

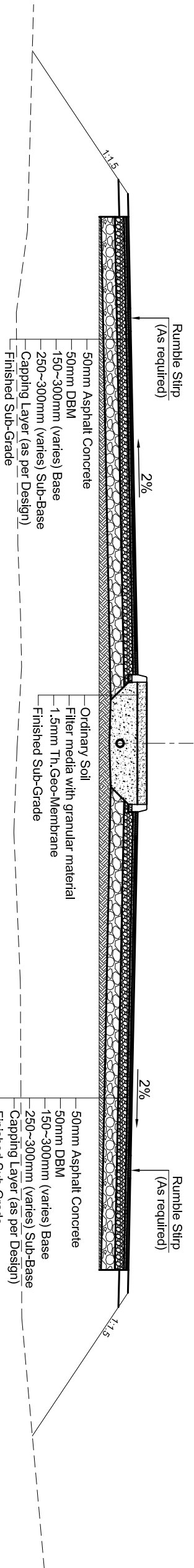
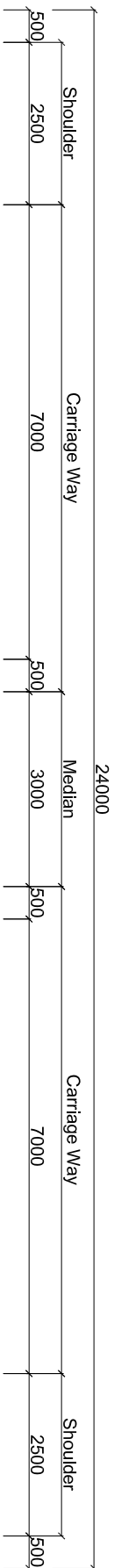
CONTENTS

S.No.	DESCRIPTION	DWG. NO.	NO. OF SHEETS
1.	Typical Cross Section	1	9
2.	Typical Section of Bridge	2	4
3.	Typical Drain	3	3
4.	Typical Box Culvert	4	9
5.	Typical Retaining Wall	5.1	1
	Typical Earth Reinforced Wall	5.2	2
6.	Typical Bio - Engineering	6	8
7.	Typical Electrical Drawing	7	8
8.	Typical Bus Shed	8	3
9.	Typical Vegetable Shed	9	2
10.	Smart Rest Room	10	5
11.	Typical Pedestrian Crossing	11	8
12.	Typical Accomodation Building	12	3
13.	Plan of Side Drain	13	28

Lane Distribution (Road-3) with Pavement Composition													
S.No	Chainage		Lane Type			Remarks	Total Pavement Thickness	Adopted Pavement Composition				Subgrade replaced with Sub-base	
	From	To	4 (Rural)	Semi Urban	6 (Urban)			Sub-base	Base	DBM	AC		
1	590+000	590+220		220		Both side	600	300	200	50	50		
2	590+220	591+400		1180		Left	600	300	200	50	50		
3	591+400	593+000			1600		600	300	200	50	50		
3	593+000	595+920			2920		500	250	150	50	50		
4	595+920	596+000		80		Left	500	250	150	50	50		
4	596+000	596+480		480		Left	600	300	200	50	50		
5	596+480	597+000			520		600	300	200	50	50		
5	597+000	597+380			380		500	250	150	50	50		
6	597+380	600+000		2620		Both side	500	250	150	50	50		
6	600+000	601+000		1000		Both side	600	300	200	50	50		
6	601+000	601+650		650		Both side	700	300	300	50	50		
7	601+650	602+000			350		700	300	300	50	50		
7	602+000	603+440			1440		600	300	200	50	50		
8	603+440	603+940		500		Left	600	300	200	50	50		
9	603+940	604+000			60		600	300	200	50	50		
9	604+000	604+600			600		500	250	150	50	50		
10	604+600	605+060	460				500	250	150	50	50		
11	605+060	606+580			1520	Both side	500	250	150	50	50		
12	606+580	607+000	420				500	250	150	50	50		
12	607+000	607+290	290				700	300	300	50	50	250	
13	607+290	608+000		710		Both side	700	300	300	50	50	250	
13	608+000	610+900		2900		Both side	700	300	300	50	50		
14	610+900	611+000	100				700	300	300	50	50		
14	611+000	611+190	190				500	250	150	50	50		
15	611+190	611+820		630		Both side	500	250	150	50	50		
16	611+820	612+000	180				500	250	150	50	50		
16	612+000	613+000	1000				600	300	200	50	50		
16	613+000	614+000	1000				500	250	150	50	50		
16	614+000	616+000	2000				700	300	300	50	50	100	
16	616+000	617+720	1720				500	250	150	50	50		
17	617+720	620+000			2280		500	250	150	50	50		
17	620+000	621+000			1000		600	300	200	50	50	100	
17	621+000	621+500			500		500	250	150	50	50		
18	621+500	622+220	720				500	250	150	50	50		
19	622+220	623+000		780		Both side	500	250	150	50	50		
19	623+000	623+300		300		Both side	600	300	200	50	50		
20	623+300	623+700	400			Right-side	600	300	200	50	50		
21	623+700	624+120	420				600	300	200	50	50		
22	624+120	625+000		880		Both side	600	300	200	50	50		
22	625+000	626+820		1820		Both side	700	300	300	50	50		
23	626+820	626+900		80		Left	700	300	300	50	50		
24	626+900	627+000	100				700	300	300	50	50		
24	627+000	628+000	1000				600	300	200	50	50		
24	628+000	629+000	1000				700	300	300	50	50		
24	629+000	631+000	2000				500	250	150	50	50		
24	631+000	633+000	2000				600	300	200	50	50		
24	633+000	635+000	2000				400	150	150	50	50		
24	635+000	635+140	140				700	300	300	50	50	100	
25	635+140	636+000			860		700	300	300	50	50	100	
25	636+000	636+500			500		700	300	300	50	50		
26	636+500	636+820	320				700	300	300	50	50		
27	636+820	637+000		180		Both side	700	300	300	50	50		
27	637+000	637+440		440		Both side	600	300	200	50	50		
28	637+440	638+000	560			Left	600	300	200	50	50		
28	638+000	640+000	2000			Left	760	300	300	100	60	100	
TOTAL LENGTH			19620	15850	14530								

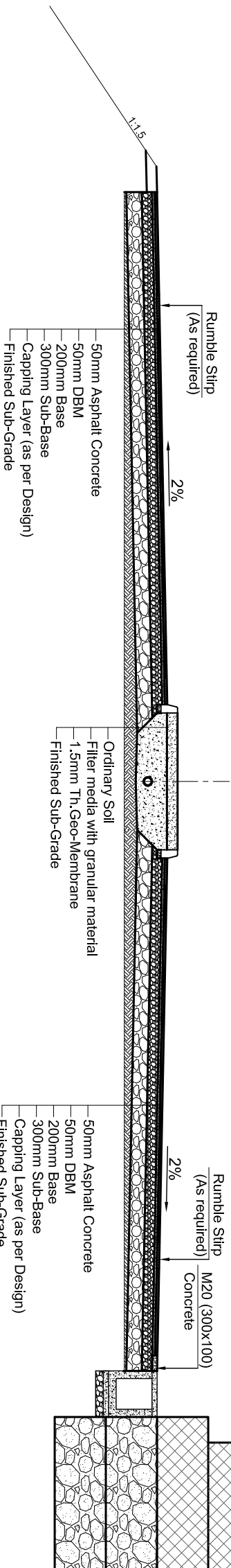
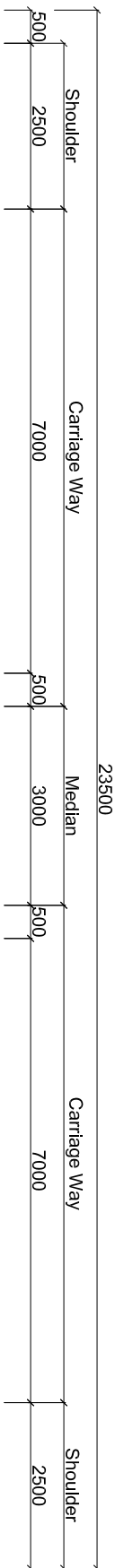
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP			CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERMCo P (Ltd), Nepal and JYK-Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01)		SHEET TITLE: Lane Distribution with Pavement Design		SCALE:		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022	
											S.B. Shrestha					DWG.NO.: 1	
											P. Upadhyaya					CHECKED BY:	
											Dr. T.H.Choi					APPROVED BY:	
																SHEET NO.: 1	
																1	

TCS - 01 at (Rural Area)



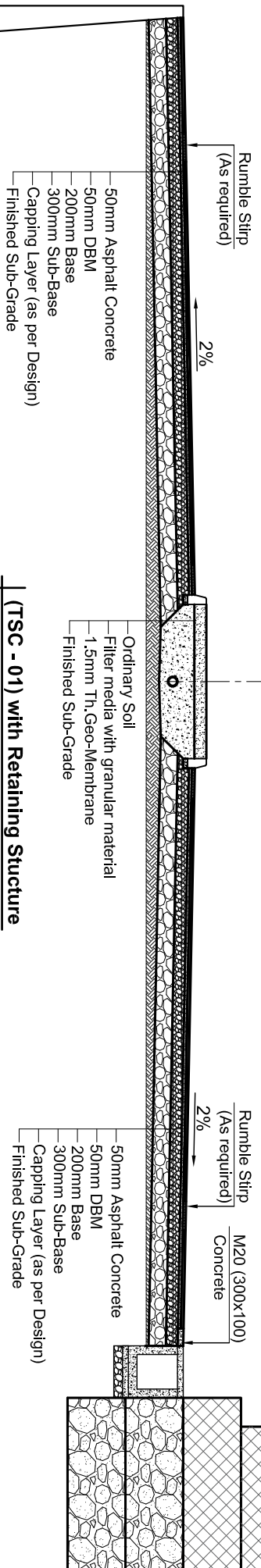
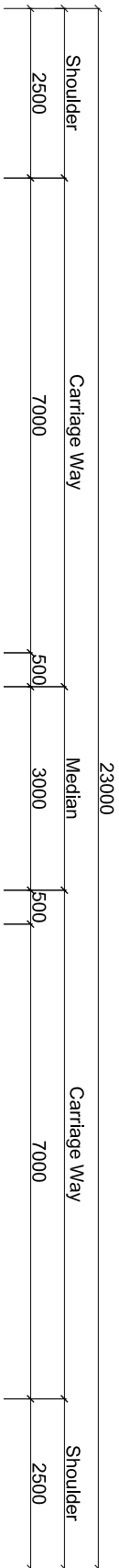
(TSC - 01) at Filling Area

Scale:-1:100



(TSC - 01) at with Side Hill Area

Scale:-1:100

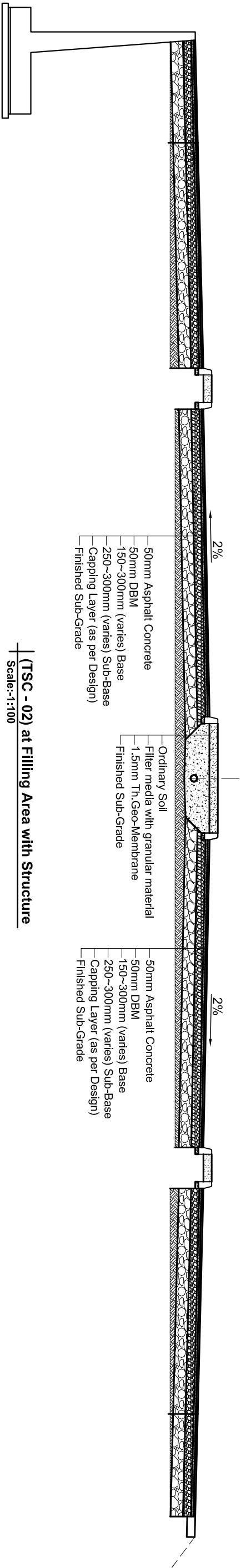


(TSC - 01) with Retaining Structure

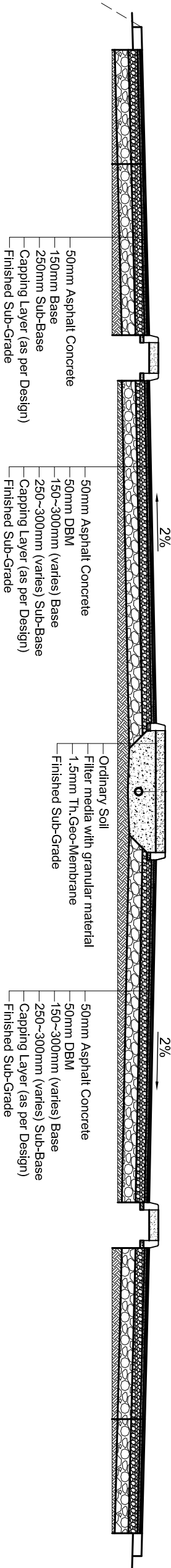
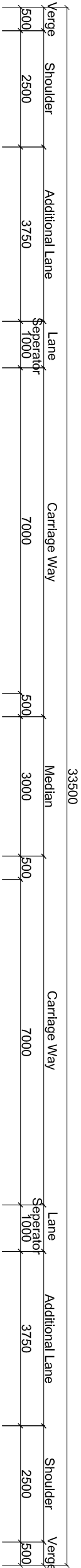
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Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd), Nepal and JYK-Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01)		SHEET TITLE: Typical Cross Section (TSC)		SCALE: As Shown		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022
										DESIGNED BY: S.B. Shrestha					DWG.NO.: 1
										CHECKED BY: P. Upadhyaya					SHEET NO.: 2
										APPROVED BY: Dr. T.H.Choi					

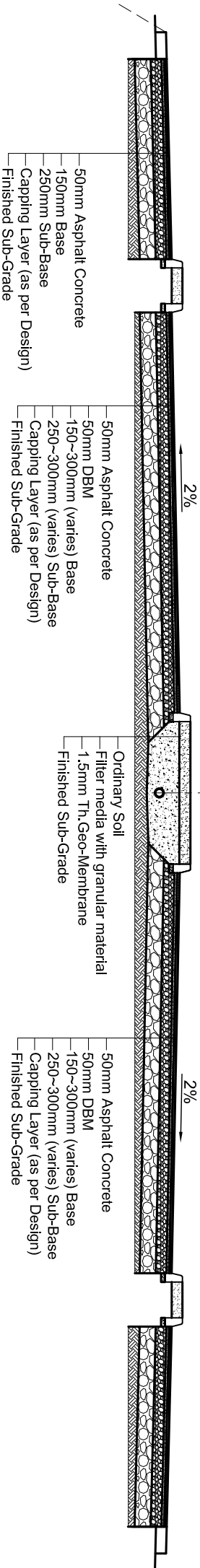
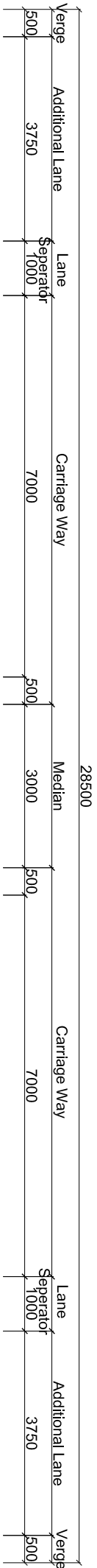
TCS - 02 at (Semi - Urban Area)



(TSC - 02) at Filling Area with Structure
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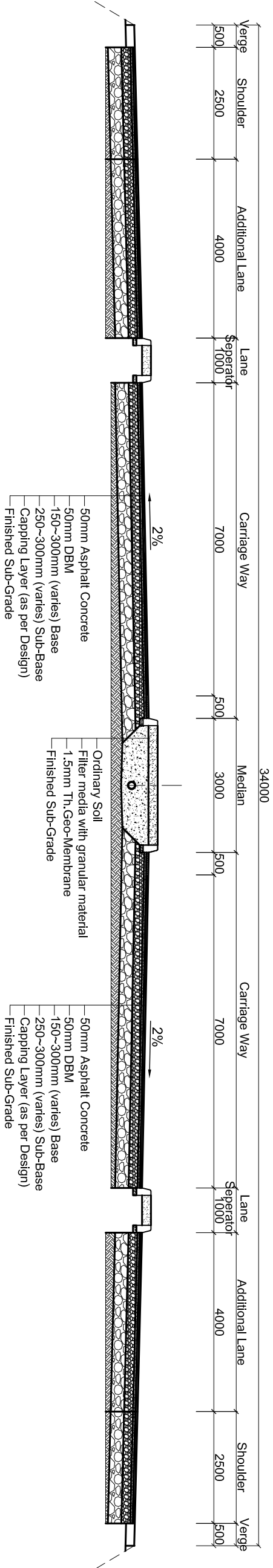
(TSC - 02) at Filling Area
Scale::1:100



(TSC - 02) at Filling Area with Additional Lane
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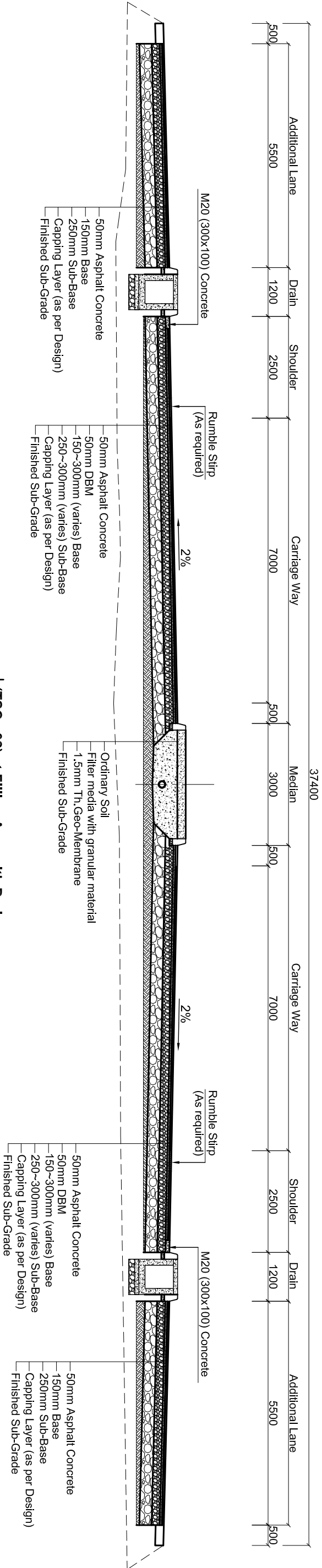
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NP	CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022 DWG.NO.: 1 SHEET NO.: 3
	Soosung Engineering Co. Ltd, Korea In association with		DOR, DCID		Typical Cross Section (TSC)		As Shown		S.B. Shrestha		<i>S.B. Shrestha</i>			
	ERMIC P (Ltd), Nepal and		ROAD NAME:						P. Upadhyaya		<i>P. Upadhyaya</i>			
	JYU-Tech Studio of Engineering		East West Highway (H01)						CHECKED BY:					
	Butwal - Gorusinghe Section								APPROVED BY:		<i>Dr. T.H. Choi</i>			

TCS - 02 at (Semi - Urban Area)



(TSC - 02) at Transition Lane

Scale:-1:100

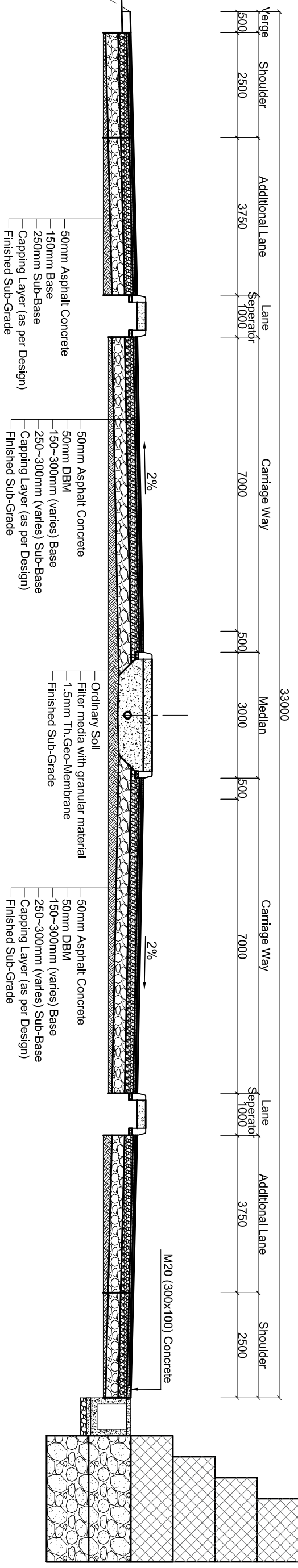


(TSC - 02) at Filling Area with Drain

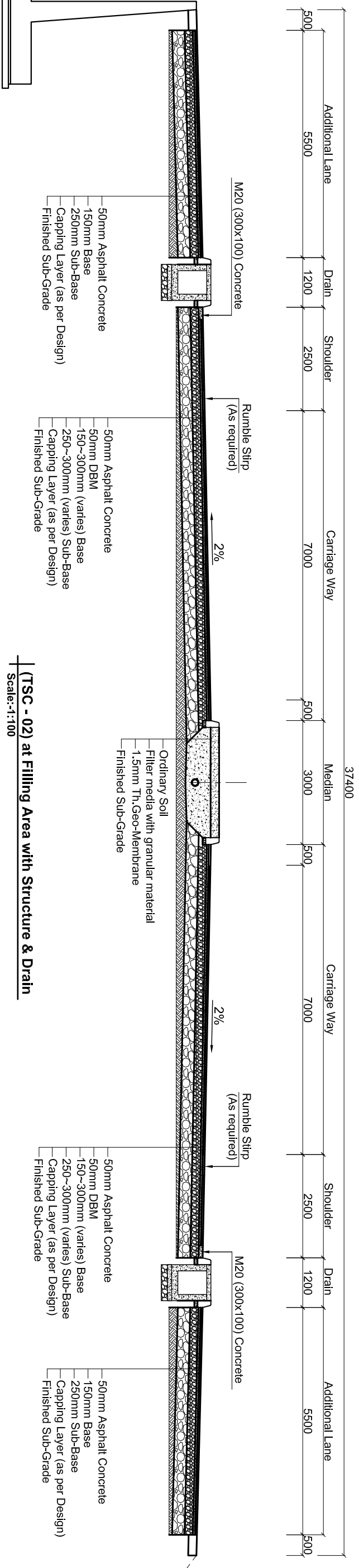
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Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NP		CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd), Nepal and JYK-Tech Studio of Engineering	IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01)		SHEET TITLE: Typical Cross Section (TSC)		SCALE: As Shown		DESIGNED BY: S.B. Shrestha	Signature	REV NO.	DESCRIPTION	DATE: November, 2022	
			Butwal - Gorusinghe Section						CHECKED BY: P. Upadhyaya	PLC				DWG.NO.: 1
									APPROVED BY: Dr. T.H.Choi	THC				SHEET NO.: 4

TCS - 02 at (Semi - Urban Area)

