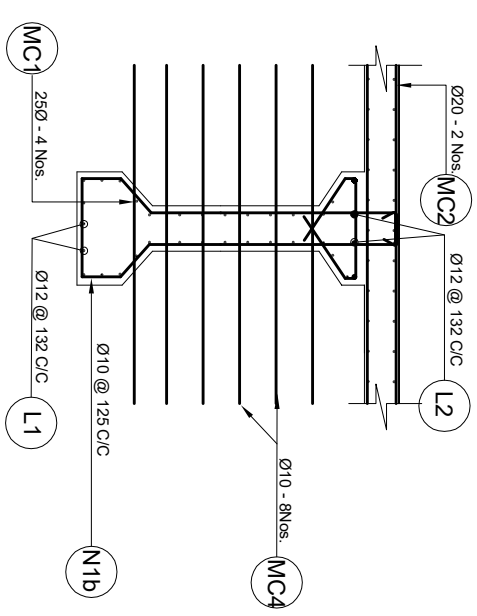
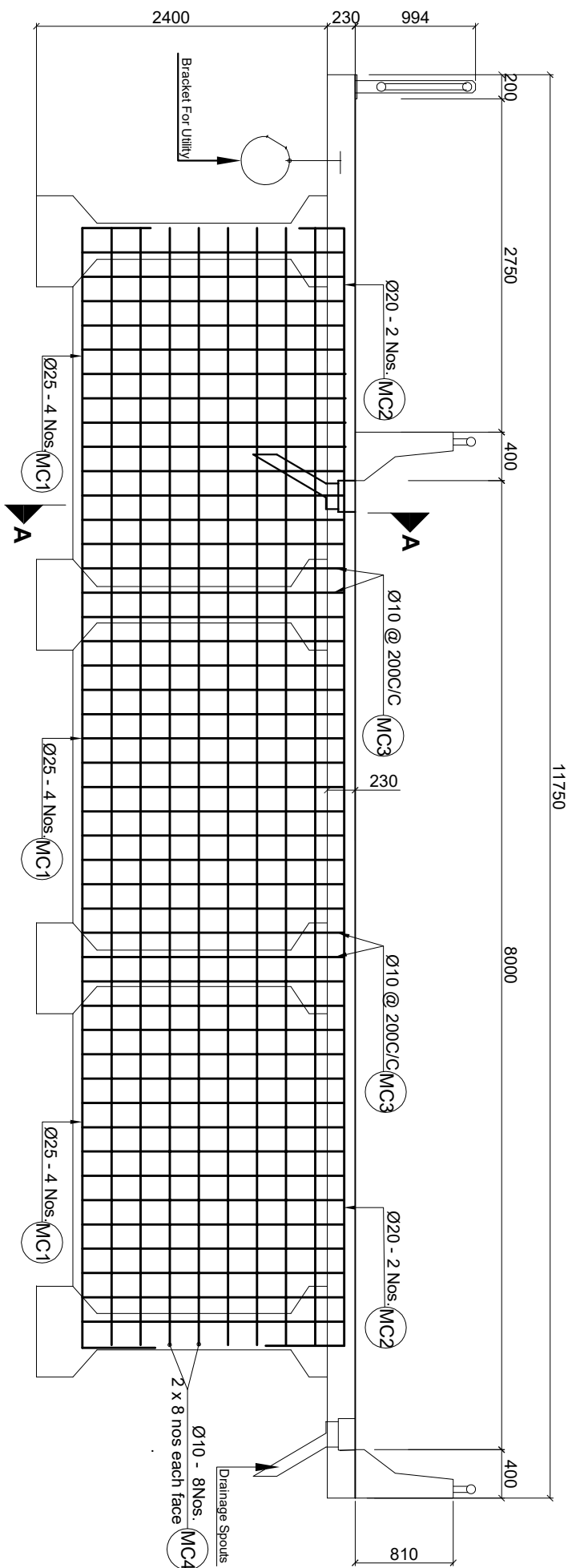
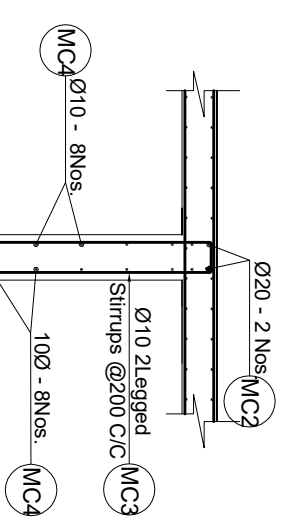
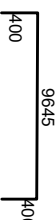
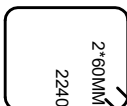
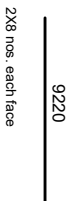




Dowel bar of Intermediate Cross Girder
Scale:-1:50



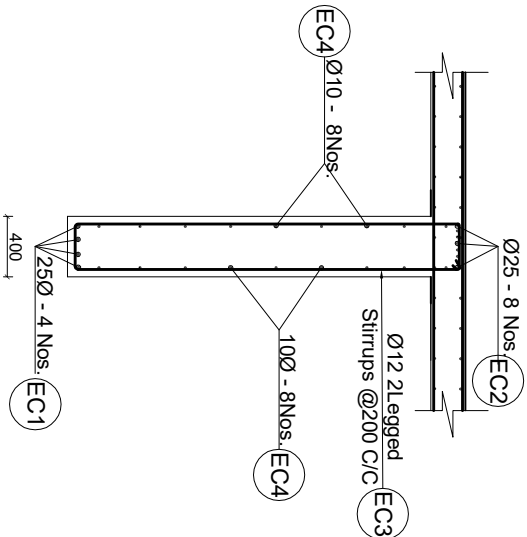
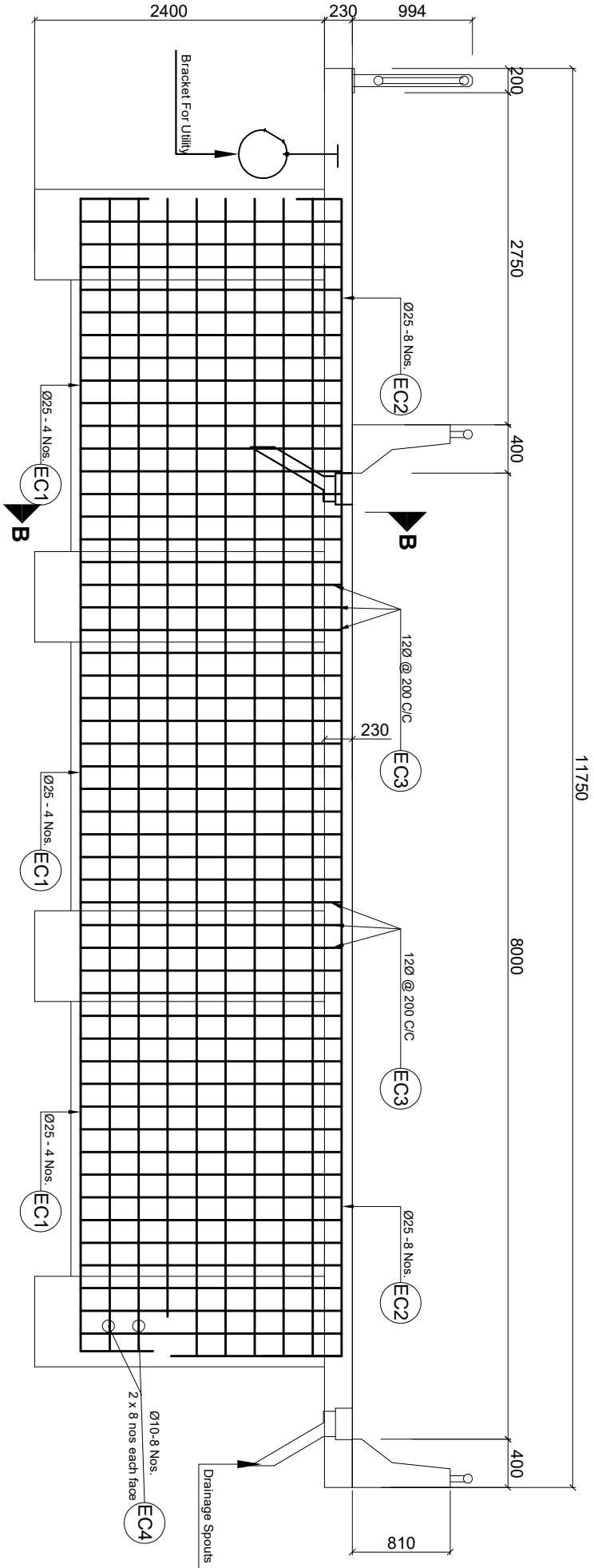
Section At A-A
Scale: 1:50

BAR BENDING SCHEDULE OF INTERMEDIATE CROSS GIRDER								
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)	TOTAL WEIGHT (kg)	
MC1			25	4	10.445	3.853	160.994	
MC2			20	2	10.445	2.466	51.518	
MC3		200	10	45	5.020	0.617	139.276	
MC4		300	10	16	9.220	0.617	90.952	
TOTAL IN ONE GIRDER							442.740	
TOTAL NUMBER OF GIRDER AND TOTAL WEIGHT (IN METRIC TON)							3	1.328

NOTE:

Dowel bars similar to the longitudinal bars of the cross girders shall be pre-installed in the precast main girder before casting. The longitudinal bars of the cross girder shall be lapped to the dowel bars, which shall have a lap length of 60 dia. of the corresponding bars.

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  Jyoti-Tech Studio of Engineering										 Butwal - Gorusinghe Section		DOR, DCID		Reinforcement Details of Intermediate Cross Gilder of Kundra Bridge ((47/H001/314_A))		As Shown		DESIGNED BY:		SIGNATURE										DWG NO.:	
																		CHECKED BY:		SIGNATURE										314_Kundra	
																		APPROVED BY:		SIGNATURE										SHEET NO.:	
																														13/32	
																Dr. T.H. Choi															

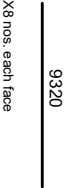


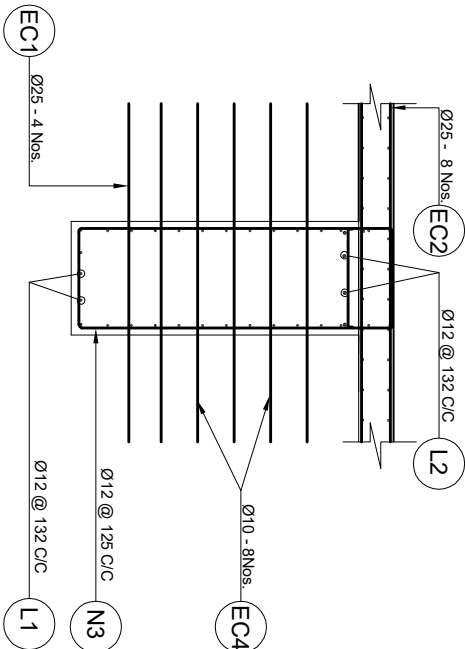
Section A-A

Scale:-1:50

End Cross Girders

Scale:-1:50

BAR BENDING SCHEDULE OF END CROSS GIRDER							
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACING (MM)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGT H (KG/m)	TOTAL WEIGHT (KG)
EC1			25	4	10.445	3.853	160.994
EC2			25	8	10.445	3.853	321.987
EC3		200	12	50	5.242	0.888	232.697
EC4		300	10	16	9.320	0.617	91.938
TOTAL IN ONE GIRDER							807.616
TOTAL NUMBER OF GIRDER AND TOTAL WEIGHT (IN METRIC TON)							2
							1.615



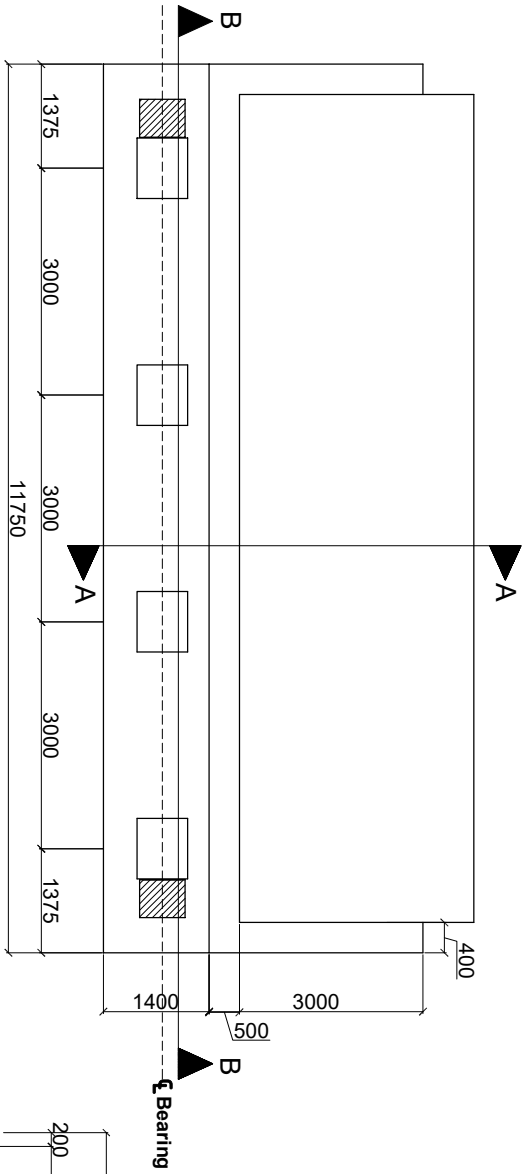
Dowel bar of End Cross Girder

Scale:-1:50

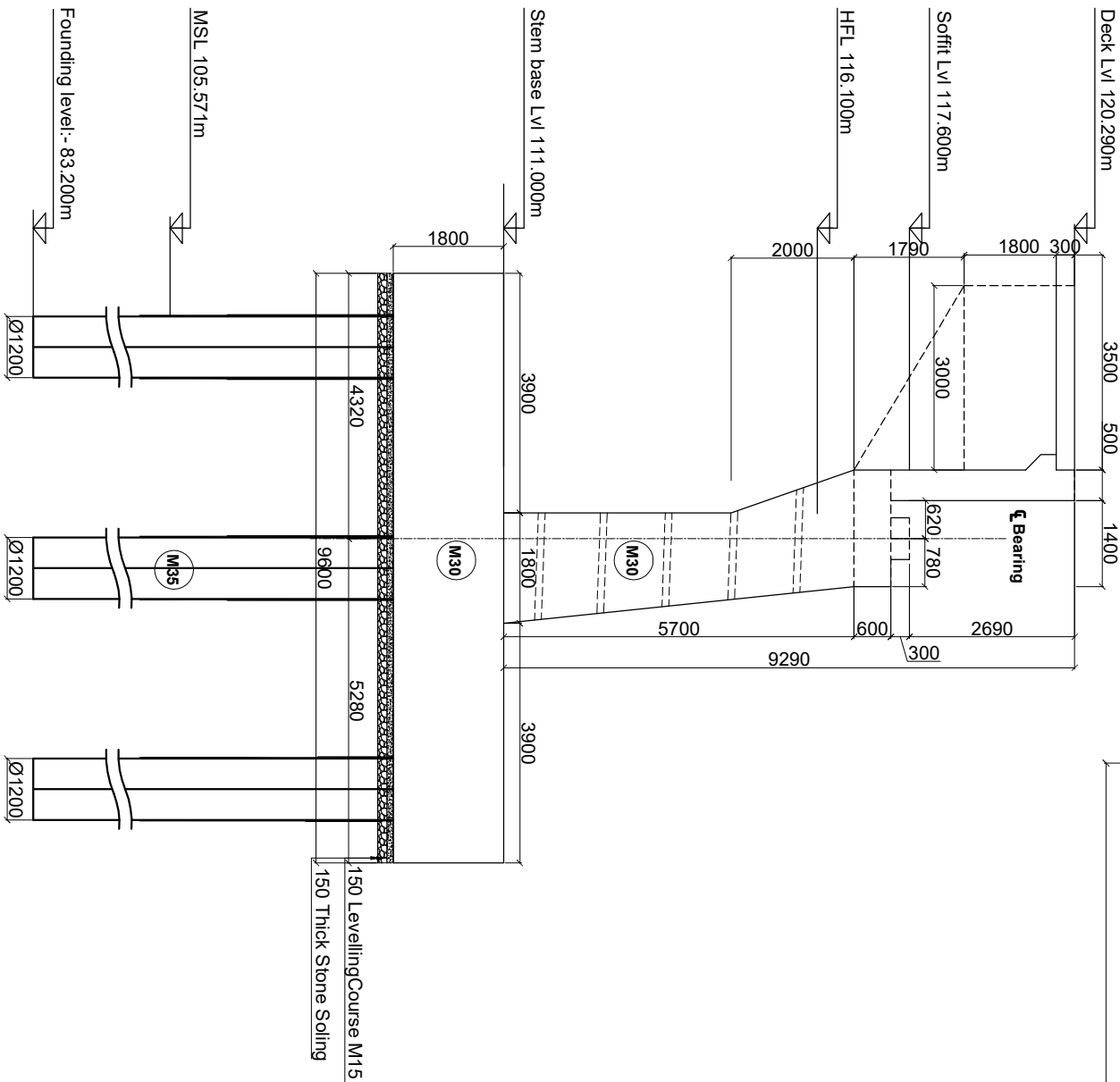
NOTE:

