg/cm<sup>2</sup> with reinforced bar.
- ② Cut-off-wall by reinforced concrete (h=2.0m, t=60cm)
- ③ Concrete curb 1=500mm, h=250mm Ø1.0m
- ④ Reinforced concrete delineators Ø10.0m
- ⑤ Down stream apron  
L1=0.60\*4/√H, t=40cm
- ⑥ Down stream river bed protection, gabion mattress  
L2=0.30\*4/√H\*Q, T=1.0m  
L3=0.63\*4/√H\*Q, T=0.5m
- ⑦ Up stream apron  
L4=L1, t=40cm
- ⑧ Up stream river bed protection, gabion mattress  
L5=L3/2, T=0.5m
- ⑨ Checkdam, gabion mattress Tmax=2.0m on river bed protection
- ⑩ Apron concrete, grade 180kg/cm<sup>2</sup> with re-bar by D13 ctc 300mm
- ⑪ "q" means run-off discharge per a liner meter(m<sup>3</sup>/sec).
- ⑫ River bed protection and checkdam shall be provided only on main water course.
- ⑬ Minimum concrete cover to re-bar 5cm.

TYPICAL SECTION OF CAUSEWAY SCALE 1:100

SECTION A - A



NOTES

- ① 40cm thickness concrete surfacing, grade=180kg/cm<sup>2</sup> with re-bar by D13 ctc 300mm
- ② 30cm random rubble masonry set in concrete, grade=180kg/cm<sup>2</sup>
- ③ Cut-off-wall by reinforced concrete (h=2.0m, t=40cm)
- ④ Concrete curb l=500mm, h=250mm @1.0m
- ⑤ Reinforced concrete delineators @10.0m
- ⑥ Down stream apron  
L1=0.60\*4√H, t=40cm
- ⑦ Down stream river bed protection, gabion mattress  
L2=0.30\*4√H\*q, T=1.0m  
L3=0.63\*4√H\*q, T=0.5m
- ⑧ Up stream apron  
L4=L1/2, t=40cm
- ⑨ Up stream river bed protection, gabion mattress  
L5=L3/2, T=0.5m
- ⑩ Checkdam, gabion mattress Tmax=2.0m on river bed protection
- 11 Apron concrete, grade 180kg/cm<sup>2</sup> with re-bar by D13 ctc 300mm
- 12 "q" means run-off discharge per a liner meter(m<sup>3</sup>/sec).
- 13 River bed protection and checkdam shall be provided only on main water course.
- 14 Minimum concrete cover to re-bar 5cm.

DIMENSION LIST OF APRON

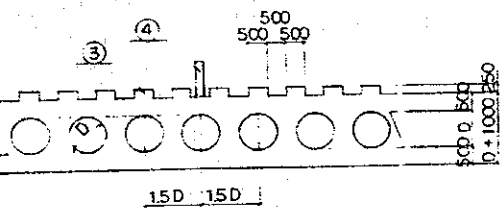
(UNIT: m)

HEAD "H"	L1	L4	REMARKS
H=0.0m	0.0	0.0	FOR CUT
H=0.0m	3.0	2.0	FOR GROUND LEVEL
H=1.0m	3.0	2.0	
H=1.5m	3.0	2.0	
H=2.0m	4.0	2.0	

MATERIAL LIST

ITEM	CLASS	UNIT	H=0.0m FOR CUT	H=0.0m FOR LEVEL GROUND	H=1.0m	H=1.5m	H=2.0m	REMARKS
CONCRETE	σ ck=180kg/cm <sup>2</sup>	m <sup>3</sup>	4.73	5.53	6.89	7.09	7.69	
FORME		m <sup>2</sup>	7.70	8.10	10.53	11.94	13.36	
REINFORCEMENT		kg	190	220	275	285	310	SD-295A
MASONRY	30cm RUNDOW RUBBLE	m <sup>3</sup>	0.00	0.00	4.86	9.46	14.56	

SECTION A - A



NOTES

- ① Concrete grade=180kg/cm<sup>2</sup> with re-bar by D13
- ② Cut-off-wall by reinforced concrete (h=2.0m, t=40cm)
- ③ Concrete curb l=500mm, h=250mm @1.0m
- ④ Reinforced concrete delineators @10.0m
- ⑤ Down stream apron  
L1=0.60\*4√H, t=40cm
- ⑥ Down stream river bed protection, gabion mattress  
L2=0.30\*4√H\*q, T=1.0m  
L3=0.63\*4√H\*q, T=0.5m
- ⑦ Up stream apron  
L4=L1, t=40cm
- ⑧ Up stream river bed protection, gabion mattress  
L5=L3/2, T=0.5m
- ⑨ Checkdam, gabion mattress Tmax=2.0m on river bed protection
- 10 Apron concrete, grade 180kg/cm<sup>2</sup> with re-bar by D13 ctc 300mm
- 11 Vent diameter is either 1.0m or 1.5m, depending on run off discharge.
- 12 This type of causeway is applicable to principal stream.
- 13 "q" means run-off discharge per a liner meter(m<sup>3</sup>/sec).
- 14 River bed protection and checkdam shall be provided only on main water course.
- 15 Minimum concrete cover to re-bar 5cm.

DIMENSION LIST OF APRON

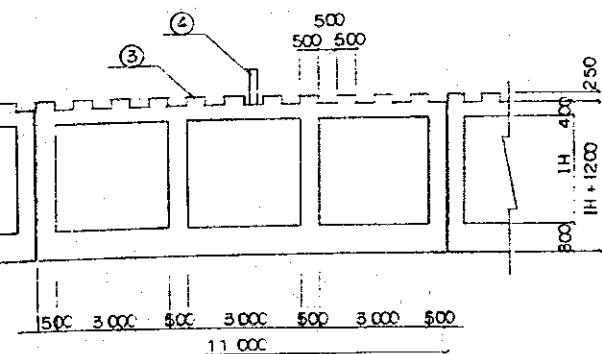
(UNIT: m)

HEAD "H"	DIAMETER OF VENT "D"	L1	L4	REMARKS
H=1.5m	D=1.0m	3.0	3.0	
H=2.0m	D=1.5m	4.0	4.0	
H=2.5m	D=2.0m	4.0	4.0	

MATERIAL LIST

ITEM	CLASS	UNIT	D=1.0m	D=1.5m	D=2.0m	REMARKS
CONCRETE	σ ck=180kg/cm <sup>2</sup>	m <sup>3</sup>	18.16	21.81	24.90	
FORME		m <sup>2</sup>	37.91	39.63	41.35	
REINFORCEMENT		kg	730	880	1000	SD-295A

SECTION A - A



NOTES

- ① Concrete grade=240kg/cm<sup>2</sup> with reinforced bar.
- ② Cut-off-wall by reinforced concrete (h=2.0m, t=60cm)
- ③ Concrete curb l=500mm, h=250mm @1.0m
- ④ Reinforced concrete delineators @10.0m
- ⑤ Down stream apron  
L1=0.60\*4√H, t=40cm
- ⑥ Down stream river bed protection, gabion mattress  
L2=0.30\*4√H\*q, T=1.0m  
L3=0.63\*4√H\*q, T=0.5m
- ⑦ Up stream apron  
L4=L1, t=40cm
- ⑧ Up stream river bed protection, gabion mattress  
L5=L3/2, T=0.5m
- ⑨ Checkdam, gabion mattress Tmax=2.0m on river bed protection
- 10 Apron concrete, grade 180kg/cm<sup>2</sup> with re-bar by D13 ctc 300mm
- 11 "q" means run-off discharge per a liner meter(m<sup>3</sup>/sec).
- 12 River bed protection and checkdam shall be provided only on main water course.
- 13 Minimum concrete cover to re-bar 5cm.

DIMENSION LIST OF APRON

(UNIT: m)

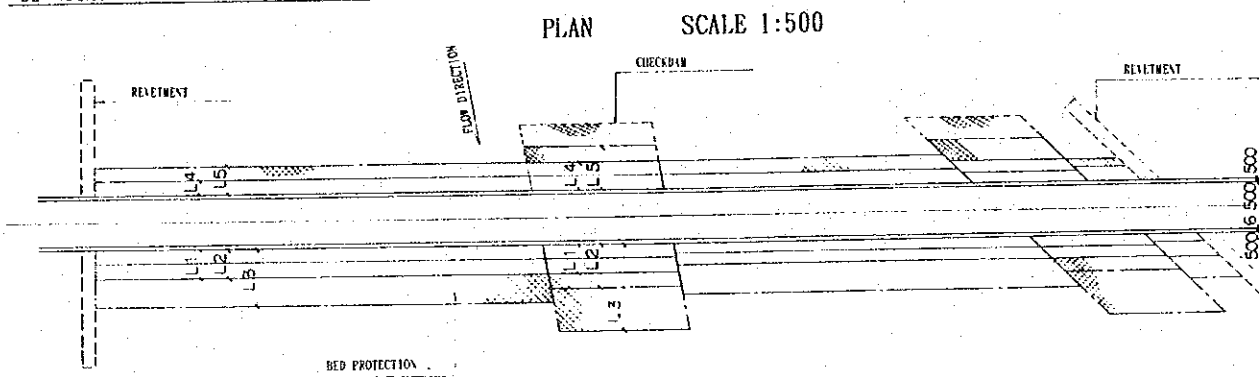
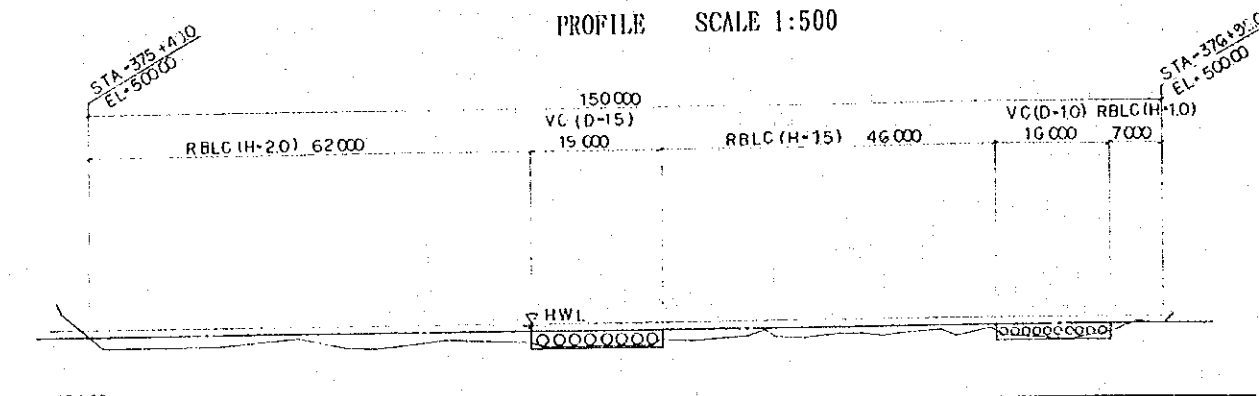
HEAD "H"	INNER HIG- HT OF BOX CULVERT "IH"	L1	L4	REMARKS
H=3.0m	2.5m	5.0	5.0	
H=3.5m	3.0m	5.0	5.0	

MATERIAL LIST

ITEM	CLASS	UNIT	IH=2.5m	IH=3.0m	REMARKS
CONCRETE	σ ck=240kg/cm <sup>2</sup>	m <sup>3</sup>	20.07	22.05	
CONCRETE	σ ck=180kg/cm <sup>2</sup>	m <sup>3</sup>	2.88	2.48	
FORME		m <sup>2</sup>	42.02	46.75	
REINFORCEMENT		kg	1850	2000	SD-295A
SCAFOLDING		m <sup>2</sup>	12.87	15.29	
SUPPORT		m <sup>2</sup>	15.34	18.41	



(SECT. 11-1) ANDHERTEL CAUSEWAY



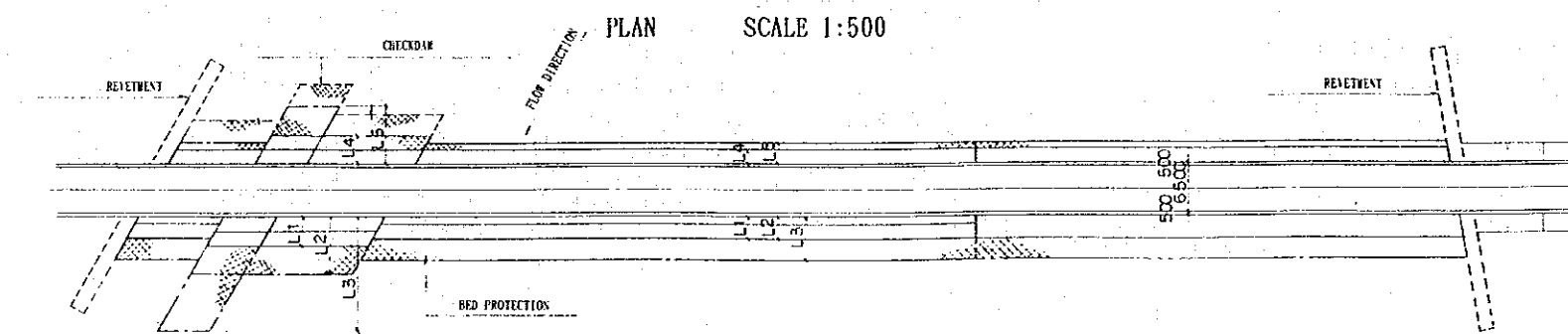
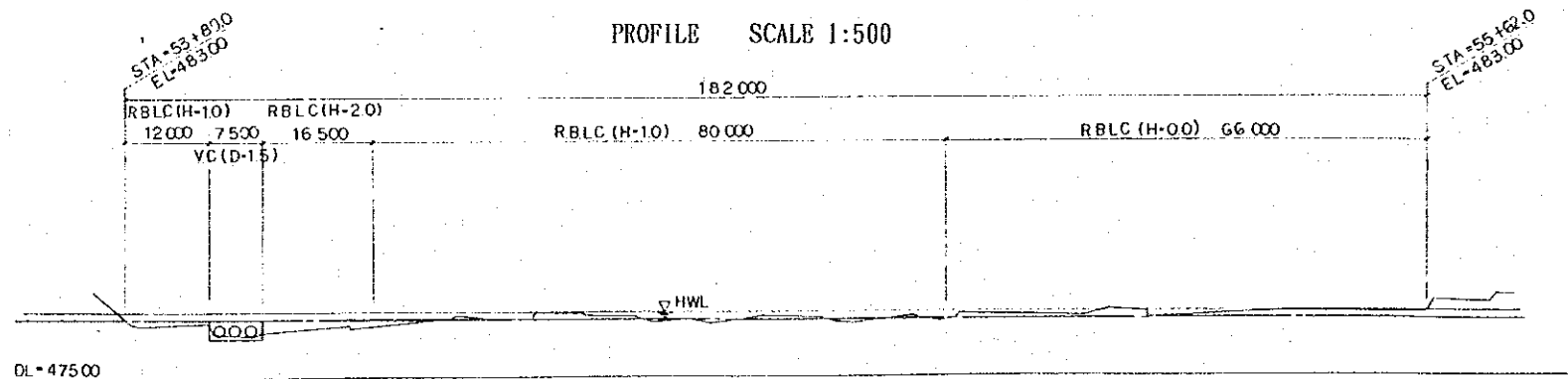
DIMENSION LIST OF BED PROTECTION

						(UNIT: m)
	HEAD "H"	DIAMETER OF VENT	L2	L3	L5	REMARKS
R. B. L. C	H=1.0m		3.0	6.0	3.0	
	H=1.5m		3.0	7.0	4.0	
	H=2.0m		4.0	8.0	4.0	
V. C	H=1.5m	D=1.0m	5.0	11.0	6.0	
	H=2.0m	D=1.5m	6.0	12.0	6.0	

MATERIAL LIST

		UNIT	QUANTITIES	REMARKS
R. B. L. C	H=1.0m	m	7.0	
	H=1.5m	m	46.0	
	H=2.0m	m	62.0	
V. C	D=1.0m	m	16.0	
	D=1.5m	m	19.0	
EXCAVATION		m <sup>3</sup>	3050	
GABIONS	BED PROTECTION	m <sup>2</sup>	556	
	CHECKDAM	m <sup>2</sup>	105	
	REVTMENT	m <sup>2</sup>	66	
	SUMMARY	m <sup>2</sup>	727	

(SECT. 11-2) NIGAULI CAUSEWAY

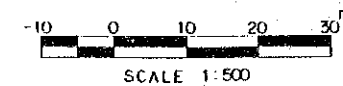


DIMENSION LIST OF BED PROTECTION

						(UNIT: m)
	HEAD "H"	DIAMETER OF VENT "D"	L2	L3	L5	REMARKS
R. B. L. C	H=0.0m		3.0	6.0	3.0	FOR G. L.
	H=1.0m		3.0	6.0	3.0	
	H=2.0m		4.0	8.0	4.0	
V. C	H=2.0m	D=1.5m	8.0	16.0	8.0	

MATERIAL LIST

		UNIT	QUANTITIES	REMARKS
R. B. L. C	H=0.0m	m	66.0	FOR G. L.
	H=1.0m	m	92.0	
	H=2.0m	m	16.5	
V. C	D=1.5m	m	7.5	
EXCAVATION		m <sup>3</sup>	2350	
GABIONS	BED PROTECTION	m <sup>2</sup>	441	
	CHECKDAM	m <sup>2</sup>	108	
	REVTMENT	m <sup>2</sup>	66	
	SUMMARY	m <sup>2</sup>	615	