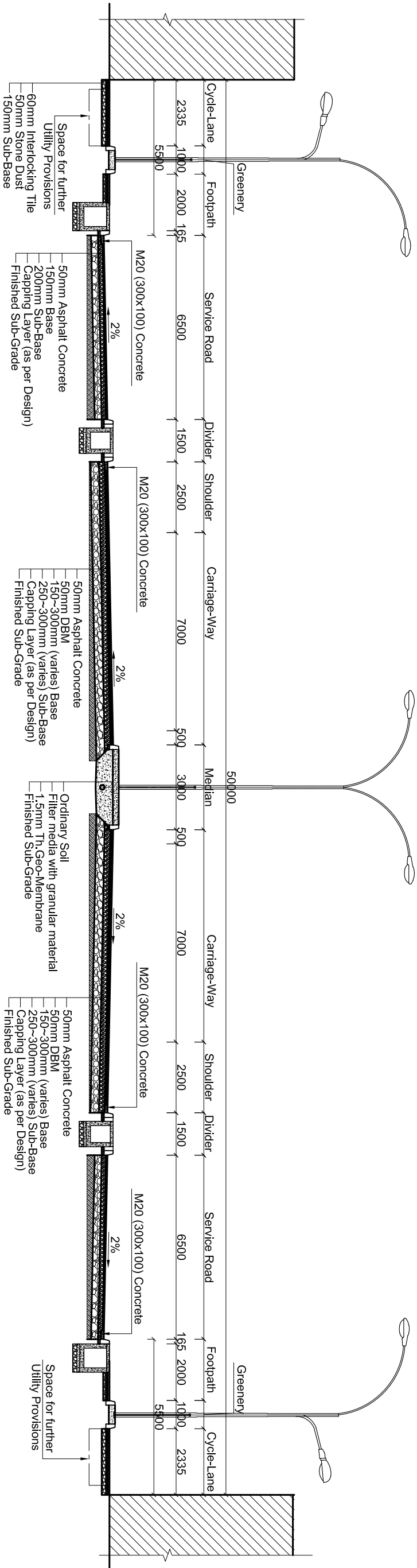


(TSC - 02) at Hill Area with Additional Lane
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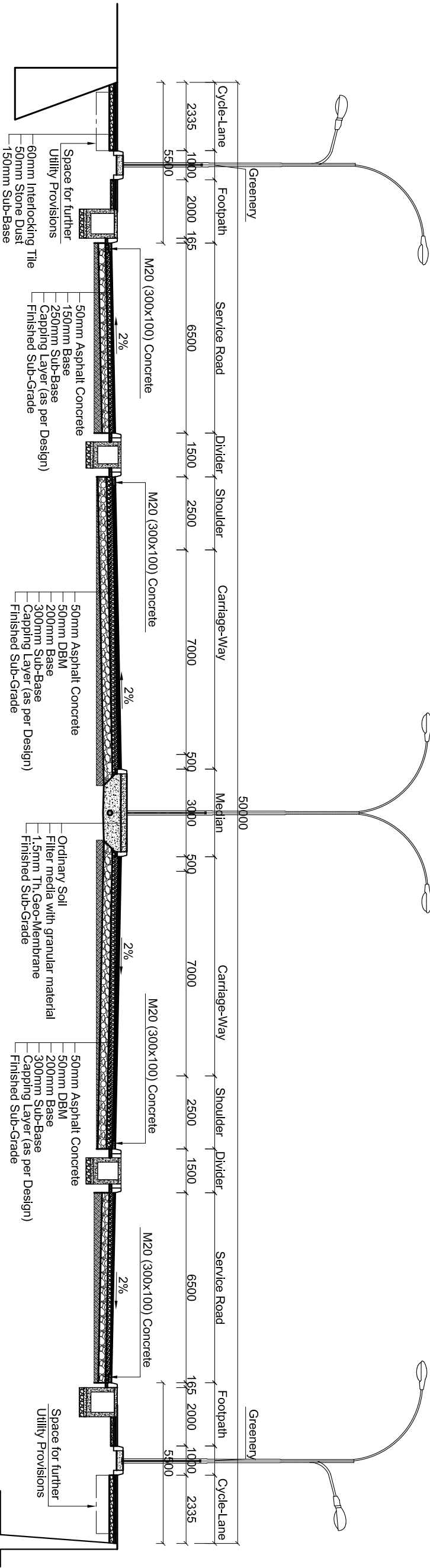


Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No. 3722-NEP	CONSULTANT:	Soosung Soosung Engineering Co. Ltd, Korea in association with ERMC P (Ltd), Nepal and JYE-Tech Studio of Engineering							
	IMPLEMENTING AGENCY:	DOR, DCID	SHEET TITLE:	SCALE:	NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022
		ROAD NAME:							
		East West Highway (H01)							
		Butwal - Gorusinghe Section							
Typical Cross Section (TSC)		As Shown	DESIGNED BY:	S.B. Shrestha				DWG. NO.: 1	
		CHECKED BY:	P. Upadhyaya					SHEET NO.: 5	
		APPROVED BY:	Dr. T.H.Choi						

TCS - 03 at (Urban Area)



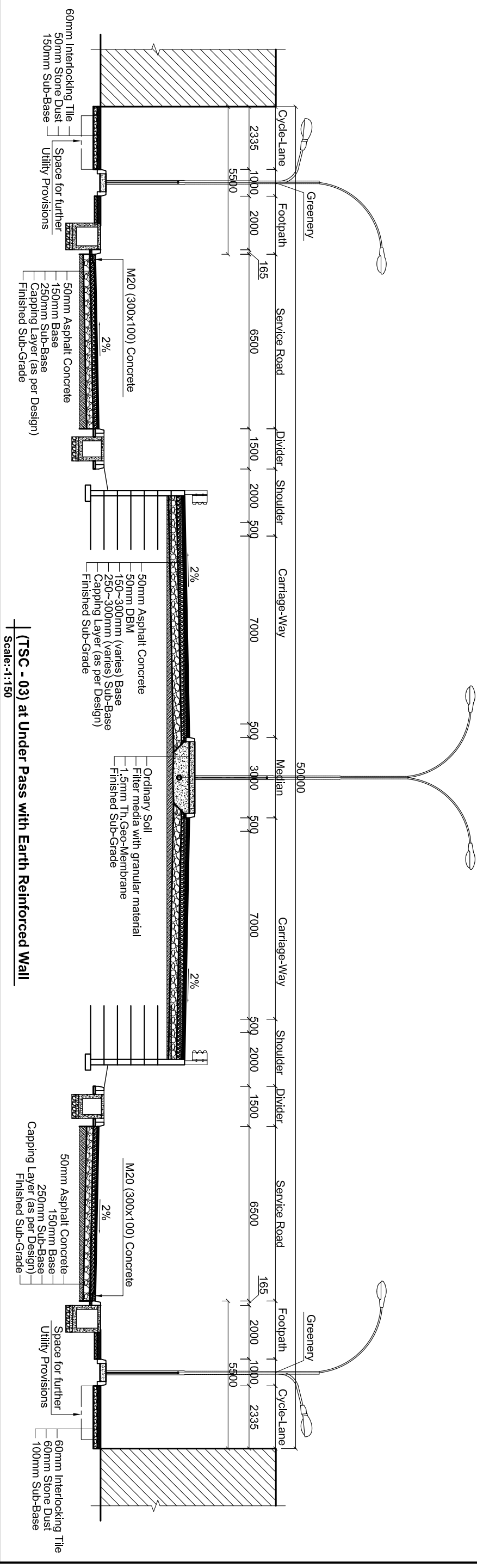
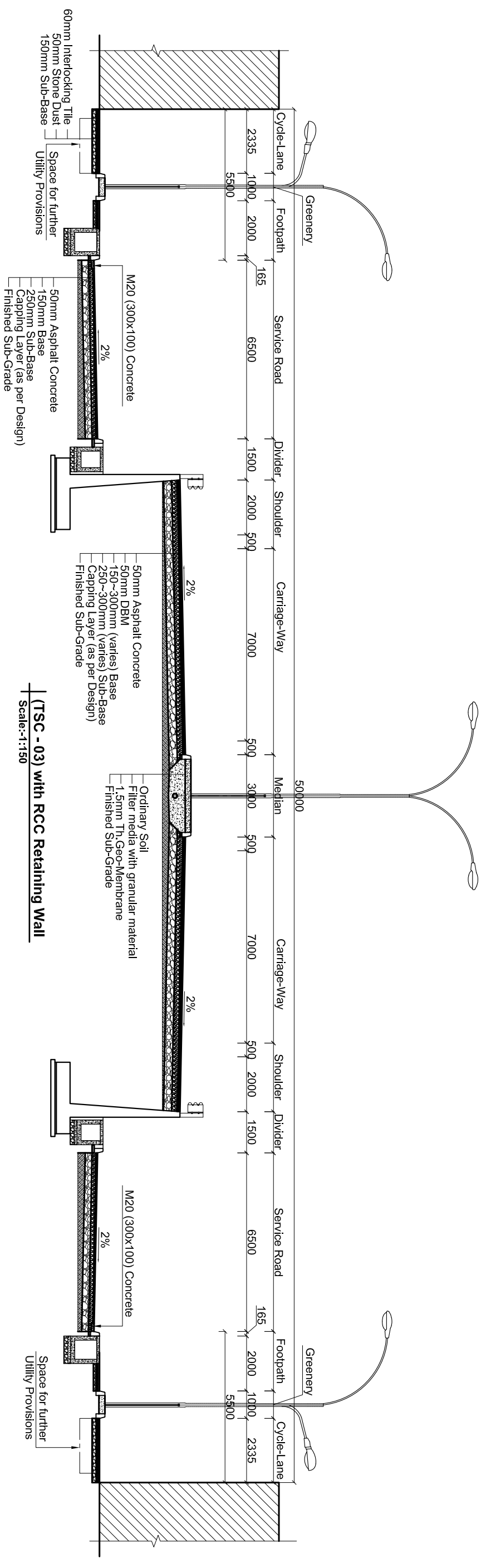
(TSC - 03) with Drains & Footpath
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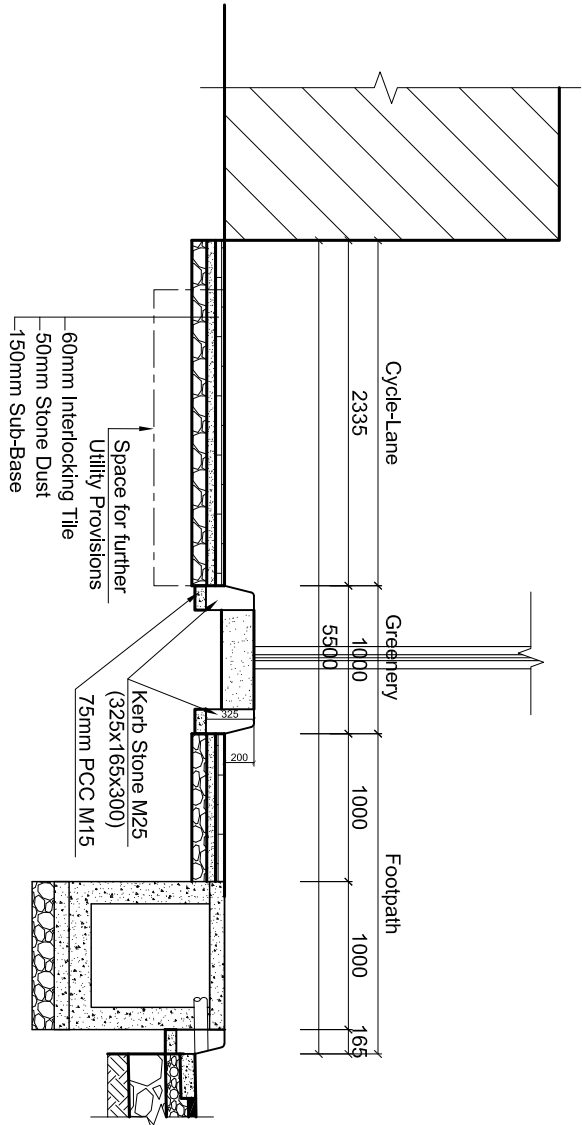
(TSC - 03) with Structures
Scale:-1:150

Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd), Nepal and JYK-Tech Studio of Engineering	IMPLEMENTING AGENCY:	SHEET TITLE:	SCALE:		NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
											DOR, DCID	ROAD NAME:	Typical Cross Section (TSC)	As Shown	DESIGNED BY:	S.B. Shrestha				DWG.NO.: 1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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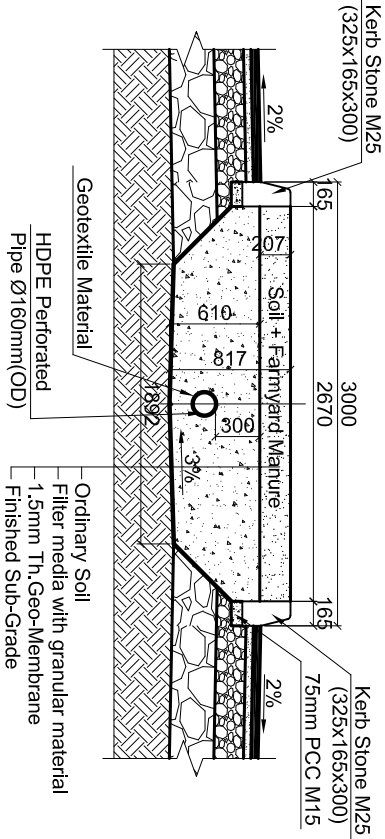
TCS - 03 at (Urban Area)



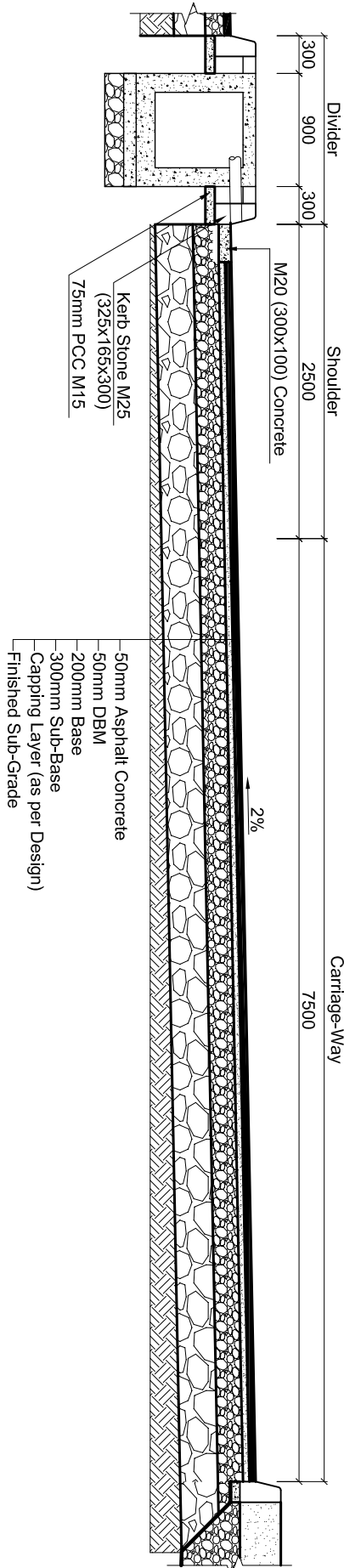
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No. 3722-NEP			CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE:	
 Soosung Soosung Engineering Co. Ltd, Korea in association with ERMC P (Ltd), Nepal and  3MTE-Tech Studio of Engineering		DOR, DCID		Typical Cross Section (TSC)		As Shown		DESIGNED BY:		S.B. Shrestha								November, 2022		
								ROAD NAME:								DWG. NO.:				
								East West Highway (H01)								1				
								Butwal - Gorusinghe Section								SHEET NO.:				
								APPROVED BY:		Dr. T.H.Choi								7		



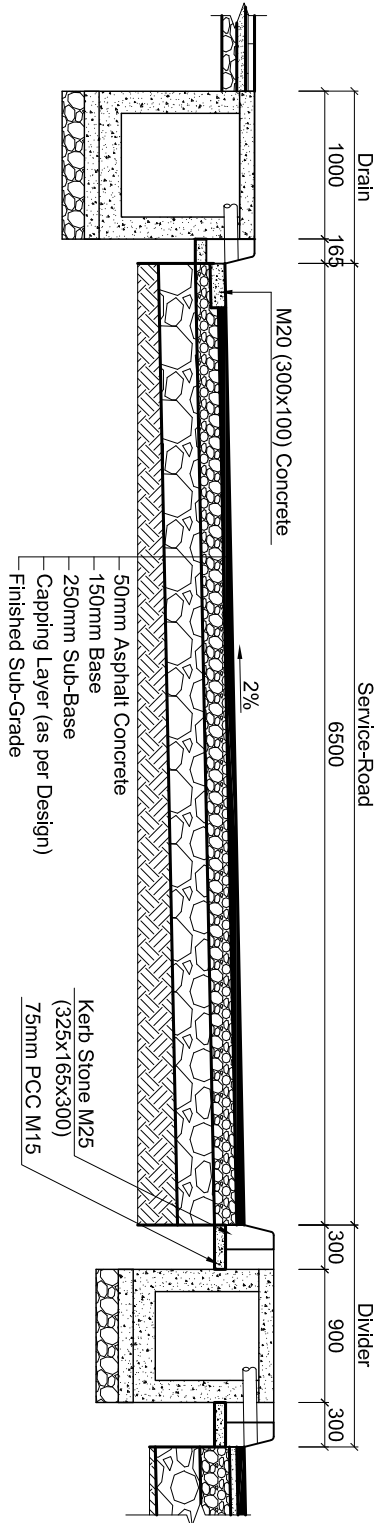
Footpath Detail
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Median Detail
Scale:-1:50