Dowel bars similar to the longitudinal bars of the cross girders shall be pre-installed in the precast main girder before casting. The longitudinal bars of the cross girder shall be lapped to the dowel bars, which shall have a lap length of 60 dia. of the corresponding bars.

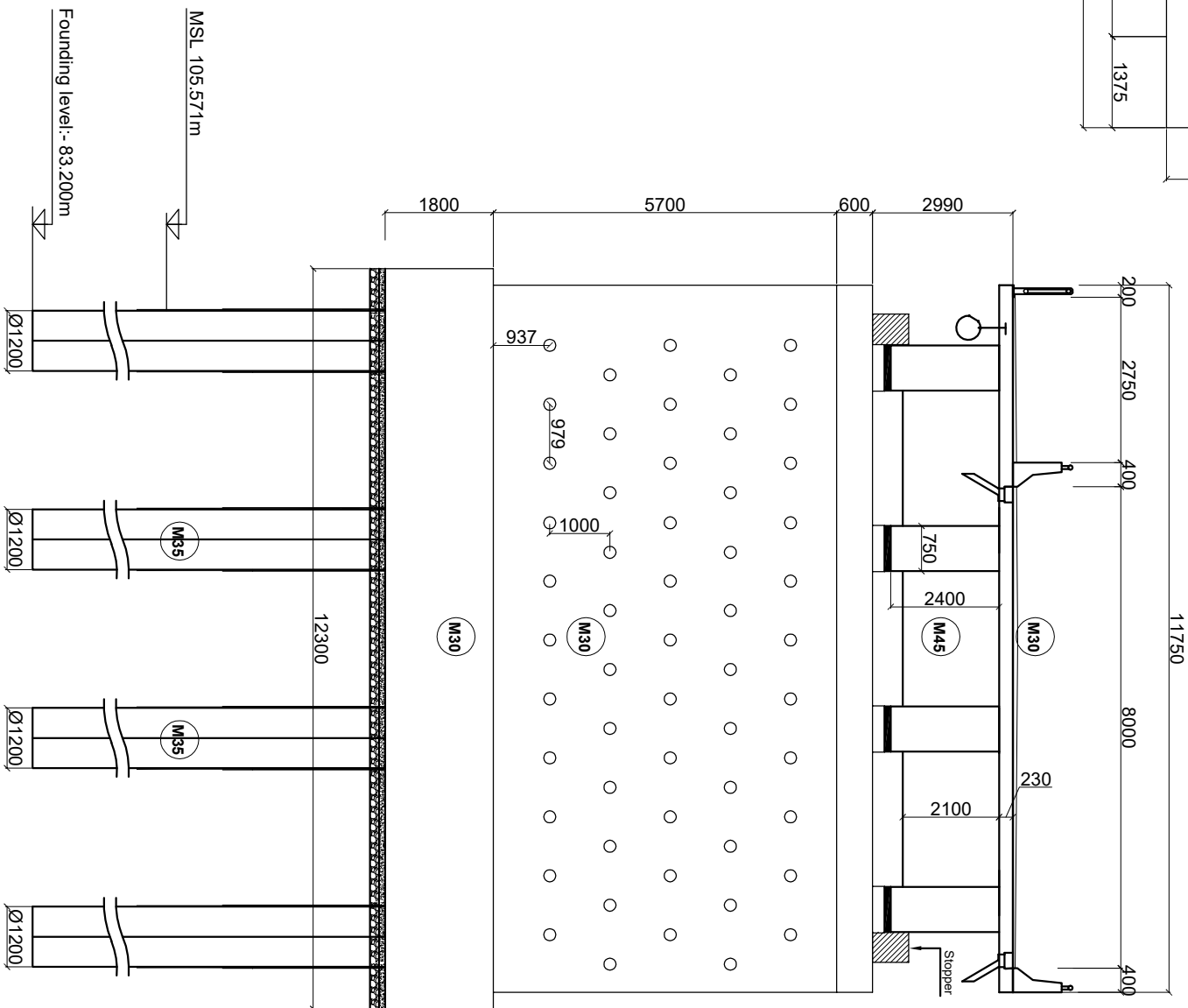
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd), Nepal and  JYV- Tech Studio of Engineering	IMPLEMENTING AGENCY:	SHEET TITLE:	SCALE:		NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE: November , 2022							
											DOR, DCID	ROAD NAME:	As Shown	DESIGNED BY:	CHECKED BY:	APPROVED BY:	DWG.NO.:



Plan of Abutment
Scale:-1:100

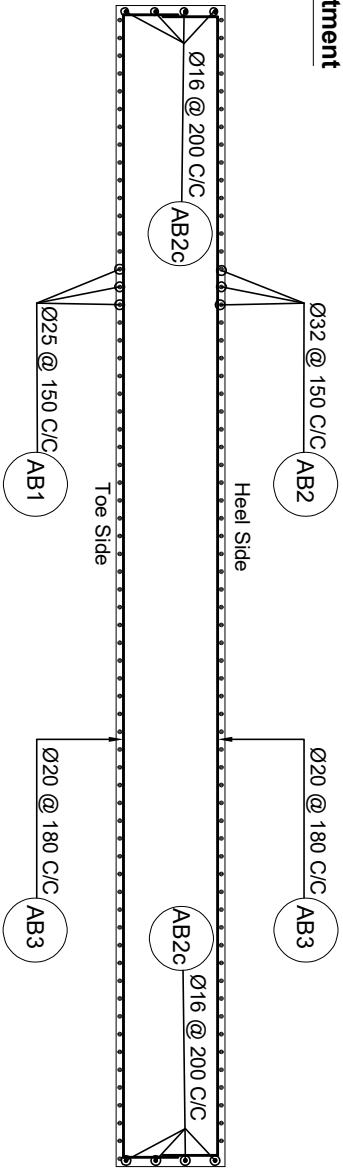
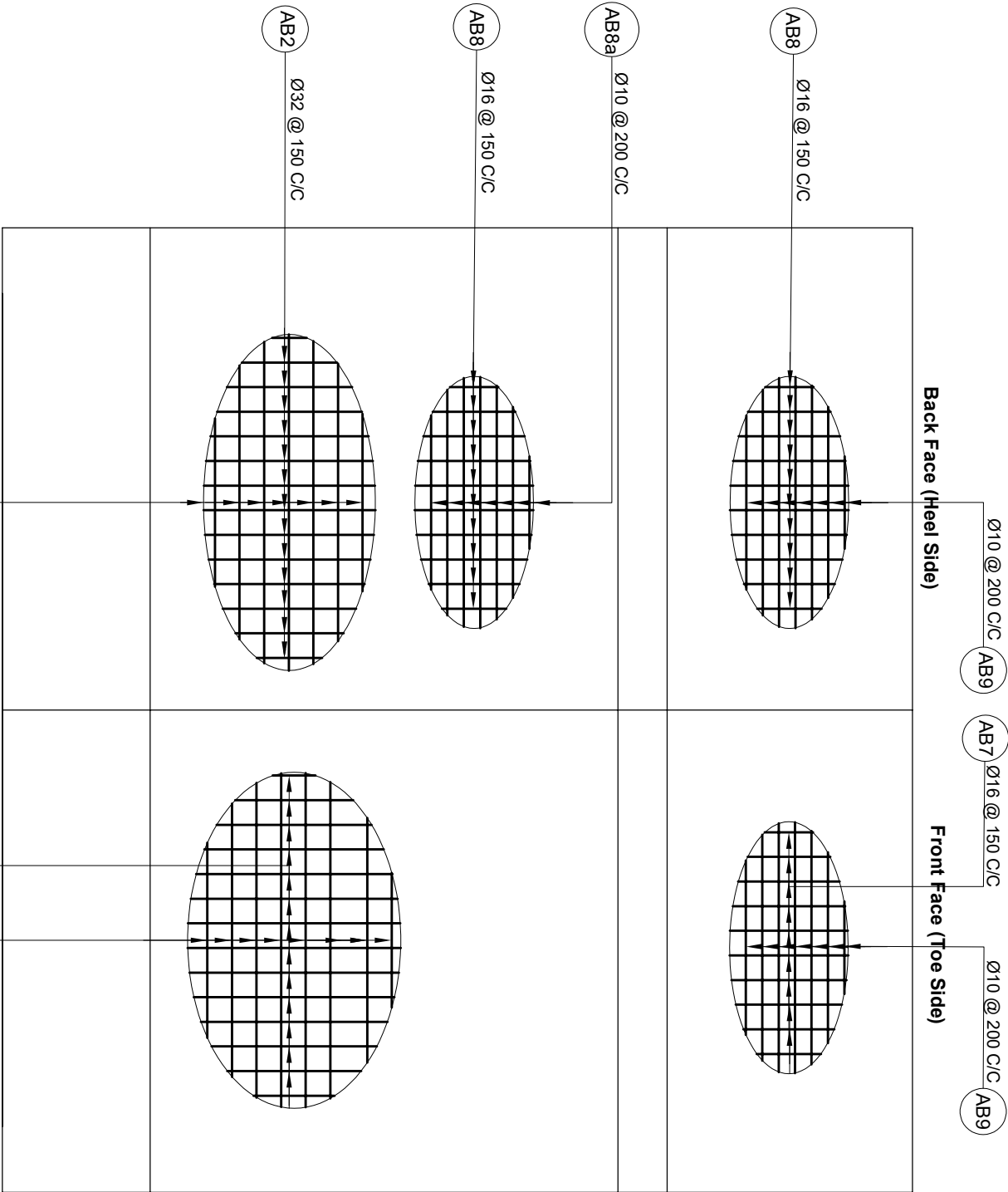
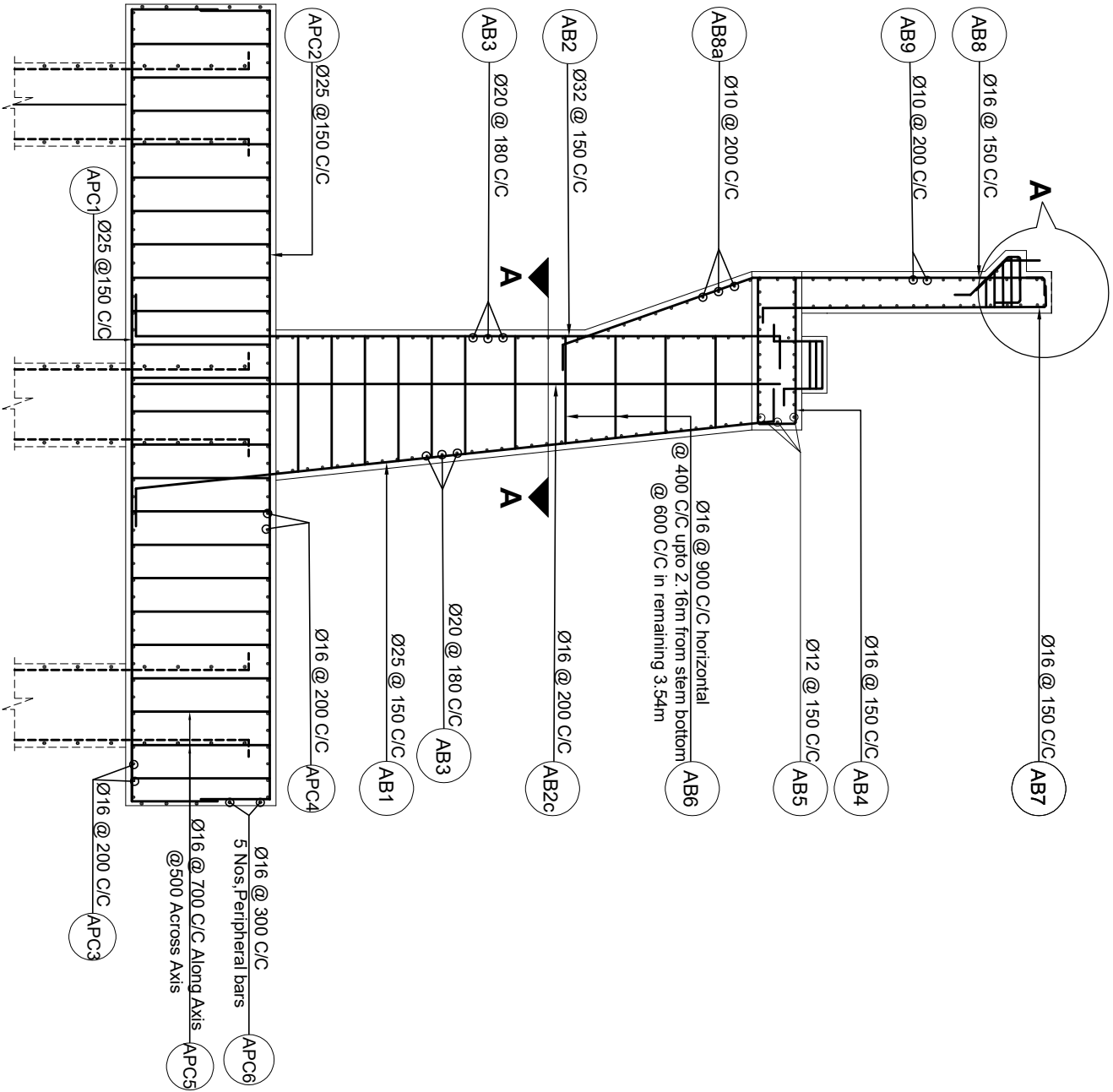