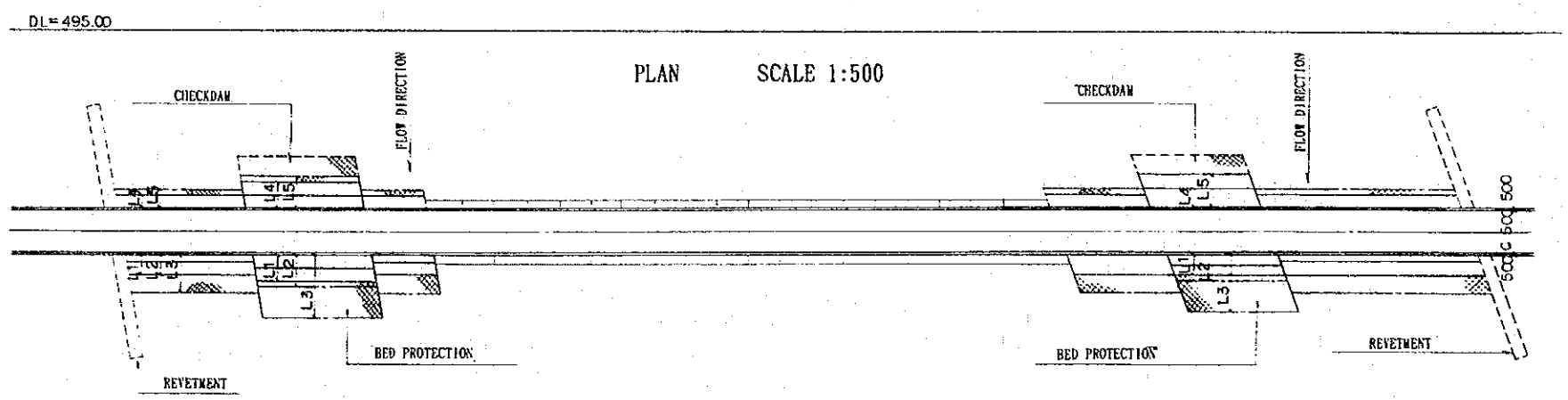
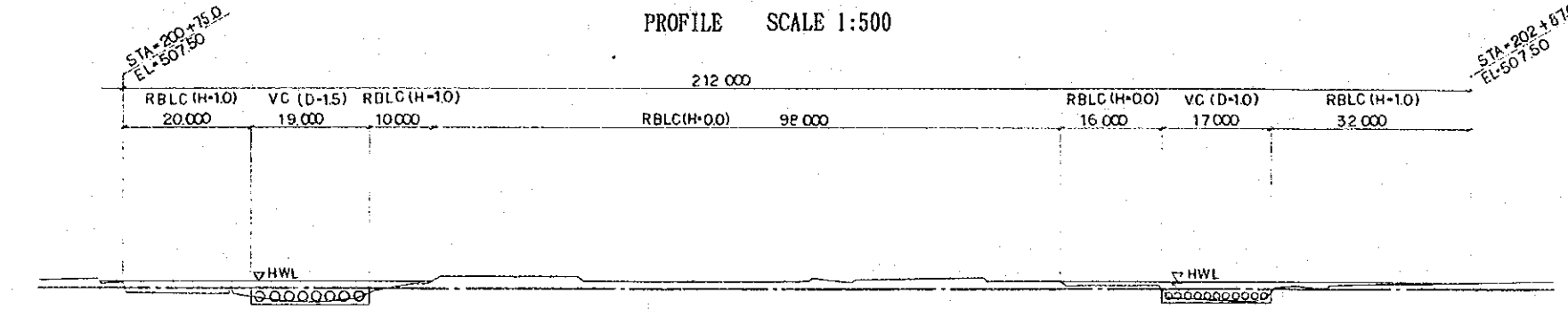


NOTES  
 R. B. L. C. MEANS RIVERBED LEVEL CAUSEWAY  
 V. C. MEANS VENTED CAUSEWAY

THE MAJESTY'S GOVERNMENT OF NEPAL  
 MINISTRY OF WORKS AND TRANSPORT  
 DEPARTMENT OF ROADS  
 AFTER-CARE STUDY  
 FOR  
 SINDHUJI ROAD CONSTRUCTION PROJECT  
 (SEC. 11-1) ANDHERTEL CAUSEWAY SHEET NO. D-15  
 (SEC. 11-2) NIGAULI CAUSEWAY  
 SCALE: HOR. 1:500 VER. 1:500 DATE: \_\_\_\_\_  
 JAPAN INTERNATIONAL COOPERATION AGENCY

(SECT11-2) GANGATE CAUSEWAY

PROFILE SCALE 1:500



DIMENSION LIST OF BED PROTECTION

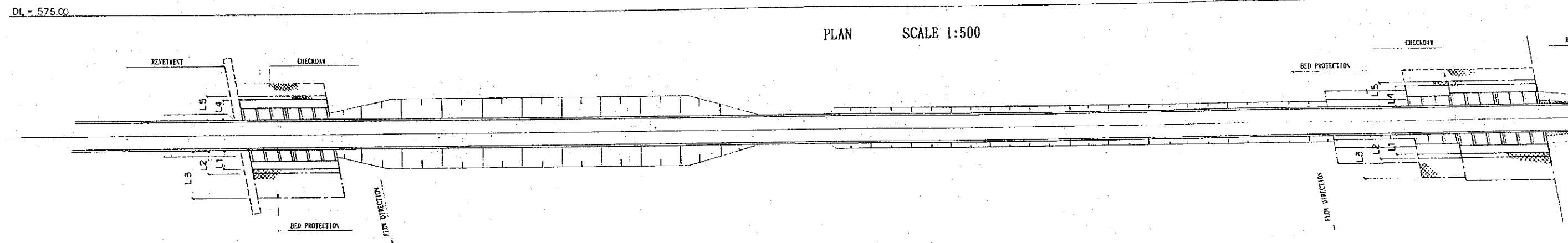
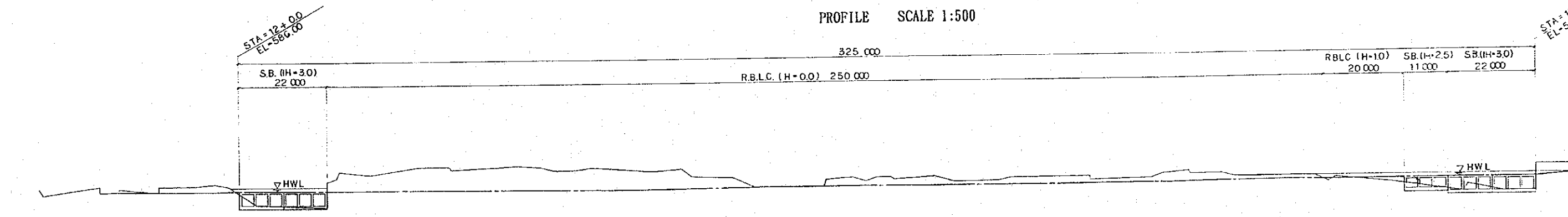
	HEAD "H"	DIAMETER OF VENT "D"	L2	L3	L5
R. B. L. C	H=0.0m		0.0	0.0	
	H=0.0m		3.0	6.0	
	H=1.0m		3.0	6.0	
V. C	H=1.5m	D=1.0m	4.0	9.0	
	H=2.0m	D=1.5m	5.0	10.0	

MATERIAL LIST

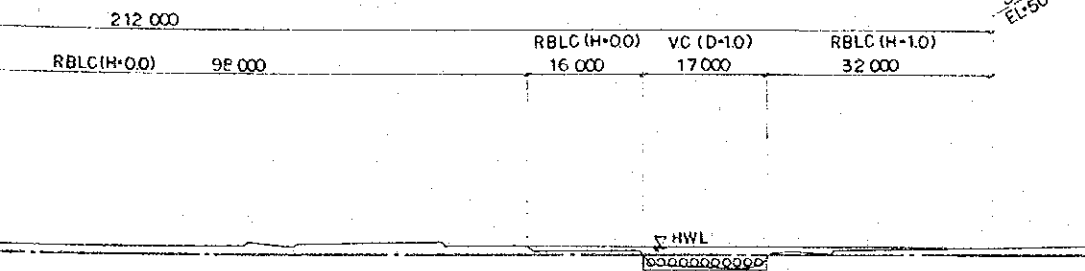
		UNIT	QUANTITIES	REMARKS
R. B. L. C	H=0.0m	m	98.0	FOR CUT
	H=0.0m	m	16.0	FOR G. L.
	H=1.0m	m	62.0	
V. C	D=1.0m	m	17.0	
	D=1.5m	m	19.0	
EXCAVATION		m <sup>3</sup>	3210	
GABIONS	BED PROTECTION	m <sup>3</sup>	309	
	CHECKDAM	m <sup>3</sup>	57	
	REVEEMENT	m <sup>3</sup>	66	
	SUMMARY	m <sup>3</sup>	432	

(SECT. 11-3) GHYAMPE CAUSEWAY

PROFILE SCALE 1:500



PROFILE SCALE 1:500

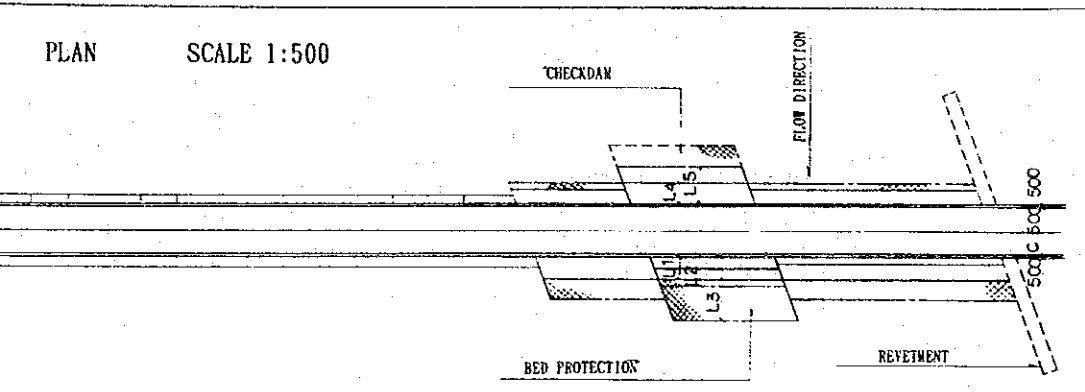


STA-202+870  
EL-507.50

DIMENSION LIST OF BED PROTECTION (UNIT: m)

	HEAD "H"	DIAMETER OF VENT "D"	L2	L3	L5	REMARKS
R. B. L. C	H=0.0m		0.0	0.0	0.0	FOR CUT
	H=0.0m		3.0	6.0	3.0	FOR G.L.
	H=1.0m		3.0	6.0	3.0	
V. C	H=1.5m	D=1.0m	4.0	9.0	5.0	
	H=2.0m	D=1.5m	5.0	10.0	5.0	

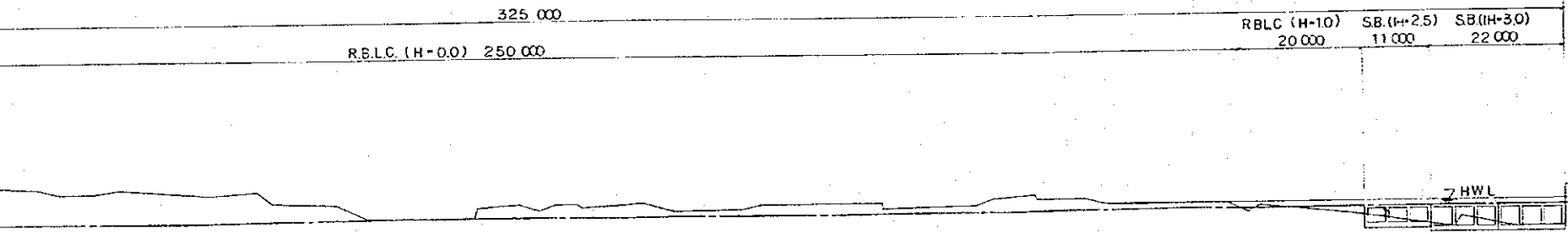
PLAN SCALE 1:500



MATERIAL LIST

		UNIT	QUANTITIES	REMARKS
R. B. L. C	H=0.0m	m	98.0	FOR CUT
	H=0.0m	m	16.0	FOR G.L.
	H=1.0m	m	62.0	
V. C	D=1.0m	m	17.0	
	D=1.5m	m	19.0	
EXCAVATION		m <sup>3</sup>	3210	
GABIONS	BED PROTECTION	m <sup>3</sup>	309	
	CHECKDAM	m <sup>3</sup>	57	
	REVETMENT	m <sup>3</sup>	66	
	SUMMARY	m <sup>3</sup>	432	

PROFILE SCALE 1:500

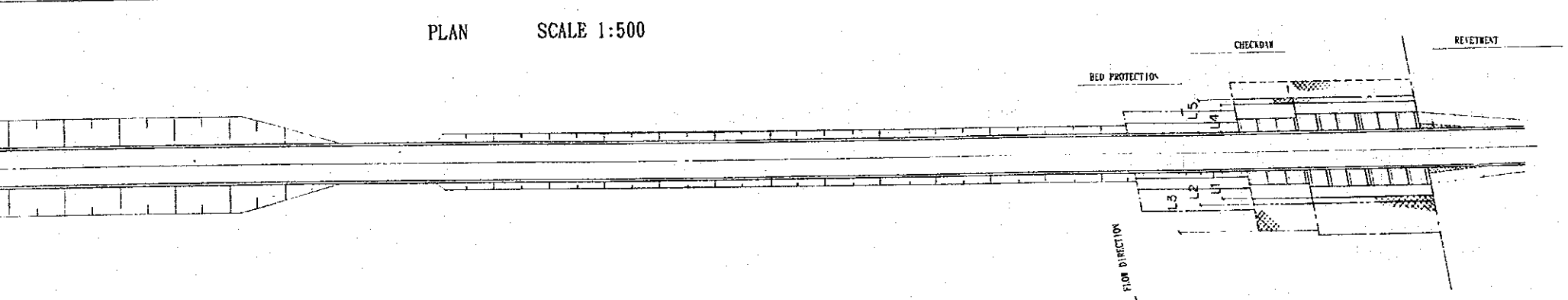


STA-15+250  
EL-560.00

DIMENSION LIST OF BED PROTECTION (UNIT: m)

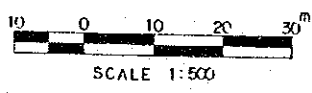
	HEAD "H"	INNER HIG- HT OF BOX CULVERT "IH"	L2	L3	L5	REMARKS
R. B. L. C	H=0.0m		0.0	0.0	0.0	FOR CUT
	H=1.0m		3.0	6.0	3.0	
S. B	H=3.0m	2.5m	6.0	11.0	6.0	
	H=3.5m	3.0m	6.0	12.0	6.0	

PLAN SCALE 1:500



MATERIAL LIST

		UNIT	QUANTITIES	REMARKS
R. B. L. C	H=0.0m	m	250.0	FOR CUT
	H=1.0m	m	20.0	
S. B	IH=2.5m	m	11.0	
	IH=3.0m	m	44.0	
EXCAVATION		m <sup>3</sup>	5710	
GABIONS	BED PROTECTION	m <sup>3</sup>	282	
	CHECKDAM	m <sup>3</sup>	165	
	REVETMENT	m <sup>3</sup>	50	
	SUMMARY	m <sup>3</sup>	497	



JIES  
R. B. L. C. MEANS RIVERBED LEVEL CAUSEWAY  
V. C. MEANS VENTED CAUSEWAY  
S. B. MEANS SUBMERSIBLE BRIDGE

HIS MAJESTY'S GOVERNMENT OF NEPAL  
MINISTRY OF WORKS AND TRANSPORT  
DEPARTMENT OF ROADS

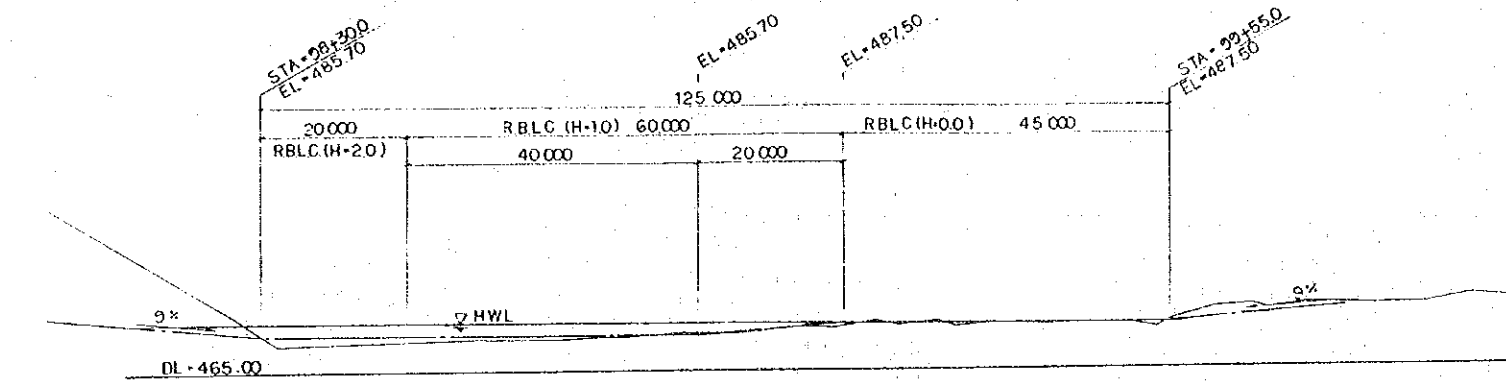
AFTERCARE STUDY  
FOR  
SINDHULI ROAD CONSTRUCTION PROJECT

(SEC II - 2) GANGATE CAUSEWAY	SHEET NO.
(SEC II - 3) GHYAMPE CAUSEWAY	D - 16
SCALE HOR. 1:500 VER. 1:500	DATE

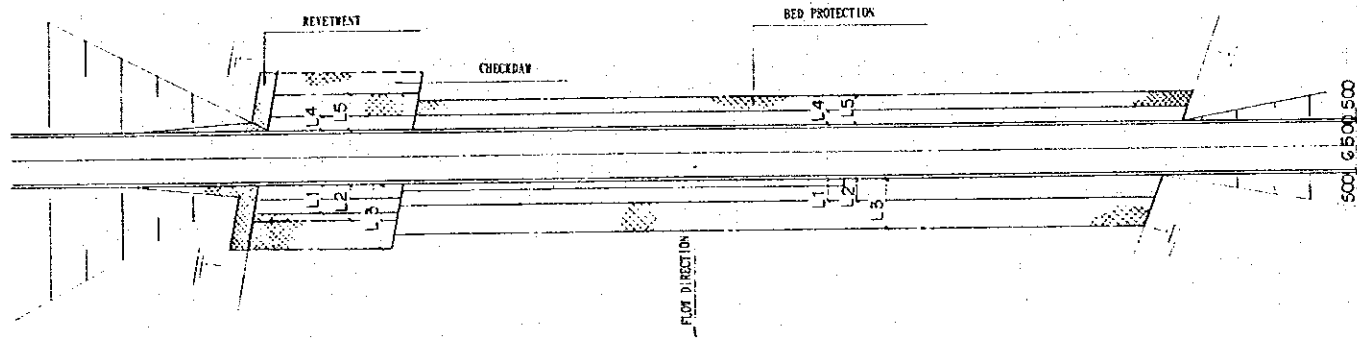
JAPAN INTERNATIONAL COOPERATION AGENCY

(SECT. II-3) BHYAKURE CAUSEWAY

PROFILE SCALE 1:500



PLAN SCALE 1:500



DIMENSION LIST OF BED PROTECTION

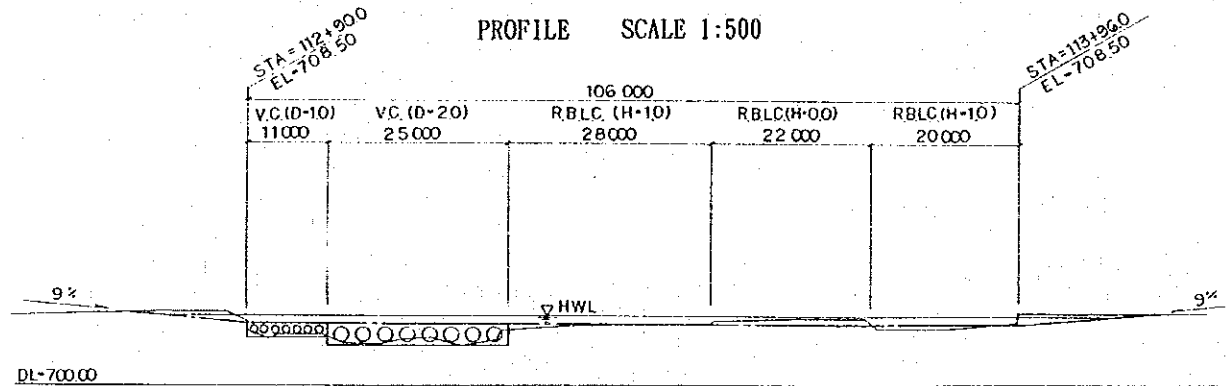
(UNIT: m)					
	HEAD "H"	L2	L3	L5	REMARKS
R. B. L. C	H=0.0m	3.0	7.0	4.0	
	H=1.0m	3.0	7.0	4.0	
	H=2.0m	5.0	9.0	5.0	