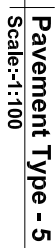
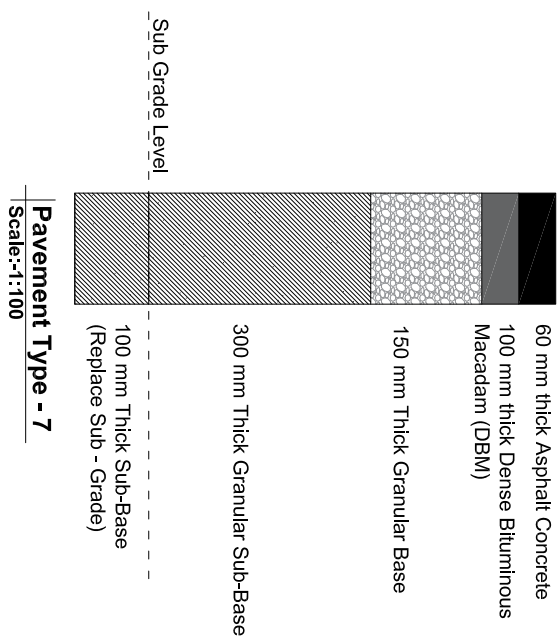
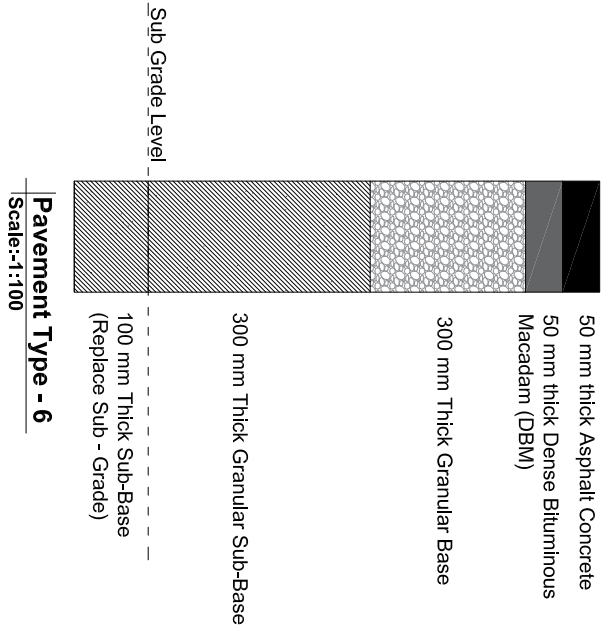
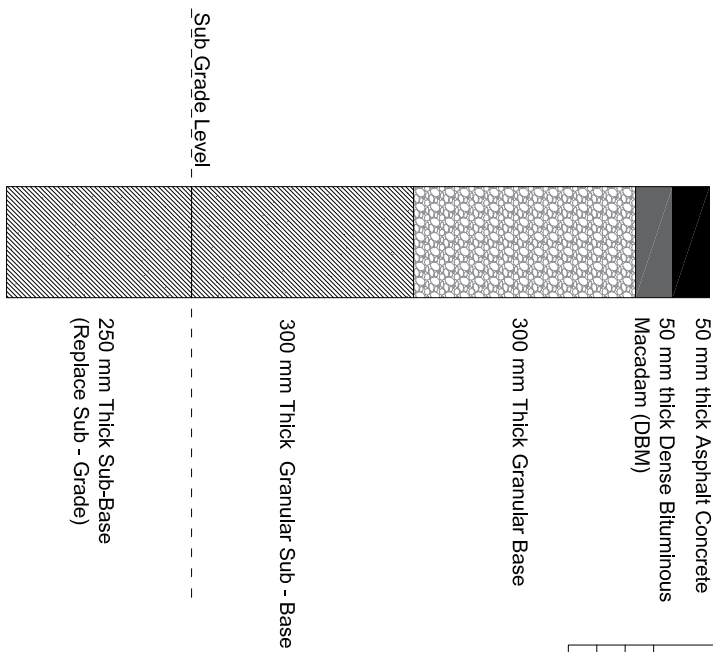
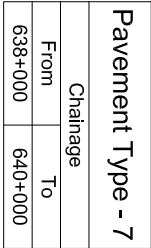
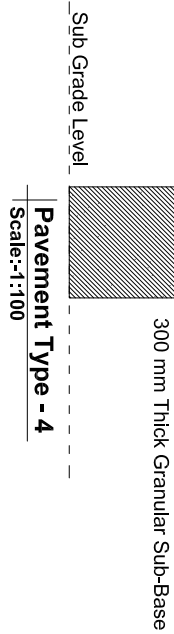
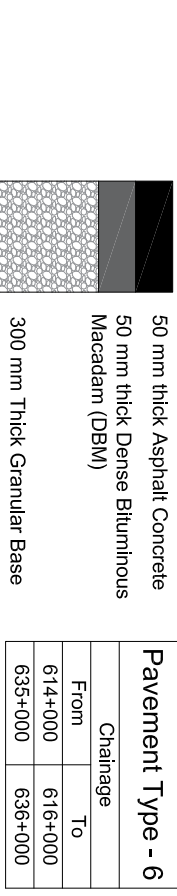
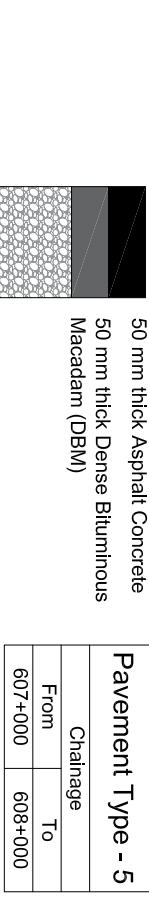
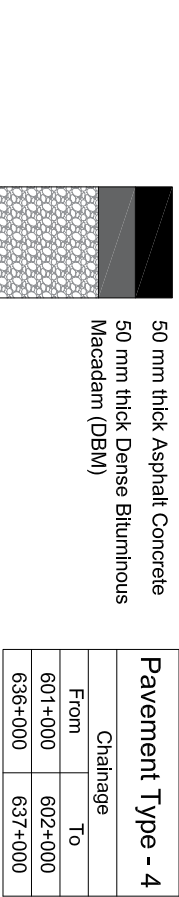
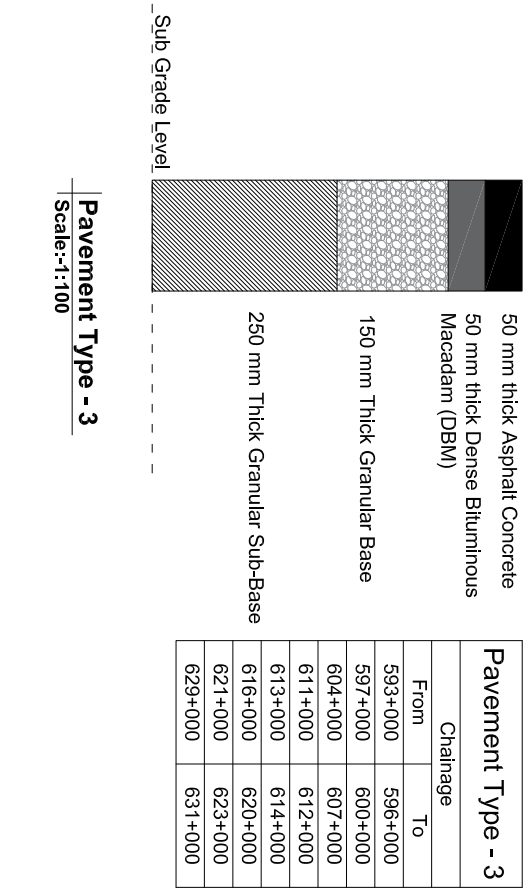
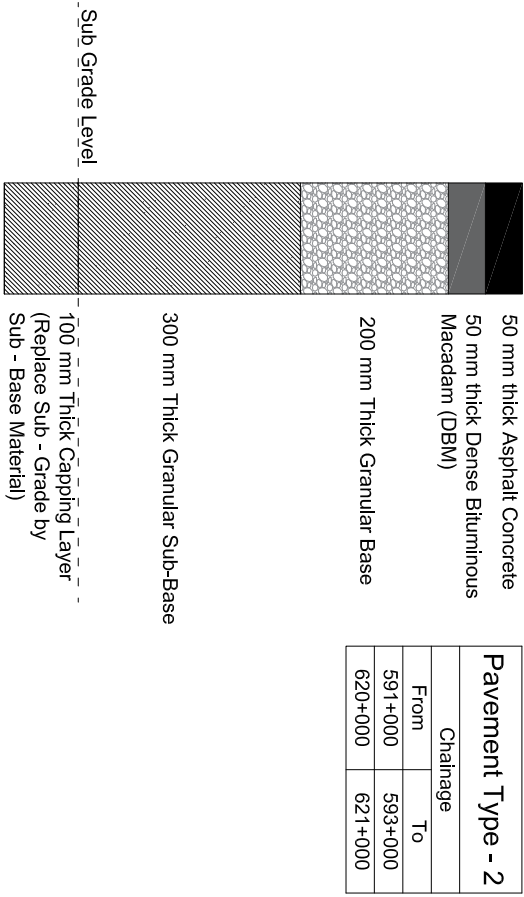
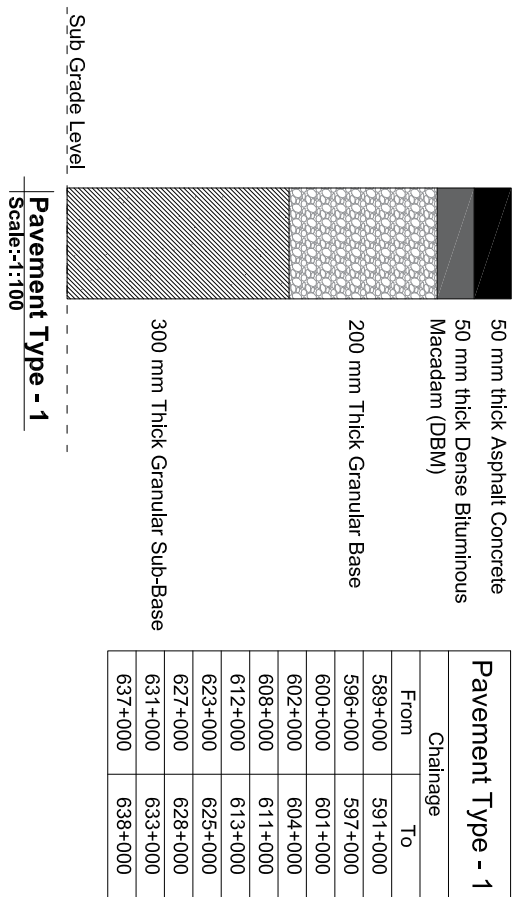
Main Carriage Way Detail
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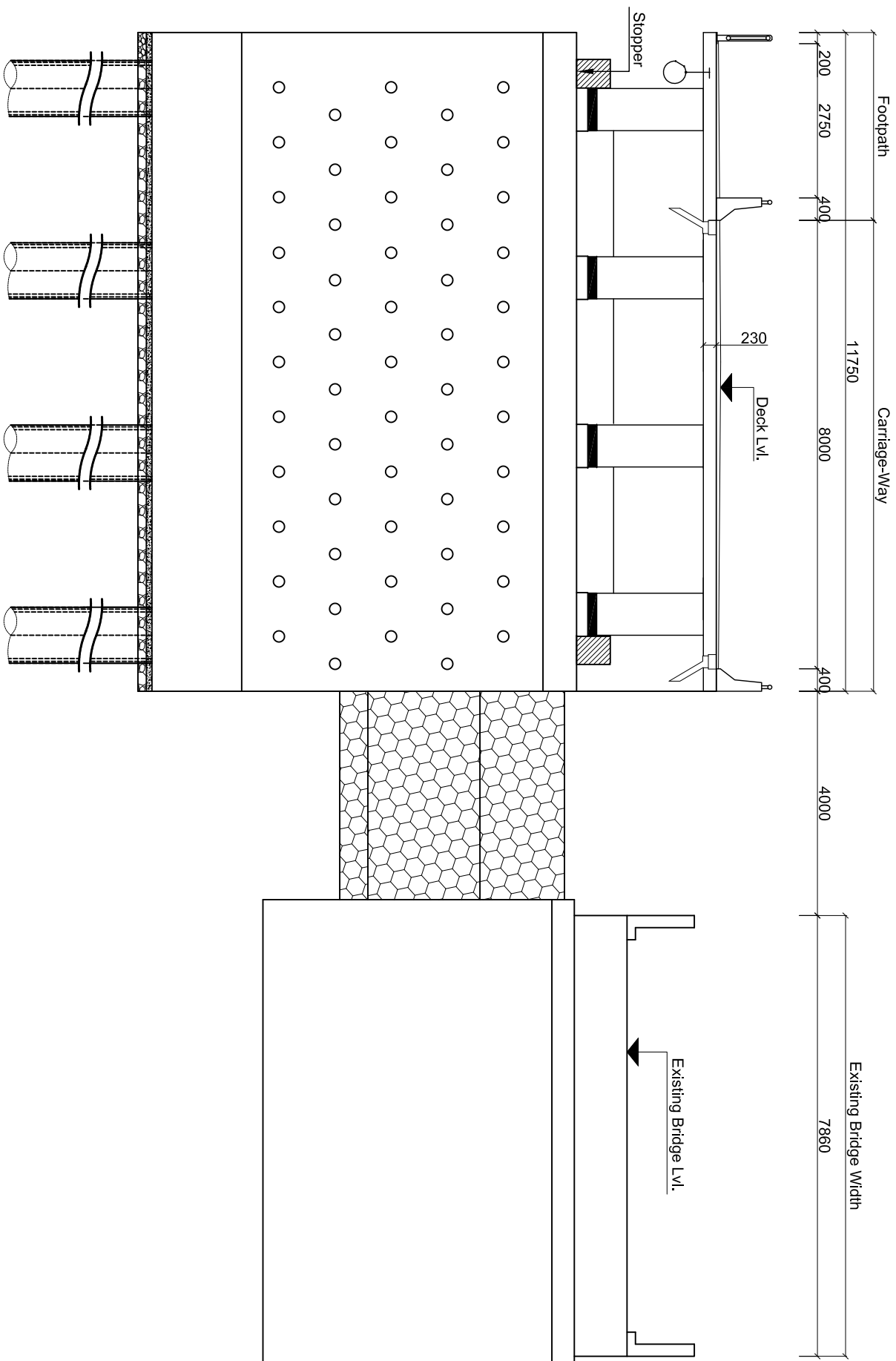
Service Road Detail
Scale:-1:50

S. No.	Chainage		Type of X-section
	From	To	
1	590+000	590+180	TCS - 02
2	590+180	590+220	TCS - 02
3	590+220	591+400	TCS - 01
4	591+400	591+540	TCS - 02
5	591+540	595+820	TCS - 03
6	595+820	595+930	TCS - 03
7	595+930	596+480	TCS - 02
8	596+480	596+610	TCS - 03
9	596+610	597+350	TCS - 03
10	597+350	597+380	TCS - 03
11	597+380	597+464	TCS - 01
12	597+464	597+680	TCS - 02
13	597+680	601+650	TCS - 02
14	601+650	603+420	TCS - 03
15	603+420	603+970	TCS - 02
16	603+970	604+510	TCS - 03
17	604+510	605+060	TCS - 01
18	605+060	606+580	TCS - 02
19	606+580	607+290	TCS - 01
20	607+290	610+760	TCS - 02
21	610+760	611+190	TCS - 01
22	611+190	611+300	TCS - 02
23	611+300	611+510	TCS - 01
24	611+510	611+790	TCS - 02
25	611+790	617+800	TCS - 01
26	617+800	621+500	TCS - 03
27	621+500	622+225	TCS - 02
28	622+225	623+270	TCS - 02
29	623+270	623+300	TCS - 02
30	623+300	623+700	TCS - 02
31	623+700	625+150	TCS - 01
32	625+150	626+820	TCS - 02
33	626+820	626+900	TCS - 02
34	626+900	635+220	TCS - 01
35	635+220	636+500	TCS - 03
36	636+500	636+850	TCS - 01
37	636+850	637+410	TCS - 02
38	637+410	640+000	TCS - 01

Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:	 Soosung Soosung Engineering Co. Ltd, Korea in association with  ERM Co. P (Ltd), Nepal and  JYK-Tech Studio of Engineering	IMPLEMENTING AGENCY:	SHEET TITLE:	SCALE:		NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022	
	ROAD NAME:	Butwal - Gorusinghe Section	Details of Cross Section	As Shown	DESIGNED BY:	S.B. Shrestha					DWG.NO.: 1	
					CHECKED BY:	P. Upadhyaya						
					APPROVED BY:	Dr. T.H.Choi						
												SHEET NO.: 8

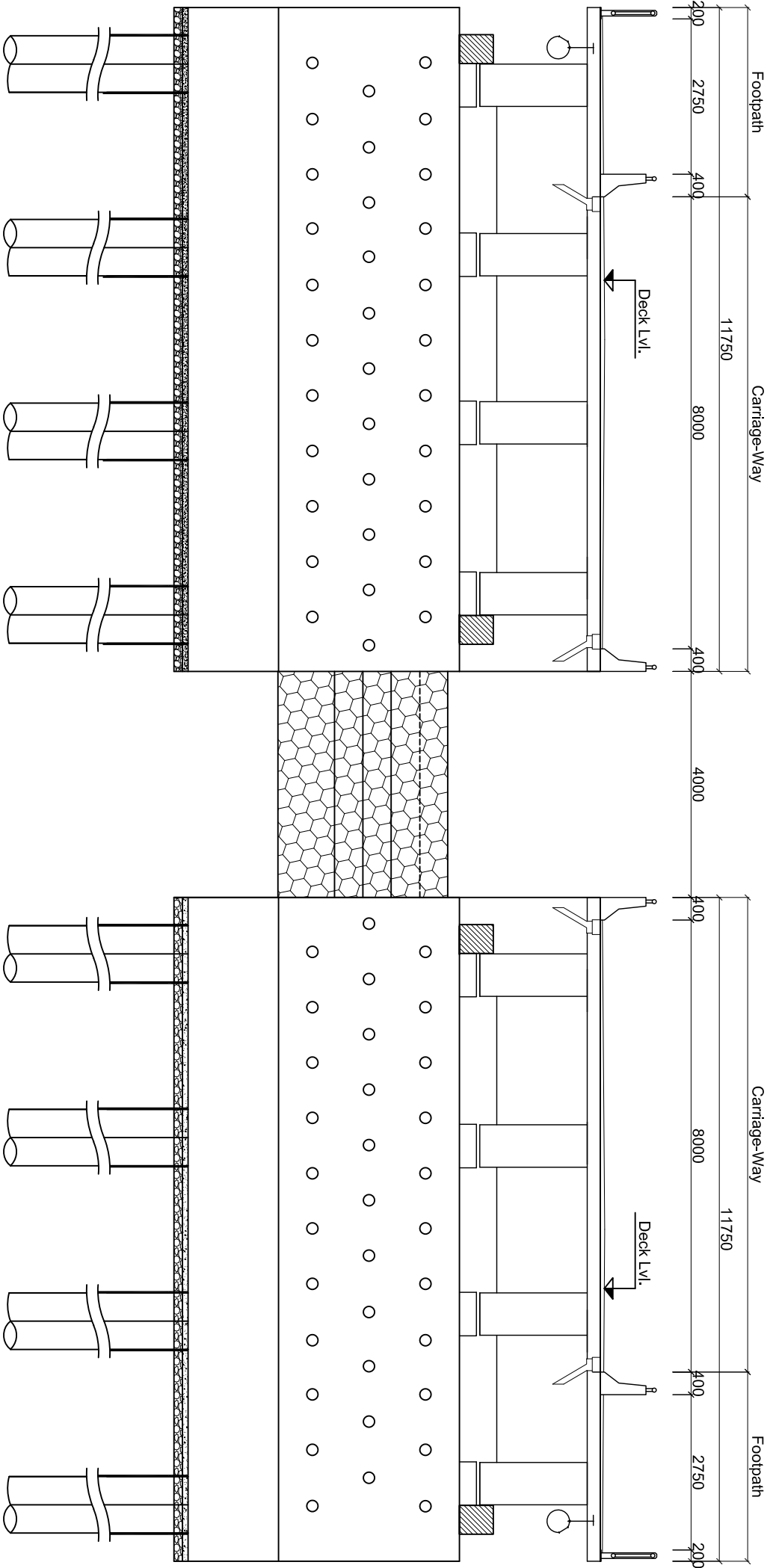


Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No.: 3722-NEP	CONSULTANT:  Soosung Engineering Co. Ltd. Korea in association with ERM/C P (Ltd) and  JYGL-Tech Studio of Engineering Nepal	IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section	SHEET TITLE: Detail of Pavement	SCALE: As Shown		NAME Suresh B. Shrestha	SIGNATURE 	REV NO.	DESCRIPTION	DATE: November, 2022			
					Designed by:							DWG.NO.: 1	
					Checked by:						P. Upadhyaya		
					Approved by:						Dr. T.H.Choi		SHEET NO.: 9



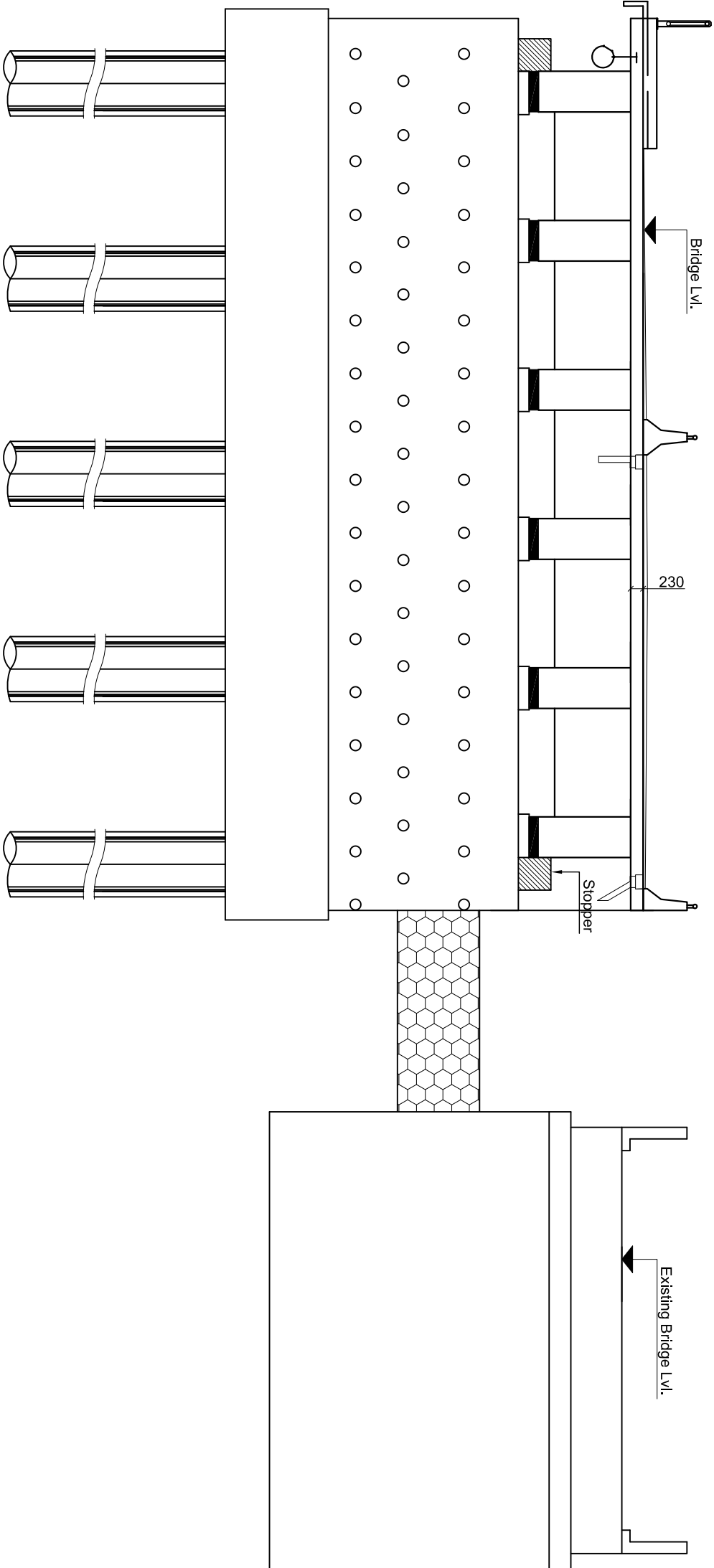
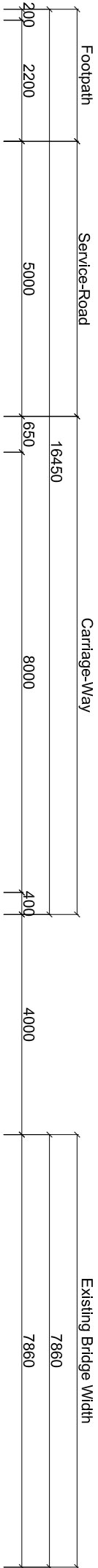
With Existing (Rural)
Scale:-1:100

Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHP-PPC) ADB Loan No: 3722-NP	CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERMCo P (Ltd) and  JYU-Tech Studio of Engineering Nepal	IMPLEMENTING AGENCY:	SHEET TITLE:	SCALE:		NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE:			
		DOR, DCID	Typical Cross Section of Rural Bridge	1:100		Designed by:	S.B. Shrestha				November, 2022		
							ROAD NAME:	Checked by:	P. Upadhyaya				DWG.NO.:
													2
		East West Highway (H01)											
		Butwal - Gorusinghe Section				Approved by:	Dr. T.H.Choi					SHEET NO.:	
												1	

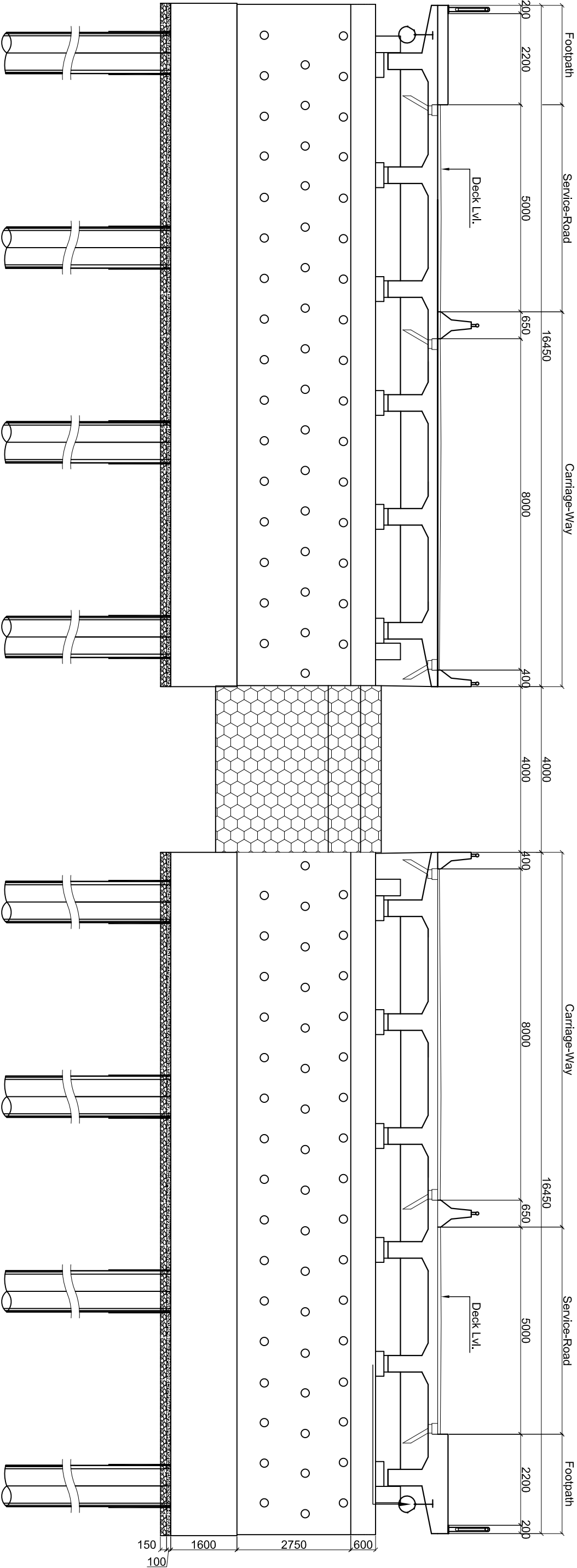


Twin Bridge (Rural)
Scale:-1:100

Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and <i>STYK</i> - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Typical Cross Section of Rural Bridge		SCALE: 1:100		Designed by:	S.B. Shrestha		REV NO.	DESCRIPTION	DATE: November, 2022
										Checked by:	P. Upadhyaya				DWG.NO.: 2
										Approved by:	Dr. T.H.Choi				SHEET NO.: 2