Section Of Abutment At (A-A)
Scale:-1:110

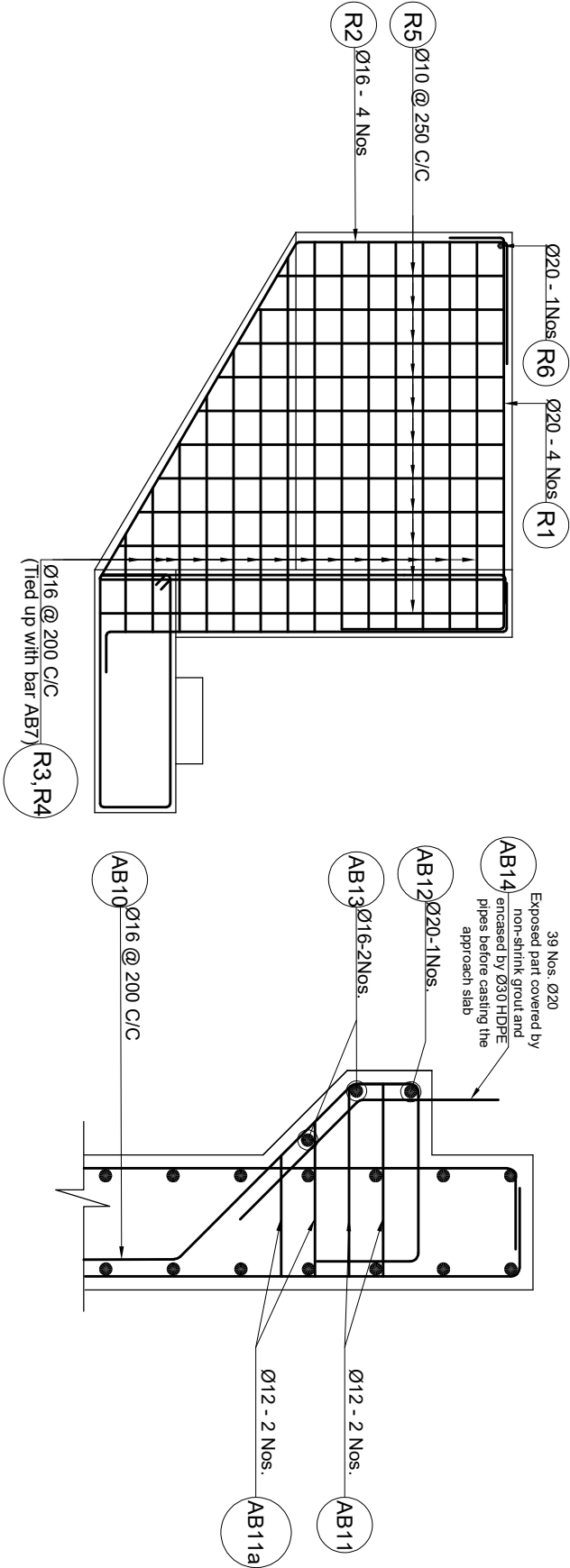


Section Of Abutment At (B-B)
Scale:-1:110

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	 Soosung Engineering Co. Ltd, Korea in association with ERMCo P (Ltd), Nepal and JYR - Tech Studio of Engineering	CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE:
		DOR, DCID		ROAD NAME:		Details of Abutment Right of Kundra Bridge ((47/H001/314_A))		As Shown		DESIGNED BY:		Saroj Bhattacharai			November, 2022
		East West Highway (H01)								CHECKED BY:		P. Upadhyaya			
		Butwal - Gorusinghe Section								APPROVED BY:		Dr. T.H. Choi			
															DWG. NO.: 314_Kundra SHEET NO.: 15/32

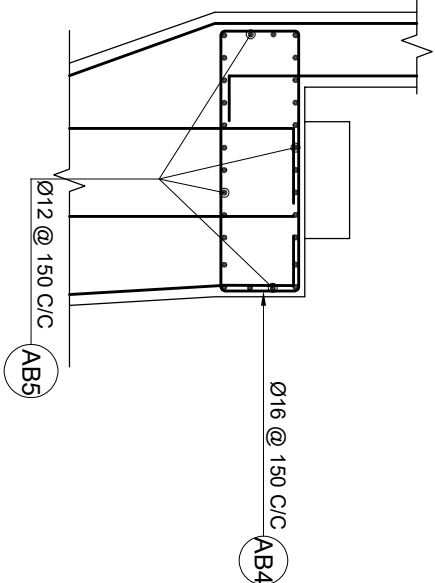


Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP				CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd), Nepal and  JTC - Tech Studio of Engineering	
IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:	
DOR, DCID		Reinforcement Details Of Abutment Right of Kundra Bridge ((47/H001/314_A))		As Shown	
ROAD NAME:		DESIGNED BY:		NAME	
East West Highway (H01)		CHECKED BY:		SIGNATURE	
Butwal - Gorusinghe Section		APPROVED BY:		REV NO.	
		Dr. T.H. Choi		DESCRIPTION	
				DATE:	
				November, 2022	
				DWG. NO.:	
				313_Tulbuliya	
				SHEET NO.:	
				16/32	



Reinforcement Details Of Wingwall

Detail At A

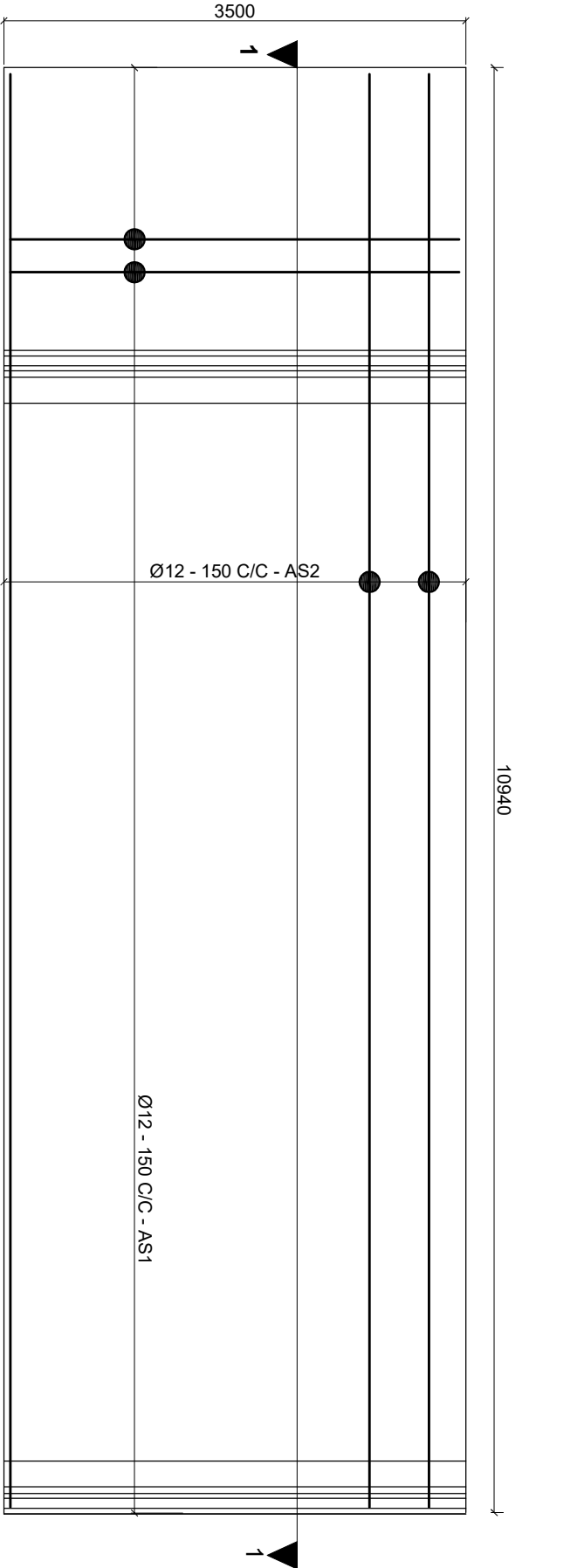


Reinforcement Details Of Abutment

BAR BENDING SCHEDULE FOR WINGWALL						
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACIN BARS G (mm)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (Kg/m)
R1		0	20	8	5.007	2.466
R2		0	16	8	5.502	1.578
R3		200	16	18	7.356	1.578
R4		200	16	18	3.928	1.578
R5		250	10	26	6.050	0.617
R6		20	2	0.307	2.466	1.514
R7		10	0	3.400	0.617	0.000
R8		10	0	1.320	0.617	0.000
TOTAL IN 2 WINGWALL IN ONE ABUTMENT						587.332
TOTAL WEIGHT (IN METRIC TON)						0.587

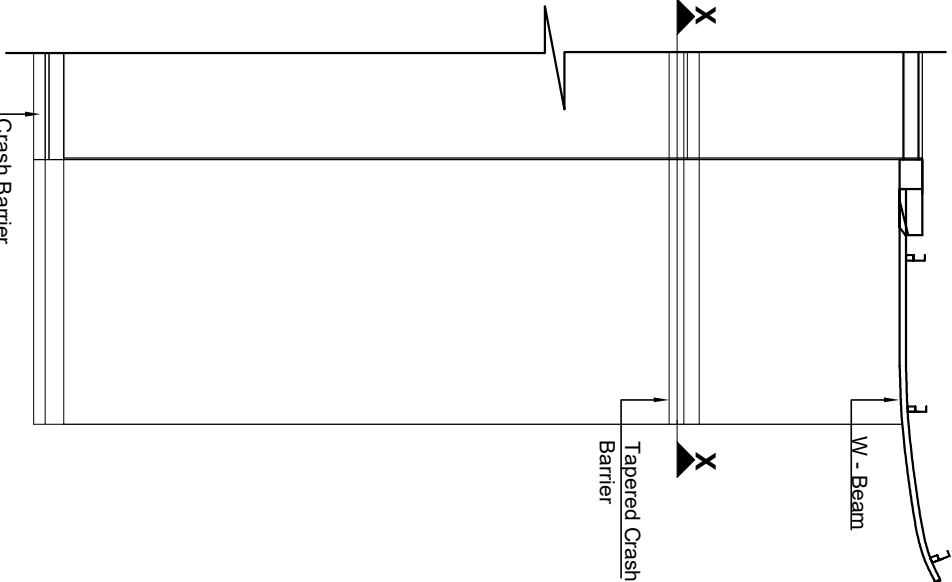
BAR BENDING SCHEDULE OF ABUTMENT						
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACING BARS (mm)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (Kg/m)
AB1		150 mm c/c Approx	25	78	8.685	3.853
AB1a		-	-	-	-	-
AB2		150 mm c/c Approx	32	78	8.885	6.313
AB2c		At sideface 200 mm c/c	16	10	8.385	1.578
AB3		180 mm c/c Approx	20	66	25.370	2.466
AB4		150 mm c/c Approx	16	80	4.700	1.578
AB5		150 mm c/c Approx	12	30	11.600	0.888
AB6		900 mm C/C horizontal 400 mm C/C vertical upto 2.16m from stem bottom 600 mm C/C vertical at retaining 3.54 m	16	157	1.783	1.578
AB7		150 mm c/c Approx	16	79	4.240	1.578
AB8		150 mm c/c Approx	16	79	6.284	1.578
AB8a		200 mm c/c Approx	10	12	11.600	0.617
AB9		200mm c/c Approx	10	16	23.850	0.617
AB10		200 mm c/c Approx	16	55	1.947	1.578
AB11			12	110	1.000	0.888
AB11a			12	110	0.700	0.888
AB12			20	1	11.600	2.466
AB13			16	2	11.600	1.578
AB14			20	39	0.900	2.466
TOTAL WEIGHT ABUTMENT KG						14711.846
TOTAL WEIGHT (IN METRIC TON)						14.712

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		DATE: November , 2022	
	IMPLEMENTING AGENCY:		DOR, DCID		DWG.NO.:	
	ROAD NAME:		East West Highway (H01)		314_Kundra	
	Butwal - Gorusinghe Section		Reinforcement Details of Wingwall Right of Kundra Bridge ((47/H001/314_A))		SHEET NO.:	
			As Shown		17/32	



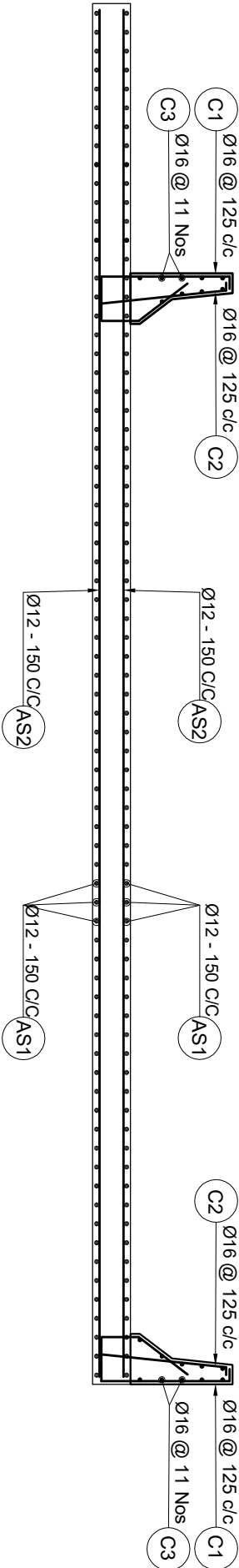
Plan of Reinforcement Details of Approach Slab

Scale:-1:50



Plan of Approach Slab

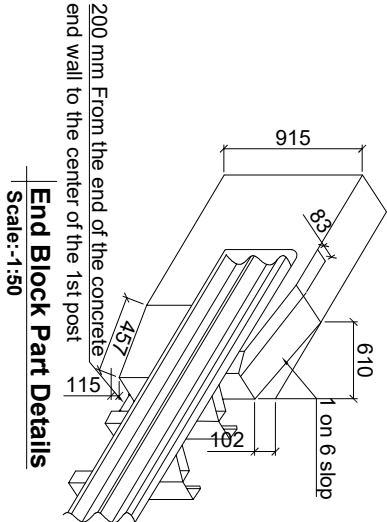
Not to Scale



Section at 1-1

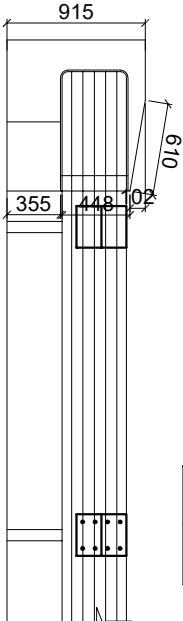
Scale:-1:50

BAR BENDING SCHEDULE OF APPROACH SLAB						
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (kg/m)	TOTAL WEIGHT (kg)
AS1	3400	12	148	3.400	0.888	446.749
AS2	10850	12	48	10.850	0.888	462.375
TOTAL IN ONE APPROACHSLAB						909.124
TOTAL WEIGHT IN METRIC TON						0.909