MATERIAL LIST

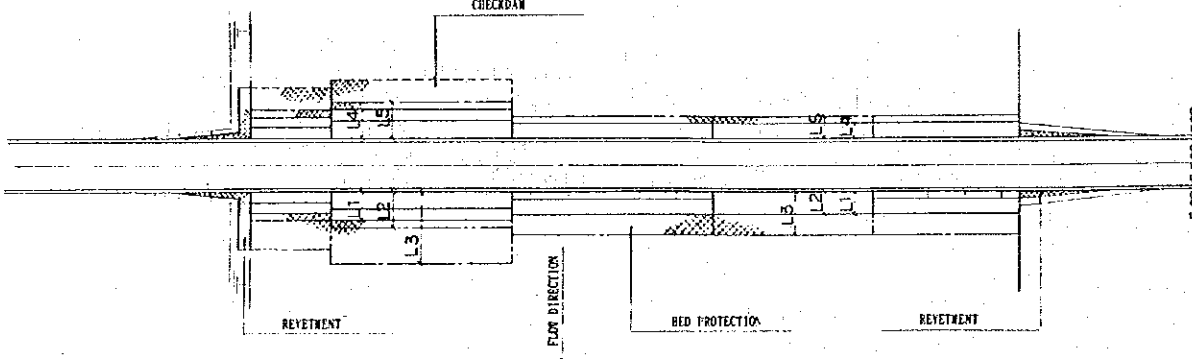
		UNIT	QUANTITIES	REMARKS
R. B. L. C	H=0.0m	m	45.0	
	H=1.0m	m	60.0	
	H=2.0m	m	20.0	
EXCAVATION		m <sup>3</sup>	1680	
GABIONS	BED PROTECTION	m <sup>3</sup>	405	
	CHECKDAM	m <sup>3</sup>	60	
	REVTMENT	m <sup>3</sup>	148	
	SUMMARY	m <sup>3</sup>	613	

(SECT. II-3) STA. 113+43.0 CAUSEWAY

PROFILE SCALE 1:500



PLAN SCALE 1:500

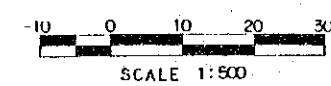


DIMENSION LIST OF BED PROTECTION

(UNIT: m)						
	HEAD "H"	DIAMETER OF VENT "D"	L2	L3	L5	REMARKS
R. B. L. C	H=0.0m		3.0	6.0	3.0	FOR G. L.
	H=1.0m		3.0	6.0	3.0	
V. C	H=1.5m	D=1.0m	4.0	8.0	4.0	
	H=2.5m	D=2.0m	5.0	10.0	5.0	

MATERIAL LIST

		UNIT	QUANTITIES	REMARKS
R. B. L. C	H=0.0m	m	22.0	FOR G. L.
	H=1.0m	m	48.0	
V. C	D=1.0m	m	11.0	
	D=2.0m	m	25.0	
EXCAVATION		m <sup>3</sup>	1760	
GABIONS	BED PROTECTION	m <sup>3</sup>	279	
	CHECKDAM	m <sup>3</sup>	108	
	REVTMENT	m <sup>3</sup>	59	
	SUMMARY	m <sup>3</sup>	446	



NOTES  
R. B. L. C. MEANS RIVERBED LEVEL CAUSEWAY  
V. C. MEANS VENTED CAUSEWAY

HIS MAJESTY'S GOVERNMENT OF NEPAL MINISTRY OF WORKS AND TRANSPORT DEPARTMENT OF ROADS	
AFTERCARE STUDY FOR SINDHULI ROAD CONSTRUCTION PROJECT	
(SEC II-3) BHYAKURE CAUSEWAY	SHEET NO. D-17
(SEC II-3) STA113+43.0 CAUSEWAY	DATE
SCALE: HOR 1:500 VER 1:500	DATE
JAPAN INTERNATIONAL COOPERATION AGENCY	

## MATERIAL LIST OF MINOR CAUSEWAY

MATERIAL LIST

	STATION	TYPE OF CAUSEWAY		QUANTITIES			
				LENGTH m	EXCAVATION m <sup>3</sup>	GABIONS m <sup>3</sup>	
SECTION-1	172+25.0 ~ 172+85.0	R. B. L. C.	H=0.0	60.0	576	120	
	183+60.0 ~ 183+90.0	R. B. L. C.	H=0.0	30.0	288	60	
	194+0.0 ~ 194+40.0	R. B. L. C.	H=0.0	40.0	384	80	
	201+0.0 ~ 201+40.0	R. B. L. C.	H=1.0	40.0	508	80	
	211+85.0 ~ 212+15.0	R. B. L. C.	H=0.0	15.0	144	30	
				H=1.0	15.0	191	75
				SUMMARY	30.0	335	105
	217+75.0 ~ 218+5.0	R. B. L. C.	H=0.0	15.0	144	30	
				H=1.0	15.0	191	75
				SUMMARY	30.0	335	105
	223+20.0 ~ 223+50.0	R. B. L. C.	H=0.0	30.0	288	60	
	226+70.0 ~ 227+10.0	R. B. L. C.	H=0.0	20.0	192	40	
				H=1.0	20.0	254	133
				SUMMARY	40.0	446	173
	229+50.0 ~ 230+10.0	R. B. L. C.	H=0.0	30.0	288	60	
				H=1.0	30.0	381	183
				SUMMARY	60.0	669	243
	234+15.0 ~ 234+75.0	R. B. L. C.	H=0.0	30.0	288	60	
				H=1.0	30.0	381	183
				SUMMARY	60.0	669	243
	238+95.0 ~ 239+35.0	R. B. L. C.	H=0.0	40.0	384	80	
	246+20.0 ~ 247+0.0	R. B. L. C.	H=0.0	80.0	768	160	
	249+75.0 ~ 250+55.0	R. B. L. C.	H=0.0	80.0	768	160	
	258+50.0 ~ 258+80.0	R. B. L. C.	H=0.0	15.0	144	30	
H=1.0				15.0	191	75	
SUMMARY				30.0	335	105	
260+85.0 ~ 261+15.0	R. B. L. C.	H=0.0	15.0	144	30		
			H=1.0	15.0	191	75	
			SUMMARY	30.0	335	105	
265+50.0 ~ 266+30.0	R. B. L. C.	H=0.0	80.0	768	160		
272+30.0 ~ 272+80.0	R. B. L. C.	H=0.0	50.0	480	100		
282+75.0 ~ 283+15.0	R. B. L. C.	H=0.0	30.0	288	60		
			H=1.0	10.0	127	50	
			SUMMARY	40.0	415	110	
SECTION-11-1	353+35.0 ~ 353+65.0	R. B. L. C.	H=0.0	30.0	288	60	
	381+25.0 ~ 381+55.0	R. B. L. C.	H=1.5	30.0	528	60	
SECTION-11-2	3+60.0 ~ 4+10.0	R. B. L. C.	H=0.0	30.0	288	60	
				H=1.0	20.0	254	100
				SUMMARY	50.0	542	160
	18+40.0 ~ 18+60.0	R. B. L. C.	H=0.0	20.0	192	40	
	23+15.0 ~ 23+35.0	R. B. L. C.	H=0.0	20.0	192	40	
	108+50.0 ~ 109+20.0	R. B. L. C.	H=0.0	30.0	288	60	
				H=1.0	40.0	508	200
				SUMMARY	70.0	796	260
	121+0.0 ~ 121+90.0	R. B. L. C.	H=0.0	60.0	576	120	
				H=1.0	30.0	381	150
				SUMMARY	90.0	957	270
	167+20.0 ~ 167+90.0	R. B. L. C.	H=1.5	70.0	1232	210	
	219+55.0 ~ 220+5.0	R. B. L. C.	H=0.0	10.0	96	20	
				H=1.0	10.0	127	20
H=1.5				30.0	528	180	
SUMMARY				50.0	751	220	
247+10.0 ~ 248+0.0	R. B. L. C.	H=0.0	70.0	672	140		
			H=1.0	20.0	254	100	
			SUMMARY	90.0	926	240	
SECTION-11-3	40+50.0 ~ 41+40.0	V. C.	D=2.0	30.0	804	135	
	S. B.	IH=3.0	60.0	2250	480		
			SUMMARY	90.0	3054	615	
102+50.0 ~ 103+0.0	R. B. L. C.	H=0.0	50.0	480	100		
195+80.0 ~ 196+10.0	R. B. L. C.	H=0.0	30.0	288	60		

DIMENSION LIST OF BED PROTECTION

(UNIT: m)

	HEAD "H"	"D" OR "IH"	L2	L3	L5	REMARKS
R. B. L. C.	H=0.0m		3.0	6.0	3.0	FOR G. L.
	H=1.0m		3.0	6.0	3.0	
	H=1.5m		3.0	7.0	4.0	
V. C.	H=2.0m	D=2.0	4.0	8.0	4.0	
S. B.	H=3.5m	IH=3.0	5.0	10.0	5.0	
			6.0	12.0	6.0	

NOTES

- R. B. L. C. MEANS RIVERBED LEVEL CAUSEWAY
- V. C. MEANS VENTED CAUSEWAY
- S. B. MEANS SUBVERSIBLE BRIDGE

HIS MAJESTY'S GOVERNMENT OF NEPAL MINISTRY OF WORKS AND TRANSPORT DEPARTMENT OF ROADS	
AFFERCARE STUDY FOR SINDHULI ROAD CONSTRUCTION PROJECT	
MATERIAL LIST OF MINOR CAUSEWAY	SIDE NO D - 18
SCALE	DATE
JAPAN INTERNATIONAL COOPERATION AGENCY	

## E. DRAINAGE STRUCTURES

SIDE DRAINS

SLAB CULVERT

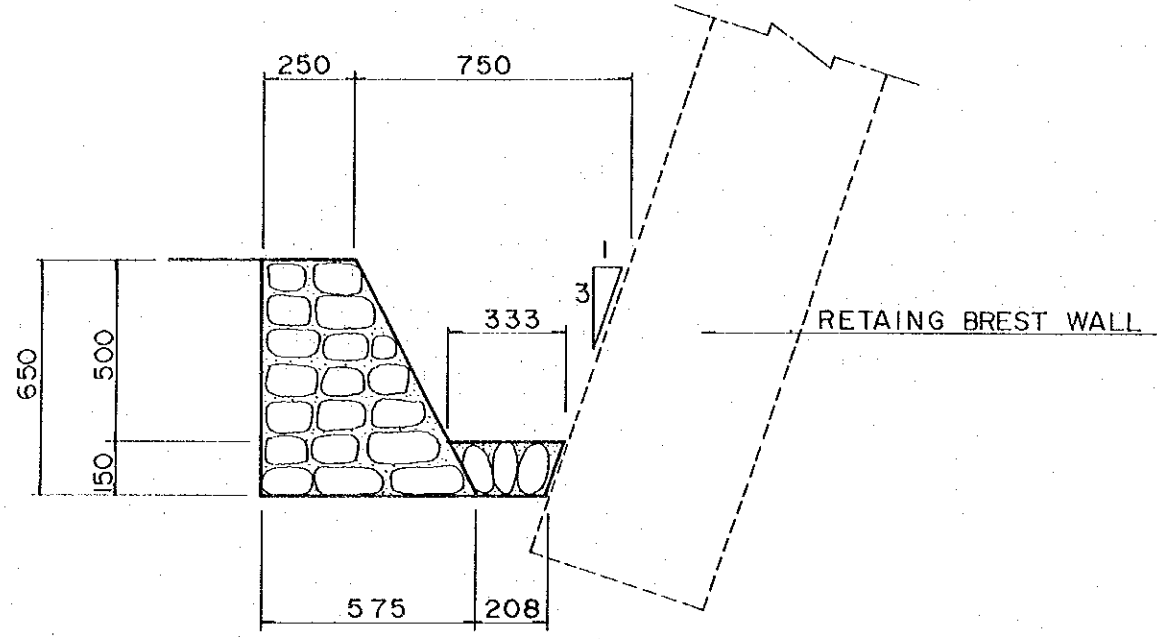
BOX CULVERT

CORRUGATED ARCH CULVERT

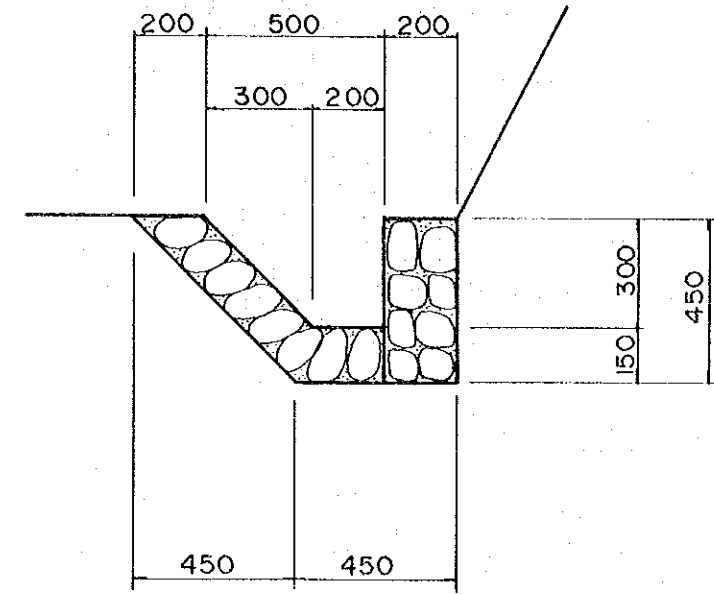
PIPE CULVERT

CHECK DAM

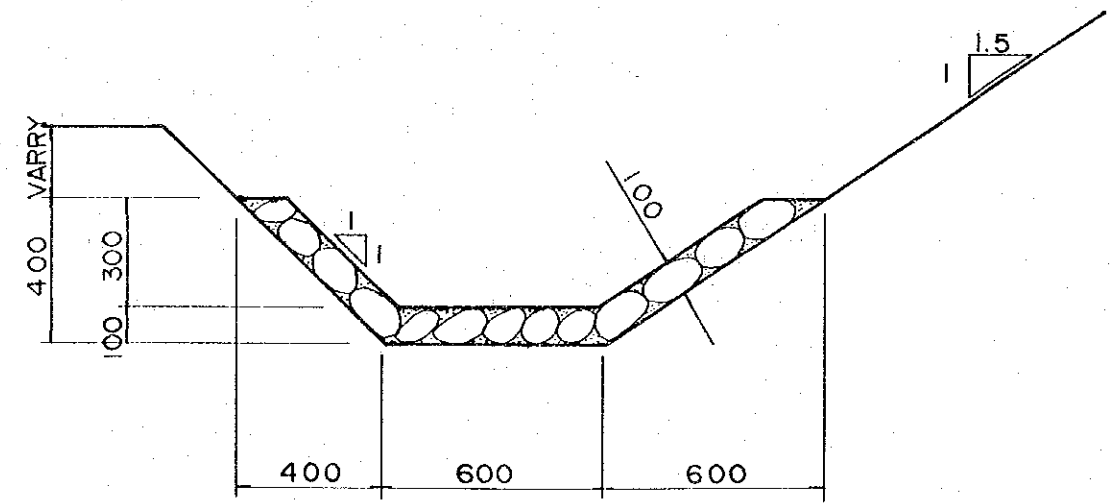
CHANNEL



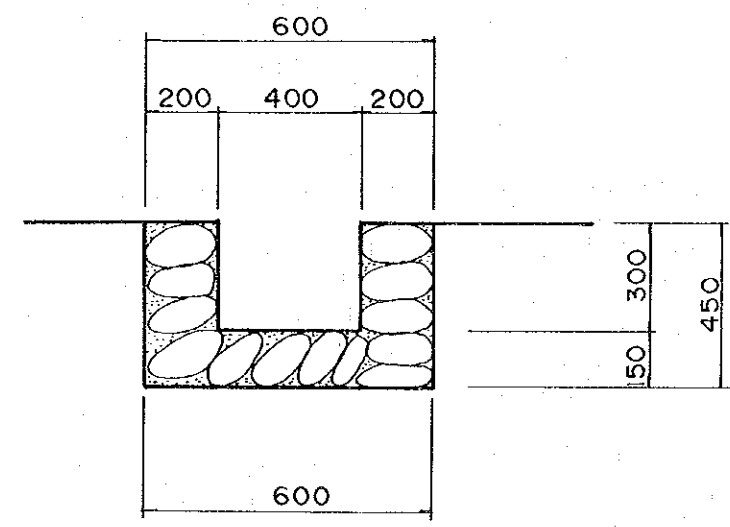
SIDE DRAIN, GROUTED RIPRAP  
0.75 x 0.50 Scale 1:20