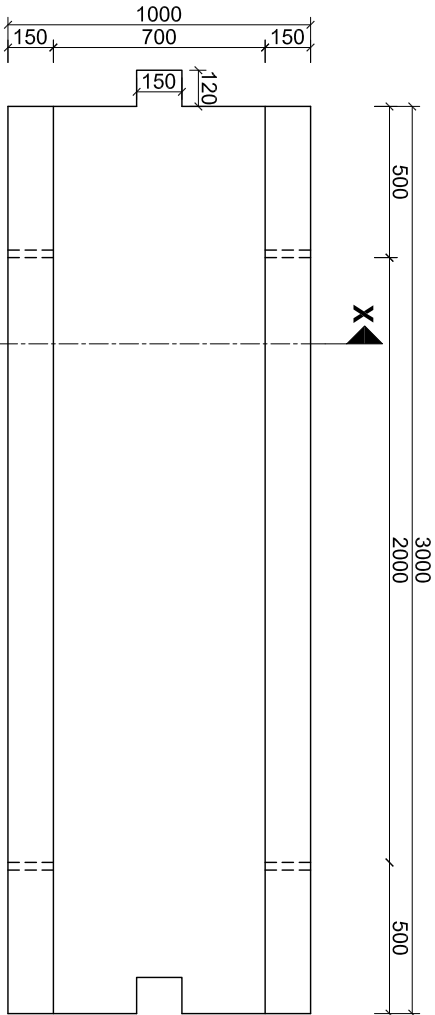


Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and JYK - Tech Studio of Engineering Nepal	IMPLEMENTING AGENCY: DOR, DCID		SHEET TITLE: Typical Cross Section of Urban Bridge	SCALE: 1:100		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022
ROAD NAME: East West Highway (H01)		Butwal - Gorusinghe Section		Designed by: S.B. Shrestha		Checked by: P. Upadhyaya		Approved by: Dr. T.H.Choi					DWG.NO.: 2
													SHEET NO.: 3

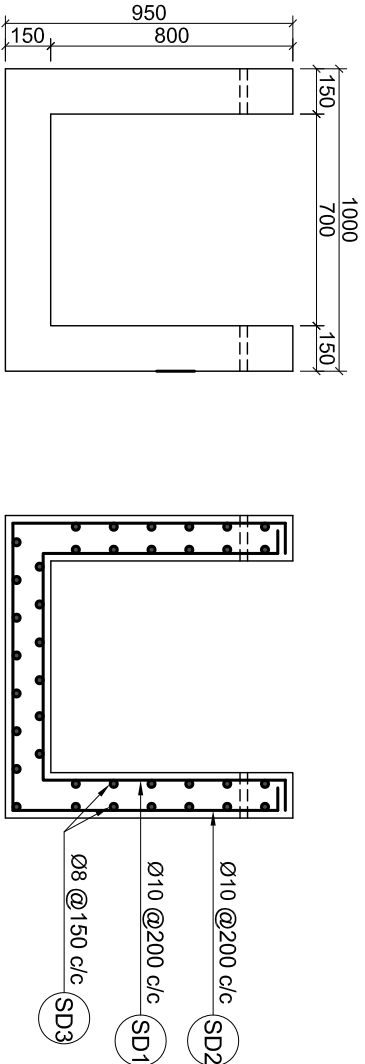


Urban/ Semi-Urban (Twin)
Scale:-1:100

Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERMCo P (Ltd) and JYK - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID		ROAD NAME: East West Highway (H01)		Butwal - Gorusinghe Section		SHEET TITLE: Typical Cross Section of Urban Bridge		SCALE: 1:100		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November, 2022		DWG.NO.: 2		SHEET NO.: 4	
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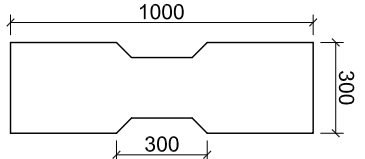


Plan (Type-1)
Scale:-1:25



Section at X-X
Scale:-1:25

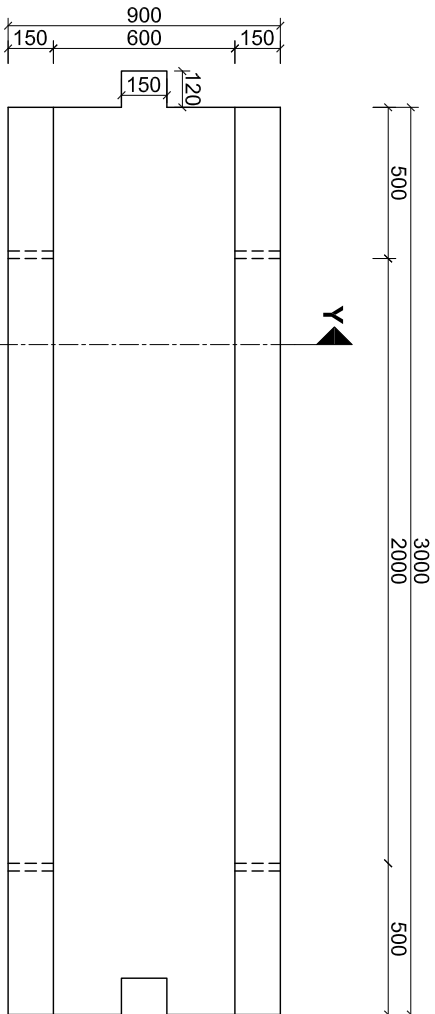
Section at X-X (With Reinforcement)
Scale:-1:25



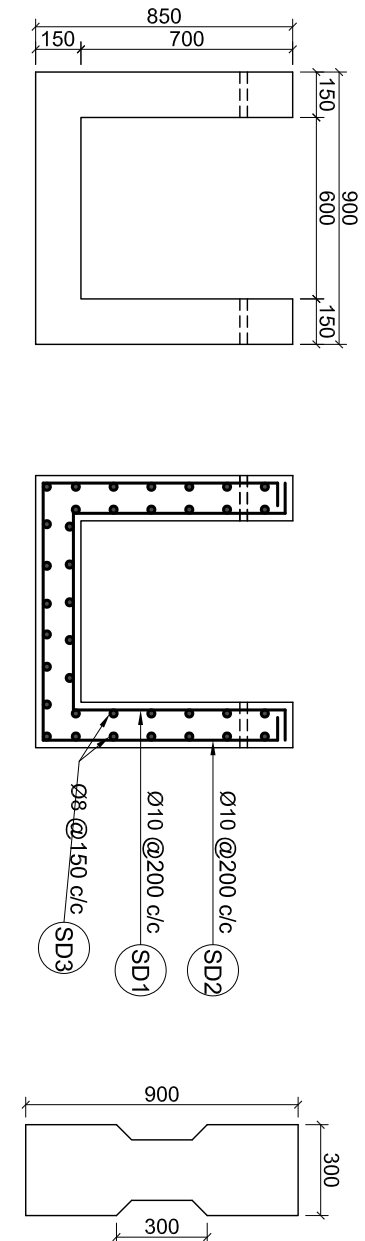
Plan of Cover Slab (Type-1)
Scale:-1:25

Section at Y-Y
Scale:-1:25

Section at Y-Y (With Reinforcement)
Scale:-1:25

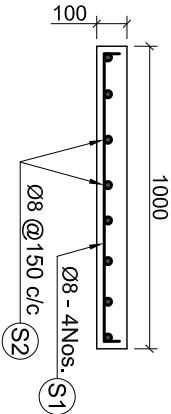


Plan (Type-2)
Scale:-1:25

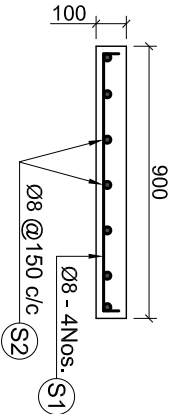


Plan of Cover Slab (Type-2)
Scale:-1:25

Bar Bending Schedule of Drain (Type-1)						
Sketch	Bar Mark	Ø, mm	No	Length, m	Weight Kg/m	Total wt. Kg
	SD1	10	16	2.25	0.617	22.22
	SD2	10	16	2.62	0.617	25.88
	SD3	8	31	3.00	0.395	36.74
	S1	8	40	0.95	0.395	15.01
	S2	8	70	0.35	0.395	9.68
Total for 3m Length						109.531



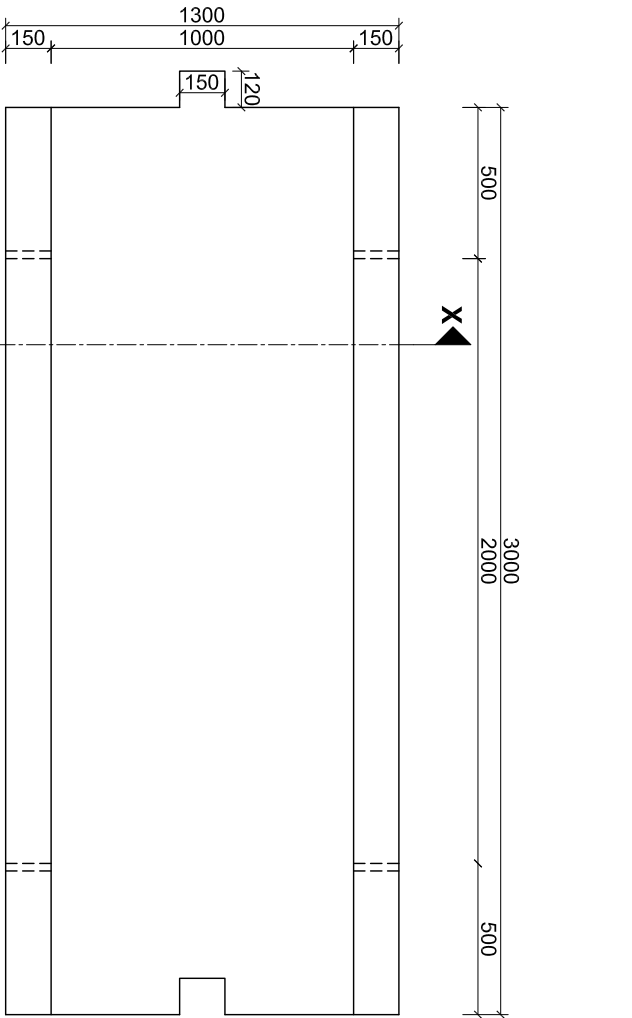
Detail of Cover Slab (Type-1)
Scale:-1:25



Detail of Cover Slab (Type-2)
Scale:-1:25

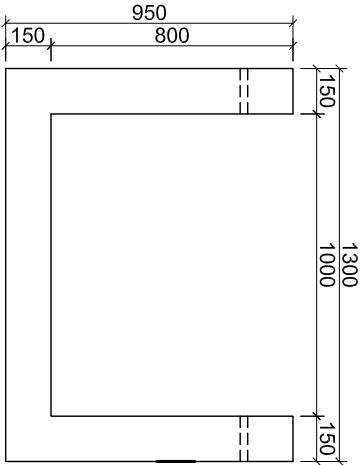
Bar Bending Schedule of Drain (Type-2)						
Sketch	Bar Mark	Ø, mm	No	Length, m	Weight Kg/m	Total wt. Kg
	SD1	10	16	2.55	0.617	25.19
	SD2	10	16	2.75	0.617	27.16
	SD3	8	35	3.00	0.395	41.48
	S1	8	40	0.90	0.395	14.22
	S2	8	70	0.35	0.395	9.68
Total for 3m Length						117.728

Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERMCo P (Ltd), Nepal and JYR - Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Typical Drain		SCALE: 1:25		DESIGNED BY: S.B. Shrestha CHECKED BY: P. Upadhyaya APPROVED BY: Dr. T.H.Choi	NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022 DWG.NO.: 3 SHEET NO.: 1
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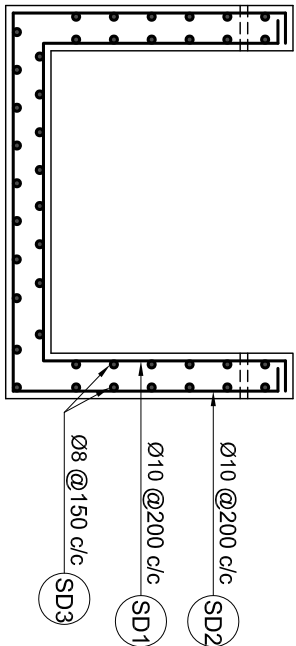
Plan (Type-3)

Scale:-1:25



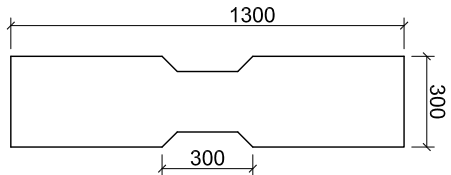
Section at X-X

Scale:-1:25



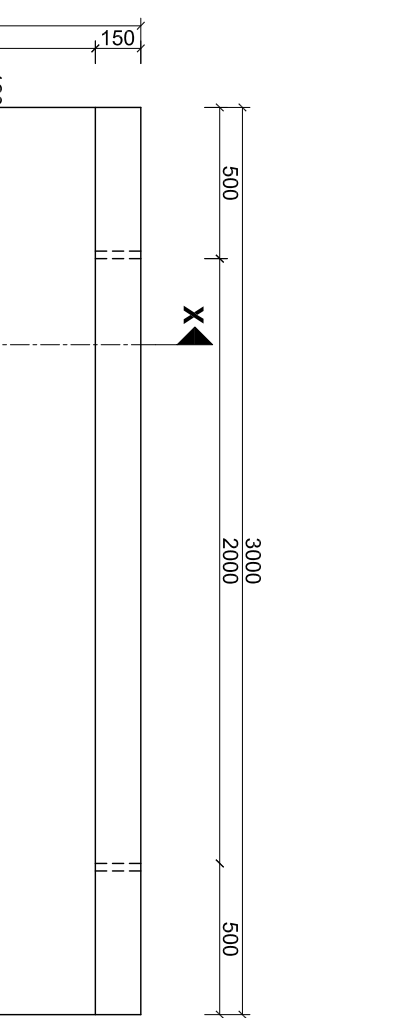
Section at X-X (With Reinforcement)

Scale:-1:25



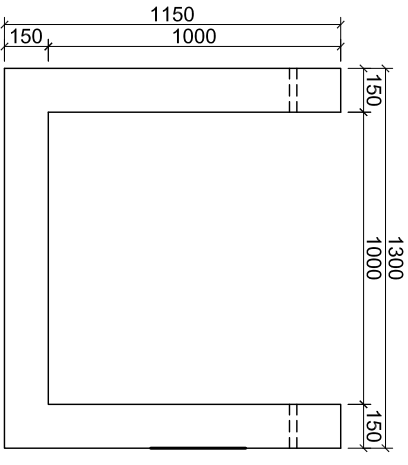
Plan of Cover Slab (Type-3)

Scale:-1:25



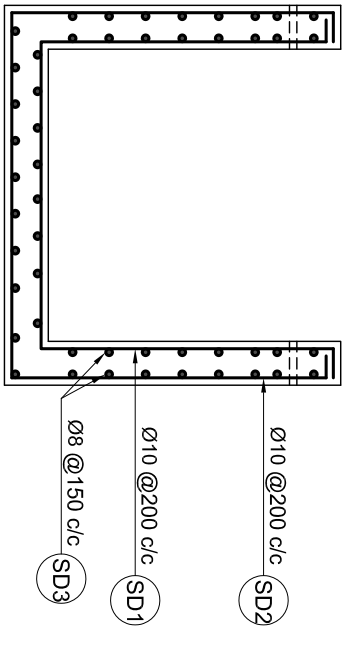
Section at X-X

Scale:-1:25



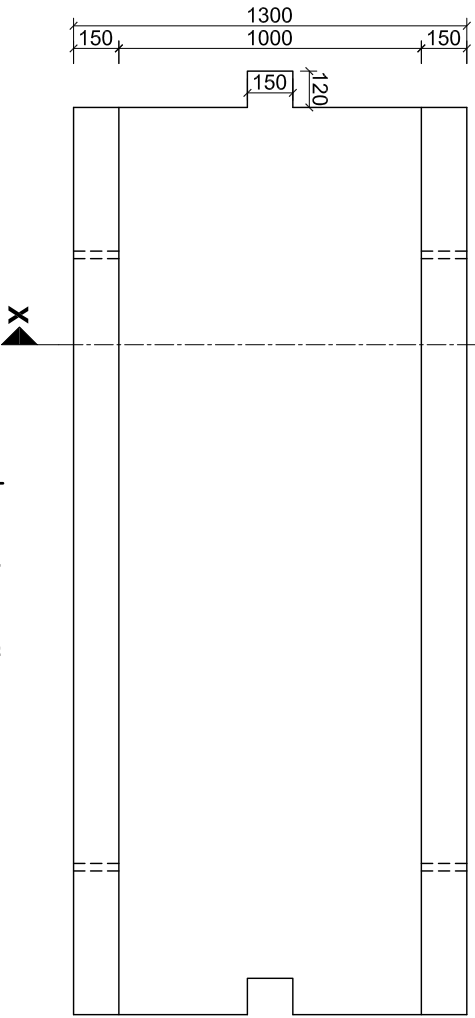
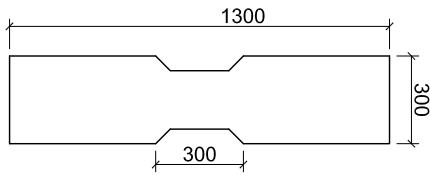
Section at X-X (With Reinforcement)

Scale:-1:25



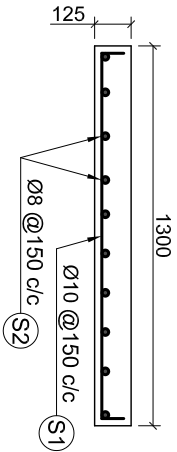
Plan of Cover Slab (Type-4)

Scale:-1:25



Plan (Type-4)

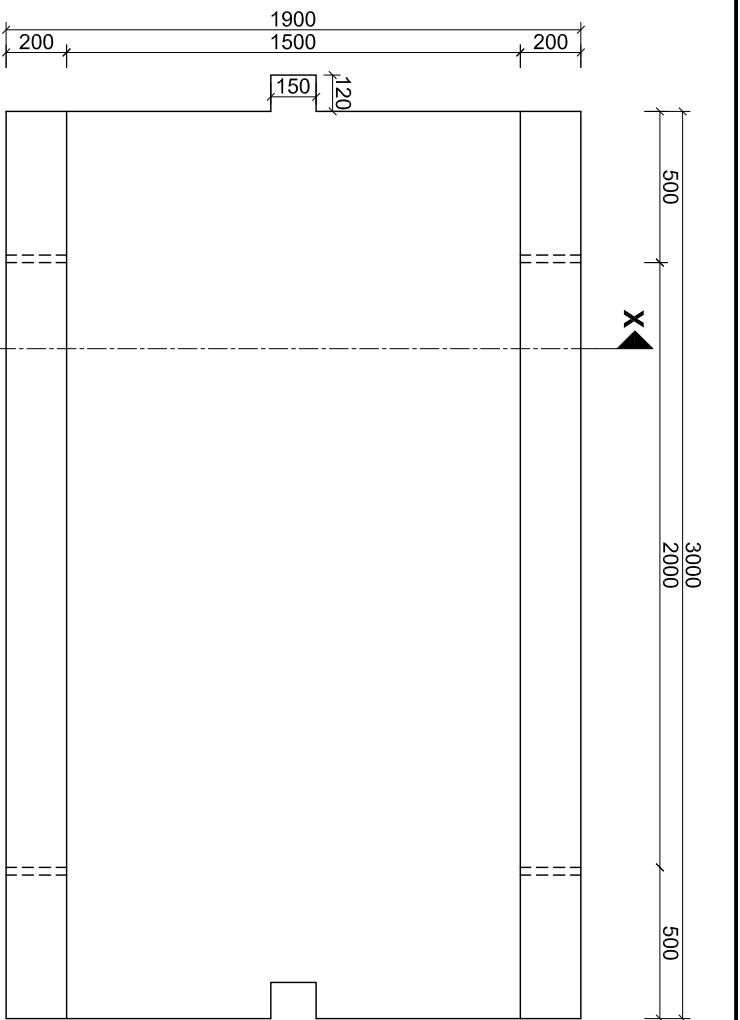
Scale:-1:25



Detail of Cover Slab (Type-4)

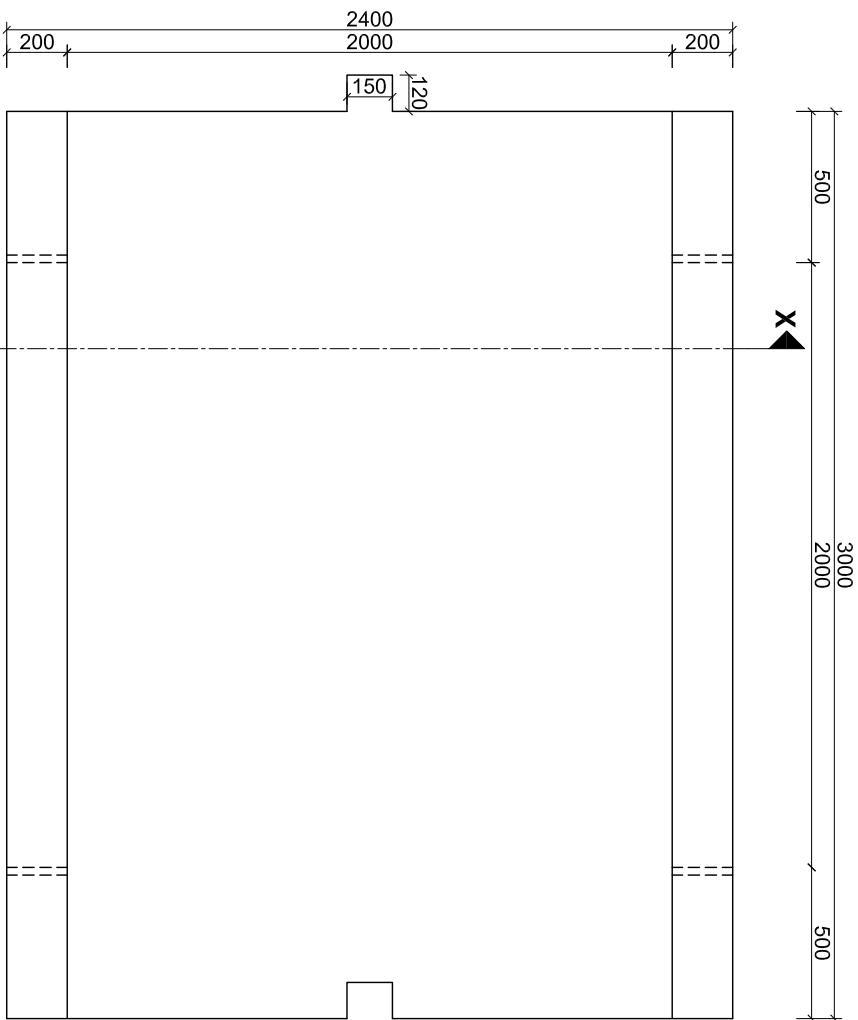
Scale:-1:25

Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP			CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd), Nepal and  JYK - Tech Studio of Engineering			IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November, 2022		
			DOR, DCID		ROAD NAME: East West Highway (H01)		Typical Drain		1:25		DESIGNED BY:		S.B. Shrestha									
											CHECKED BY:		P. Upadhyaya									
			Butwal - Gorusinghe Section								APPROVED BY:		Dr. T.H.Choi									
																			SHEET NO.: 2			