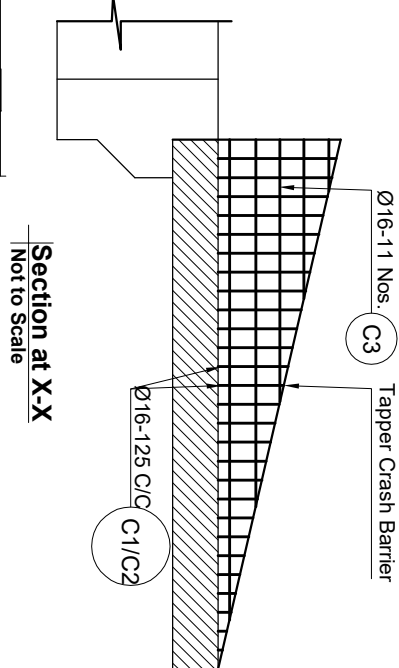
End Block Part Details

Scale:-1:50



Elevation

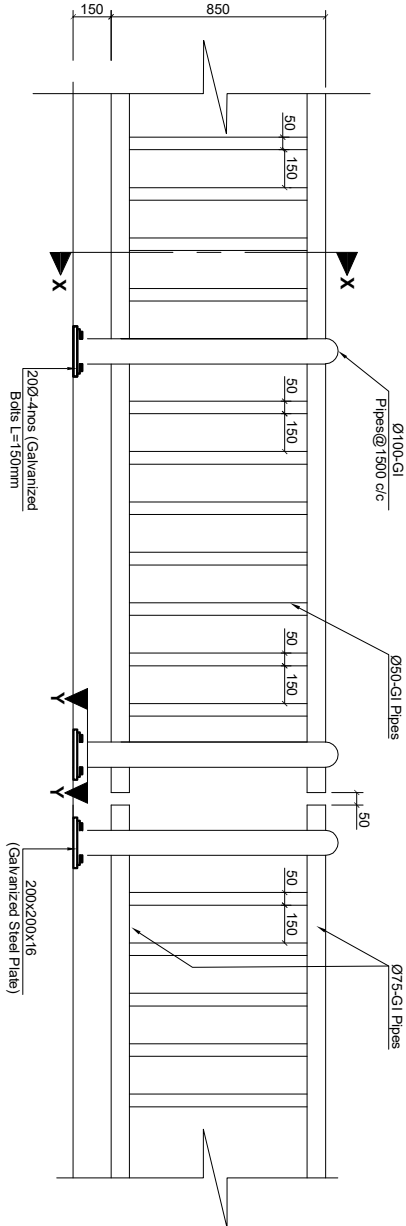
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Section at X-X

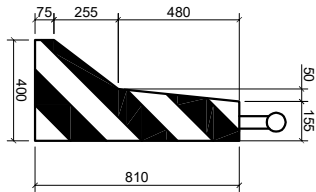
Not to Scale

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 Engineering Co. Ltd, Korea in association with  ERM Co. P (Ltd), Nepal and  JRC - Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Reinforcement Details of Approach Slab of Kundra Bridge ((47/H001/314_A))		SCALE: As Shown		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November , 2022	
										Saroj Bhattacharai								DWG.NO.: 314_Kundra	
										P. Upadhyaya									
										Dr. T.H.Choi								SHEET NO.: 19/32	



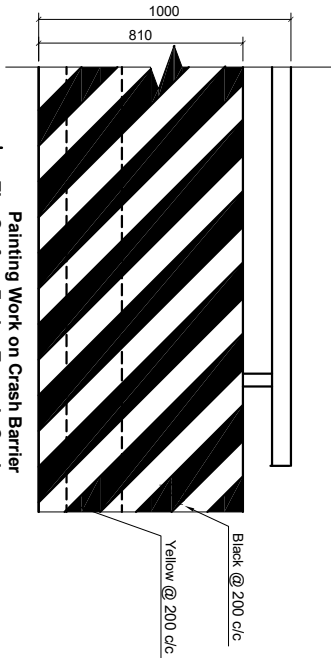
Railing Post Details

Scale:-1:20



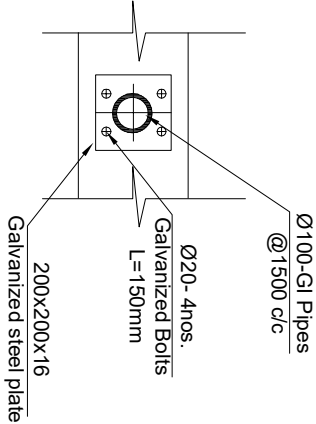
Painting Work on Crash Barrier

Scale:-1:20



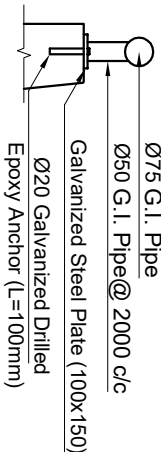
Painting Work on Crash Barrier

Scale:-1:20



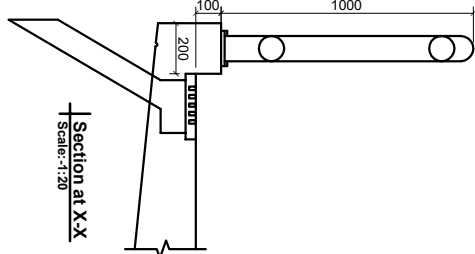
Section at Y-Y

Scale:-1:20



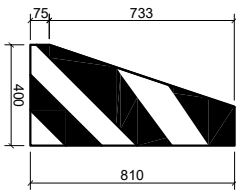
Details at A-A

Scale:-1:20



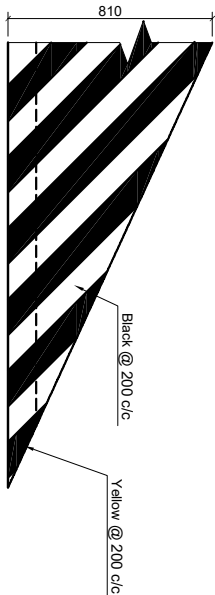
Section at X-X

Scale:-1:20



Painting Work on Tapper Crash Barrier

Scale:-1:20

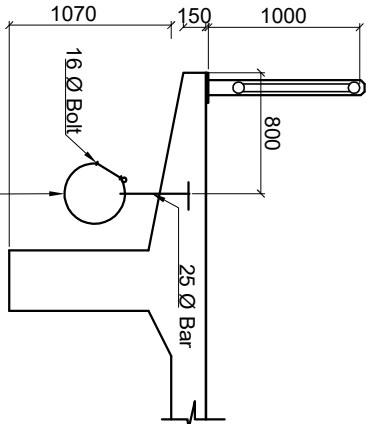


Painting Work on Crash Barrier

Scale:-1:20

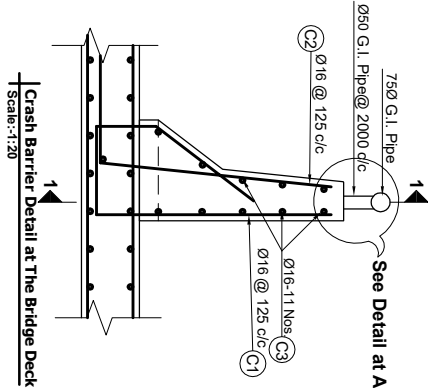
NOTES:
The crash barrier shall be sloped at both ends of the bridge as shown and the reinforcement shall be adjusted according to the slope.

BAR BENDING SCHEDULE OF CRASH BARRIER (For each 1m)					
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACING (mm)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)
C1		125	16	8	2.030
C2		125	16	8	1.415
C3		16	11	0.963	1.578
TOTAL FOR 1 M					60.218
TOTAL FOR 1.0M (IN METRIC TON)					0.060



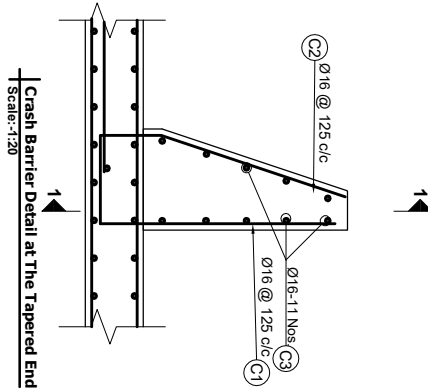
Utility hanger Detail

Scale:-1:50



Crash Barrier Detail at The Bridge Deck

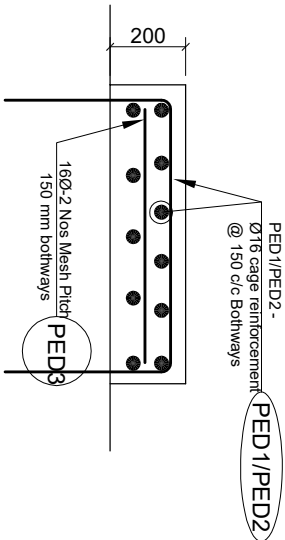
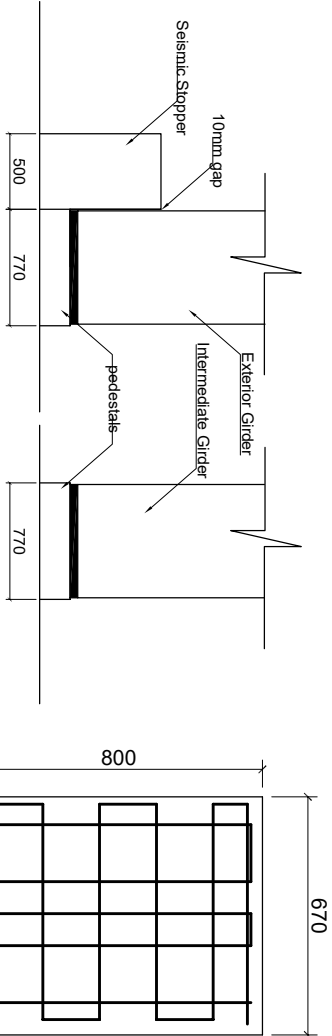
Scale:-1:20



Crash Barrier Detail at The Tapered End

Scale:-1:20

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 JYR - Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Miscellaneous Details-1 of Kundra Bridge ((47/H001/314_A))		SCALE: As Shown		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November , 2022	
										DESIGNED BY: Saroj Bhattacharai		CHECKED BY: P. Upadhyaya		APPROVED BY: Dr. T.H.Choi				DWG.NO.: 314_Kundra	
																		SHEET NO.: 20/32	

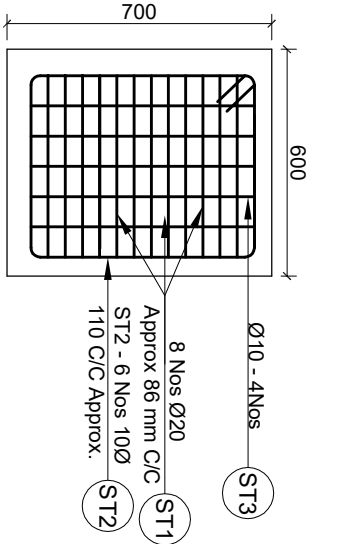


Abutment Cap With Stopper
Scale:-1:50

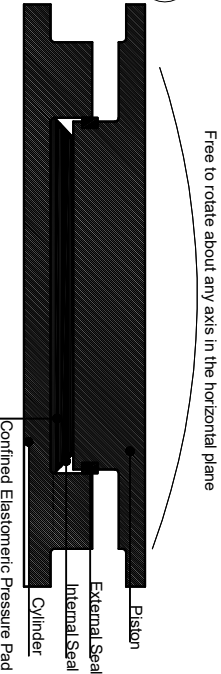
Pedestal Plan
Scale:-1:20

Pedestal Section
Scale:-1:20

Note
On Pedestal Thickness The thickness of the pedestal can be suitably adjusted as per engineer's instruction to retain the height of the ballast wall

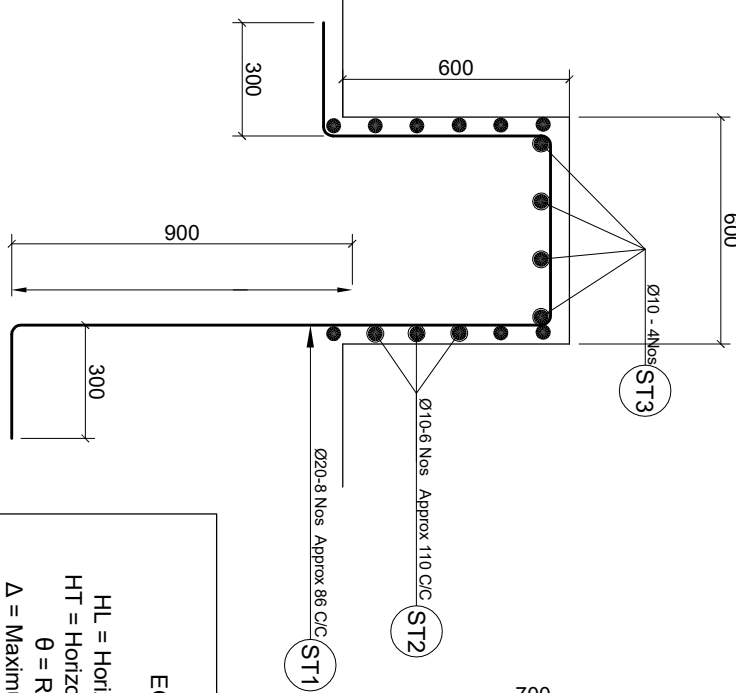


Stoppers Plan
Scale:-1:20



Fixed Pot Bearing As Per IRC : 83
(Part - III) - 2018 Section 2.1.1

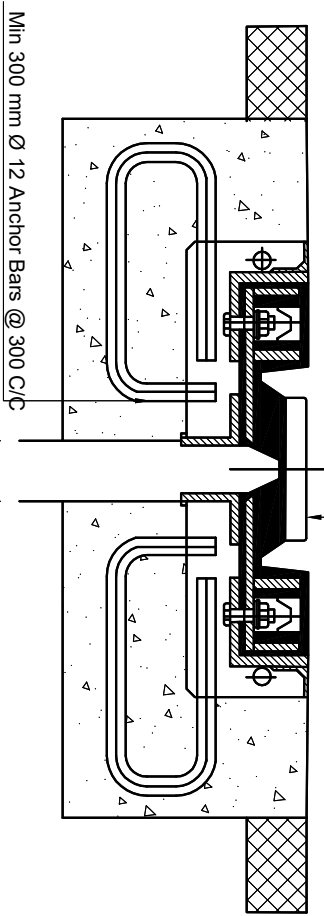
- Notes: Proposed Type of Bearing:- POT-PTFE bearings
- 1) The POT-Fixed bearings are fixed in position and free to rotate in all directions
 - 2) The POT-PTFE Free bearings are free to rotate in all direction, Free to slide along the the bridge axis and Fixed in position in transverse direction
 - 3) The coefficient of friction, μ for PTFE free bearings is taken as 0.05



Stoppers Details
Scale:-1:20

Legends:
EQ = Earthquake condition
V = Vertical load
HL = Horizontal force along the bridge axis
HT = Horizontal force transverse to bridge axis
 θ = Rotation about transverse axis
 Δ = Maximum longitudinal movement allowed

Reinforced Elastomeric Pad
Assembly as Specified in IRC : SP: 69-2011 (Section 5.2.3)



Reinforced Elastomeric Joint
Scale:-1:10

Load Condition	Items	Load / Displacement/ Moment	
		POT Fixed Bearing	POT_PTFE Free Bearing
Under DL only	V, kN	No EQ EQ	1280 1446
	HL, kN	No EQ EQ	66 768
	HT, kN	No EQ EQ	0 346
	θ , rad	No EQ EQ	0.0000 0.0000
	Δ , mm	No EQ EQ	1990 2258
	Under Maximum Live Load	No EQ EQ	0 497
Under Maximum Live Load	V, kN	No EQ EQ	1280 1446
	HL, kN	No EQ EQ	66 768
	HT, kN	No EQ EQ	0 346
	θ , rad	No EQ EQ	0.0000 0.0000
	Δ , mm	No EQ EQ	1990 2258
	Under Maximum Live Load	No EQ EQ	0 497

The Contractor Shall Provide and Supply POT - PTFE Bearings According to Provided load and Deformation.