SIDE DRAIN, GROUTED RIPRAP  
0.50 x 0.30 Scale 1:20

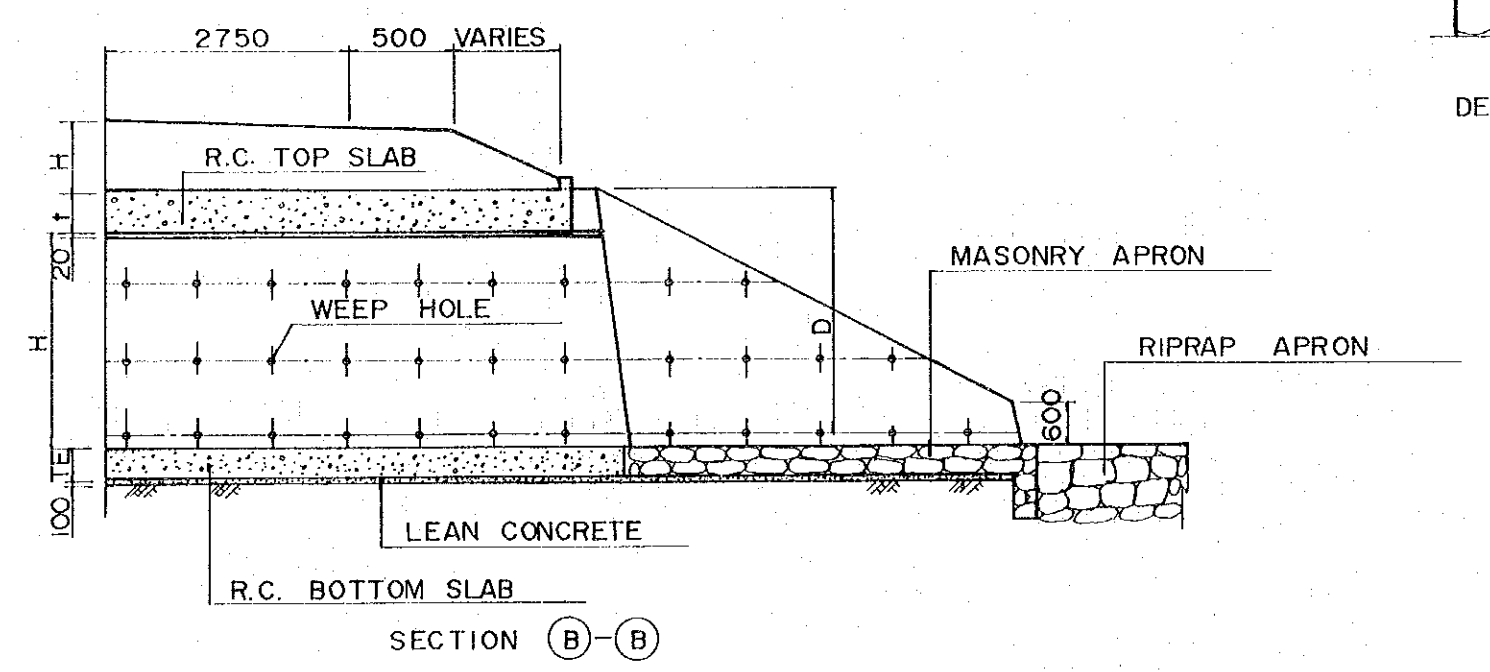
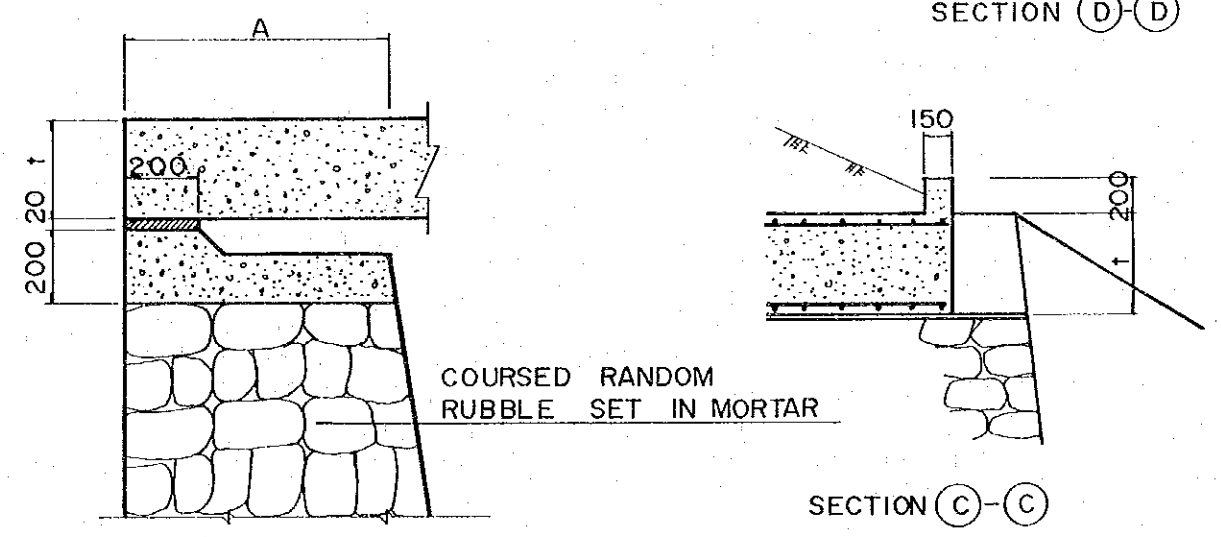
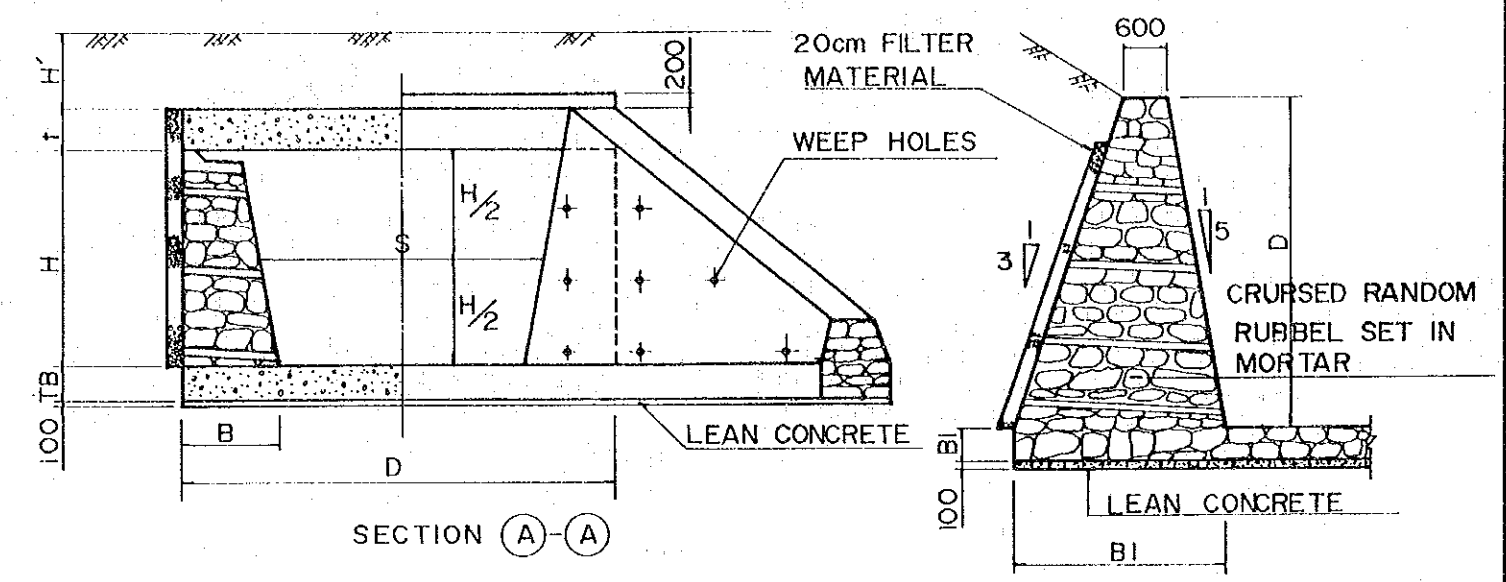
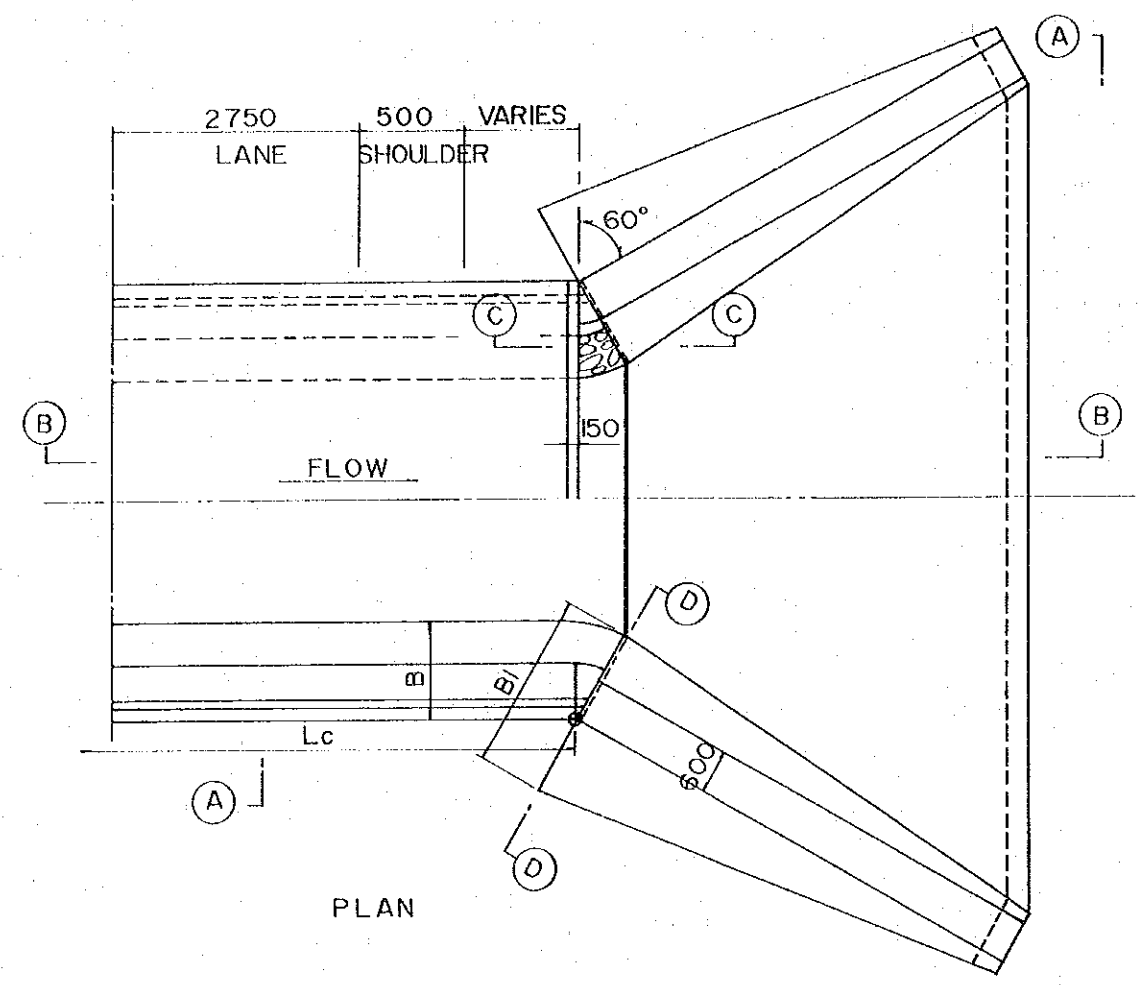


GROUTED RIPRAP LINED DITCH  
Scale 1:20



COMPENSATORY IRRIGATION CHANNEL  
STONE MASONRY, 0.40 x 0.30

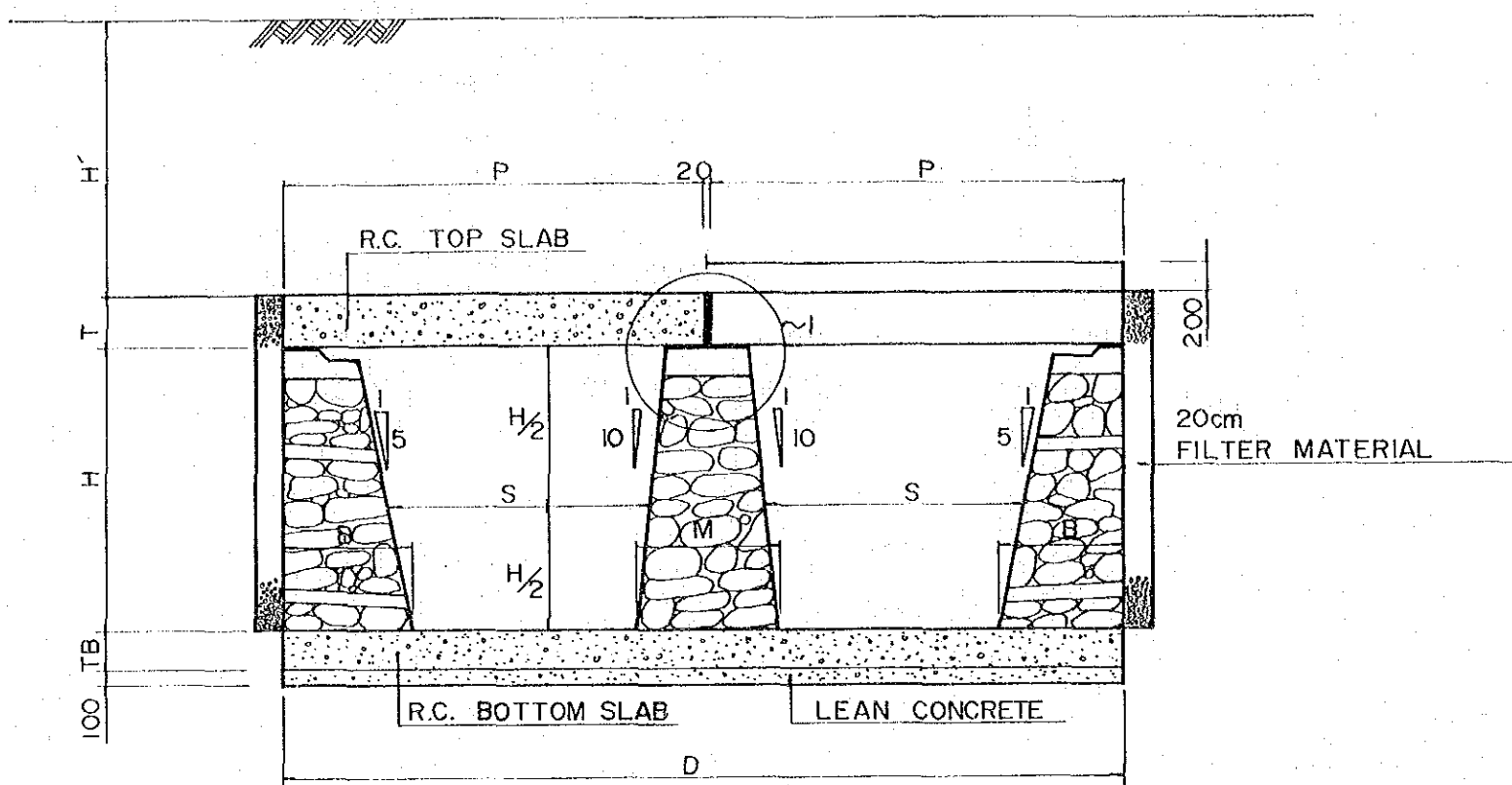
HIS MAJESTY'S GOVERNMENT OF NEPAL MINISTRY OF WORKS AND TRANSPORT DEPARTMENT OF ROADS	
AFTERCARE STUDY FOR SINDHULI ROAD CONSTRUCTION PROJECT	
DRAINAGE STRUCTURES SIDE DRAINS	SHEET NO. E-1
SCALE 1:20	DATE
JAPAN INTERNATIONAL COOPERATION AGENCY	



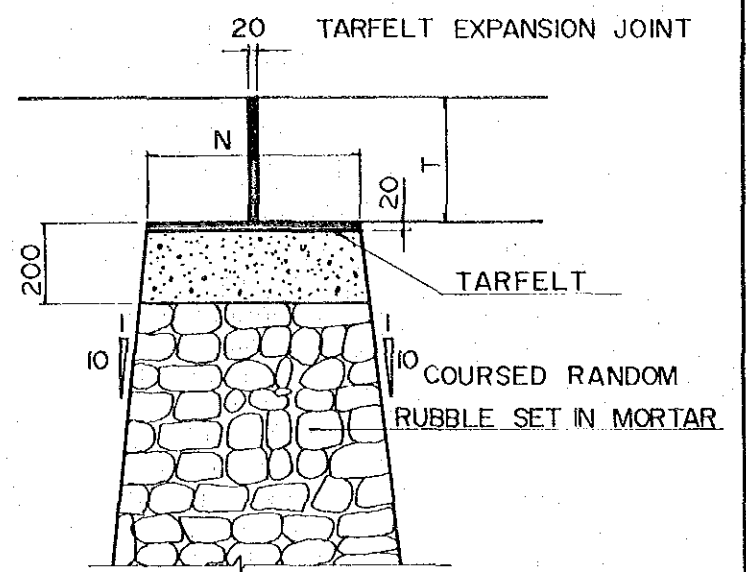
SLAB CULVERT S = 4.0M

HIS MAJESTY'S GOVERNMENT OF NEPAL MINISTRY OF WORKS AND TRANSPORT DEPARTMENT OF ROADS	
AFTERCARE STUDY FOR SINDHULI ROAD CONSTRUCTION PROJECT	
DRAINAGE STRUCTURES SLAB CULVERT (1/2) SINGLE SPAN TYPE	SHEET NO. E - 2
SCALE	DATE
JAPAN INTERNATIONAL COOPERATION AGENCY	