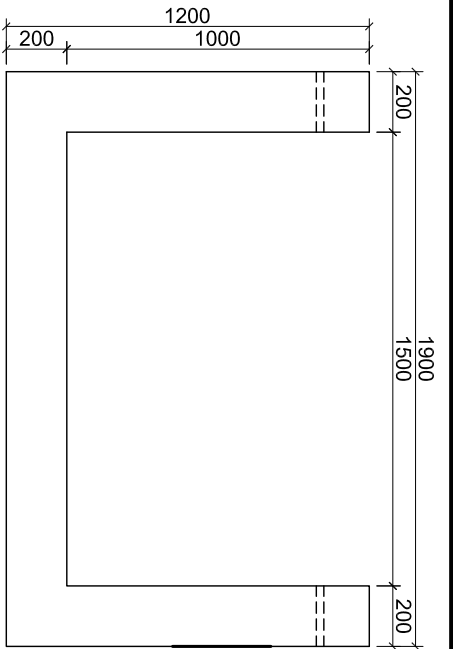
Plan (Type-5)

Scale:-1:25



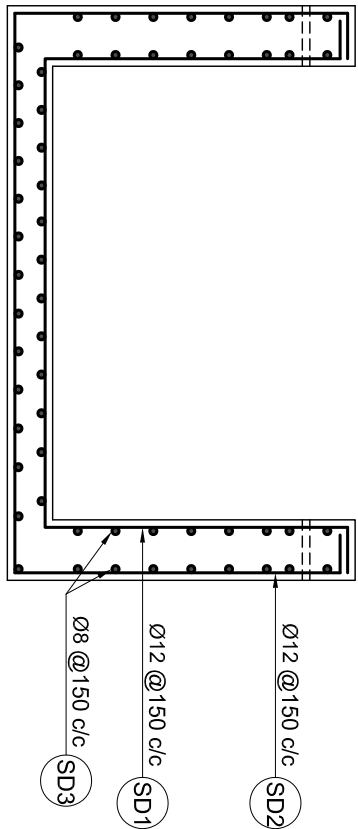
Plan (Type-6)

Scale:-1:25



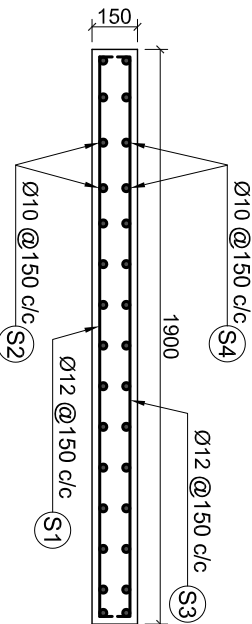
Section at X-X

Scale:-1:25



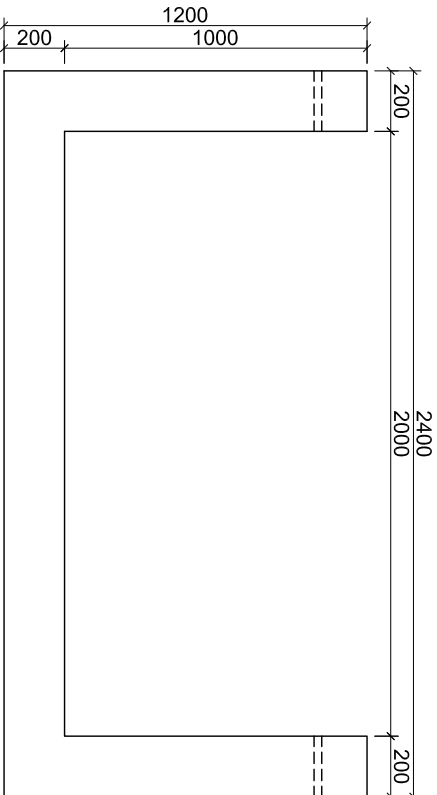
Section at X-X (With Reinforcement)

Scale:-1:25



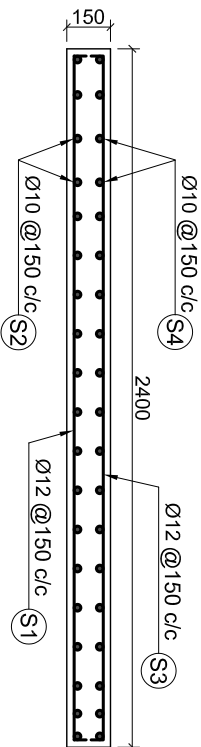
Detail of Cover Slab (Type-5)

Scale:-1:25



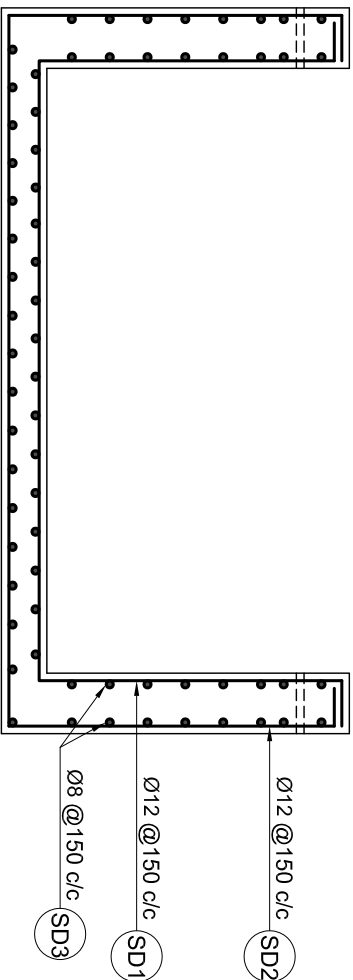
Section at X-X

Scale:-1:25



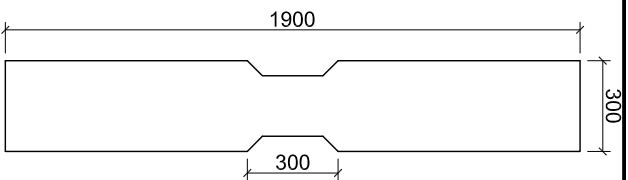
Detail of Cover Slab (Type-6)

Scale:-1:25



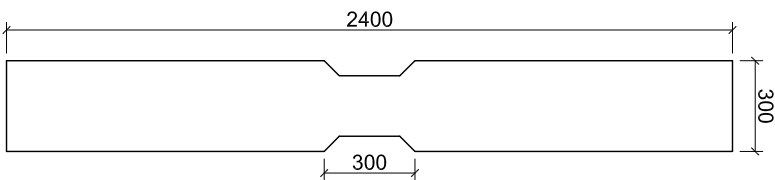
Section at X-X (With Reinforcement)

Scale:-1:25



Plan of Cover Slab (Type-5)

Scale:-1:25



Plan of Cover Slab (Type-6)

Scale:-1:25

Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP			CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd), Nepal and JYK - Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Typical Drain		SCALE: 1:25		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022	DWG.NO.: 3	SHEET NO.: 3
											DESIGNED BY: S.B. Shrestha							
											CHECKED BY: P. Upadhyaya							
											APPROVED BY: Dr. T.H.Choi							

GENERAL NOTES

a) Culvert Design Specifications

IRC Standard Specifications and Code of Practice for Road Bridges - All Relevant Sections.

b) Culvert Design Method

Limit State method.

c) Live Load

IRC Class A and IRC Class 70R, Tracked and Wheeled vehicles. Load combinations are adopted as per IRC:6-2017, Section: II, Loads and Load Combinations.

Pedestrian Load: 4kN/m².

d) Concrete

Concrete Class for box, Approach Slab and Safety Kerb is M25.

e) Steel Reinforcement

Reinforcing Steel shall be HYSD bars of grade Fe 500 confirming to IS: 1786-2008.

f) Lap Length

Minimum Lap Length is 65x diameter of steel reinforcement.

Laps shall be in staggered position.

Lapped bars more than 50% shall not be allowed.

g) Clear covers

Top Slab

The clear cover to steel reinforcement is 40mm.

Side Wall and Base Slab

The clear cover to steel reinforcement steel is 75mm.

Approach Slab

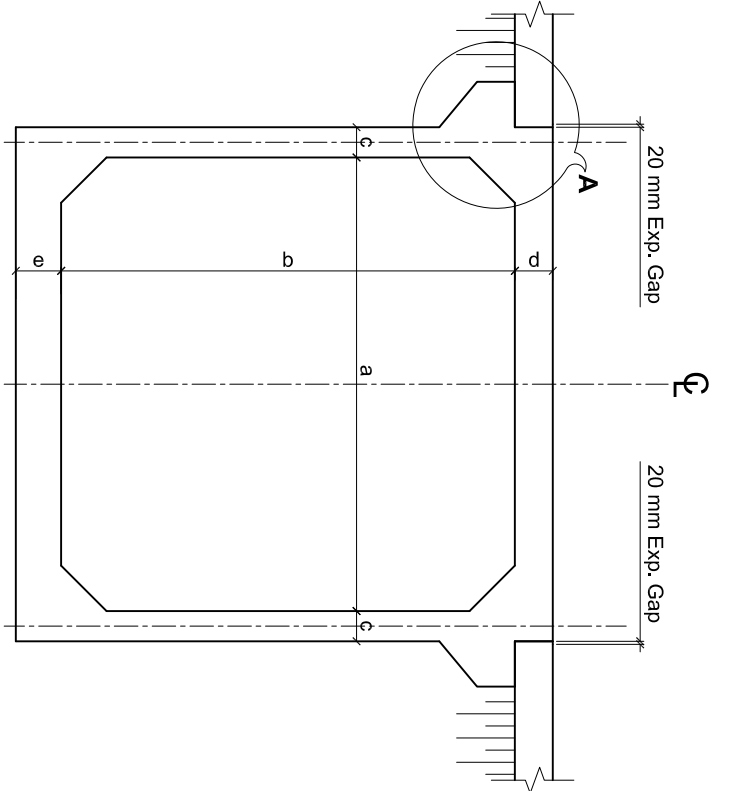
The clear cover to steel reinforcement steel is 40mm.

Safety Kerb

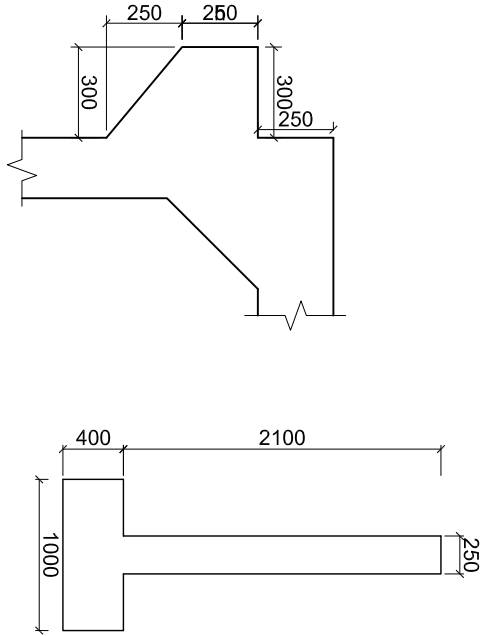
The clear cover to steel reinforcement steel is 25mm.

h) All dimensions are in millimeters except otherwise mentioned.

Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		 Soosung Engineering Co. Ltd, Korea in association with ERMC P (Ltd), Nepal and JYE-Tech Studio of Engineering			
CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:	
 Soosung Engineering Co. Ltd, Korea in association with ERMC P (Ltd), Nepal and JYE-Tech Studio of Engineering		DOR, DCID		Typical Design of Box Culvert General Notes	
		ROAD NAME:			
		East West Highway (H01)			
		Butwal - Gorurisinghe Section			
SCALE:		NAME		SIGNATURE	
DESIGNED BY:		S.B. Shrestha			
CHECKED BY:		P. Upadhyaya			
APPROVED BY:		Dr. T.H.Choi			
DATE:		November, 2022		REV NO.	
DWG.NO.:		4		DESCRIPTION	
SHEET NO.:		1			



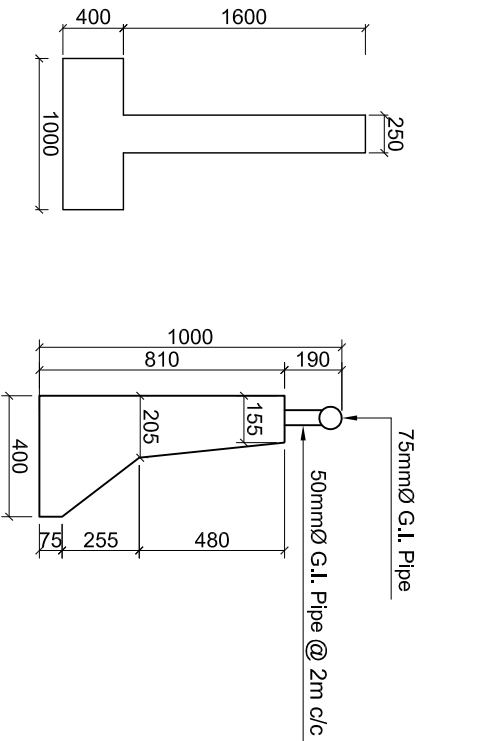
Section at B-B
Scale:-1:50



Detail at 'A'
Scale:-1:25



Approach Slab
Scale:-1:50

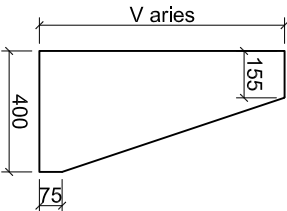


Curtain Wall D/S
Scale:-1:50

Curtain Wall D/S
Scale:-1:50

Safety Barrier (CB-1)
Scale:-1:25

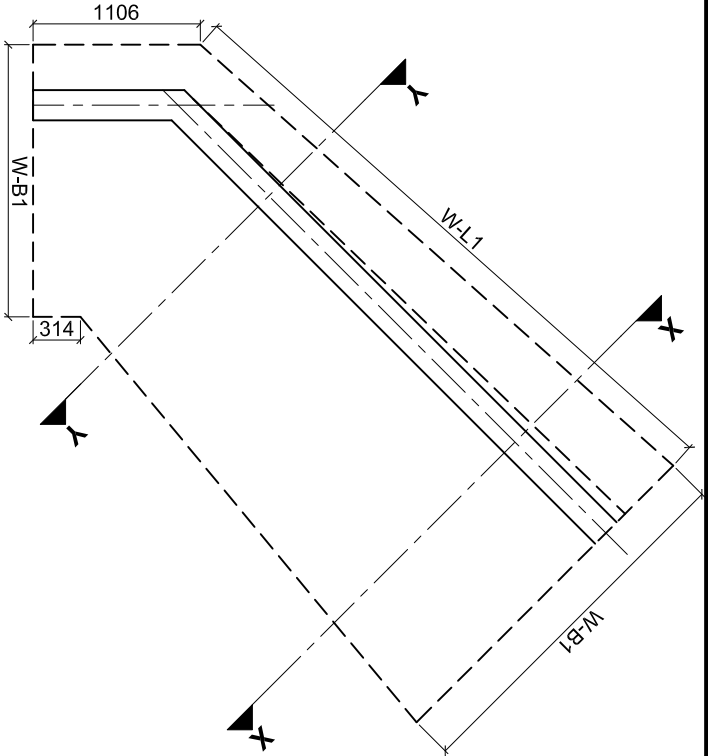
Safety Barrier (CB-2)
Scale:-1:25



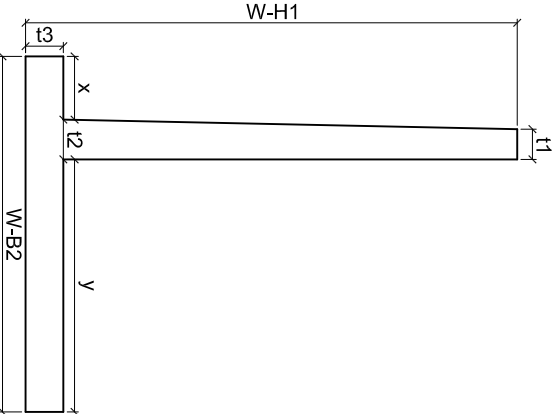
SALIENT DIMENSION OF BOX CULVERT

Size	Clear Width	Clear Height	Side Wall	Top Slab	Bottom Slab	Fillet	Crash Barrier (m)																Apron (m)				Curtain Wall (m)				Length of Flexible Apron (m)		Wing Wall (m)	Remarks
	a	b	c	d	e	f	Rural				Semi - urban				Urban				Length	Width W1	Width W2	Length	Upstream	Down Stream	Upstream	Down Stream	Length							
m	mm	mm	mm	mm	mm	mm	CB-1	CB-2	CB-3	CB-4	CB-1	CB-2	CB-3	CB-4	CB-1	CB-2	CB-3	CB-4	A - L	A -W1	A -W2	C - L	C -W1	C -W2	FA - L1	FA - L2	W - L							
1.5 x 1.5	1500	1500	180	180	220	200 X 200	21.44		14.00		21.44	3.72	14.00	14.00	25.16	3.72	28.00	14.00	3.00	1.50	7.50	7.50	9.50	9.50	2.00	3.00	4.25							
1.5 x 2.0	1500	2000	180	180	240	200 X 200	21.44		14.00		21.44	3.72	14.00	14.00	25.16	3.72	28.00	14.00	3.00	1.50	7.50	7.50	9.50	9.50	2.00	3.00	4.25							
1.5 x 3.0	1500	3000	180	200	240	200 X 200	21.44		14.00		21.44	3.72	14.00	14.00	25.16	3.72	28.00	14.00	3.00	1.50	7.50	7.50	9.50	9.50	2.00	3.00	4.25							
2.0 x 1.5	2000	1500	200	200	230	200 X 200	23.20		14.00		23.20	4.60	14.00	14.00	27.80	4.60	28.00	14.00	3.00	2.00	8.00	8.00	10.00	10.00	2.00	3.00	4.25							
2.0 x 2.0	2000	2000	200	280	280	200 X 200	23.60		14.00		23.60	4.80	14.00	14.00	28.40	4.80	28.00	14.00	3.00	2.00	8.00	8.00	10.00	10.00	2.00	3.00	4.25							
2.0 x 2.5	2000	2500	200	200	250	200 X 200	23.60		14.00		23.60	4.80	14.00	14.00	28.40	4.80	28.00	14.00	3.00	2.00	8.00	8.00	10.00	10.00	2.00	3.00	4.25							
2.0 x 3.0	2000	3000	200	200	300	200 X 200	23.60		14.00		23.60	4.80	14.00	14.00	28.40	4.80	28.00	14.00	3.00	2.00	8.00	8.00	10.00	10.00	2.00	3.00	4.25							
3.0 x 1.5	3000	1500	300	300	350	300 X 300	27.76		14.00		27.76	6.88	14.00	14.00	34.64	6.88	28.00	14.00	3.00	3.00	9.00	9.00	11.00	11.00	3.00	4.00	4.25							
3.0 x 2.0	3000	2000	250	350	400	300 X 300	27.60		14.00		27.60	6.80	14.00	14.00	34.40	6.80	28.00	14.00	3.00	3.00	9.00	9.00	11.00	11.00	3.00	4.00	4.25							
3.0 x 3.0	3000	3000	200	250	300	300 X 300	27.60		14.00		27.60	7.20	14.00	14.00	34.40	6.80	28.00	14.00	3.00	3.00	9.00	9.00	11.00	11.00	3.00	4.00	4.25							
3.0 x 3.5	3000	3500	300	250	250	300 X 300	28.40		14.00		28.40	7.20	14.00	14.00	35.60	7.2	28.00	14.00	3.00	3.00	9.00	9.00	11.00	11.00	3.00	4.00	5.66							
3.0 x 4.0	3000	4000	300	250	250	300 X 300	28.40		14.00		28.40	7.20	14.00	14.00	35.60	7.2	28.00	14.00	4.00	3.00	11.00	11.00	13.00	13.00	3.00	4.00	5.66							
4.0 x 2.0	4000	2000	400	400	400	300 X 300	32.00		14.00		32.00	9.00	14.00	14.00	41.00	9.00	28.00	14.00	3.00	4.00	10.00	10.00	12.00	12.00	3.00	4.00	4.25							
4.0 x 2.5	4000	2500	250	350	350	300 X 300	31.60		14.00		31.60	8.80	14.00	14.00	40.40	8.80	28.00	14.00	3.00	4.00	10.00	10.00	12.00	12.00	3.00	4.00	4.25							
4.0 x 3.0	4000	3000	200	330	380	300 X 300	31.60		14.00		31.60	8.80	14.00	14.00	40.40	8.80	28.00	14.00	3.00	4.00	10.00	10.00	12.00	12.00	3.00	4.00	4.25							
4.0 x 4.0	4000	4000	260	300	380	300 X 300	32.08		14.00		32.08	9.04	14.00	14.00	41.12	9.04	28.00	14.00	4.00	4.00	12.00	12.00	14.00	14.00	3.00	4.00	5.66							
5.0 x 2.0	5000	2000	400	450	600	300 X 300	36.24		14.00		36.24	11.12	14.00	14.00	47.36	11.12	28.00	14.00	3.00	5.00	11.00	11.00	13.00	13.00	4.00	6.00	4.25							
5.0 x 3.0	5000	3000	280	350	420	300 X 300	36.24		14.00		36.24	11.12	14.00	14.00	47.36	11.12	28.00	14.00	3.00	5.00	11.00	11.00	13.00	13.00	4.00	6.00	4.25							
5.0 x 3.5	5000	3500	300	350	450	300 X 300	36.40		14.00		36.40	11.20	14.00	14.00	47.60	11.20	28.00	14.00	3.00	5.00	11.00	11.00	13.00	13.00	4.00	6.00	5.66							
6.0 x 2.0	6000	2000	350	350	450	300 X 300	41.20		14.00		41.20	13.60	14.00	14.00	54.80	13.60	28.00	14.00	3.00	6.00	12.00	12.00	14.00	14.00	4.00	6.00	4.25							
6.0 x 3.0	6000	3000	400	400	550	300 X 300	41.20		14.00		41.20	13.60	14.00	14.00	54.80	13.60	28.00	14.00	3.00	6.00	12.00	12.00	14.00	14.00	4.00	6.00	4.25							
6.0 x 4.0	6000	4000	400	400	550	300 X 300	41.20		14.00		41.20	13.60	14.00	14.00	54.80	13.60	28.00	14.00	4.00	6.00	14.00	14.00	16.00	16.00	4.00	6.00	5.66							

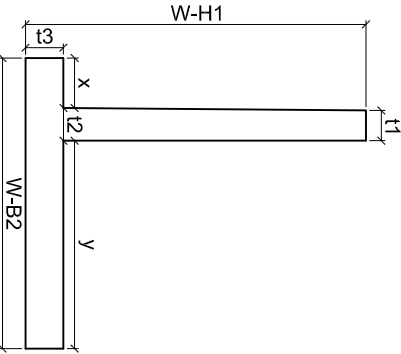
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd), Nepal and JYR - Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Typical Design of Box Culvert Cross Section Concrete Outline		SCALE: As Shown		NAME S.B. Shrestha		SIGNATURE 		REV NO.		DESCRIPTION		DATE: November, 2022		DWG.NO.: 4		SHEET NO.: 3	
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Plan of Wing Wall
Scale:-1:50