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 Engineering Co. Ltd,

Korea in association with

ERMCM P (Ltd), Nepal

and

JYK - Tech Studio of Engineering

IMPLEMENTING AGENCY:

DOR, DCID

ROAD NAME:

East West Highway (H01)

Butwal - Gorusinghe Section

SHEET TITLE:

Miscellaneous Details-2

of

Kundra Bridge

((47/H001/314_A))

SCALE:

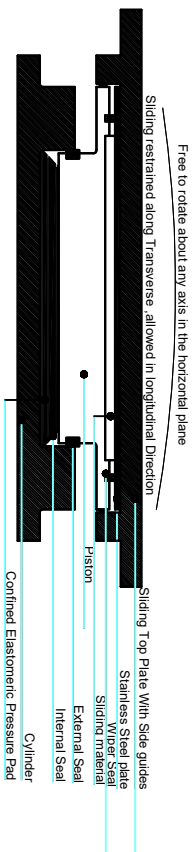
As Shown

BAR BENDING SCHEDULE OF PEDESTAL

BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACIN G (mm)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (Kg/m)	TOTAL WEIGHT (Kg)
PED1		200	16	5	2.960	1.578	23.359
PED2		200	16	6	2.830	1.578	26.800
PED3		150	16	2	7.540	1.578	23.801
TOTAL BAR BENDING SCHEDULE OF PEDESTAL							73.961
TOTAL WEIGHT (IN METRIC TON)							0.074

BAR BENDING SCHEDULE OF STOPPER

BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACIN G (mm)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (Kg/m)	TOTAL WEIGHT (Kg)
ST1		86	20	8	3.200	2.466	63.134
ST2		110	10	6	2.440	0.617	9.026
ST3		10	4	0.600	0.617	1.480	73.639
TOTAL BAR BENDING SCHEDULE OF STOPPER							0.074
TOTAL WEIGHT (IN METRIC TON)							0.074



Guided Pot Bearing(For free Bearing) Movement Allowed in to longitudinal Direction As Per IRC : 83 (Part - III) - 2018 Section 2.1.3

DATE:

November , 2022

DWG.NO.:

314_Kundra

CHECKED BY:

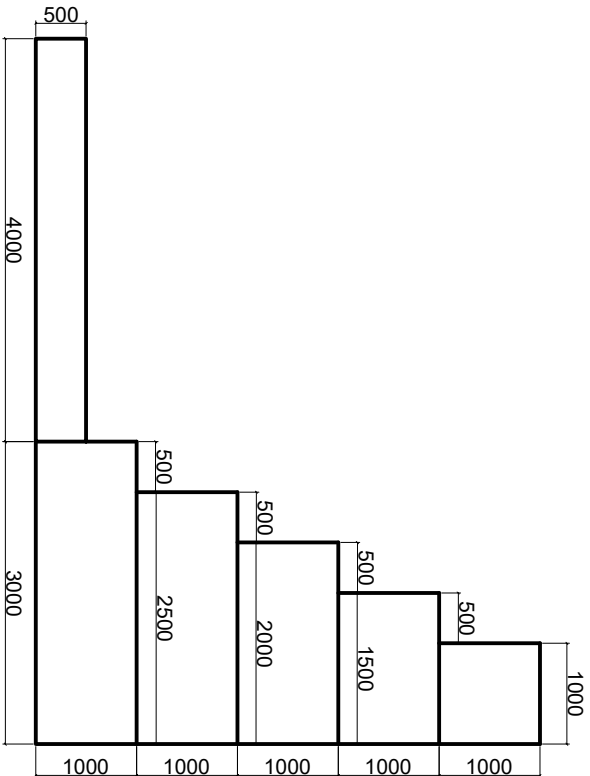
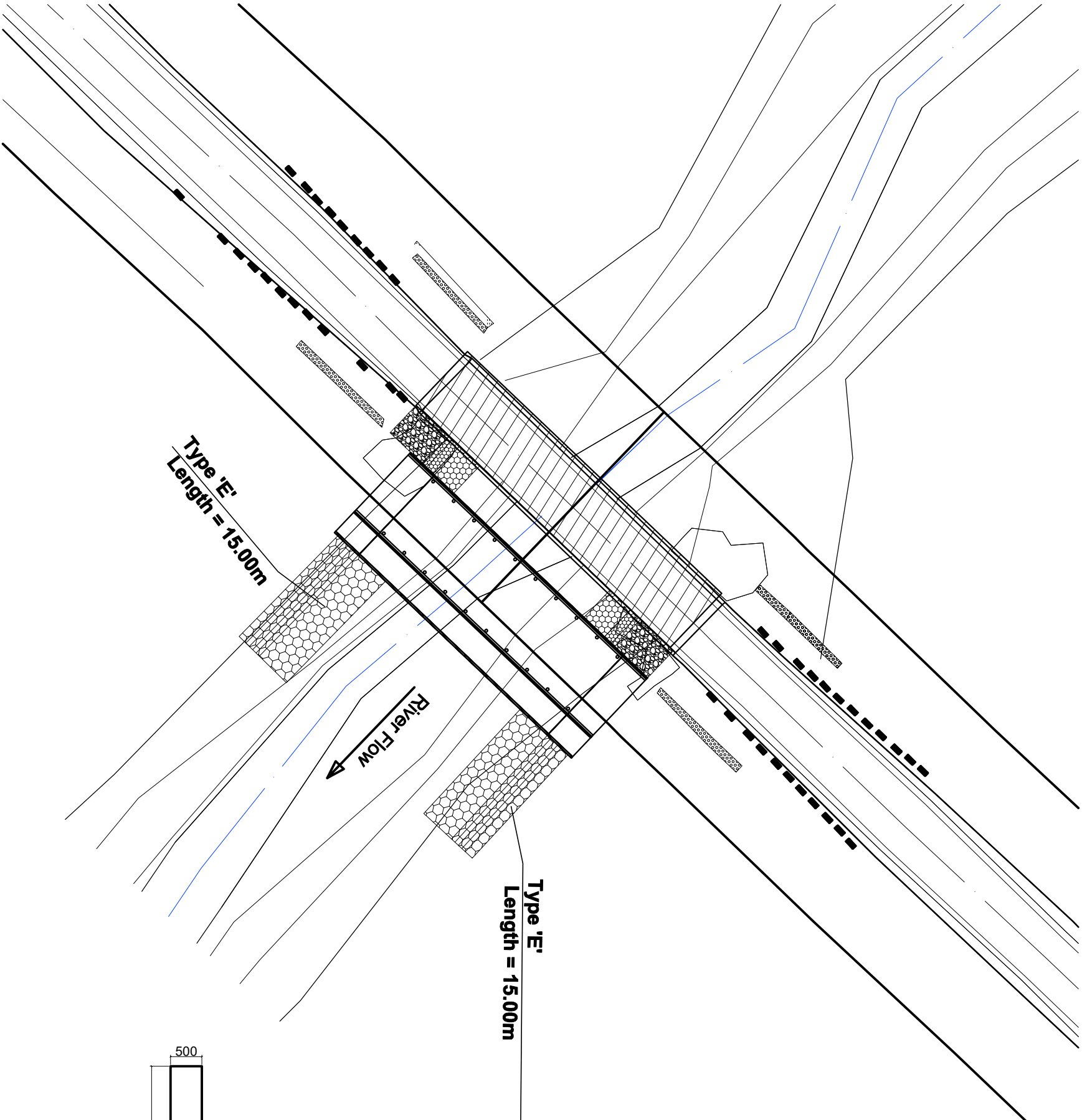
P. Upadhyaya

APPROVED BY:

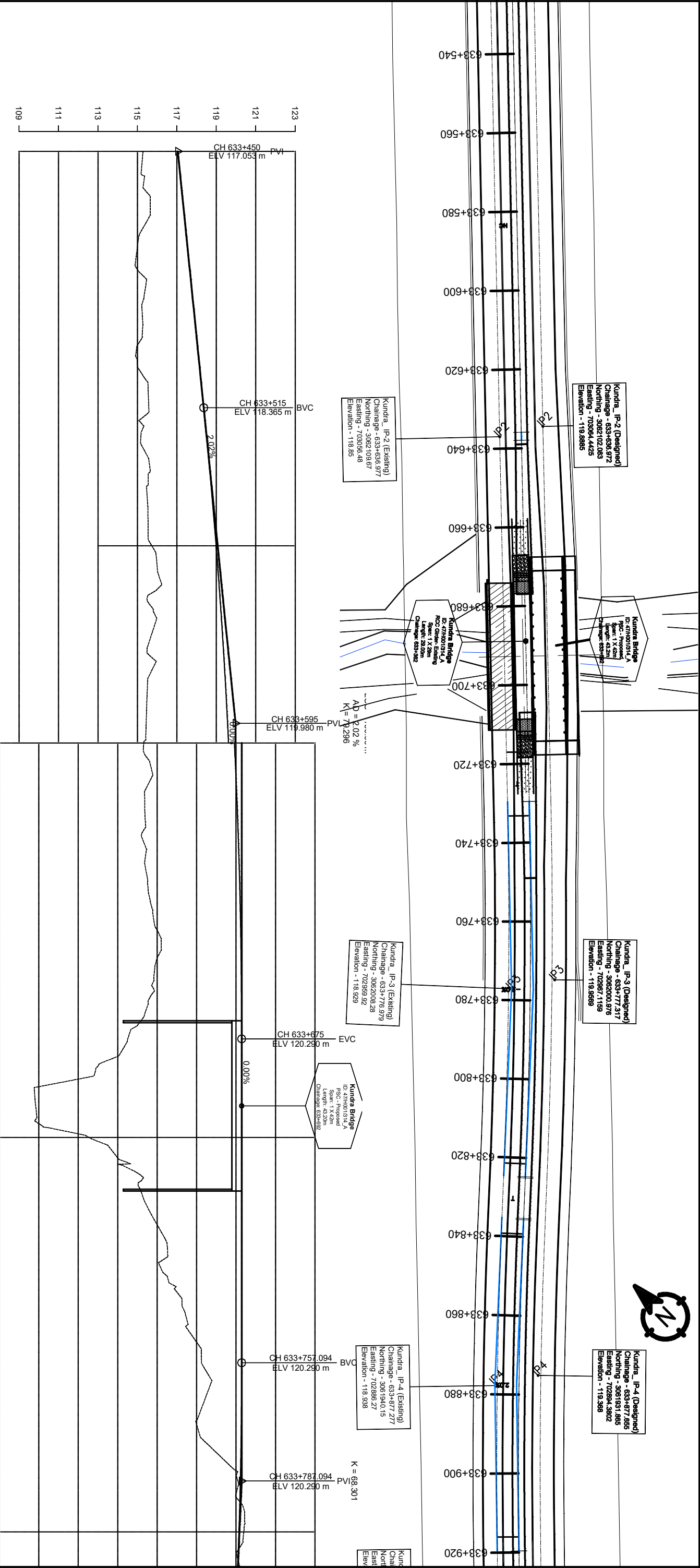
Dr. T.H.Choi

SHEET NO.:

21/32



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 Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and  JYK - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:				NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November , 2022	
				DOR, DCID		River Training Work of Kundra Bridge (47/H001/314_A)		As Shown				Designed by:								DWG.NO.: 314_Kundra	
				ROAD NAME:								Checked by:								SHEET NO.: 22/32	
				Butwal - Gorusinghe Section								Approved by:									



DESIGN LEVEL(m)	EXISTING LEVEL(m)	HORIZONTAL ALIGNMENT		SUPER ELEVATION	CHAINAGE(km)
		RIGHT	LEFT		
117.053	115.287	IP-1 R=0.00		633+450	633+450
117.255	115.416				633+460
117.457	115.222			NC	633+470
117.659	115.003				633+480
117.861	115.235				633+490
118.062	114.959				633+500
118.264	115.544				633+510
118.464	115.301				633+520
118.654	115.630				633+530
118.830	115.530				633+540
118.994	115.736				633+550
119.146	116.215				633+560
119.284	115.884				633+570
119.410	115.888				633+580
119.524	115.478				633+590
119.921	115.324				633+600
120.013	115.597				633+610
120.092	115.406				633+620
120.157	115.375	IP-2 R=1994.50		NC	633+630
120.210	115.655				633+640
120.249	116.207				633+650
120.275	115.843				633+660
120.288	115.244				633+670
120.290	113.727				633+680
120.290	109.805				633+690
120.290	112.555				633+700
120.290	115.272				633+710
120.290	115.762				633+720
120.290	116.539	IP-3 R=1505.50		T 633+724.678 633+730.978	633+730
120.290	117.134				633+740
120.290	117.740				633+750
120.289	118.581				633+760
120.278	118.155				633+770
120.252	119.030				633+780
120.211	120.023				633+790
120.155	120.396				633+800

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
TSE-Tech Studio of Engineering

ROAD NAME:

East West Highway (H01)

IMPLEMENTING AGENCY:

DOR, DCID

SHEET TITLE:

Plan & Profile
of
Kundra Bridge

SCALE:

Vertical Scale
0 2 4 6m

Horizontal Scale
0 10 20 30m

DESIGNED BY:

Saroj Bhattacharai

CHECKED BY:

P. Upadhyaya

APPROVED BY:

Dr. T.H.Choi

NAME

SIGNATURE

REV NO.