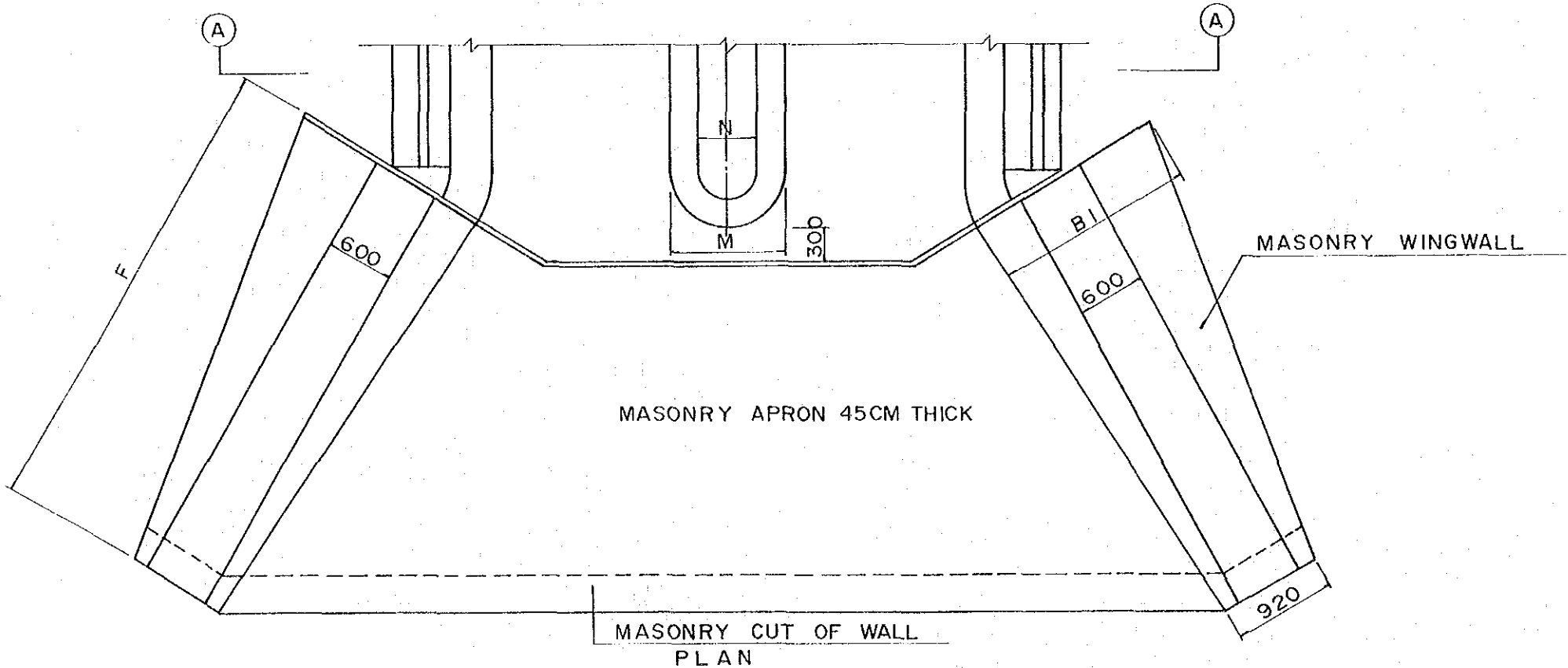




SECTION (A) (A)



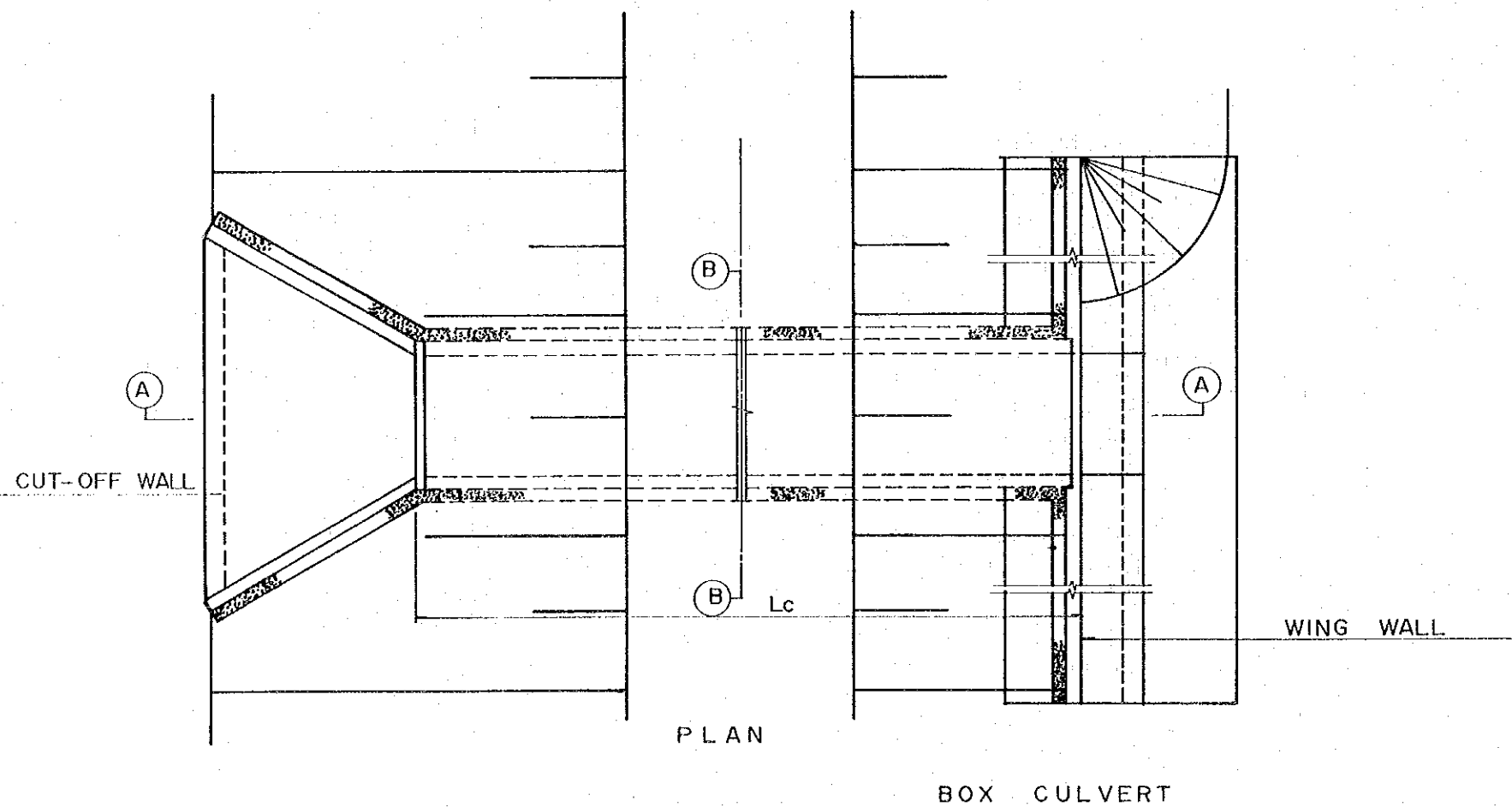
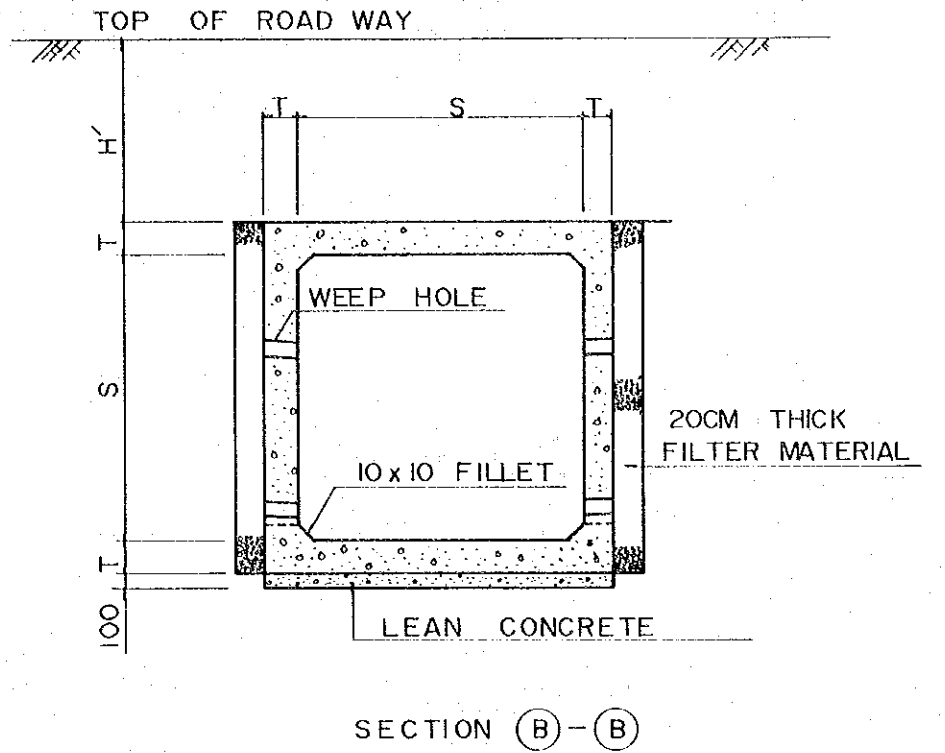
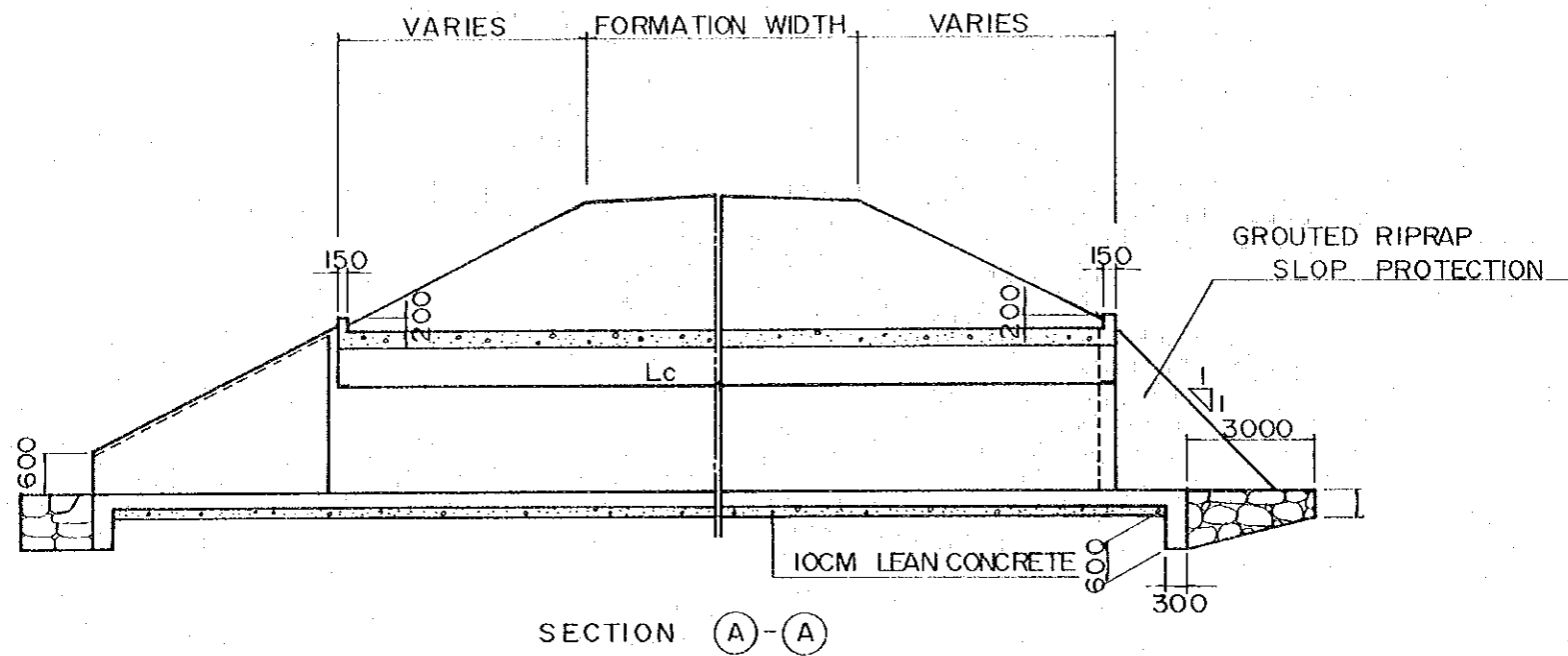
DETAIL I (R.C. PIER SEAT)



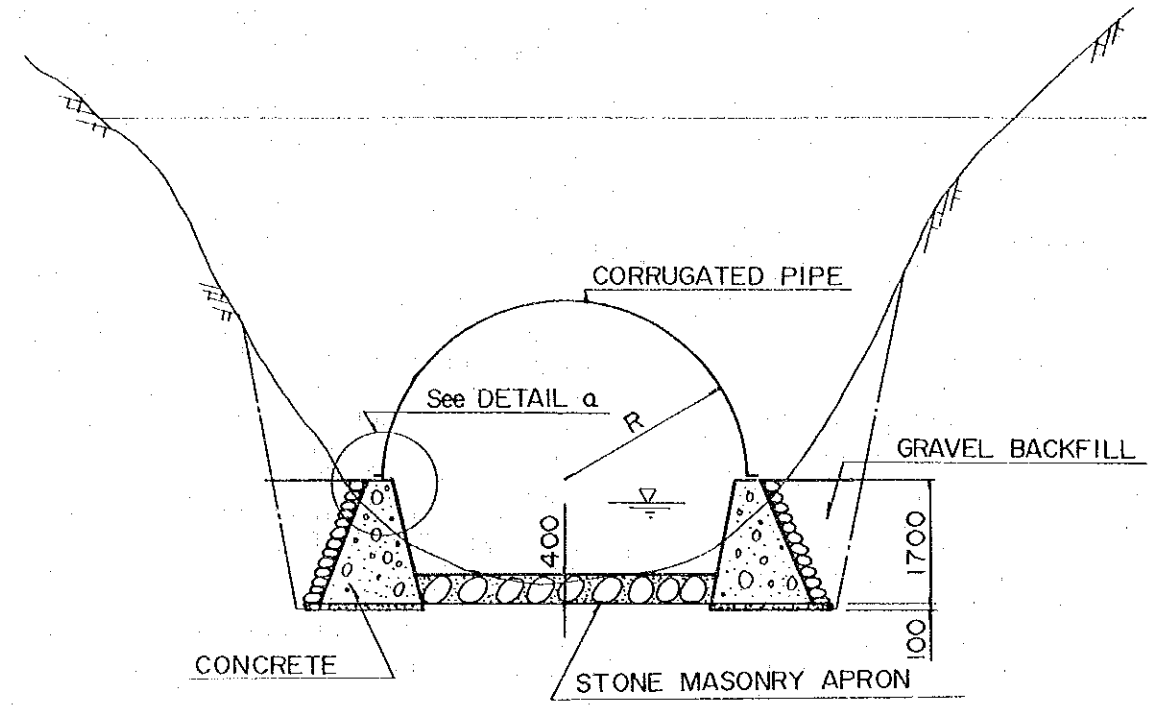
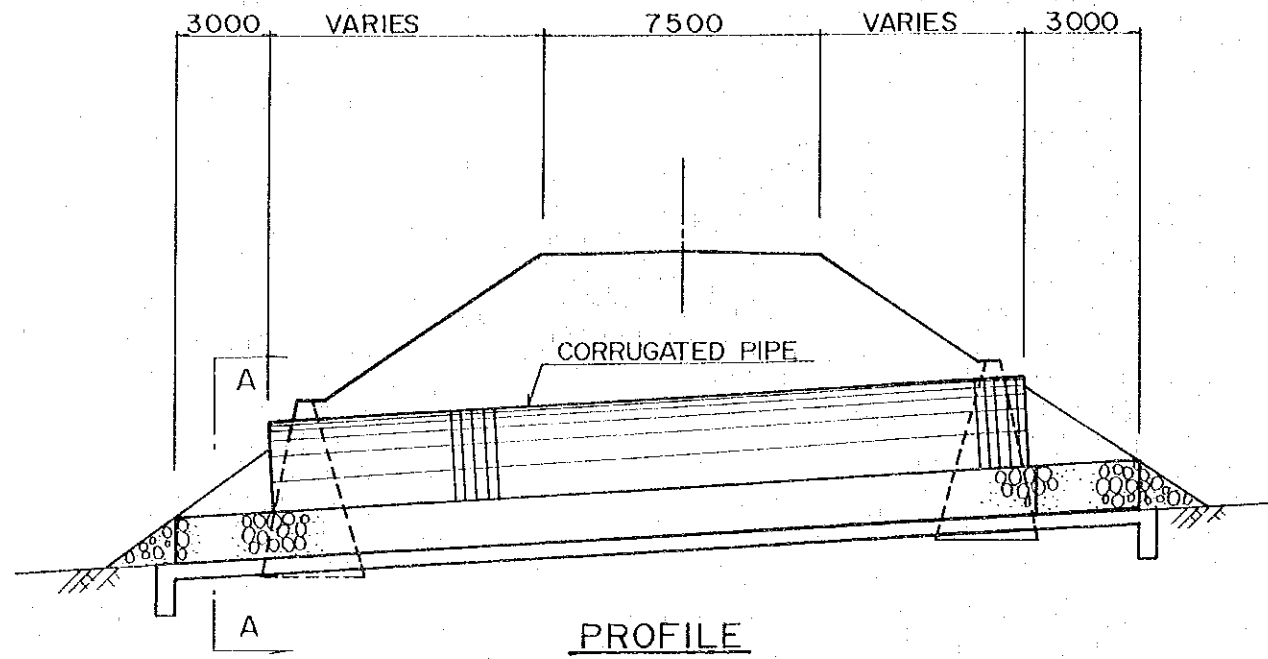
MASONRY CUT OF WALL PLAN