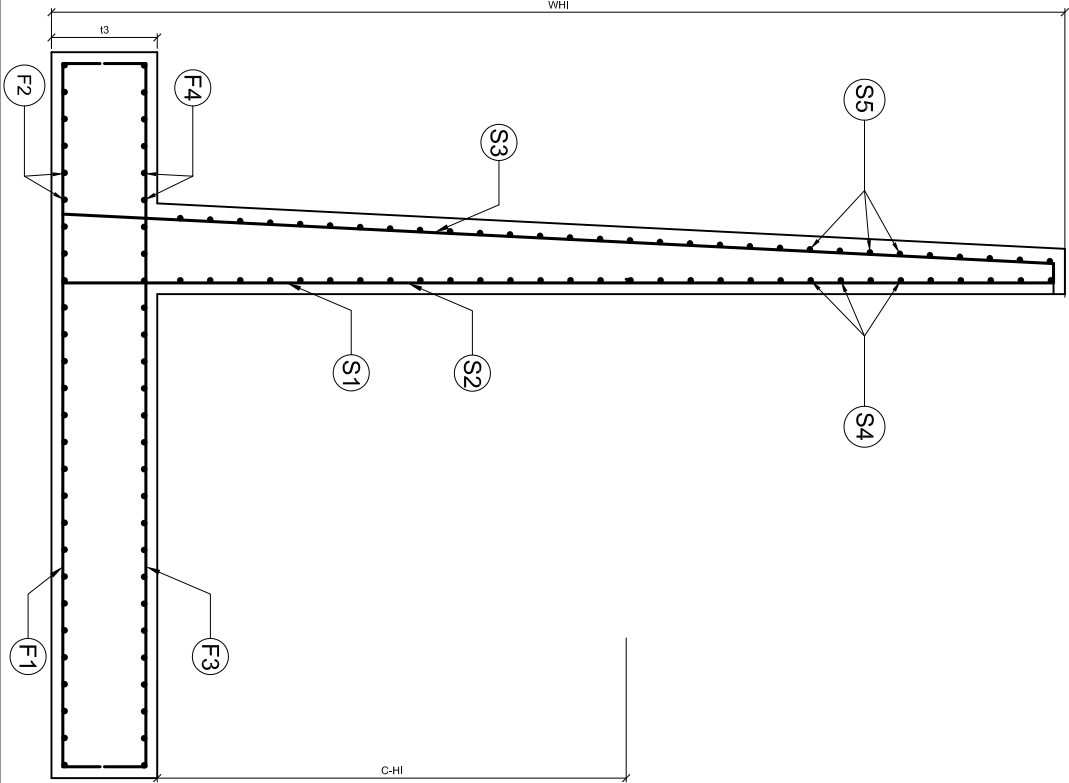


Section at X-X
Scale:-1:50



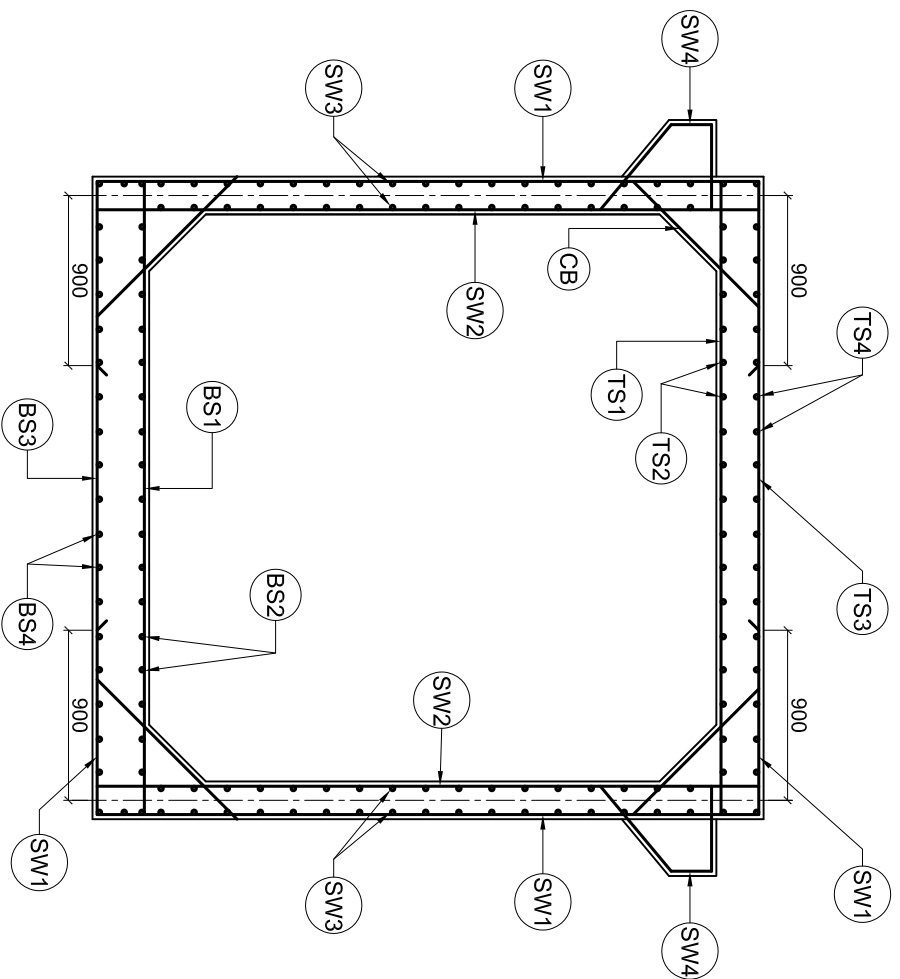
Section at Y-Y
Scale:-1:50

Salient Dimension of Wing Wall												
S.No.	W-H1(m)	W-L1 Length	W-B1	W-B2	t1	t2	t3	x	y			
1.	2.00	4300	1800	1800	200	200	200	300	1300			
2.	2.50	4300	2200	1800	200	240	200	300	1660			
3.	3.00	4300	2400	1800	200	280	250	450	1670			
4.	4.00	5700	3200	1800	250	350	300	500	2350			
5.	4.50	5700	3500	1800	250	400	350	500	2600			
6.	5.00	5700	4000	1800	300	500	500	800	2700			
7.	6.00	5700	4800	1800	300	600	700	1000	3200			

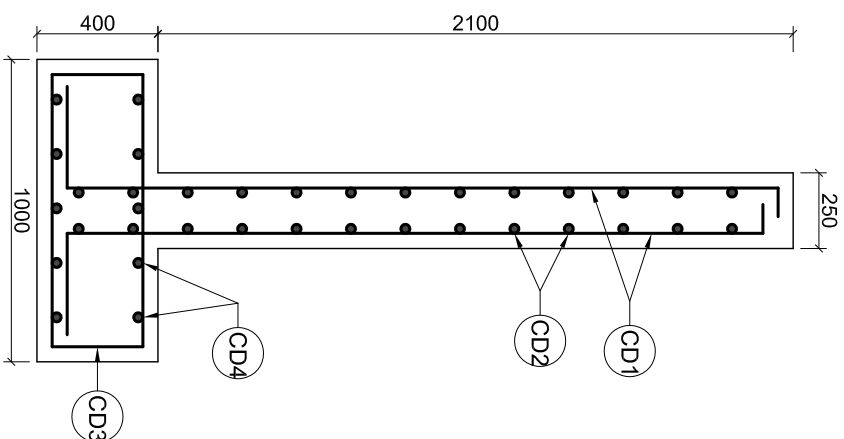


REINFORCEMENT DETAIL OF WING WALL																			
HEIGHT W-H1	Curtallment Height C-H1	F1		F2		F3		F4		S1		S2		S3		S4		S5	
		Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing
m	m	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
2.0		8	230	8	230	12	200	8	230	12	100			10	200	8	230	8	230
2.5		8	230	8	230	12	160	8	230	16	160			10	160	8	230	8	230
3.0	1.60	10	230	8	230	12	140	8	230	12	180	12	180	10	180	8	230	8	230
3.5	1.55	10	230	8	230	16	160	10	230	16	200	16	200	12	200	8	230	8	230
4.0	1.65	10	230	10	300	16	150	10	230	16	200	16	200	12	200	10	230	10	230
4.5	2.10	10	230	10	300	16	140	10	230	16	200	16	200	12	150	10	230	10	230
5.0	2.45	12	220	10	250	12	150	10	250	16	180	16	180	12	160	10	230	10	230
6.0	3.10	12	180	10	180	12	150	10	180	20	200	20	200	12	120	10	160	10	160

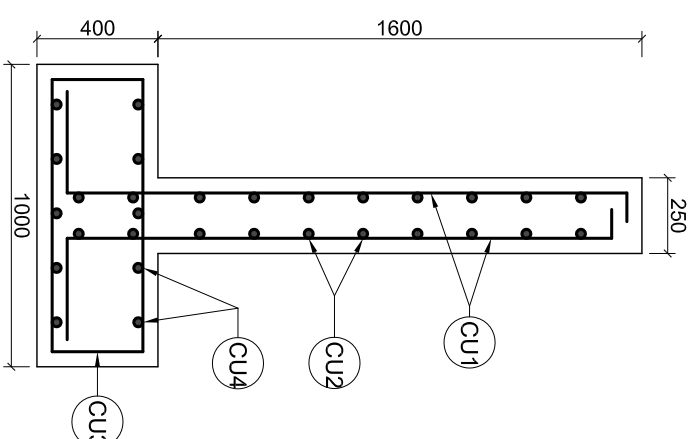
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NFP		CONSULTANT: soosung Soosung Engineering Co. Ltd, Korea in association with ERMCo P (Ltd), Nepal and JYR-Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Typical Design of Box Culvert Details of Wing Wall		SCALE: As Shown		NAME S.B. Shrestha P. Upadhyaya Dr. T.H.Choi		SIGNATURE 		REV NO.		DESCRIPTION		DATE: November, 2022 DWG.NO.: 4 SHEET NO.: 4	
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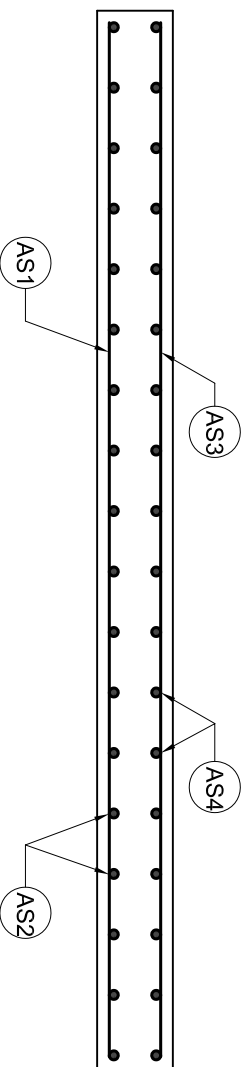
SECTION B-B
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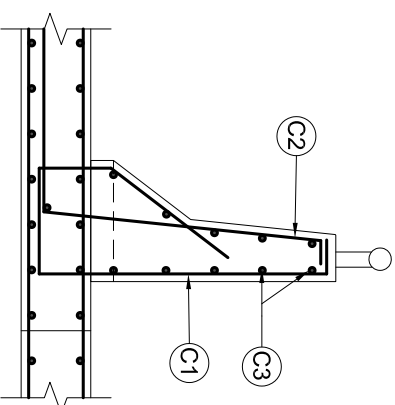
Curtain Wall D/S
Scale:-1:25



Curtain Wall U/S
Scale:-1:25

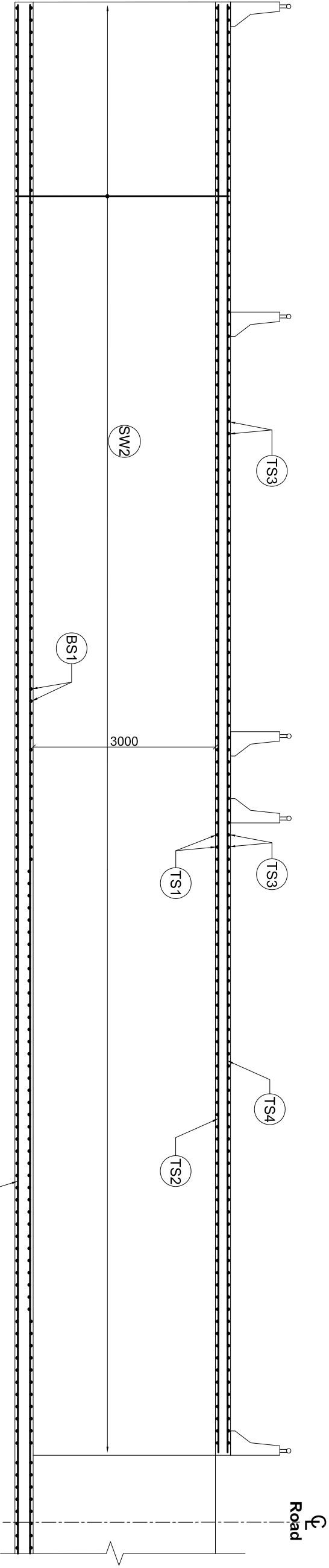


Approach Slab
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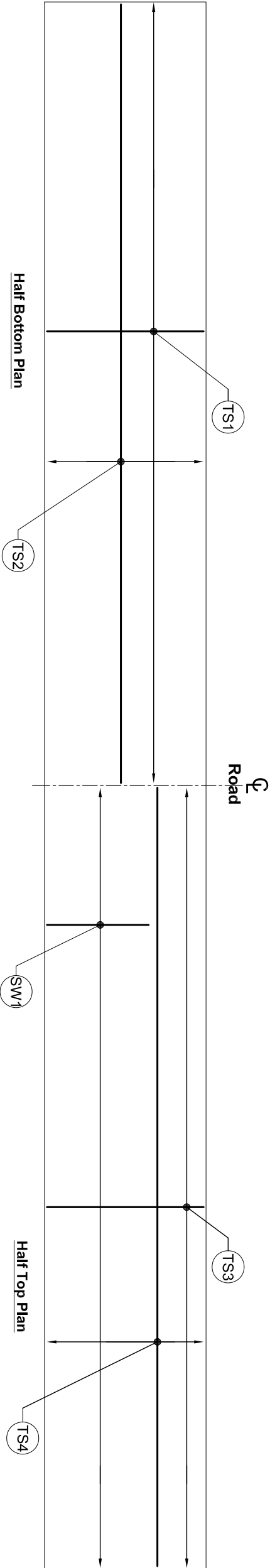
Crash Barrier Detail (Type 1)
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Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NFP		CONSULTANT: soosung Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd), Nepal and JYR - Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Typical Design of Box Culvert Reinforcement Details		SCALE: As Shown		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November, 2022	
										DESIGNED BY: S.B. Shrestha		<i>S.B. Shrestha</i>						DWG.NO.: 4	
										CHECKED BY: P. Upadhyaya		<i>P. Upadhyaya</i>							
										APPROVED BY: Dr. T.H.Choi		<i>Dr. T.H.Choi</i>						SHEET NO.: 5	



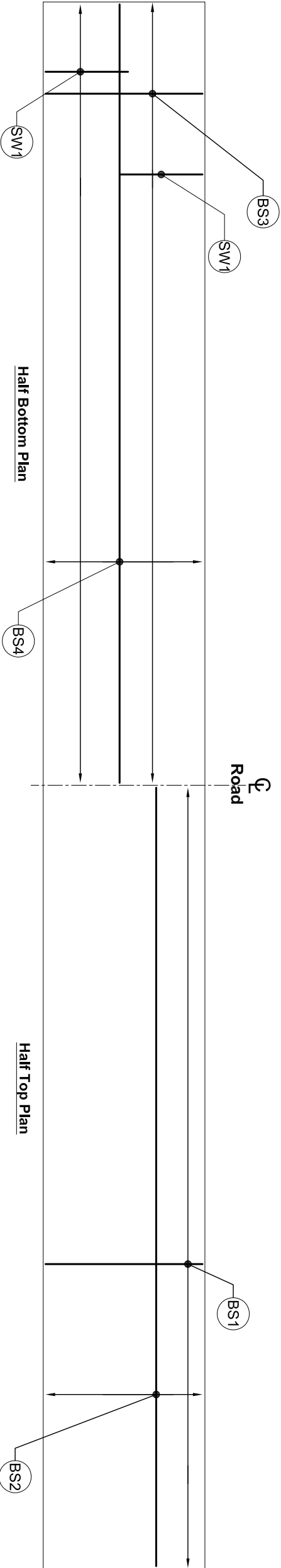
Section at A-A

Scale:-1:50



Top Slab Sectional Plan

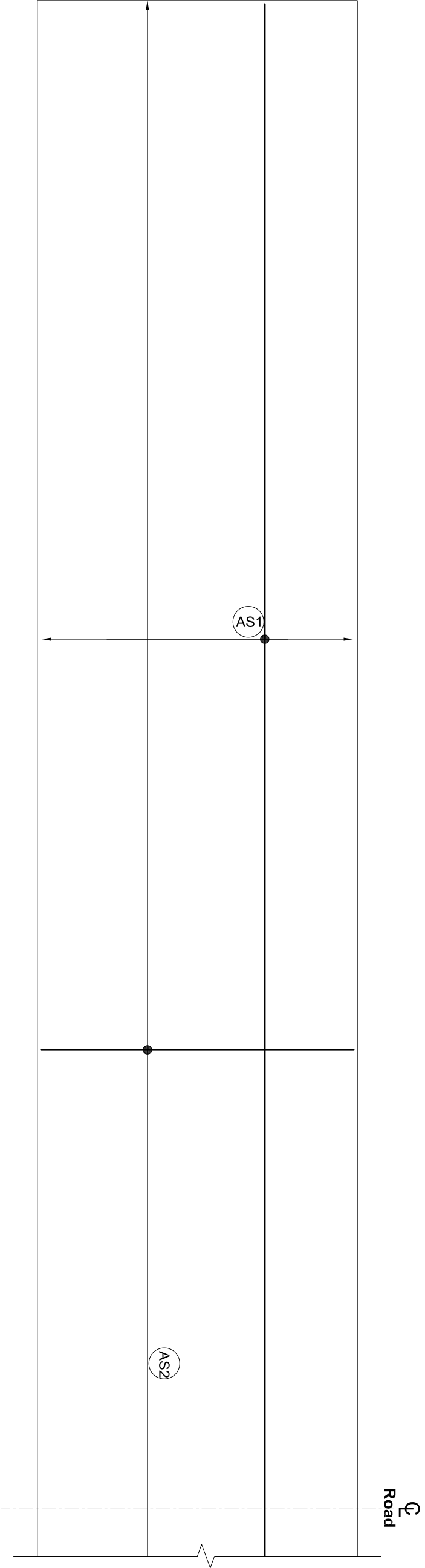
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Bottom Slab Sectional Plan

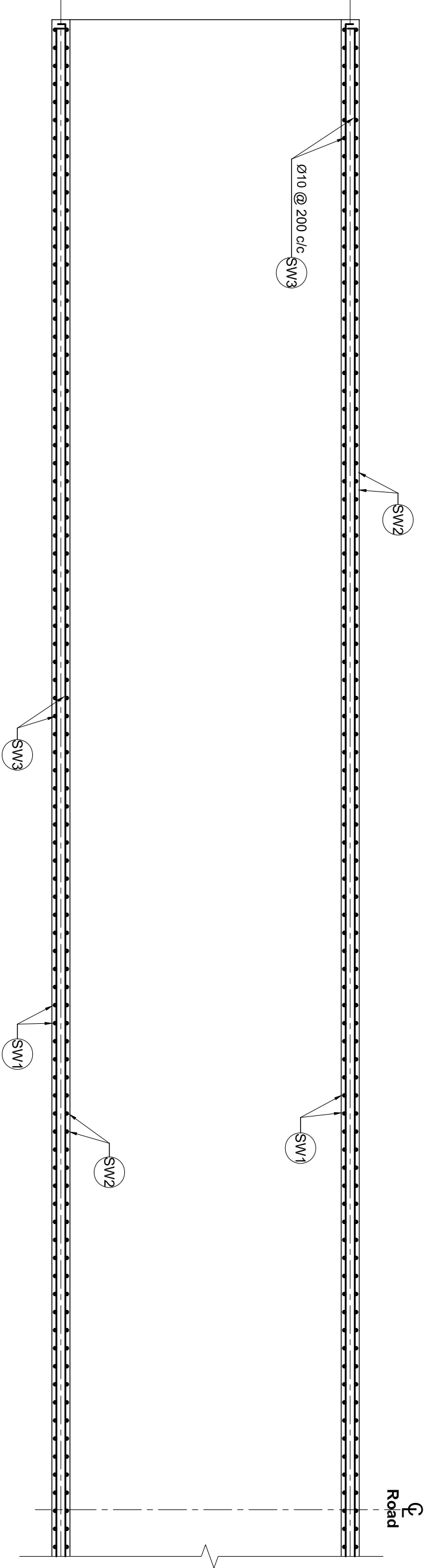
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Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022 DWG.NO.: 4 SHEET NO.: 6
	Soosung Engineering Co. Ltd, Korea in association with		DOR, DCID		Typical Design of Box Culvert		As Shown		S.B. Shrestha		<i>S.B. Shrestha</i>			
	ERMIC P (Ltd), Nepal and JYK - Tech Studio of Engineering		ROAD NAME:		Reinforcement Details				P. Upadhyaya		<i>P. Upadhyaya</i>			
			Butwal - Gorusinghe Section				Dr. T.H.Choi		<i>T.H.Choi</i>					



Approach Slab

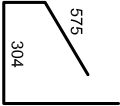
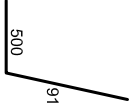
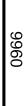
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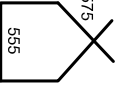
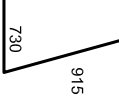
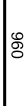


Sectional Plan of Side Wall

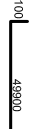
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Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM/C P (Ltd), Nepal and  JYK - Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Typical Design of Box Culvert Reinforcement Details		SCALE: 1:100		DESIGNED BY: S.B. Shrestha	SIGNATURE 	REV NO.	DESCRIPTION	DATE: November, 2022
										CHECKED BY: P. Upadhyaya	SIGNATURE 			DWG.NO.: 4
										APPROVED BY: Dr. T.H.Choi	SIGNATURE 			SHEET NO.: 7

Bar Bending Schedule of Safety Barrier Type-1						
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACING (MM)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (kg/m)
C1		125	16	81	2.030	1.578
C2		125	16	81	1.415	1.578
C3			16	11	9.960	1.578
TOTAL FOR 10M						613.351
TOTAL FOR 1.0M IN MT						0.061

Bar Bending Schedule of Safety Barrier Type-2						
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACING (MM)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (kg/m)
C1		150	16	8	2.210	1.578
C2		150	16	16	1.645	1.578
C3			16	11	0.960	1.578
TOTAL FOR 1M						86.114
TOTAL FOR 1.0M IN MT						0.086