DESCRIPTION

DATE:

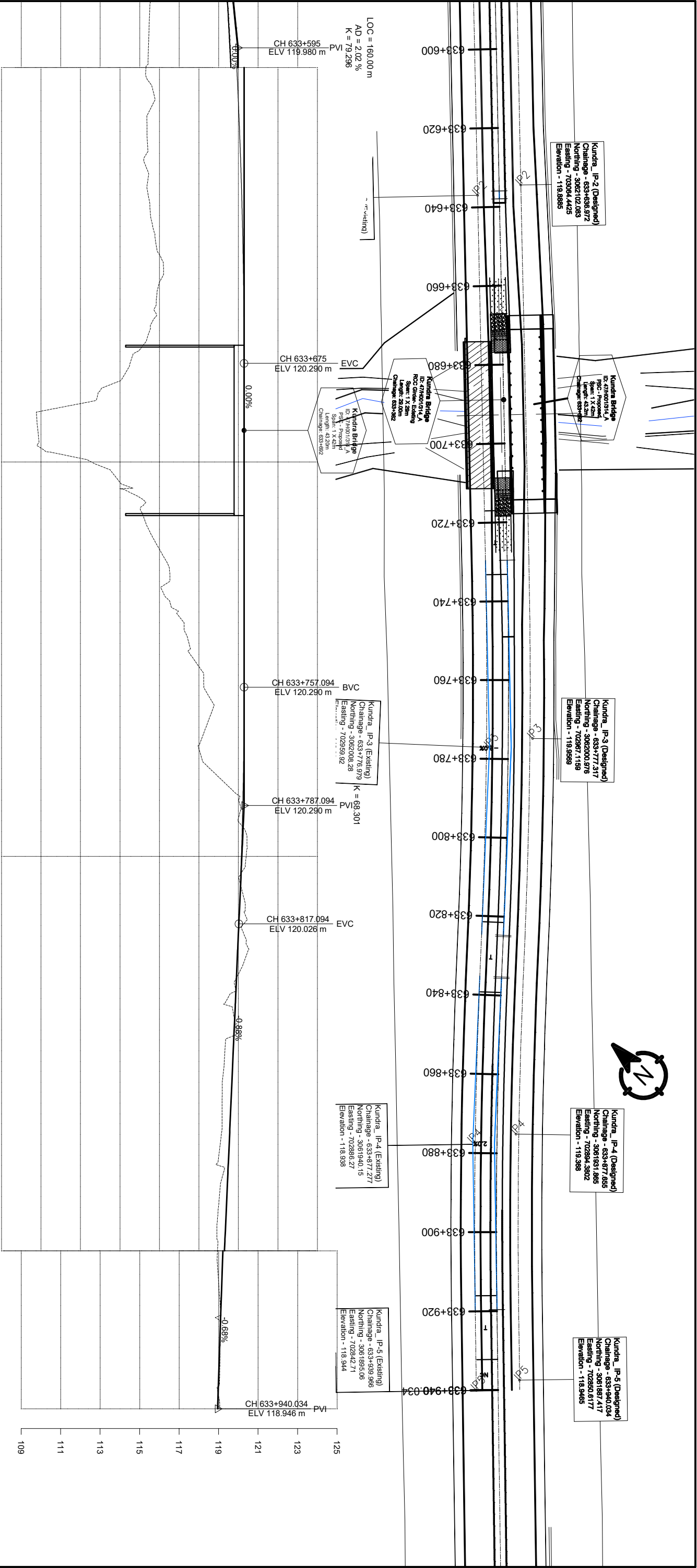
November, 2022

DWG. NO.:

314_Kundra

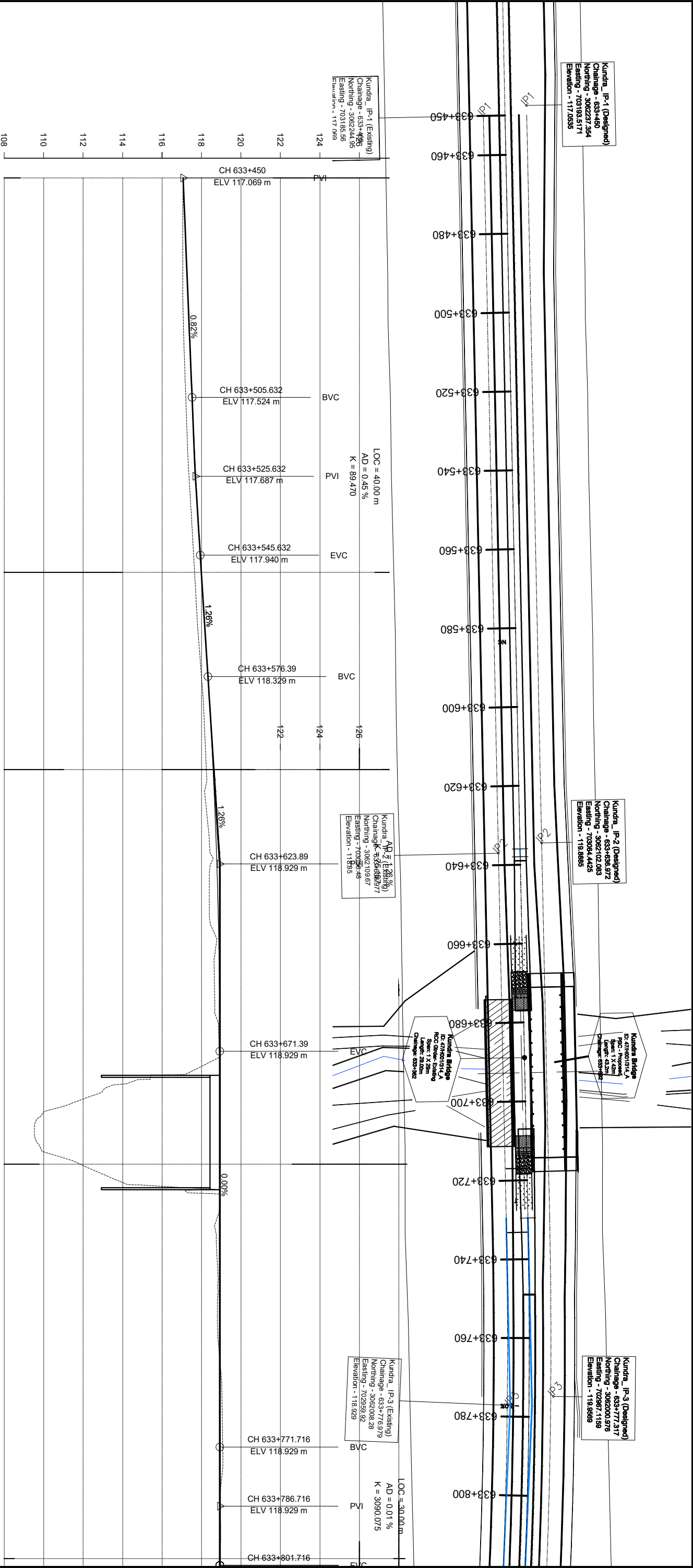
SHEET NO.

23/32



633+590																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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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 P (Ltd), Nepal and TSE-Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Plan & Profile of Kundra Bridge 633+600-633+940		SCALE: Vertical Scale Horizontal Scale		DESIGNED BY: Saroj Bhattacharai	SIGNATURE	REV NO.	DESCRIPTION		DATE: November, 2022	DWG. NO.: 314_Kundra	SHEET NO. 24/32
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DESIGN LEVEL(m)	EXISTING LEVEL(m)	HORIZONTAL ALIGNMENT		SUPER ELEVATION	CHAINAGE(km)
		RIGHT	LEFT		
117.069	117.069	IP-1 R=0.00		633+450	633+450
117.151	117.055				633+460
117.233	117.051				633+470
117.314	117.052				633+480
117.396	117.098				633+490
117.478	117.164				633+500
117.560	117.235				633+510
117.653	117.307				633+520
117.756	117.421				633+530
117.870	117.539				633+540
117.995	117.651			633+600	633+550
118.121	117.761				633+560
118.248	117.902				633+570
118.373	118.056				633+580
118.488	118.159				633+590
118.590	118.248				633+600
118.678	118.248				633+610
118.753	118.420				633+620
118.815	118.397				633+630
118.863	118.520	IP-2 R=2005.50			633+640
118.899	118.641			633+730	633+650
118.920	118.672				633+660
118.929	118.887				633+670
118.929	113.485				633+680
118.929	109.538				633+690
118.929	111.847				633+700
118.929	118.940				633+710
118.929	118.753				633+720
118.929	118.837				633+730
118.929	118.808				633+740
118.929	118.939			633+780	633+750
118.929	119.041				633+760
118.929	119.072				633+770
118.929	119.012	IP-3 R=1494.50			633+780
118.930	118.969				633+790
118.930	118.956				633+800

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

 TSE-Tech Studio of Engineering

IMPLEMENTING AGENCY:

DOR, DCID

SHEET TITLE:

Plan & Profile of Kundra Existing Bridge

633+450 - 633+800

SCALE:

0 2 4 6m

Vertical Scale

0 10 20 30m

Horizontal Scale

NAME

Saroj Bhattacharai

SIGNATURE



REV NO.

DESCRIPTION

DATE:

November, 2022

DWG. NO.:

314_Kundra

SHEET NO.

25/32

Kundra, IP-1 (Designed)

Chainage - 633+450

Northing - 306237.964

Easting - 703163.571

Elevation - 117.069

Kundra, IP-2 (Designed)

Chainage - 633+636.672

Northing - 3062102.085

Easting - 703064.4425

Elevation - 118.896

Kundra Bridge

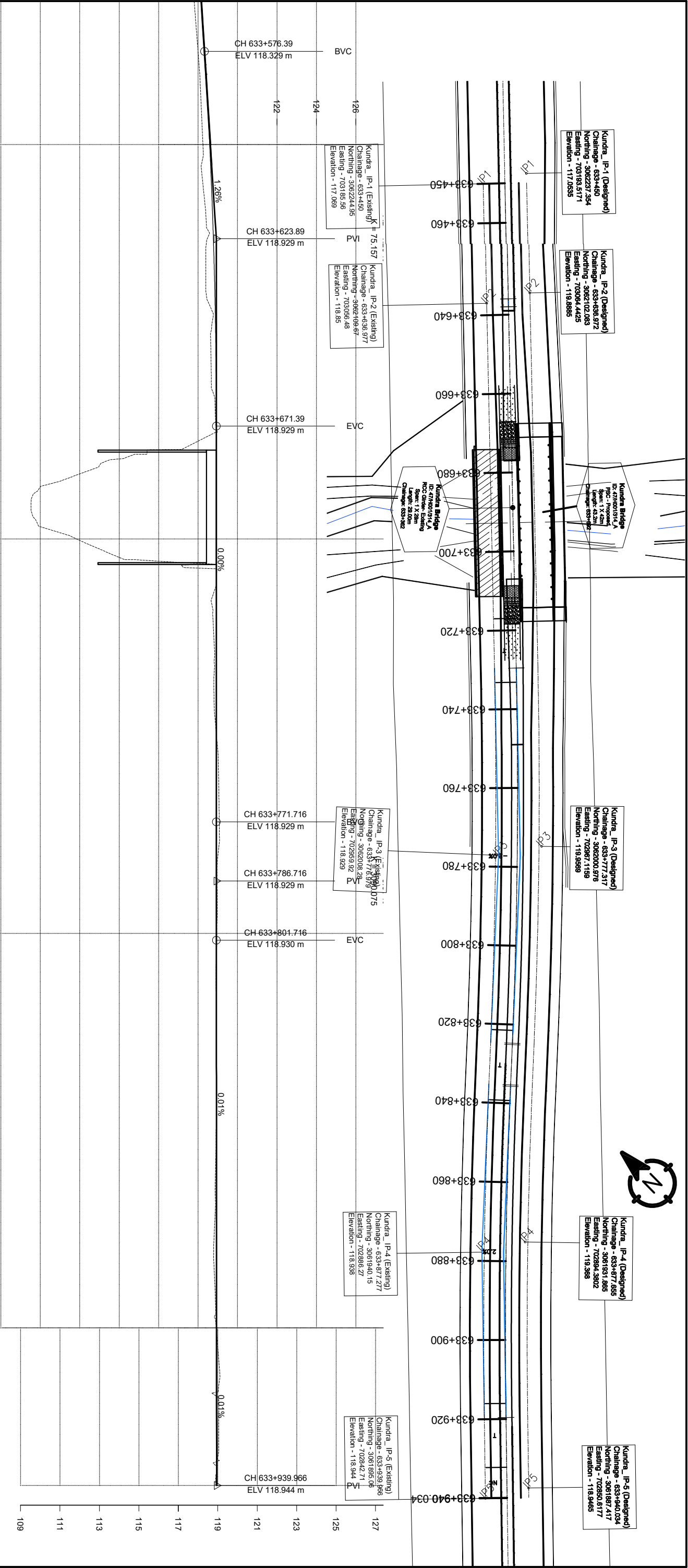
IP-3 (Designed)

Chainage - 633+773.317

Northing - 3062000.676

Easting - 702967.1159

Elevation - 119.669



633+570																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	</
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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 P (Ltd), Nepal

and

 TSE-Tech Studio of Engineering

IMPLEMENTING AGENCY:

DOR, DCID

ROAD NAME:

East West Highway (H01)

Butwal - Gorusinghe Section

SHEET TITLE:

Plan & Profile of Kundra Existing Bridge 633+570 - 633+940

SCALE:

0 2 4 6m

Vertical Scale

0 10 20 30m

Horizontal Scale

NAME

SIGNATURE

REV NO.

DESCRIPTION

DATE:

DWG.NO.:

SHEET NO.

Saroj Bhattarai



November, 2022

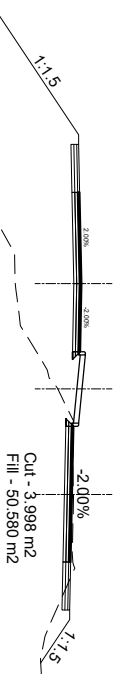
314_Kundra

26/32

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GL: 114.015
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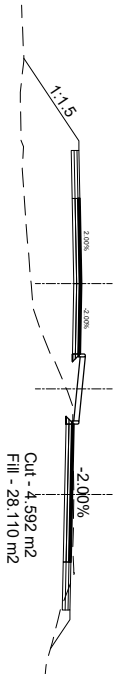


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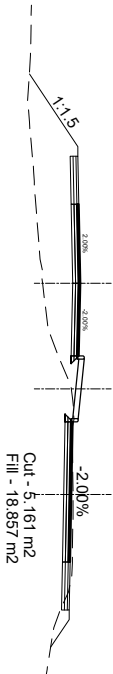


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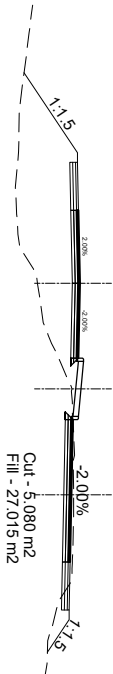


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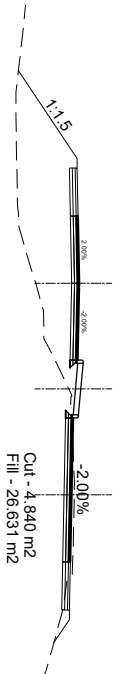


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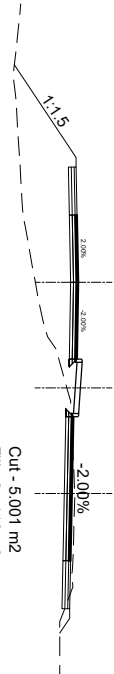
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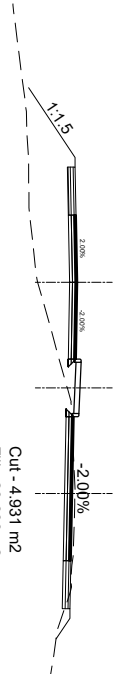