SLAB CULVERT S = 4M x 2

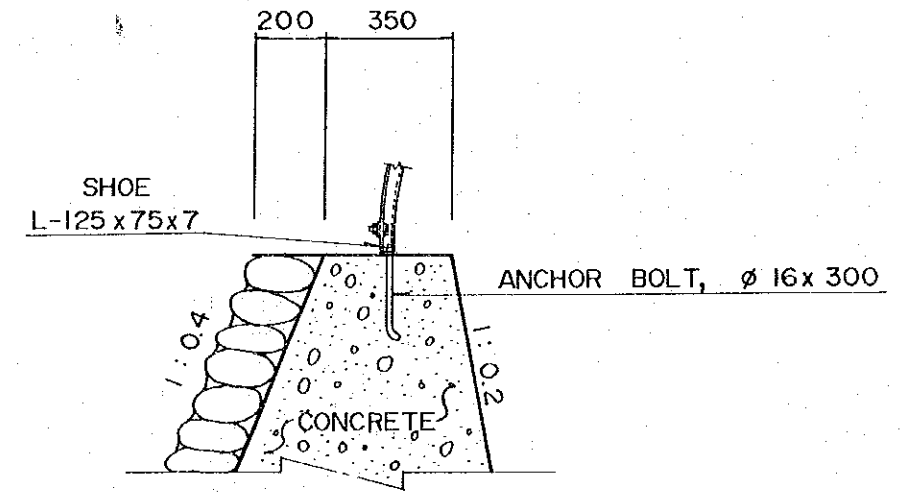
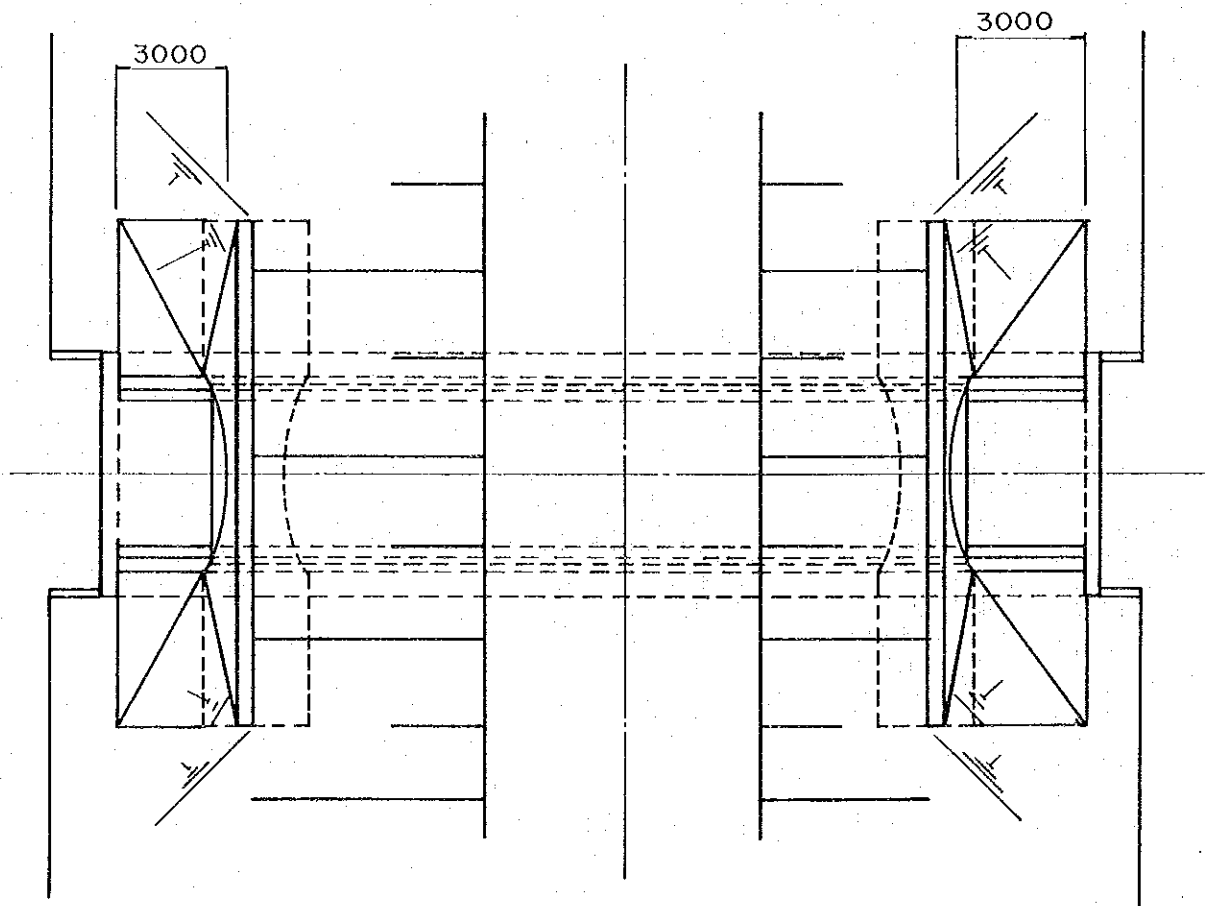
HIS MAJESTY'S GOVERNMENT OF NEPAL MINISTRY OF WORKS AND TRANSPORT DEPARTMENT OF ROADS	
AFTERCARE STUDY FOR SINDHULI ROAD CONSTRUCTION PROJECT	
DRAINAGE STRUCTURES SLAB CULVERT (2/2) DOUBLE SPAN TYPE	SHEET NO. E-3
SCALE:	DATE
JAPAN INTERNATIONAL COOPERATION AGENCY	



HIS MAJESTY'S GOVERNMENT OF NEPAL MINISTRY OF WORKS AND TRANSPORT DEPARTMENT OF ROADS	
AFTERCARE STUDY FOR SINDHULI ROAD CONSTRUCTION PROJECT	
DRAINAGE STRUCTURES BOX CULVERT	SHEET NO. E-4
SCALE	DATE
JAPAN INTERNATIONAL COOPERATION AGENCY	

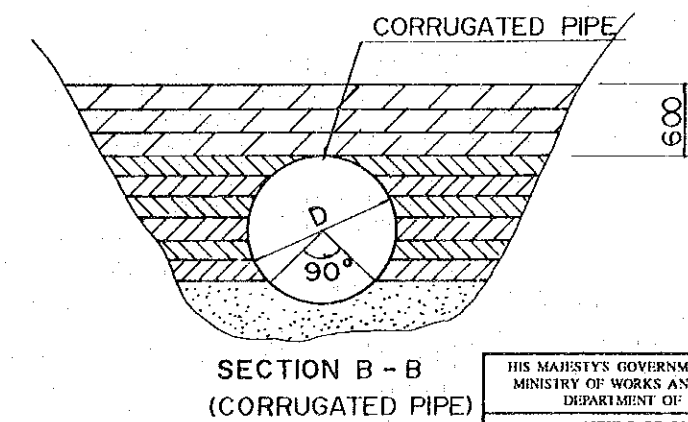
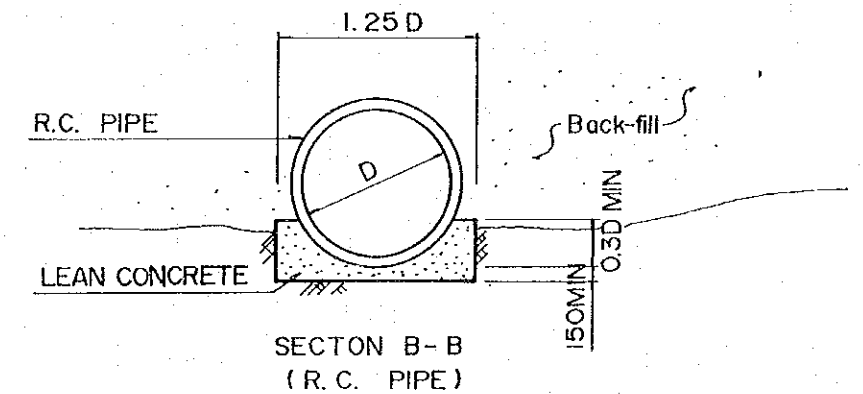
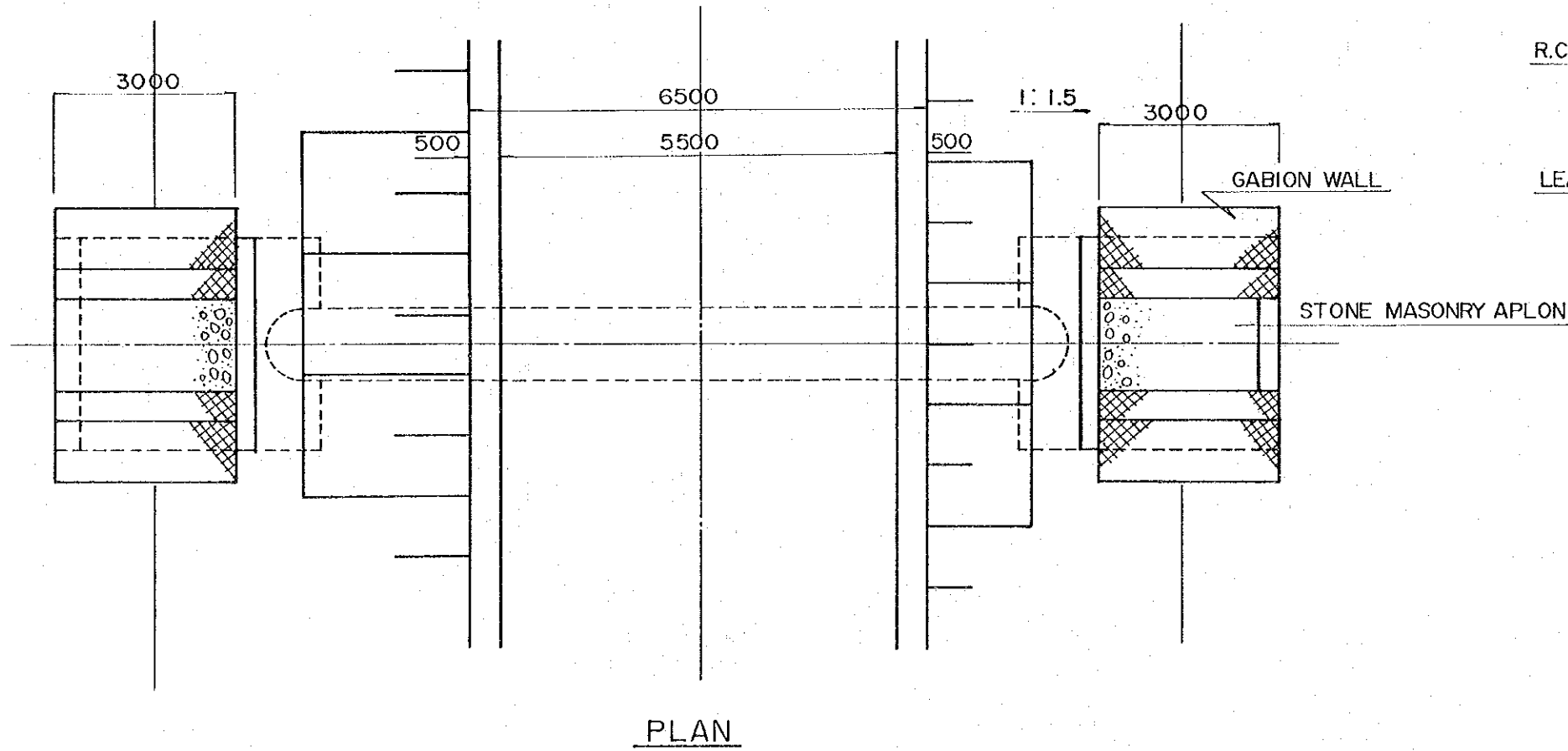
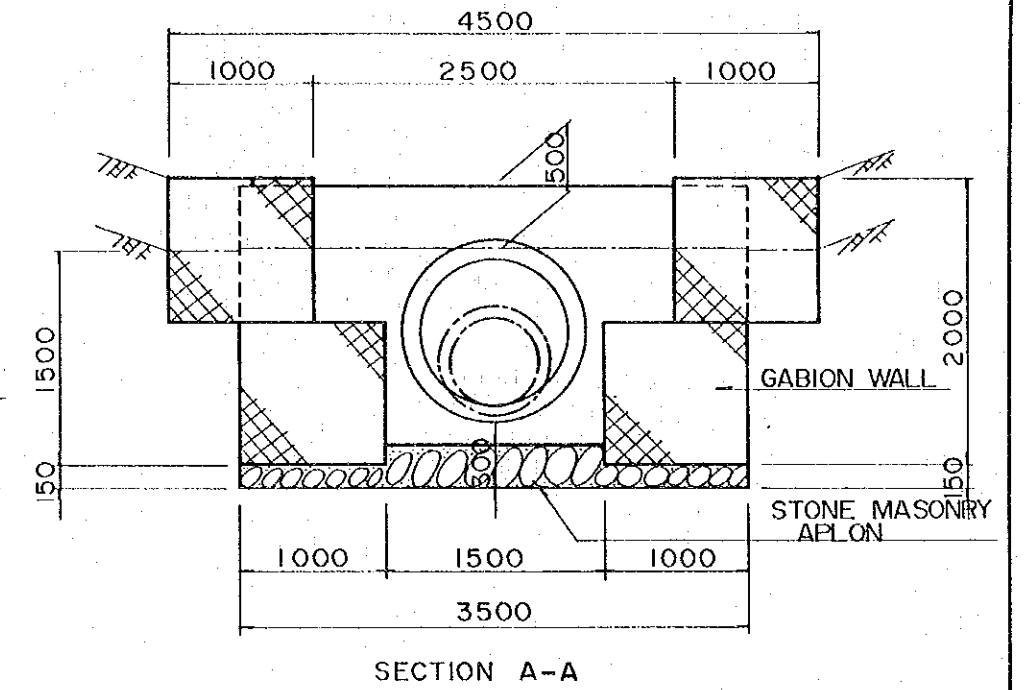
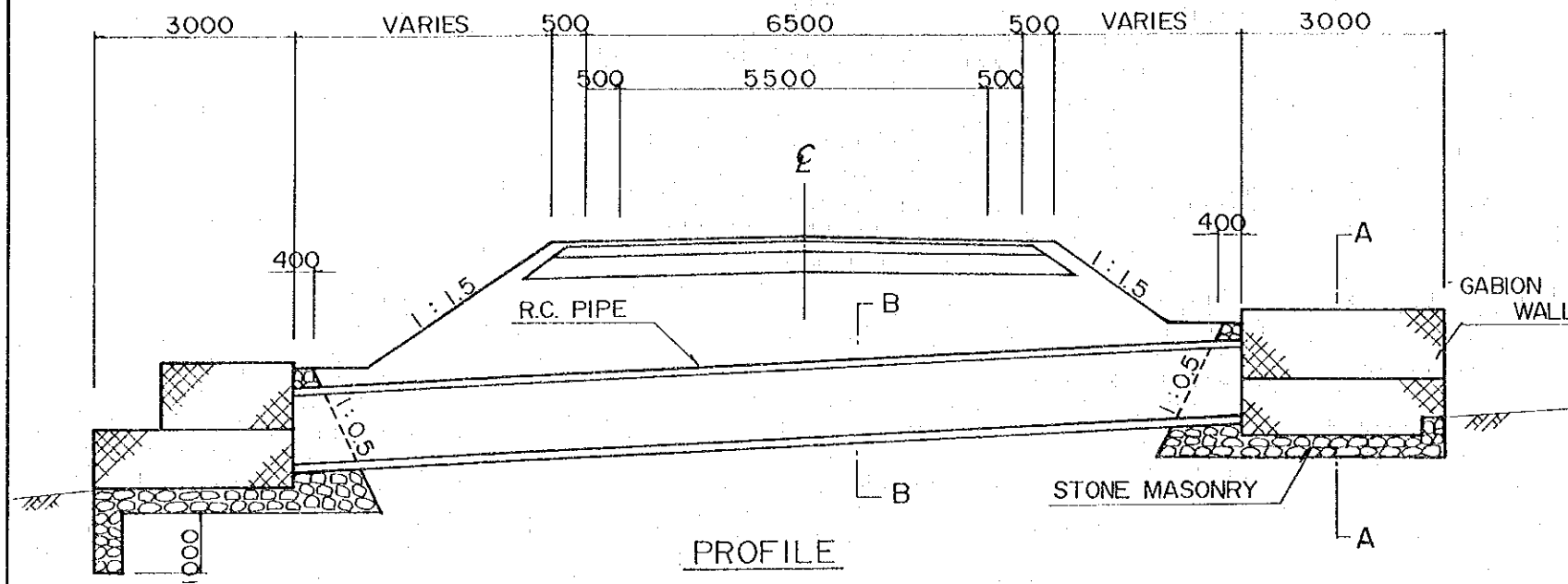