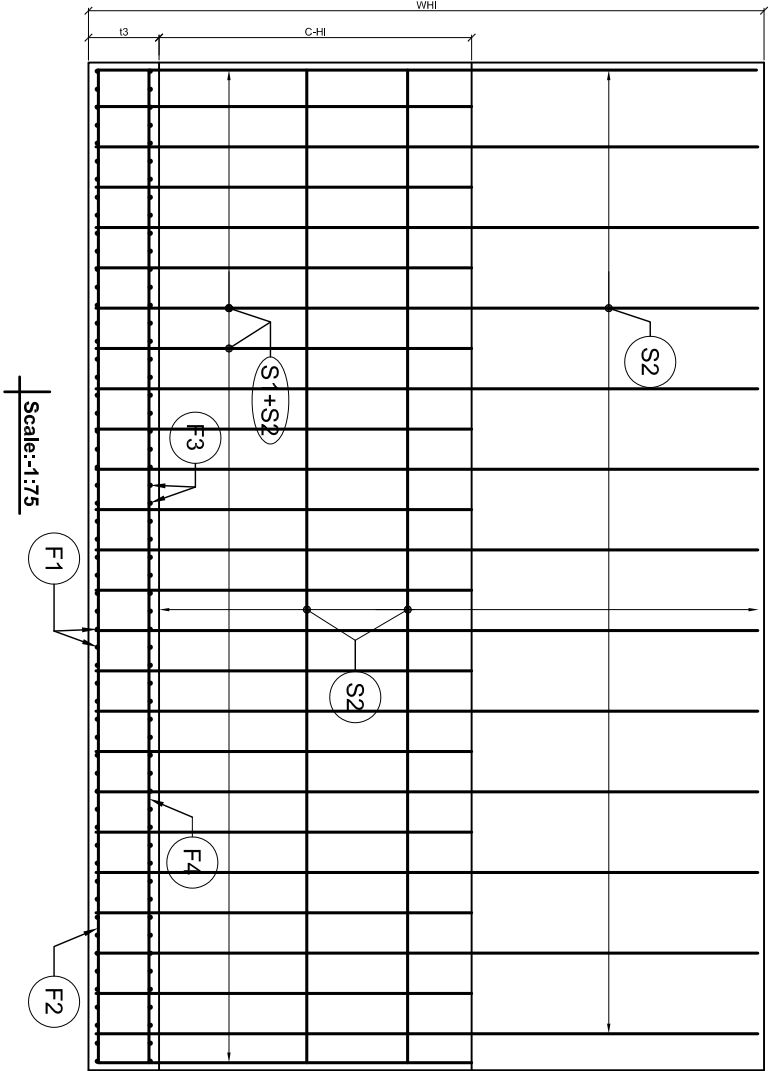
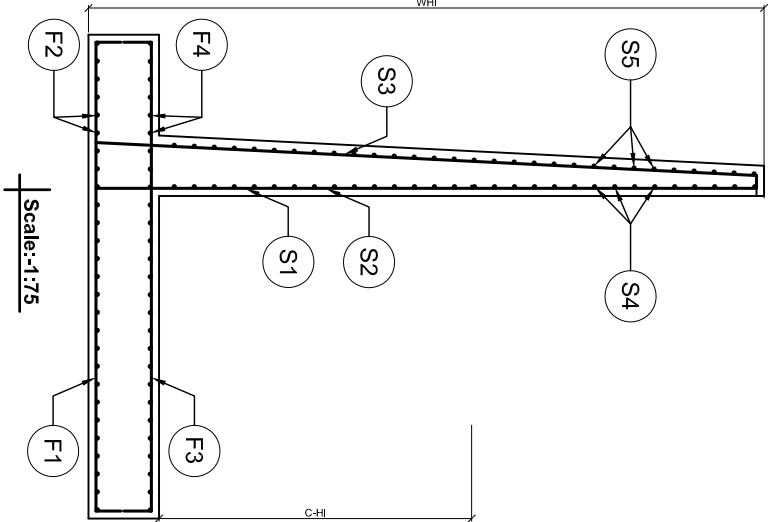
Bar Bending Schedule of Curtain Walls						
Sketch	Bar Mark	Ø, mm	No	Lot	Length, m	Weight Kg/m
	Mark	mm			Length, m	Total wt. Kg
Downstream						
	CD1	12	180	1	2.65	0.868
	CD2	10	15	1	26.78	0.620
	CD3	10	75	1	2.20	0.620
	CD4	10	12	1	13.29	0.620
Sub-Total (Downstream) =						873.8
Upstream						
	CU1	12	126	1	2.15	0.868
	CU2	10	12	1	18.78	0.620
	CU3	10	53	1	2.20	0.620
	CU4	10	12	1	9.29	0.620
Sub-Total (Upstream) =						521.7

Bar Bending Schedule of Approach Slab						
Sketch	Bar Mark	Ø, mm	No	Lot	Length, m	Weight Kg/m
	Mark	mm			Length, m	Total wt. Kg
	AS1	12	334	1	3.60	0.890
	AS2	10	23	1	50.10	0.890
	AS3	10	334	1	3.60	0.890
	AS4	10	23	1	50.10	0.890
Sub-Total (Downstream) =						4191.4

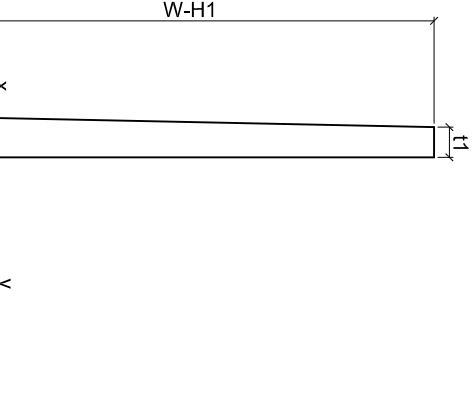
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT:  Soosung Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd), Nepal and JYK® -Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Typical Design of Box Culvert Reinforcement Details		SCALE: As Shown		NAME S.B. Shrestha P. Upadhyaya Dr. T.H.Choi		SIGNATURE   		REV NO.		DESCRIPTION		DATE: November, 2022 DWG.NO.: 4 SHEET NO.: 8	
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REINFORCEMENT DETAIL OF BOX CULVERT																													
HEIGHT W-H1	BS1		BS2		BS3		BS4		TS1		TS2		TS3		TS4		SW1		SW2		SW3		SW4		CB		Remarks		
	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing			
m	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		
1.5 x 1.5	16	180	10	200	10	200	10	200	16	200	10	200	12	200	10	200	12	200	12	200	8	200	16	200	10	200	10	200	
1.5 x 2.0	16	160	10	200	10	200	10	200	16	180	10	200	12	200	10	200	12	200	12	200	8	200	16	200	10	200	10	200	
1.5 x 3.0	16	140	10	200	10	200	8	200	16	180	10	200	12	200	10	200	12	200	12	200	8	200	16	200	10	200	10	200	
2.0 x 1.5	16	150	8	200	16	160	10	230	12	150	8	200	10	200	8	200	12	200	12	200	8	200	16	200	10	200	10	200	
2.0 x 2.0	12	200	8	200	10	200	8	200	12	200	8	200	10	200	8	230	12	230	12	200	8	200	16	200	10	200	10	200	
2.0 x 2.5	20	200	10	180	10	200	10	180	16	150	10	180	12	200	10	180	12	180	12	180	8	200	16	200	10	200	10	200	
2.0 x 3.0	20	150	10	180	10	200	10	180	16	150	10	180	12	200	10	180	12	180	12	180	8	200	16	200	10	200	10	200	
3.0 x 1.5	12	160	8	200	12	200	8	200	12	200	8	200	12	200	8	200	12	200	12	200	8	200	16	200	10	200	10	200	
3.0 x 2.0	12	180	8	200	10	200	8	200	12	200	8	200	10	200	8	200	12	200	12	200	8	200	16	200	10	200	10	200	
3.0 x 3.0	20	120	12	180	12	200	12	180	16	120	12	180	12	200	12	180	16	200	16	200	10	200	16	200	10	200	10	200	
3.0 x 3.5	20	120	12	140	12	160	12	140	16	120	12	200	12	200	12	200	16	150	12	150	10	200	16	200	10	200	10	200	
3.0 x 4.0	16	160	10	180	12	160	10	180	16	160	10	180	12	160	10	180	20	150	20	150	10	230	16	200	10	200	10	200	
4.0 x 2.0	16	200	8	200	12	200	8	200	16	200	8	200	12	200	8	200	12	200	12	200	8	200	16	200	10	200	10	200	
4.0 x 2.5	20	140	12	180	12	200	12	180	20	160	12	180	12	200	12	180	16	180	12	180	8	150	16	200	10	200	10	200	
4.0 x 3.0	20	140	12	180	12	200	12	180	20	160	12	180	12	200	12	180	16	200	12	180	10	200	16	200	10	200	10	200	
4.0 x 4.0	20	120	12	180	12	200	12	180	20	160	12	180	12	200	12	180	16	160	12	160	10	200	16	200	10	200	10	200	
5.0 x 2.0	16	200	10	200	10	200	10	200	16	200	10	200	12	200	10	200	12	200	12	200	8	200	16	200	10	200	10	200	
5.0 x 3.0	25	180	12	160	10	200	12	160	20	150	12	160	10	200	12	160	16	140	12	140	10	180	16	200	10	200	10	200	
5.0 x 3.5	25	150	12	160	12	200	12	160	20	150	12	160	12	200	12	160	16	140	12	140	10	180	16	200	10	200	10	200	
6.0 x 2.0	25	120	16	180	12	200	16	180	25	150	16	180	12	150	16	180	20	120	16	120	12	160	16	200	10	200	10	200	
6.0 x 3.0	25	140	16	180	10	200	16	180	25	150	16	180	10	150	16	180	20	140	16	140	10	180	16	200	10	200	10	200	
6.0 x 4.0	25	120	16	180	12	200	16	180	25	150	16	180	12	150	16	180	20	130	16	130	12	160	16	200	10	200	10	200	

Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP				CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with  ERM C P (Ltd), Nepal and  JYR® - Tech Studio of Engineering		IMPLEMENTING AGENCY: <table><tr><td colspan="2">DOR, DCID</td></tr><tr><td colspan="2">ROAD NAME: East West Highway (H01)</td></tr><tr><td colspan="2">Butwal - Gorusinghe Section</td></tr></table>		DOR, DCID		ROAD NAME: East West Highway (H01)		Butwal - Gorusinghe Section		SHEET TITLE: Typical Design of Box Culvert Reinforcement Details		SCALE: As Shown		<table><tr><td>DESIGNED BY:</td><td>S.B. Shrestha</td></tr><tr><td>CHECKED BY:</td><td>P. Upadhyaya</td></tr><tr><td>APPROVED BY:</td><td>Dr. T.H.Choi</td></tr></table>		DESIGNED BY:	S.B. Shrestha	CHECKED BY:	P. Upadhyaya	APPROVED BY:	Dr. T.H.Choi	NAME		SIGNATURE   		REV NO.		DESCRIPTION		DATE: November, 2022	
DOR, DCID																																			
ROAD NAME: East West Highway (H01)																																			
Butwal - Gorusinghe Section																																			
DESIGNED BY:	S.B. Shrestha																																		
CHECKED BY:	P. Upadhyaya																																		
APPROVED BY:	Dr. T.H.Choi																																		
										DWG.NO.: 4		SHEET NO.: 9																							



REINFORCEMENT DETAIL OF RETAINING WALL																				
HEIGHT W-H1	Curtailment Height C-H1	F1		F2		F3		F4		S1		S2		S3		S4		S5		Remarks
		Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	
m	m	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
2.0		8	230	8	230	12	200	8	230	12	100			10	200	8	230	8	230	
2.5		8	230	8	230	12	160	8	230	16	160			10	160	8	230	8	230	
3.0	1.60	10	230	8	230	12	140	8	230	12	180	12	180	10	180	8	230	8	230	
3.5	1.55	10	230	8	230	16	160	10	230	16	200	16	200	12	200	8	230	8	230	
4.0	1.65	10	230	10	300	16	150	10	230	16	200	16	200	12	200	10	230	10	230	
4.5	2.10	10	230	10	300	16	140	10	230	16	200	16	200	12	150	10	230	10	230	
5.0	2.45	12	220	10	250	12	150	10	250	16	180	16	180	12	160	10	230	10	230	
6.0	3.10	12	180	10	180	12	150	10	180	20	200	20	200	12	120	10	160	10	160	



Salient Dimension of Wing Wall									
S.No.	W-H1(m)	W-L1 Length	W-B1	W-B2	t1	t2	t3	x	y
1.	2.00	4300	1800	1800	200	200	200	300	1300
2.	2.50	4300	2200	1800	200	240	200	300	1660
3.	3.00	4300	2400	1800	200	280	250	450	1670
4.	4.00	5700	3200	1800	250	350	300	500	2350
5.	4.50	5700	3500	1800	250	400	350	500	2600
6.	5.00	5700	4000	1800	300	500	500	800	2700
7.	6.00	5700	4800	1800	300	600	700	1000	3200

Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd), Nepal and JYR®-Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Retaining Wall Reinforcement Details		SCALE: As Shown		NAME S.B. Shrestha P. Upadhyaya Dr. T.H.Choi		SIGNATURE 		REV NO.		DESCRIPTION		DATE: November, 2022 DWG.NO.: 5.1 SHEET NO.: 1	
---	--	--	--	---	--	---	--	--------------------	--	---	--	-----------------------	--	---------	--	-------------	--	---	--

TYPICAL PLAN WITH PARAWEB LAYOUT

DETAIL :- A

CORNER PANEL DETAIL

TYPICAL CROSS SECTION OF RS WALL

DETAIL -M (CONNECTION DETAILS)

J-HOOKS (12mm DIA.)

STEEL 'S' CLAMP

DETAIL OF COPING BEAM

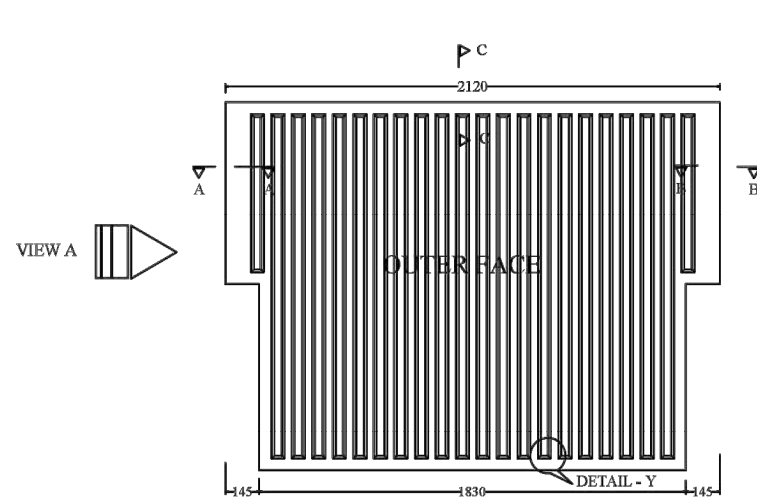
CROSS SECTION OF POLYMERIC STRIP (PARAWEB)

ZOOMED VIEW

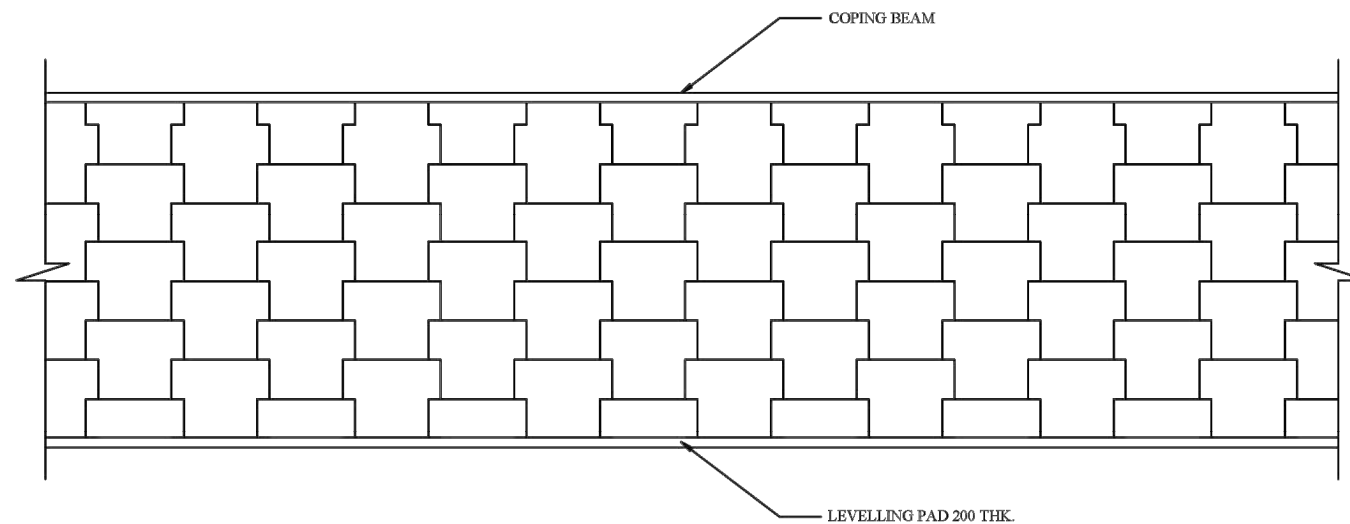
LAP & ANCHOR DETAIL

LEVELLING PAD DETAILS

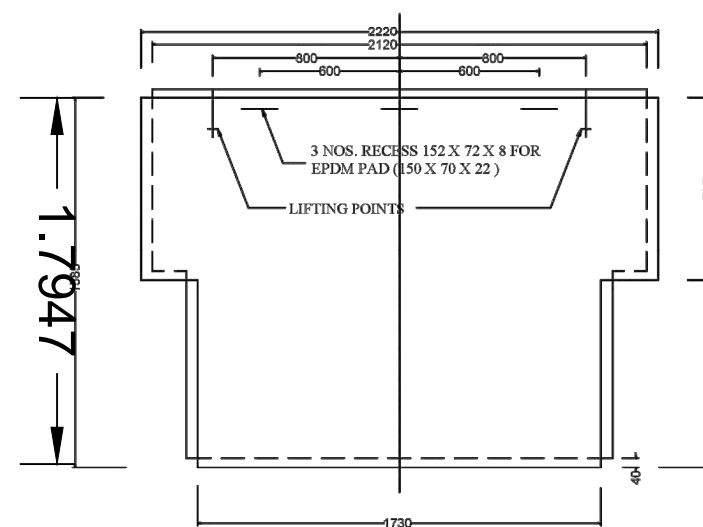
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:		IMPLEMENTING AGENCY:	SHEET TITLE:	SCALE:		NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE:		
	 Soosung Engineering Co. Ltd, Korea in association with  ERMC P (Ltd), Nepal and  TSE-Tech Studio of Engineering	DOR, DCID	Typical Drawing of Earth Reinforcement Wall	1:35	DESIGNED BY:	S.B. Shrestha					November, 2022		
		ROAD NAME:				CHECKED BY:	P. Upadhyaya					DWG.NO.:	5.2
		East West Highway (H01) Butawal -Goringhe Section				APPROVED BY:	Dr. T.H.Choi					SHEET NO.:	1



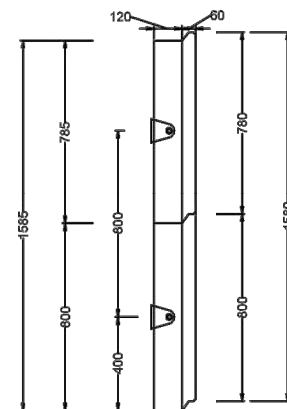
ELEVATION/WALL OUTER FACE



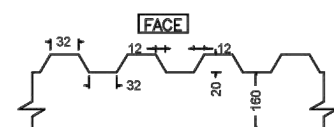
TYPICAL FRONT ELEVATION



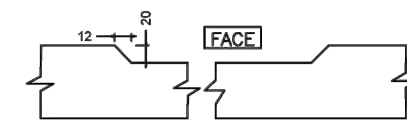
FACIA PANEL



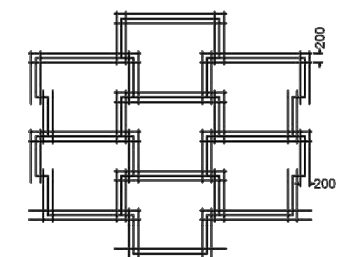
VIEW A



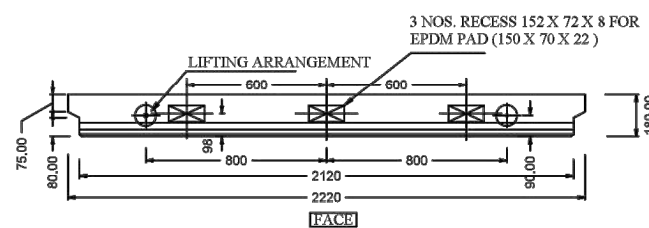
GROVE DETAILS IN CONCRETE



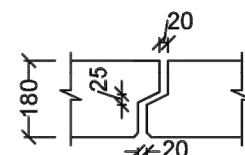
GROVE DETAILS IN CONCRETE
(DETAIL-Y) VERTICAL SECTION



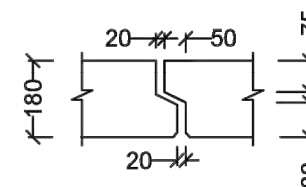
GEOTEXTILE FOR PANEL JOINTS



PLAN

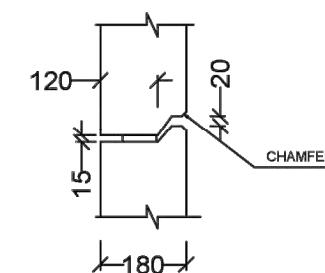


SECTION B-B



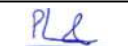
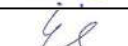
SECTION A-A

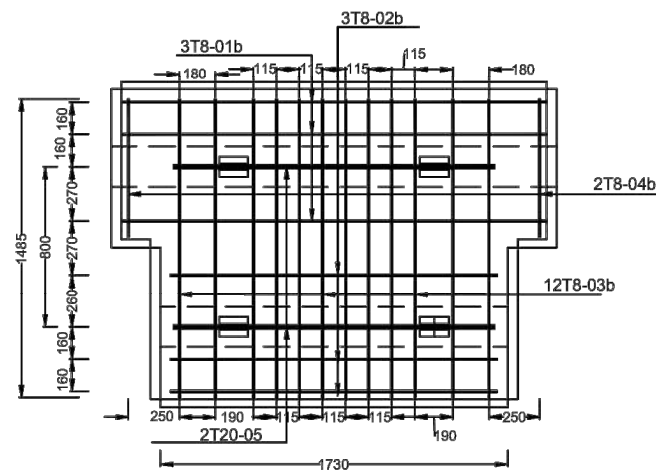
HORIZONTAL ARRANGEMENT BETWEEN ADJACENT PANELS