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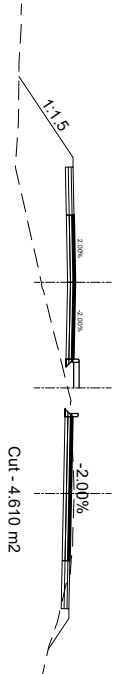


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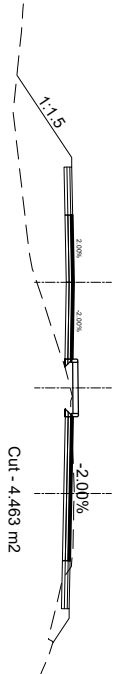


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GL: 115.151
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GL: 117.101
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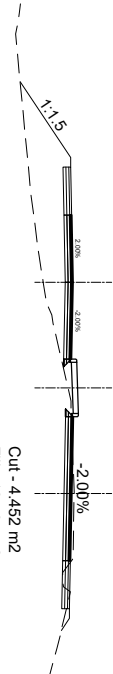


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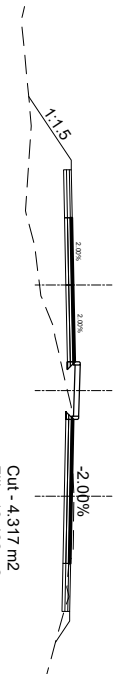
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DL: 117.042



Ch:633+450
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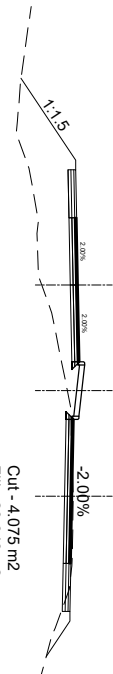


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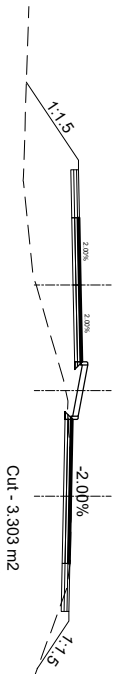


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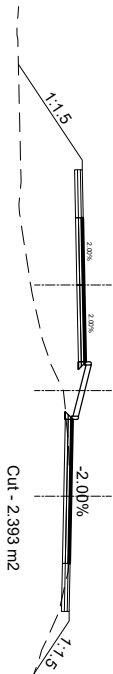


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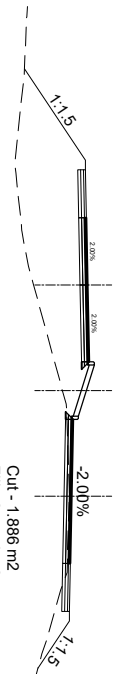


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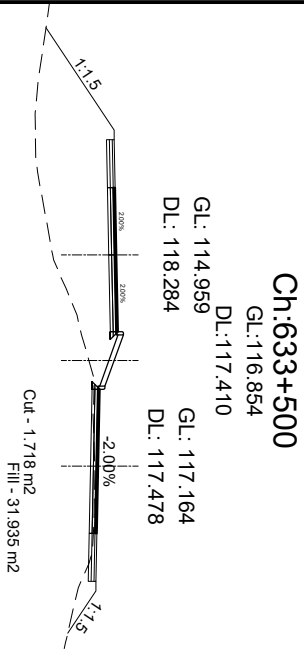
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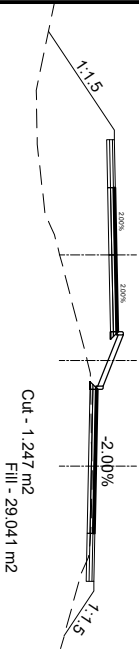
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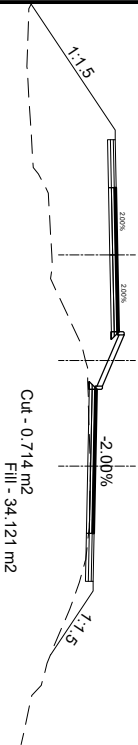
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	 Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd), Nepal and  TSE-Tech Studio of Engineering	DOR, DCID		Cross Section of Ch:633+350 - 633+490	0 2 4 6m Vertical Scale 0 10 20 30m Horizontal Scale					November, 2022 DWG.NO.: 314_Kundra SHEET NO. 27/32
		ROAD NAME:								
		East West Highway (H01)								
		Butwal - Gorusinghe Section								



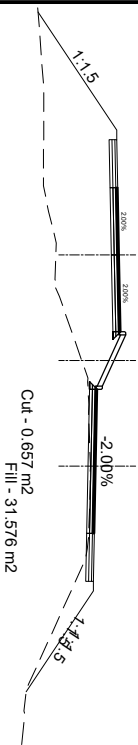
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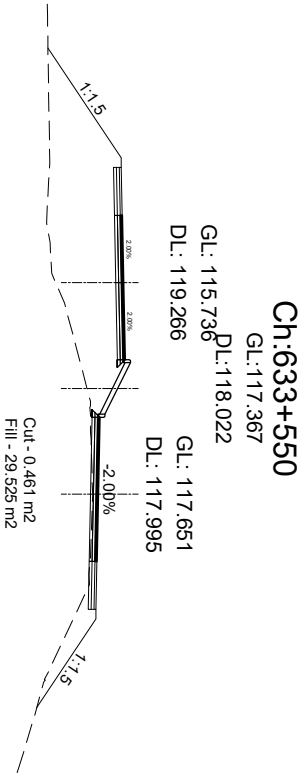
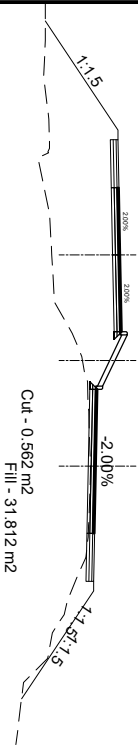
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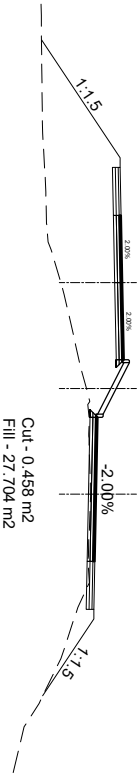
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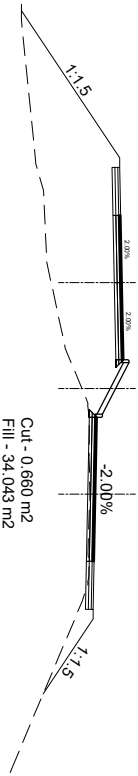
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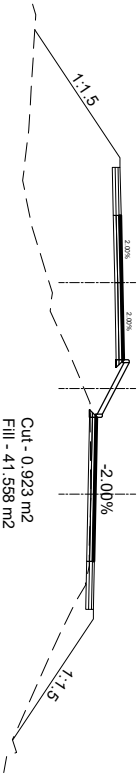
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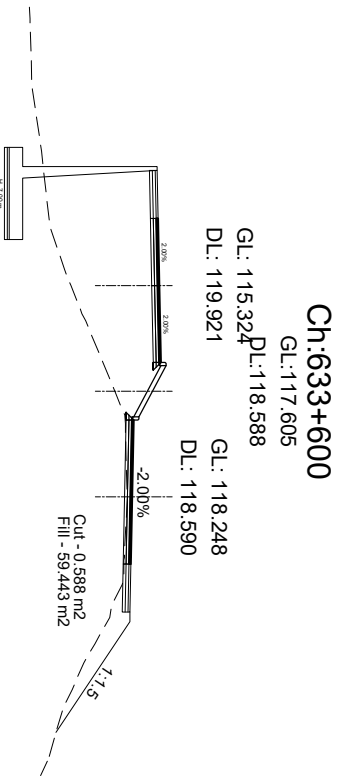
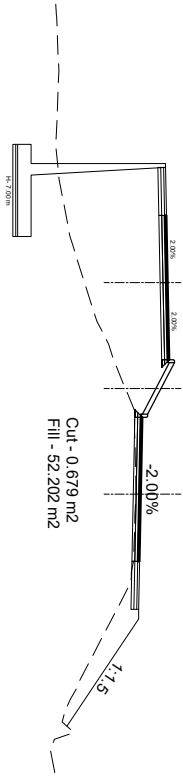
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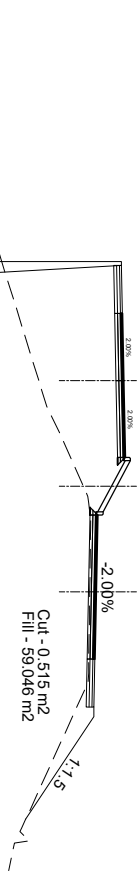
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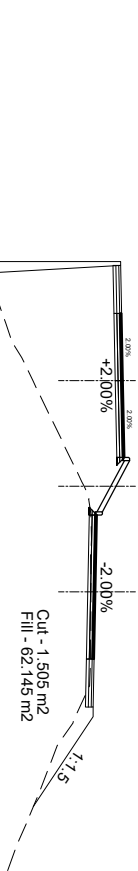
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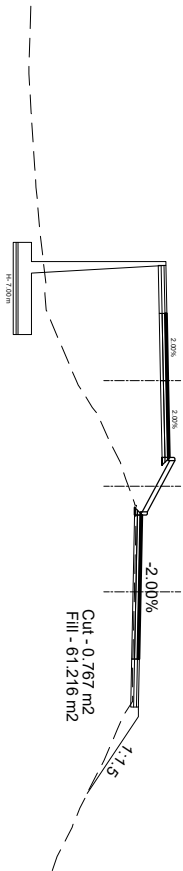
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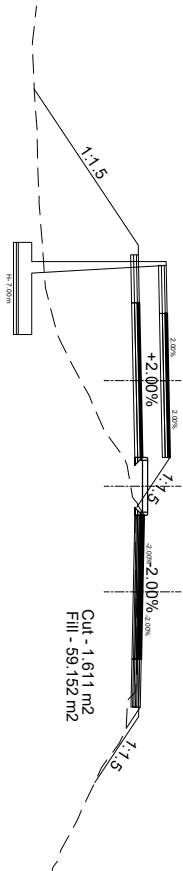
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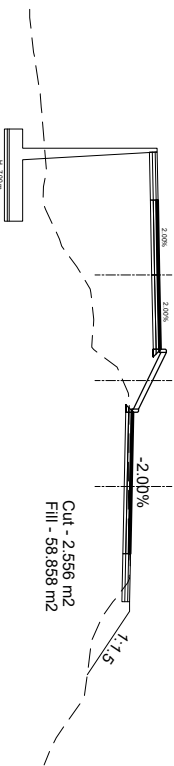


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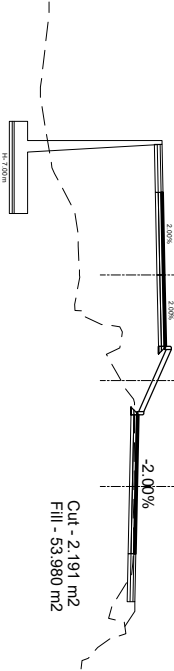


Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE:	
	Soosung Engineering Co. Ltd, Korea in association with		DOR, DCID		Cross Section of Ch:633+500 - 633+640		 		Saroj Bhattacharai					November, 2022	
	ERM C P (Ltd), Nepal and TSE-Tech Studio of Engineering		ROAD NAME: East West Highway (H01)						P. Upadhyaya					314_Kundra	
			Butwal - Gorusinghe Section						Dr. T.H.Choi					SHEET NO. 28/32	