SECTION A-A



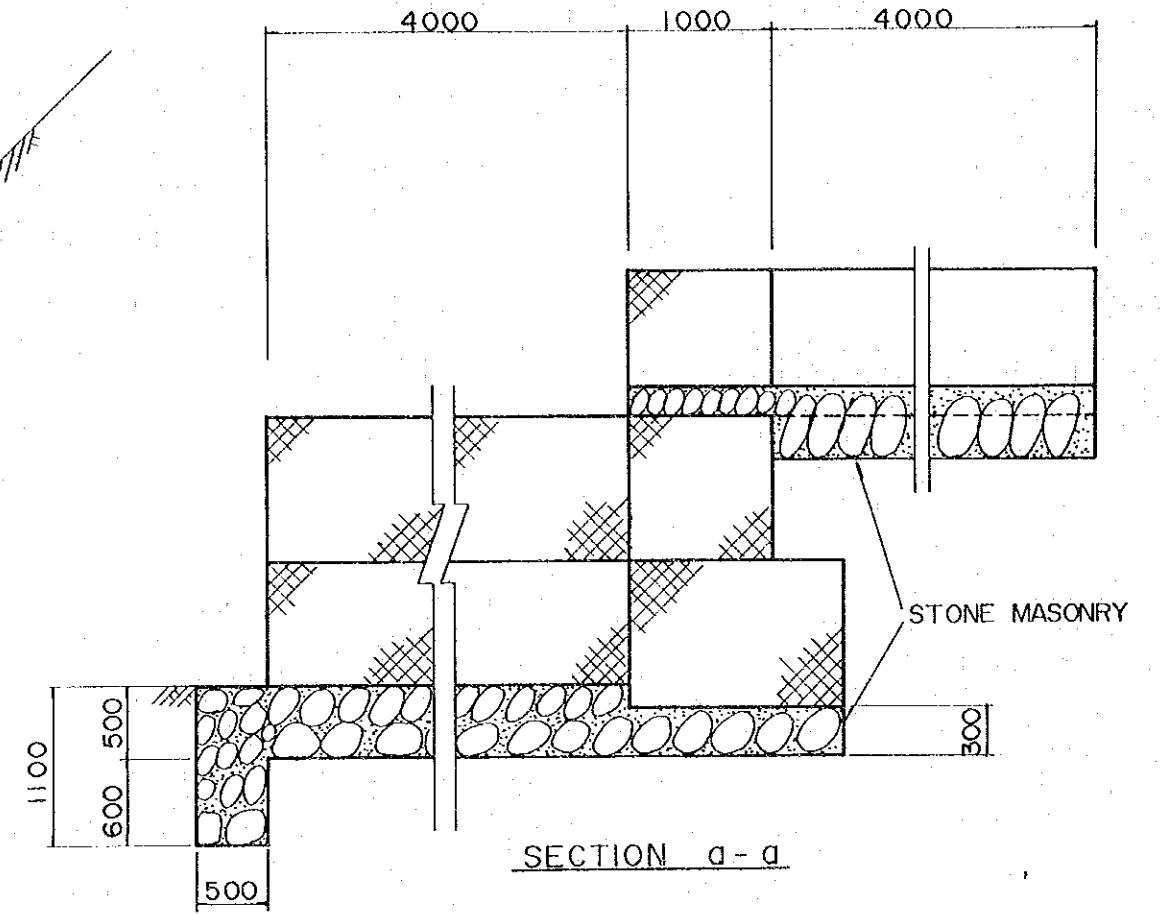
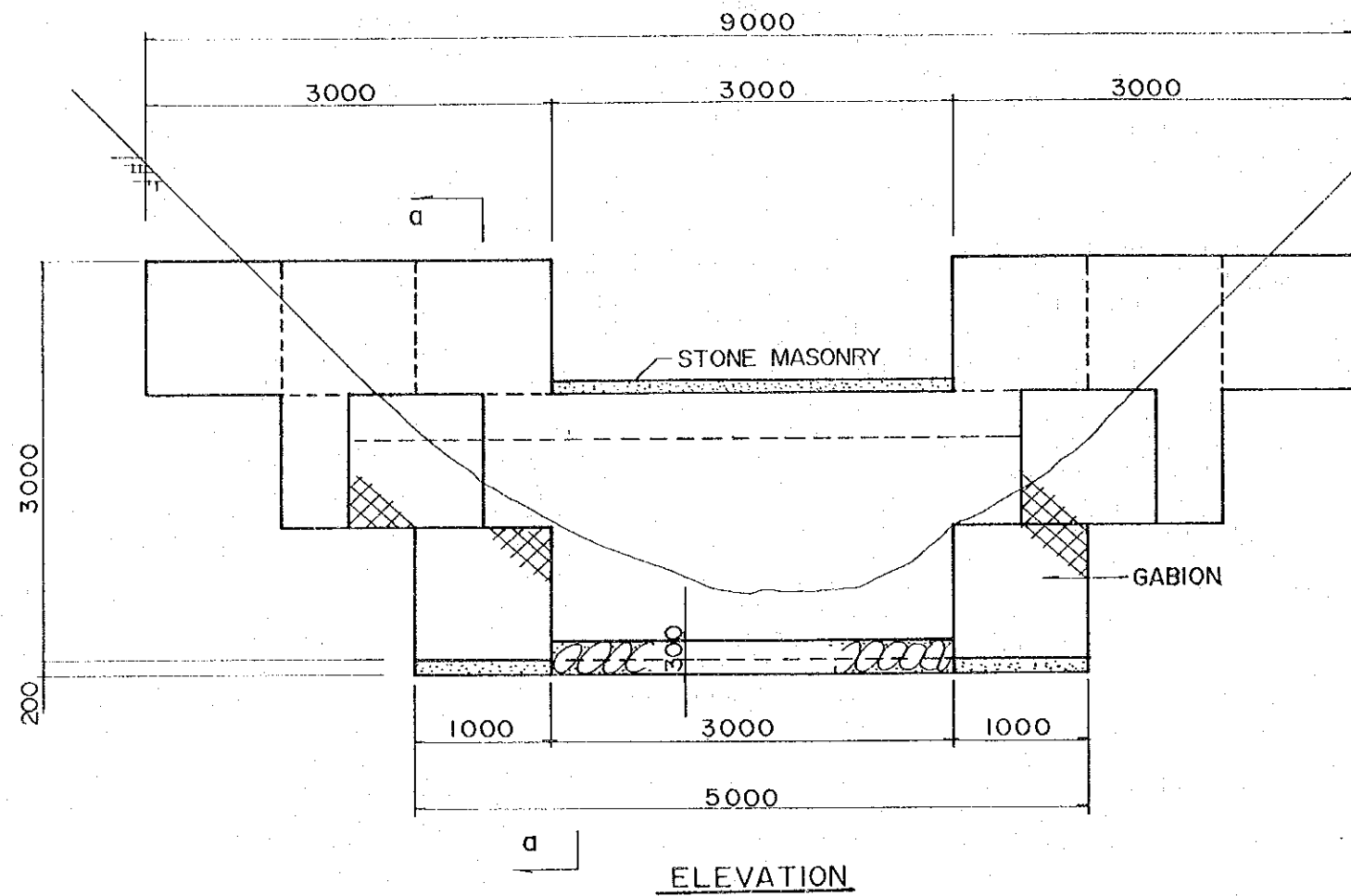
DETAIL a

HIS MAJESTY'S GOVERNMENT OF NEPAL MINISTRY OF WORKS AND TRANSPORT DEPARTMENT OF ROADS	
AFTERCARE STUDY FOR SINDHUJI ROAD CONSTRUCTION PROJECT	
DRAINAGE STRUCTURES CORRUGATED ARCH CULVERT	SHEET NO. E - 5
SCALE	DATE
JAPAN INTERNATIONAL COOPERATION AGENCY	

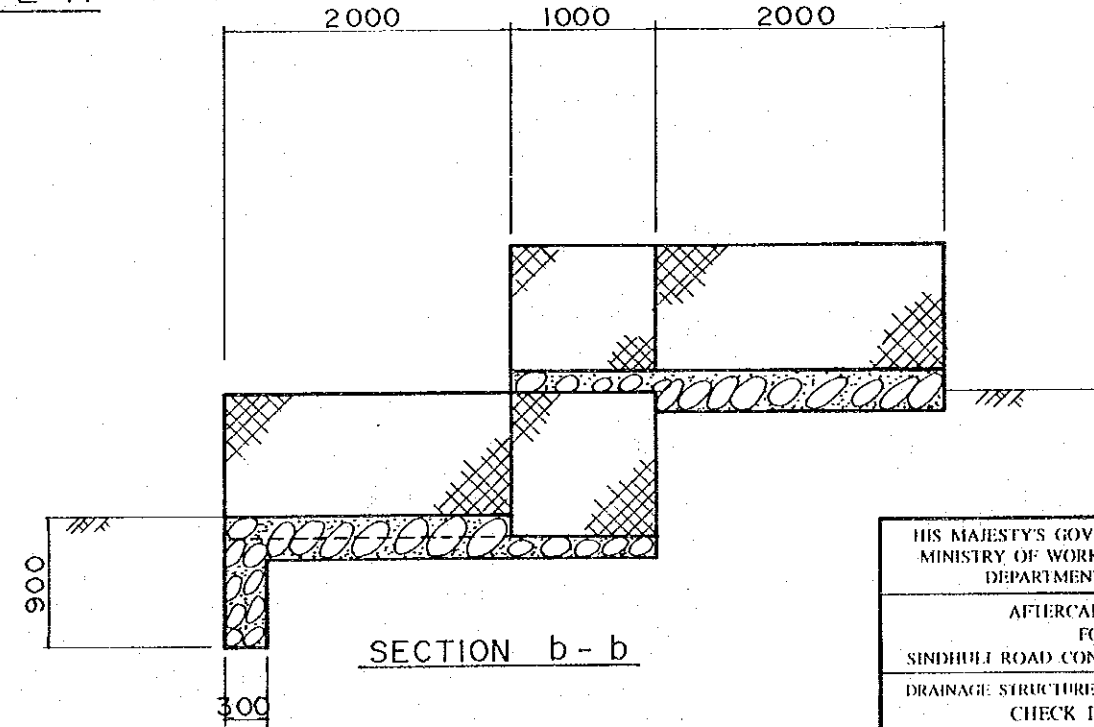
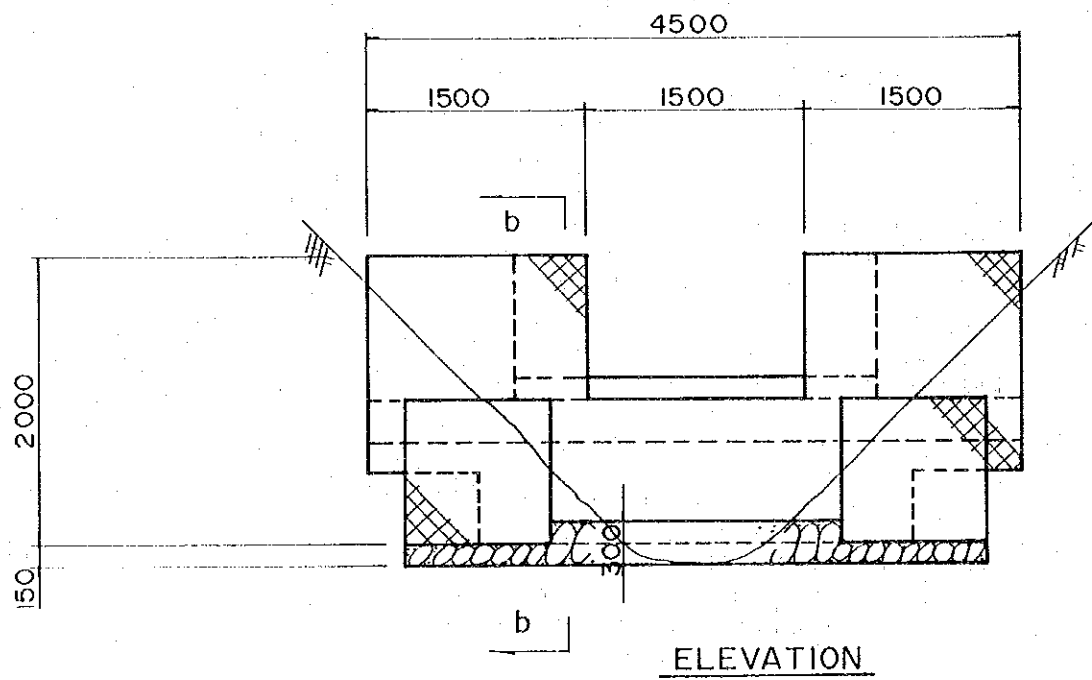


HIS MAJESTY'S GOVERNMENT OF NEPAL MINISTRY OF WORKS AND TRANSPORT DEPARTMENT OF ROADS	
AFTERCARE STUDY FOR SINDHULI ROAD CONSTRUCTION PROJECT	
DRAINAGE STRUCTURES PIPE CULVERT (R.C. & CORRUGATED METAL)	SHEET NO. E-6
SCALE	DATE
JAPAN INTERNATIONAL COOPERATION AGENCY	

TYPE - B

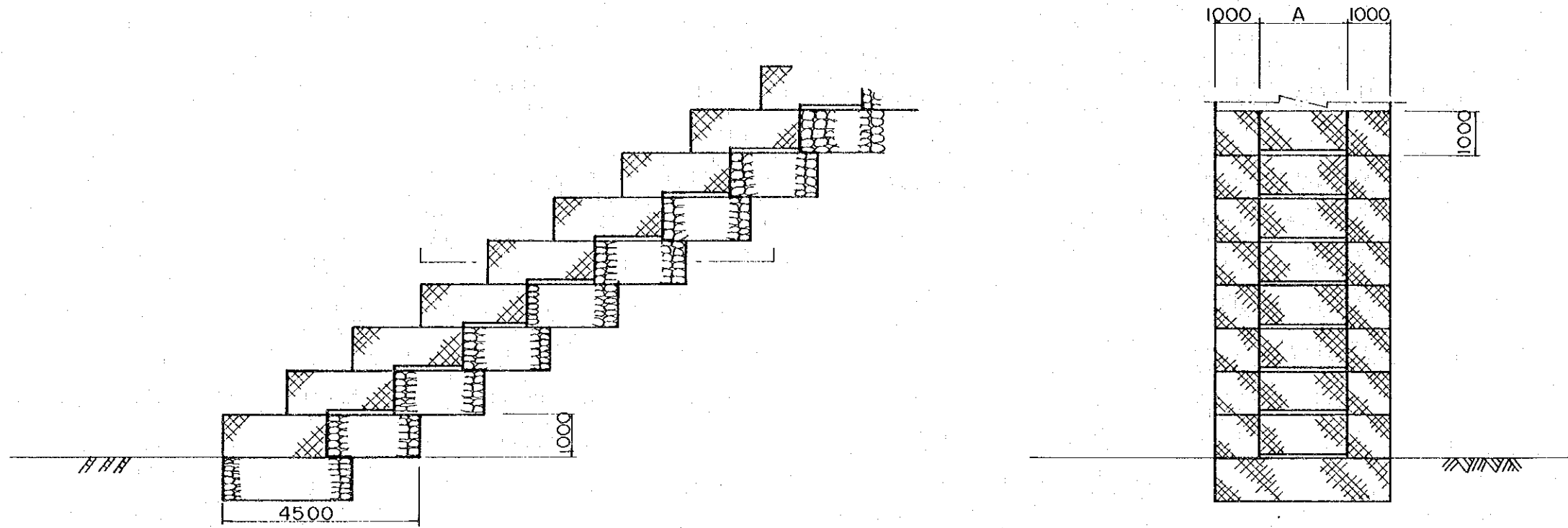


TYPE - A

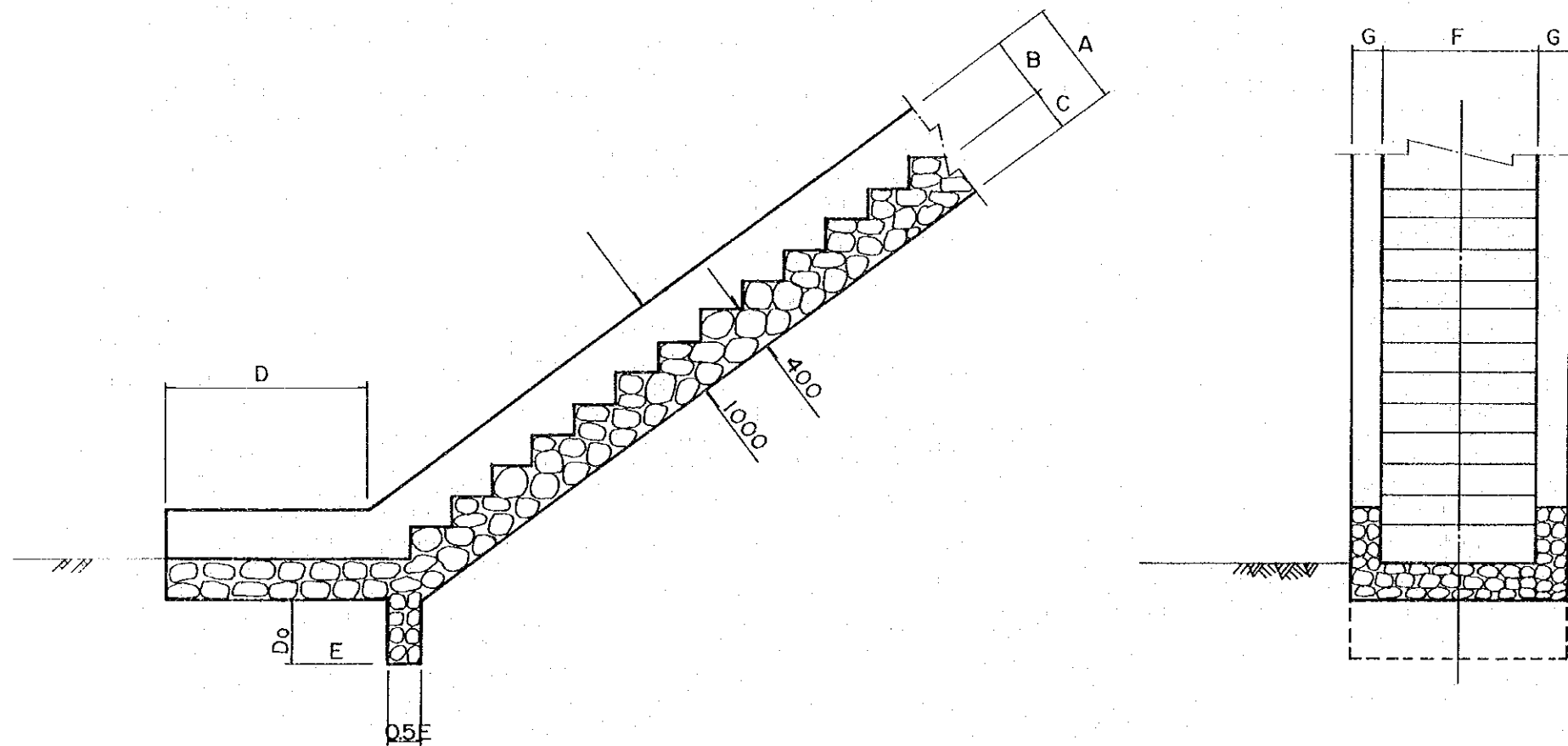


HIS MAJESTY'S GOVERNMENT OF NEPAL MINISTRY OF WORKS AND TRANSPORT DEPARTMENT OF ROADS	
AFTERCARE STUDY FOR SINDHUJI ROAD CONSTRUCTION PROJECT	
DRAINAGE STRUCTURES CHECK DAM	SHEET NO. E-7
SCALE	DATE
JAPAN INTERNATIONAL COOPERATION AGENCY	