SECTION C-C

VARTICAL ARRANGEMENT BETWEEN ADJACENT PANELS

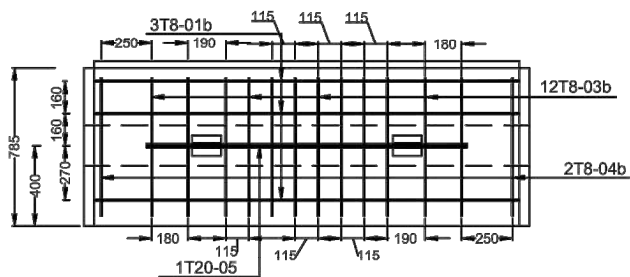
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with  ERM P (Ltd), Nepal and  TPE-Tech Studio of Engineering	IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butawal -Gorusinghe Section	SHEET TITLE: Typical Drawing of Earth Reinforcement Wall	SCALE: 1:35	DESIGNED BY:	S.B. Shrestha				DATE:
					CHECKED BY:	P. Upadhyaya				DWG.NO.:
					APPROVED BY:	Dr. T.H.Choi				5.2
										SHEET NO.:



STANDARD HEAVY FACIA PANEL(SH4)

B.B.S. OF STANDARD HEAVY PANEL (SH4)

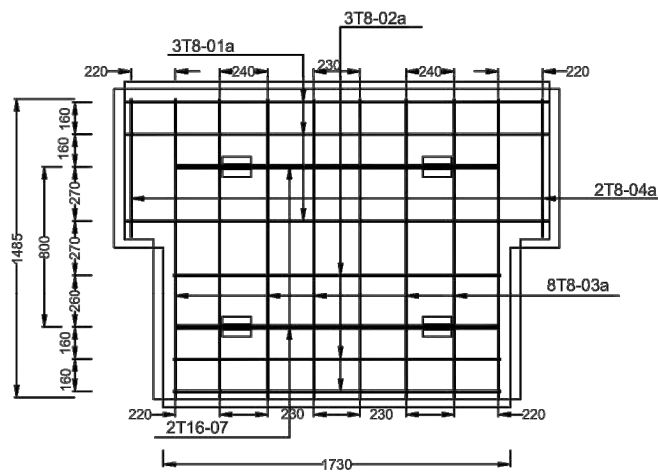
BAR MARK	DIA(mm)	NO.	CUTTING LENGTH (IN mm)	SHAPE	TOTAL LENGTH(m)	
					T8	T20
01b	T8	3	2120	STRAIGHT	6.36	-
02b	T8	3	1630	STRAIGHT	4.89	-
03b	T8	12	1485	STRAIGHT	17.82	-
04b	T8	2	685	STRAIGHT	1.37	-
05	T20	2	1600	STRAIGHT	-	3.2
TOTAL LENGTH IN METERS					30.44	3.2
WT. PER METER IN KGS.					0.395	2.469
WT. PER DIA. IN KGS.					12.023	7.901
TOTAL WT. IN KGS.					19.924	



BOTTOM HEAVY PANEL(PH2)

B.B.S. OF BOTTOM HEAVY PANEL (PH2)

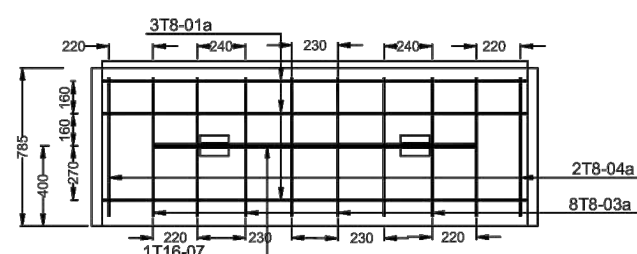
BAR MARK	DIA(mm)	NO.	CUTTING LENGTH (IN mm)	SHAPE	TOTAL LENGTH(m)	
					T8	T20
01b	T8	3	2120	STRAIGHT	6.36	-
03b	T8	12	685	STRAIGHT	8.22	-
04b	T8	2	685	STRAIGHT	1.37	-
05	T20	1	1600	STRAIGHT	-	1.6
TOTAL LENGTH IN METERS					15.95	1.6
WT. PER METER IN KGS.					0.395	2.469
WT. PER DIA. IN KGS.					6.300	3.950
TOTAL WT. IN KGS.					10.250	



STANDARD FACIA PANEL(S4)

B.B.S. OF STANDARD PANEL (S4)

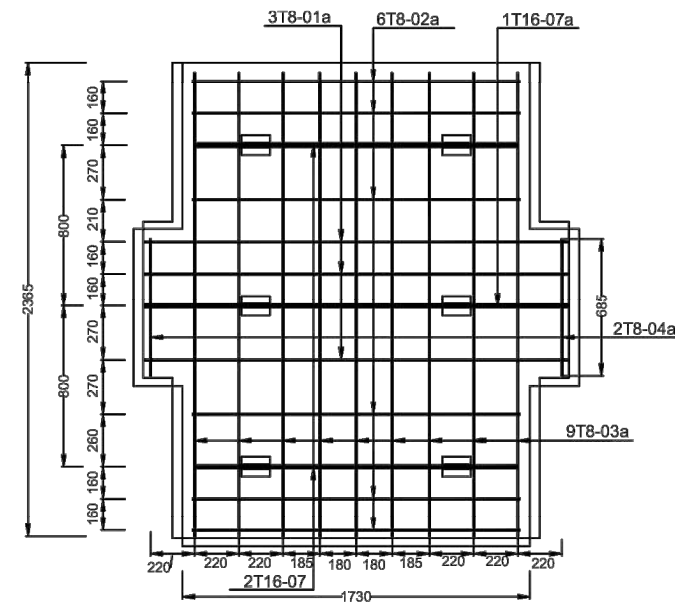
BAR MARK	DIA(mm)	NO.	CUTTING LENGTH (IN mm)	SHAPE	TOTAL LENGTH(m)	
					T8	T16
01a	T8	3	2120	STRAIGHT	6.36	-
02a	T8	3	1630	STRAIGHT	4.89	-
03a	T8	8	1485	STRAIGHT	11.88	-
04a	T8	2	685	STRAIGHT	1.37	-
07	T16	2	1600	STRAIGHT	-	3.2
TOTAL LENGTH IN METERS					24.50	3.2
WT. PER METER IN KGS.					0.395	1.580
WT. PER DIA. IN KGS.					9.677	5.058
TOTAL WT. IN KGS.					14.733	



BOTTOM PANEL(P2)

B.B.S. OF BOTTOM PANEL (P2)

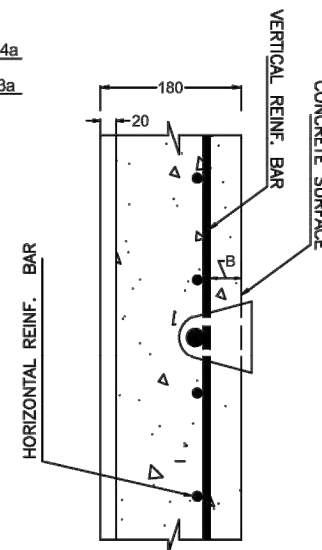
BAR MARK	DIA(mm)	NO.	CUTTING LENGTH (IN mm)	SHAPE	TOTAL LENGTH(m)	
					T8	T16
01a	T8	3	2120	STRAIGHT	6.36	-
03a	T8	8	685	STRAIGHT	5.48	-
04a	T8	2	685	STRAIGHT	1.37	-
07	T16	1	1600	STRAIGHT	-	1.6
TOTAL LENGTH IN METERS					13.21	1.6
WT. PER METER IN KGS.					0.395	1.580
WT. PER DIA. IN KGS.					5.218	2.528
TOTAL WT. IN KGS.					7.746	



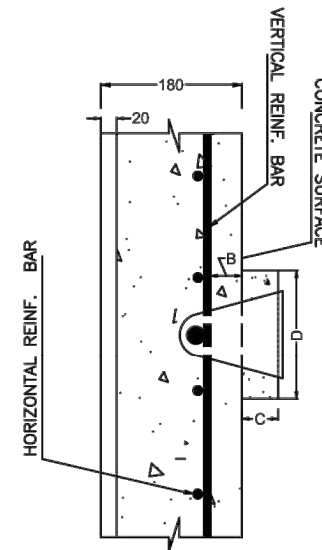
CRUCIFORM FACIA PANEL AT TOP (J6)

B.B.S. OF CRUCIFORM FACIA PANEL (J6)

BAR MARK	DIA(mm)	NO.	CUTTING LENGTH (IN mm)	SHAPE	TOTAL LENGTH(m)	
					T8	T16
01a	T8	3	2120	STRAIGHT	6.36	-
02a	T8	6	1630	STRAIGHT	9.78	-
03a	T8	9	2315	STRAIGHT	18.52	-
04a	T8	2	685	STRAIGHT	1.37	-
07	T16	2	1600	STRAIGHT	-	3.20
07a	T16	1	2120	STRAIGHT	-	2.12
TOTAL LENGTH IN METERS					38.345	5.320
WT. PER METER IN KGS.					0.395	1.580
WT. PER DIA. IN KGS.					15.146	8.406
TOTAL WT. IN KGS.					23.552	



DETAILS OF CONNECTION
FOR LIGHT PANEL



DETAILS OF CONNECTION
FOR HEAVY PANEL

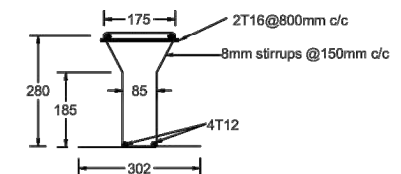
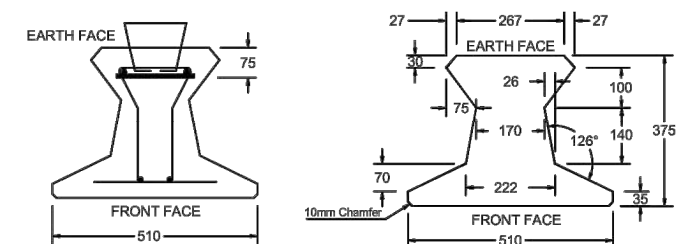
REFER TABLE -1

NOTE:-

- ALL DIMENSIONS ARE IN mm.
- MINIMUM CLEAR COVER TO REINFORCEMENT SHALL BE 50mm.
- CONFLICT BETWEEN POSITION OF CONNECTION AND REINFORCEMENT BARS TO BE RESOLVED BY MAKING MINOR ADJUSTMENT TO REINFORCEMENT BARS.
- THE NOTATION OF REINF. IS AS FOLLOWS:-

$$\begin{matrix} 7 & T & 8 & - & 01a \\ \swarrow & & \downarrow & & \searrow \\ \text{NO.} & \text{TYPE} & \text{DIA} & \text{BAR MARK} & \text{T - HIGH} \end{matrix}$$

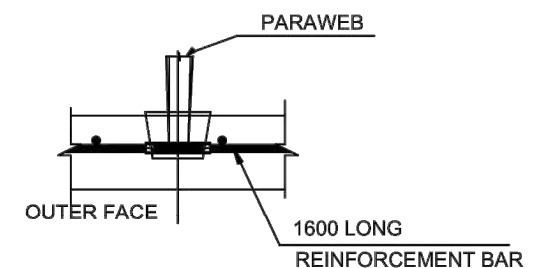
STRENGTH DEFORMED BARS OF Fe-500 GRADE (IS.1786)
- GRADE OF CONCRETE SHALL BE M-35
- RECOMMENDED TOLERANCES: LEADING DIMENSIONS OVER 200mm (INCLUDING DIAGONALS) = ± 4 mm DIMENSIONS 200mm AND LESS = ± 2 mm
- HEAVY PANELS SHALL BE USED FOR PARAWEB ABOVE 75 kN.



CORNER PANEL REINFORCEMENT DETAILS (MacRes)

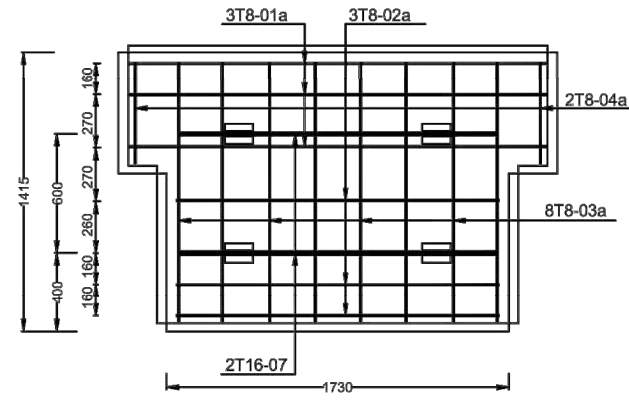
TABLE -1

TYPE	B(MM)	C(MM)	D(MM)
LIGHT	50	-	-
HEAVY	50	40	200



DETAILS OF PARAWEB STRIP
CONNECTION WITH PANEL

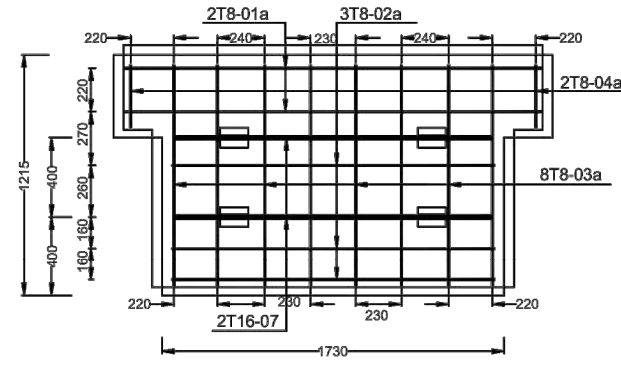
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:		IMPLEMENTING AGENCY:	SHEET TITLE:	SCALE:		NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE:			
	 Soosung Engineering Co. Ltd, Korea in association with  ERMC P (Ltd), Nepal and  TPE-Tech Studio of Engineering	DOR, DCID		Typical Drawing of Earth Reinforcement Wall	1:35		DESIGNED BY:	S.B. Shrestha				November, 2022		
		ROAD NAME: East West Highway (H01) Butawal -Gorusinghe Section					CHECKED BY:	P. Upadhyaya					DWG.NO.:	5.2
							APPROVED BY:	Dr. T.H.Choi					SHEET NO.:	3



STANDARD FACIA PANEL(E4)

B.B.S. OF STANDARD PANEL (E4)

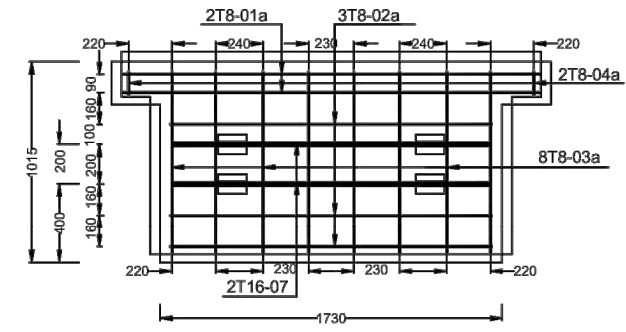
BAR MARK	DIA(mm)	NO.	CUTTING LENGTH (IN mm)	SHAPE	TOTAL LENGTH(m)	
					T8	T16
01a	T8	3	2120	STRAIGHT	6.36	-
02a	T8	3	1630	STRAIGHT	4.89	-
03a	T8	8	1315	STRAIGHT	10.52	-
04a	T8	2	515	STRAIGHT	1.03	-
07	T16	2	1600	STRAIGHT	-	3.2
TOTAL LENGTH IN METERS					22.6	3.2
WT. PER METER IN KGS.					0.395	1.580
WT. PER DIA. IN KGS.					9.006	5.056
TOTAL WT. IN KGS.					14.062	



STANDARD FACIA PANEL(C4)

B.B.S. OF STANDARD PANEL (C4)

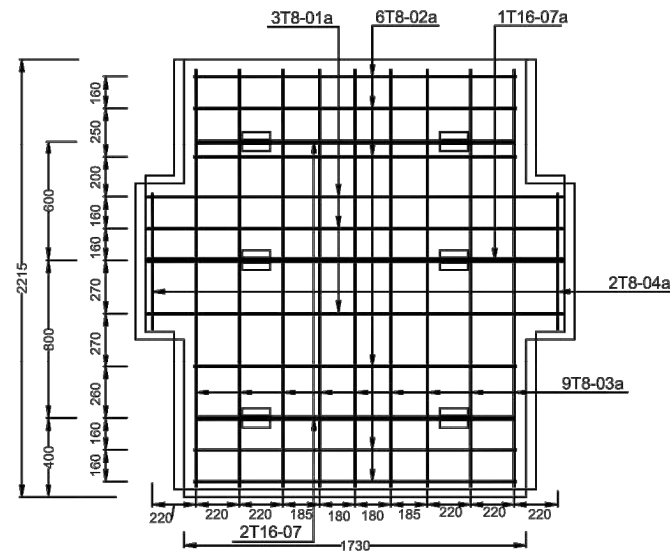
BAR MARK	DIA(mm)	NO.	CUTTING LENGTH (IN mm)	SHAPE	TOTAL LENGTH(m)	
					T8	T16
01a	T8	2	2120	STRAIGHT	4.24	-
02a	T8	3	1630	STRAIGHT	4.89	-
03a	T8	8	1115	STRAIGHT	8.92	-
04a	T8	2	315	STRAIGHT	0.63	-
07	T16	2	1600	STRAIGHT	-	3.2
TOTAL LENGTH IN METERS					18.68	3.2
WT. PER METER IN KGS.					0.395	1.580
WT. PER DIA. IN KGS.					7.379	5.056
TOTAL WT. IN KGS.					12.435	



STANDARD FACIA PANEL(A4)

B.B.S. OF STANDARD PANEL (A4)

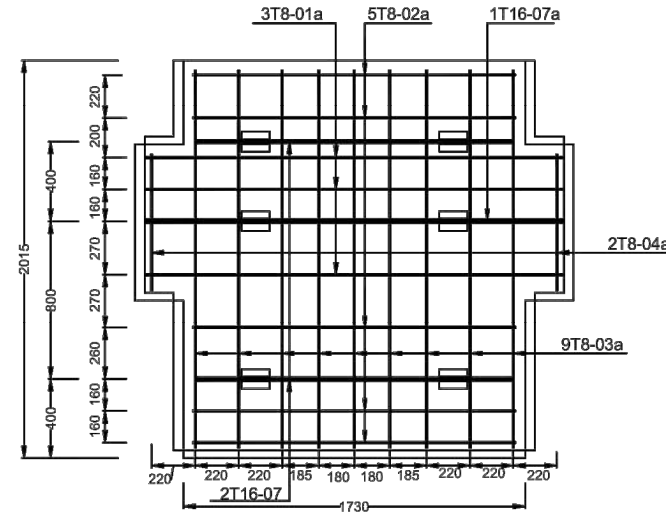
BAR MARK	DIA(mm)	NO.	CUTTING LENGTH (IN mm)	SHAPE	TOTAL LENGTH(m)	
					T8	T16
01a	T8	2	2120	STRAIGHT	4.24	-
02a	T8	3	1630	STRAIGHT	4.89	-
03a	T8	8	915	STRAIGHT	7.32	-
04a	T8	2	115	STRAIGHT	0.23	-
07	T16	2	1600	STRAIGHT	-	3.2
TOTAL LENGTH IN METERS					16.68	3.2
WT. PER METER IN KGS.					0.395	1.580
WT. PER DIA. IN KGS.					6.589	5.056
TOTAL WT. IN KGS.					11.645	



CRUCIFORM FACIA PANEL AT TOP (F6)

B.B.S. OF CRUCIFORM FACIA PANEL (F6)

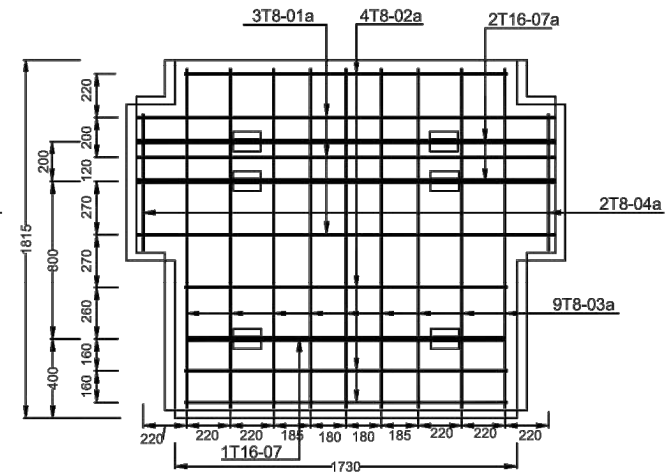
BAR MARK	DIA(mm)	NO.	CUTTING LENGTH (IN mm)	SHAPE	TOTAL LENGTH(m)	
					T8	T16
01a	T8	3	2120	STRAIGHT	6.36	-
02a	T8	6	1630	STRAIGHT	9.78	-
03a	T8	9	2115	STRAIGHT	19.035	-
04a	T8	2	685	STRAIGHT	1.37	-
07	T16	2	1600	STRAIGHT	-	3.20
07a	T16	1	2120	STRAIGHT	-	2.12
TOTAL LENGTH IN METERS					36.545	5.320
WT. PER METER IN KGS.					0.395	1.580
WT. PER DIA. IN KGS.					14.435	8.406
TOTAL WT. IN KGS.					22.841	



CRUCIFORM FACIA PANEL AT TOP (D6)

B.B.S. OF CRUCIFORM FACIA PANEL (D6)

BAR MARK	DIA(mm)	NO.	CUTTING LENGTH (IN mm)	SHAPE	TOTAL LENGTH(m)	
					T8	T16
01a	T8	3	2120	STRAIGHT	6.36	-
02a	T8	5	1630	STRAIGHT	8.15	-
03a	T8	9	1915	STRAIGHT	17.235	-
04a	T8	2	685	STRAIGHT	1.37	-
07	T16	2	1600	STRAIGHT	-	3.20
07a	T16	1	2120	STRAIGHT	-	2.12
TOTAL LENGTH IN METERS					33.115	5.320
WT. PER METER IN KGS.					0.395	1.580
WT. PER DIA. IN KGS.					13.080	8.406
TOTAL WT. IN KGS.					21.486	



CRUCIFORM FACIA PANEL AT TOP (B6)

B.B.S. OF CRUCIFORM FACIA PANEL (B6)

BAR MARK	DIA(mm)	NO.	CUTTING LENGTH (IN mm)	SHAPE	TOTAL LENGTH(m)	
					T8	T16
01a	T8	3	2120	STRAIGHT	6.36	-
02a	T8	4	1630	STRAIGHT	6.52	-
03a	T8	9	1715	STRAIGHT	15.435	-
04a	T8	2	685	STRAIGHT	1.370	-
07	T16	1	1600	STRAIGHT	-	1.60
07	T16	2	2120	STRAIGHT	-	4.24
TOTAL LENGTH IN METERS					29.685	5.840
WT. PER METER IN KGS.					0.395	1.580
WT. PER DIA. IN KGS.					11.726	9.227
TOTAL WT. IN KGS.					20.953	

Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERMC P (Ltd), Nepal and TPE-Tech Studio of Engineering	IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butawal -Gorusinghe Section	SHEET TITLE: Typical Drawing of Earth Reinforcement Wall	SCALE: 1:35	DESIGNED BY: S.B. Shrestha CHECKED BY: P. Upadhyaya APPROVED BY: Dr. T.H.Choi	NAME SIGNATURE 	REV NO. DESCRIPTION	DATE: November, 2022	
								DWG.NO.: 5.2	
								SHEET NO.:	
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