GABION CHANNEL



STONE MASONRY CHANNEL



HIS MAJESTY'S GOVERNMENT OF NEPAL MINISTRY OF WORKS AND TRANSPORT DEPARTMENT OF ROADS	
AFTERCARE STUDY FOR SINDHULI ROAD CONSTRUCTION PROJECT	
DRAINAGE STRUCTURES CHANNEL	SHEET NO. E-8
SCALE:	DATE:
JAPAN INTERNATIONAL COOPERATION AGENCY	

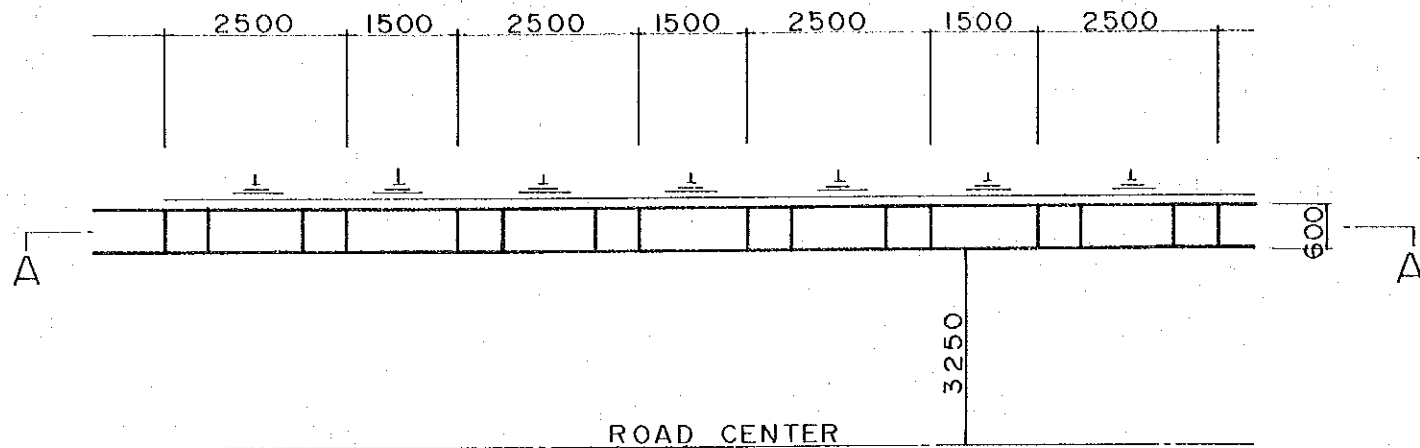
## F. MISCELLANEOUS WORKS

STONE MASONRY PARAPET

TRAFFIC SIGN & DISTANCE SIGN

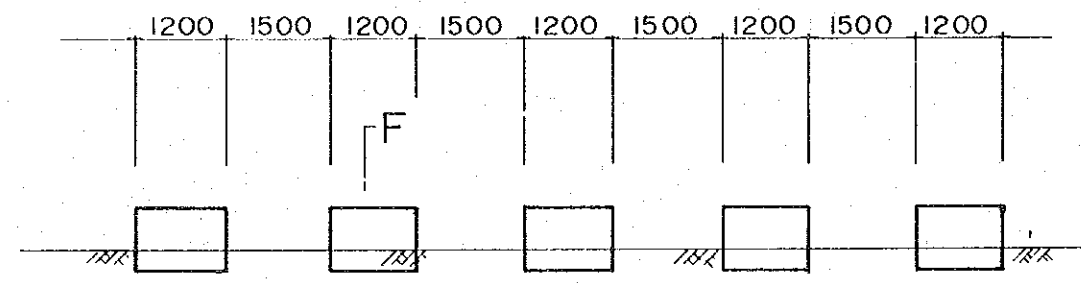
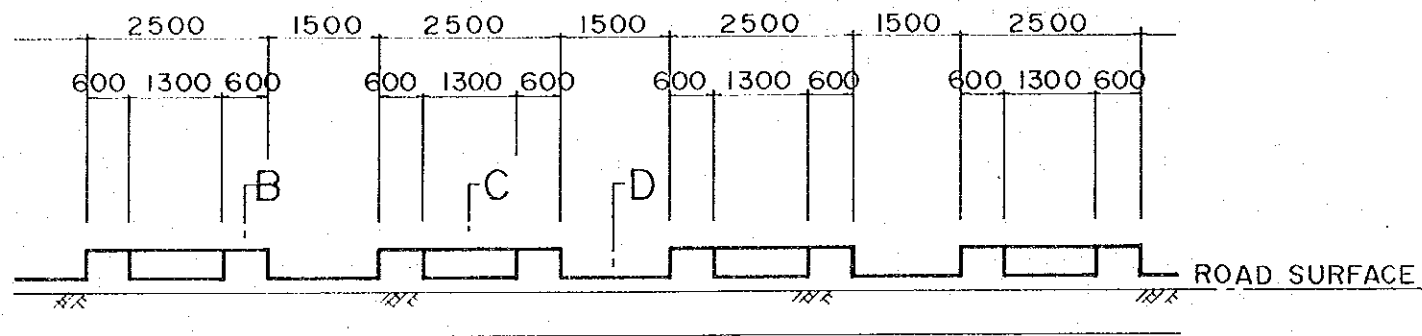
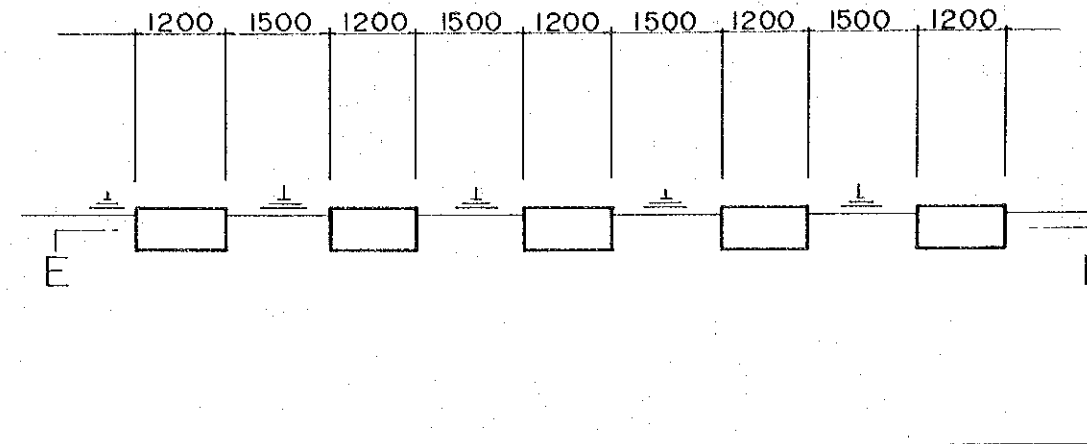
PARAPET TYPE A

PLAN



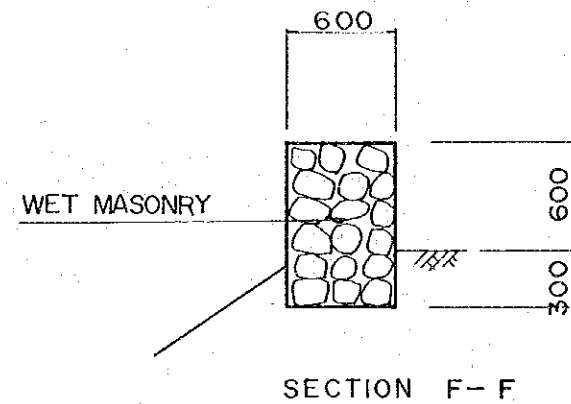
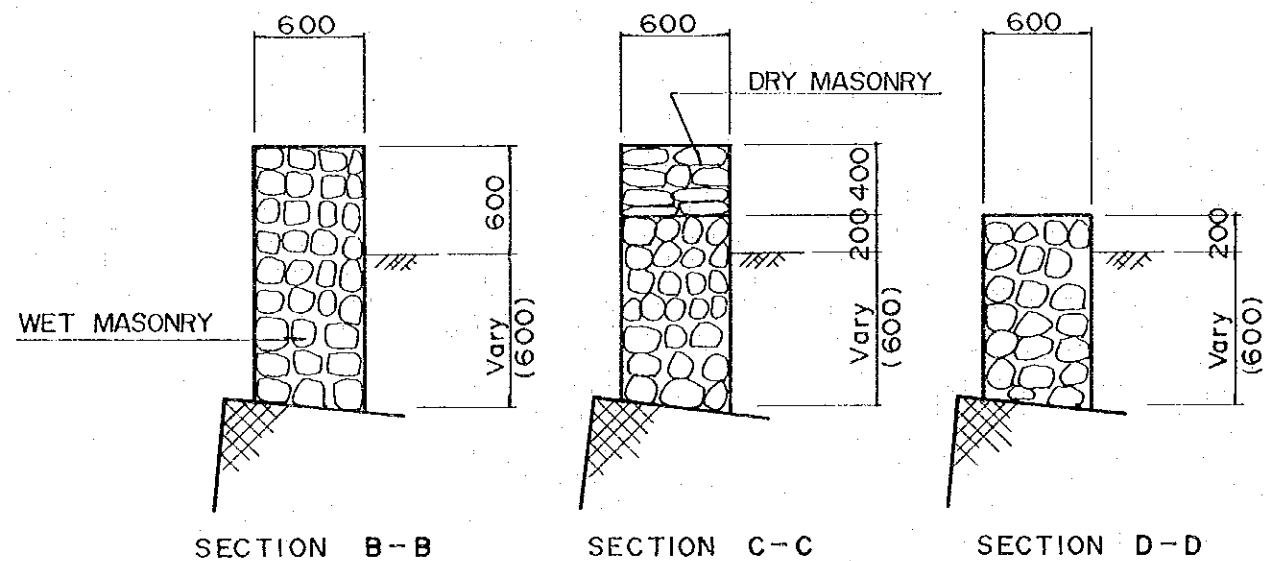
PARAPET TYPE B

PLAN



SECTION A-A

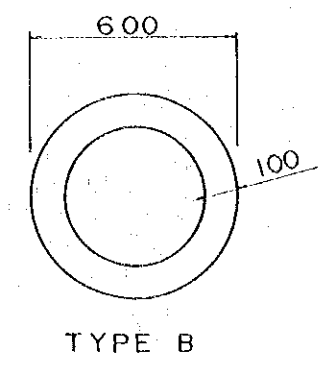
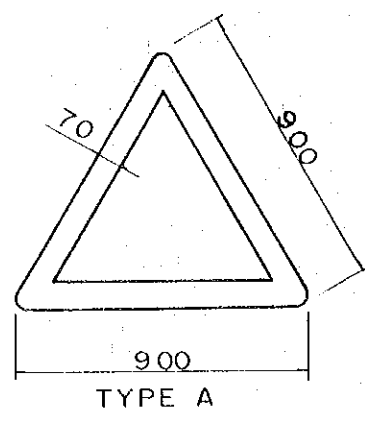
SECTION E-E



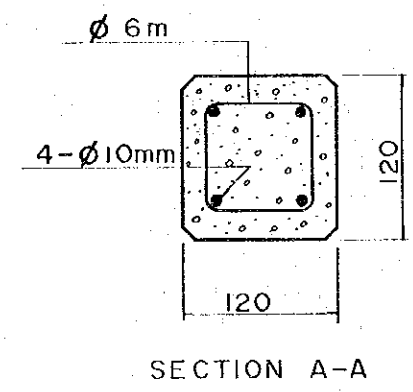
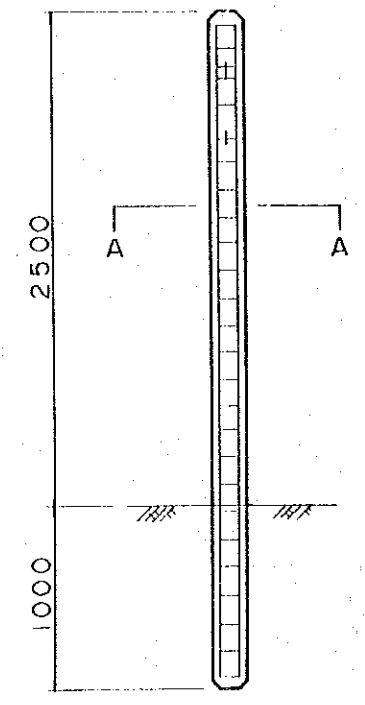
STONE MASONRY PARAPET

HIS MAJESTY'S GOVERNMENT OF NEPAL MINISTRY OF WORKS AND TRANSPORT DEPARTMENT OF ROADS	
AFTERCARE STUDY FOR SINDHULI ROAD CONSTRUCTION PROJECT	
MISCELLANEOUS WORKS STONE MASONRY PARAPET	SHEET NO. F-1
SCALE:	DATE:
JAPAN INTERNATIONAL COOPERATION AGENCY	

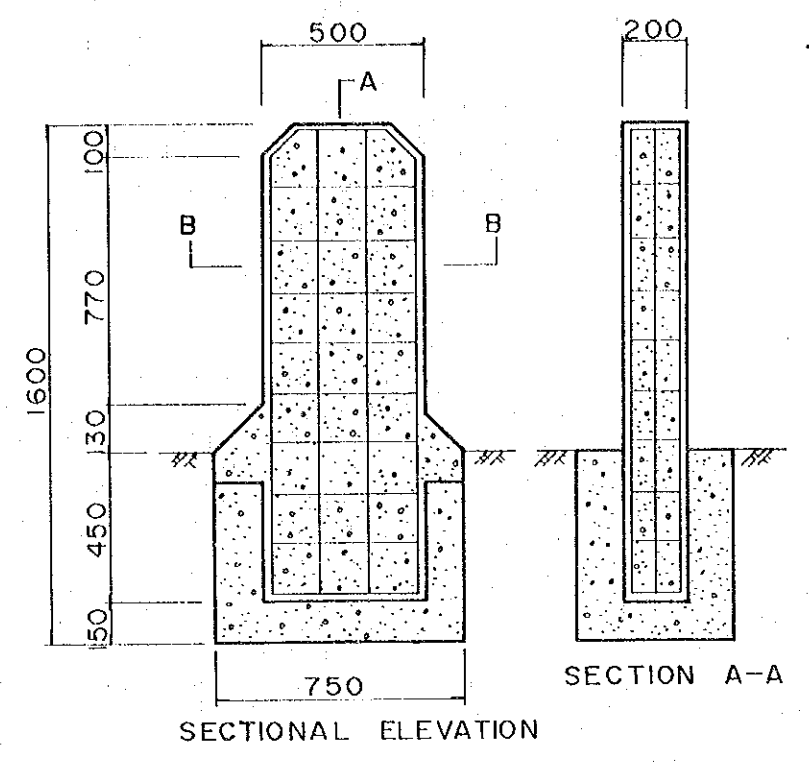




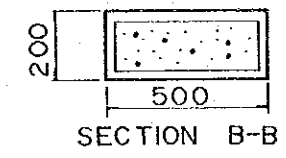
ROAD TRAFFIC SIGN



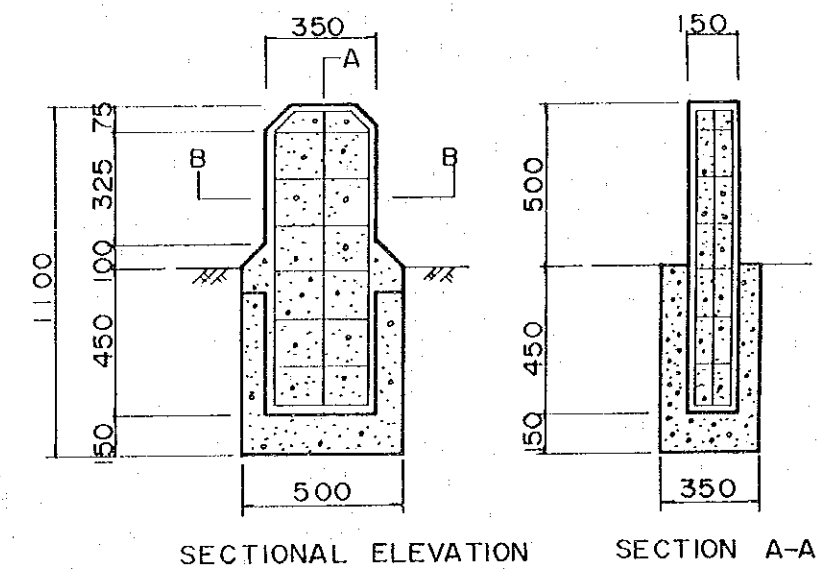
CONCRETE POST



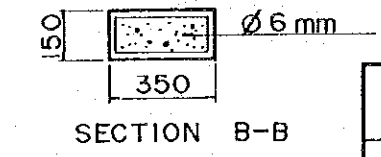
SECTIONAL ELEVATION



DISTANCE SIGN 5KM



SECTIONAL ELEVATION



DISTANCE SIGN 1KM

HIS MAJESTY'S GOVERNMENT OF NEPAL MINISTRY OF WORKS AND TRANSPORT DEPARTMENT OF ROADS	
AFTERCARE STUDY FOR SINDHULI ROAD CONSTRUCTION PROJECT	
MISCELLANEOUS WORKS TRAFFIC SIGN & DISTANCE SIGN	SHEET NO. F - 2
SCALE	DATE
JAPAN INTERNATIONAL COOPERATION AGENCY	



JICA