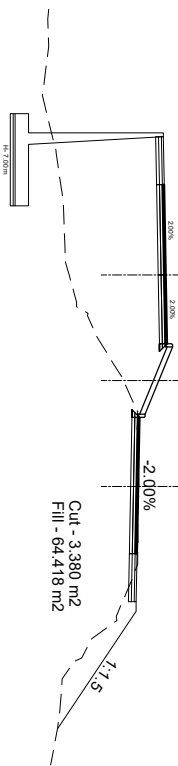
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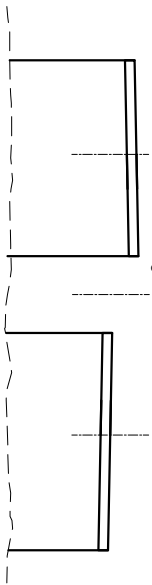
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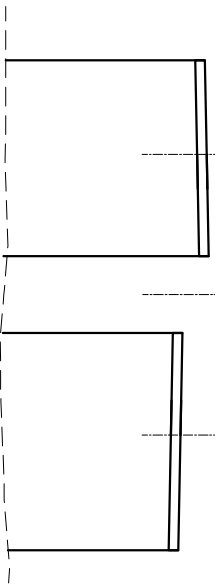
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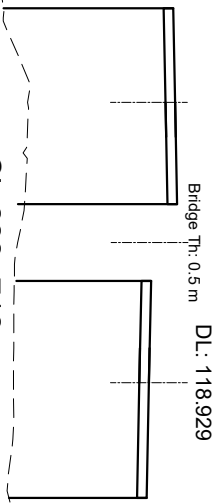
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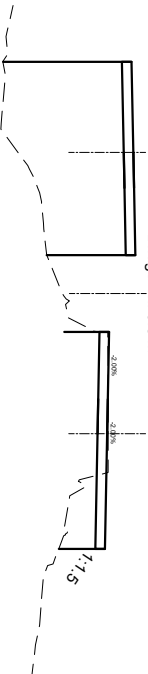
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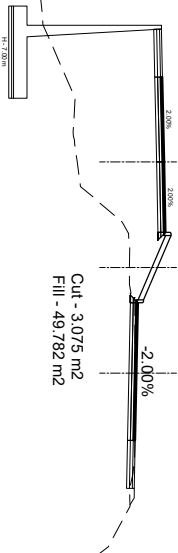
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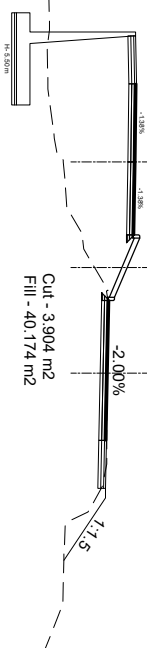
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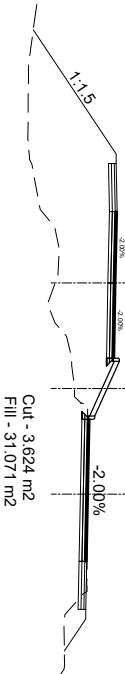
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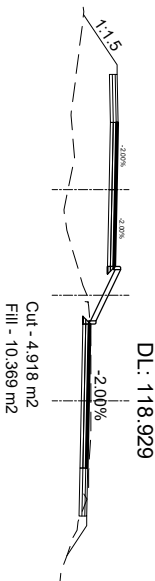
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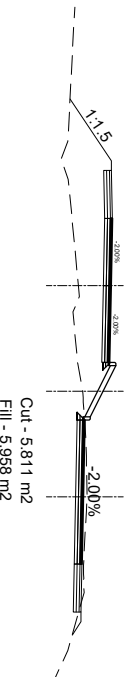
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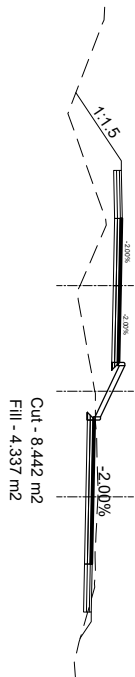
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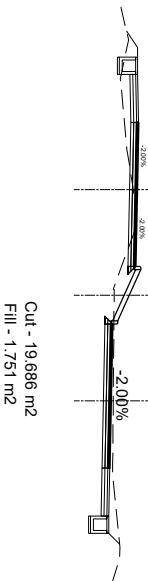
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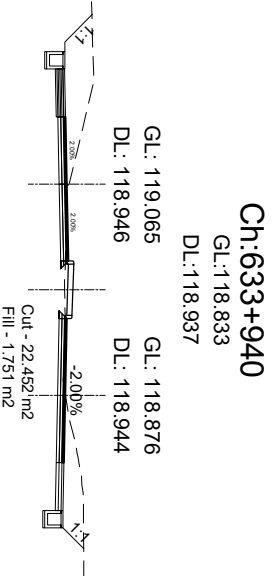
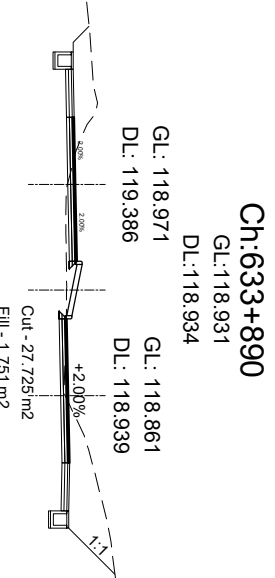
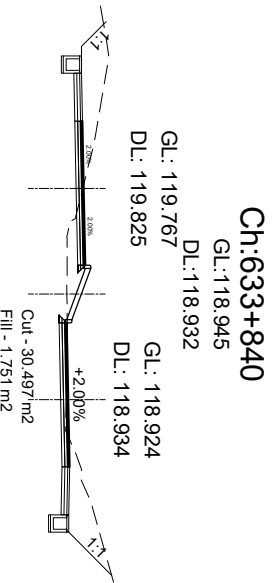
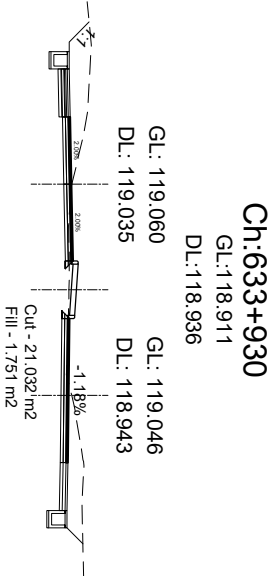
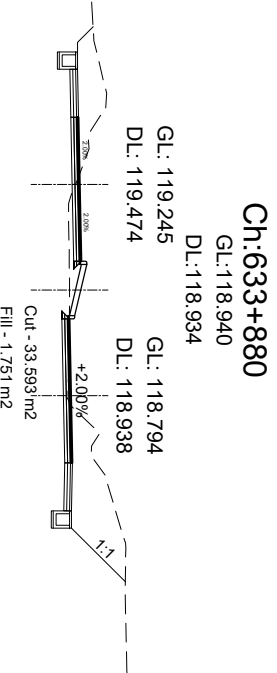
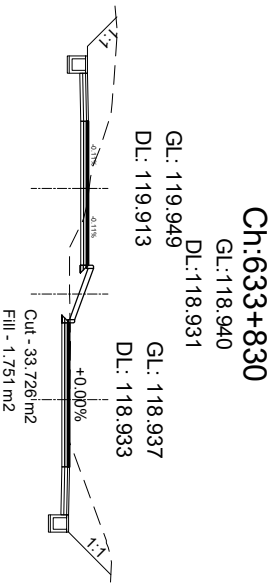
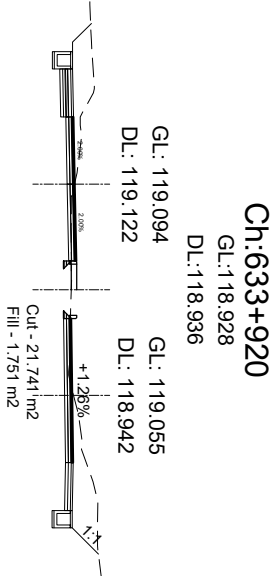
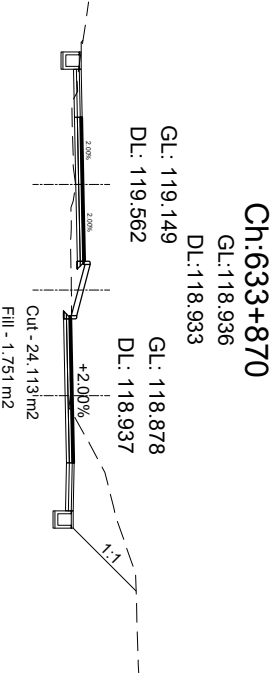
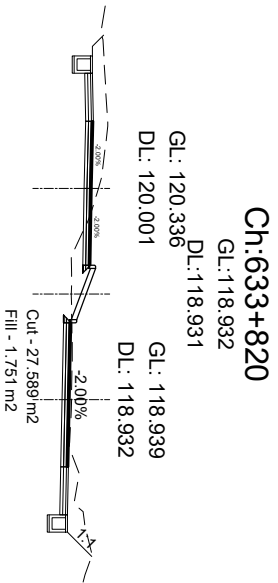
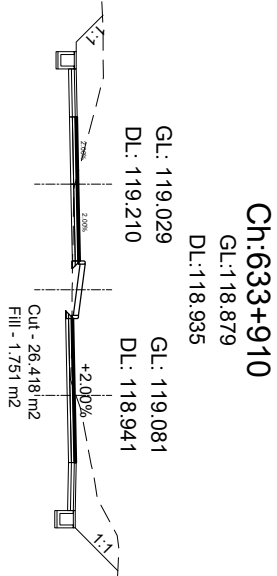
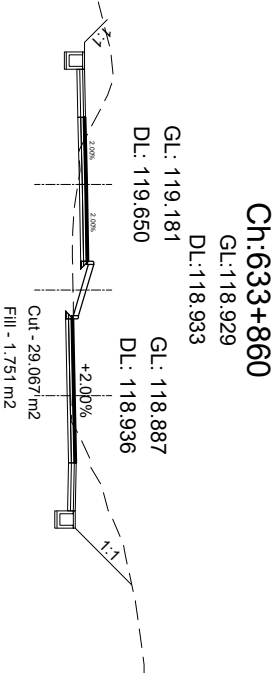
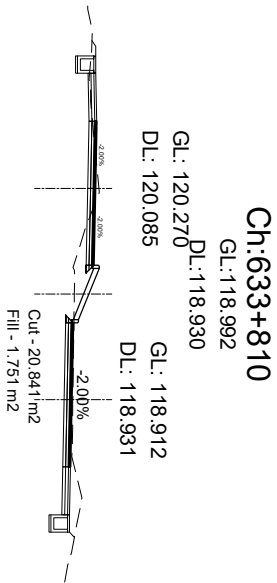
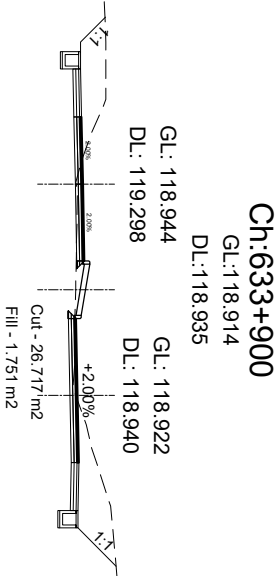
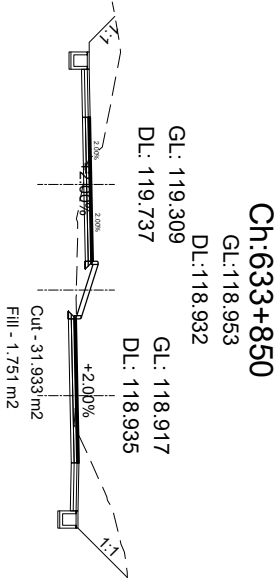
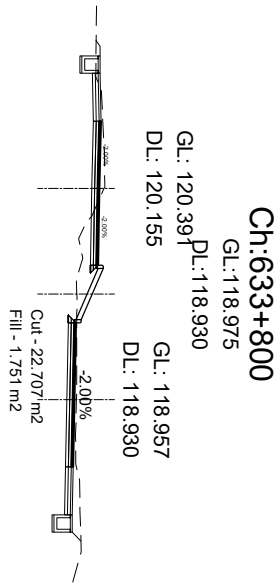
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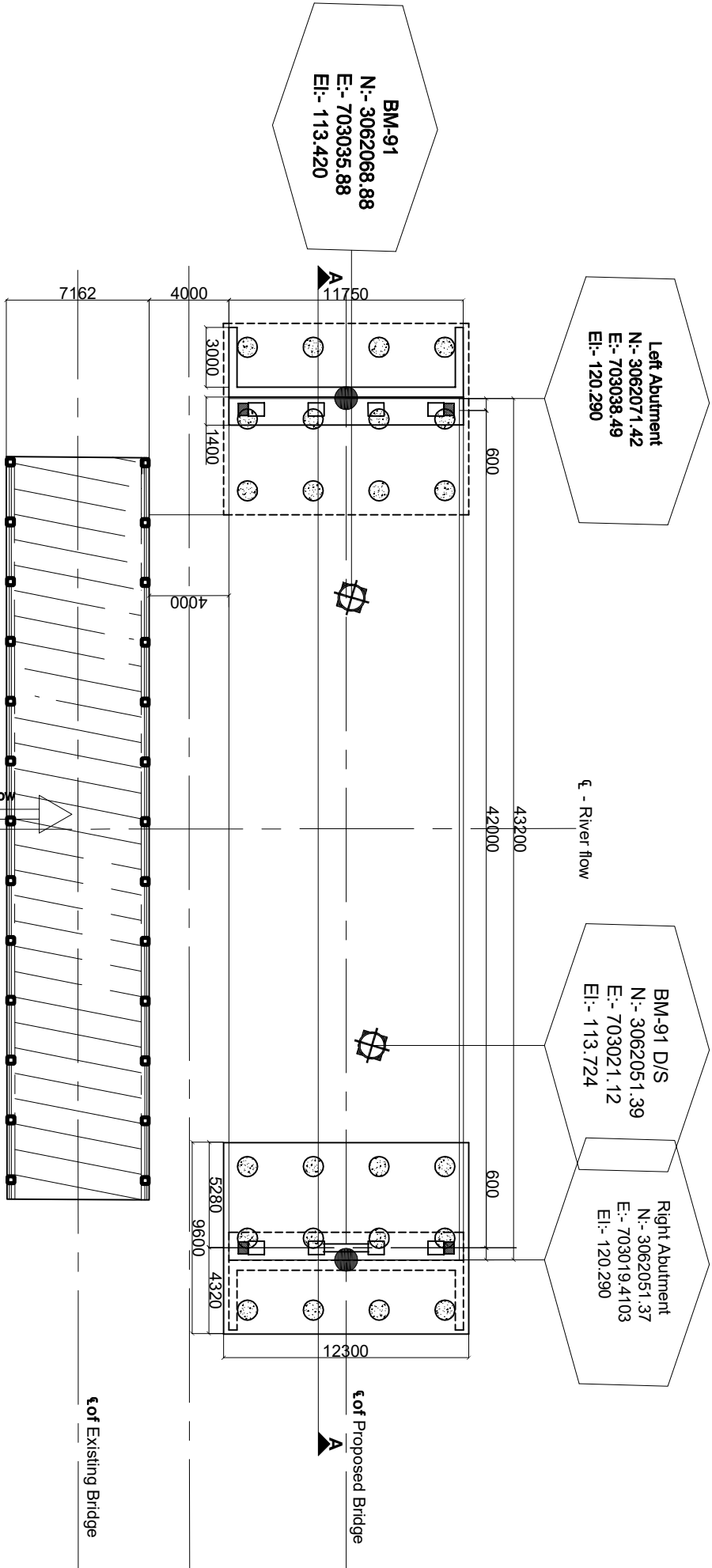
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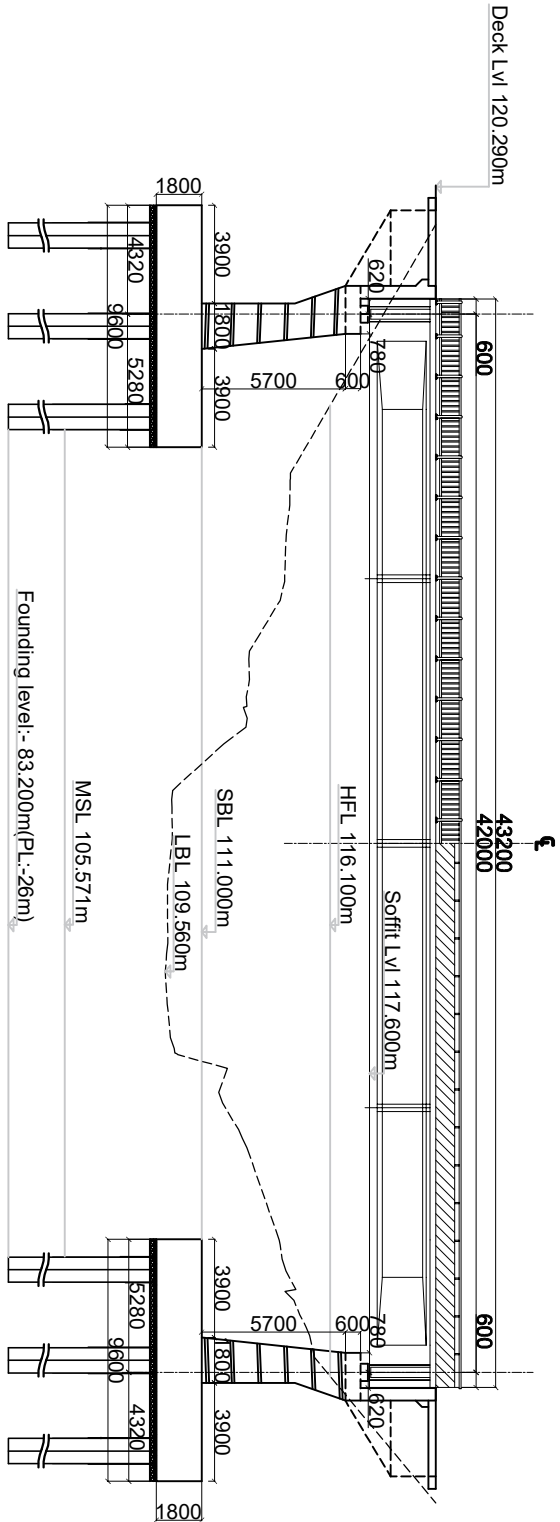
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERM P (Ltd), Nepal and TSE-Tech Studio of Engineering	IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE:	
		DOR, DCID		Cross Section of Ch:633+650 - 633+790		Vertical Scale 0 2 4 6m Horizontal Scale 0 10 20 30m		Saroj Bhattacharai		Saroj Bhattacharai						November, 2022	
		ROAD NAME:						P. Upadhyaya		P. Upadhyaya						314_Kundra	
		East West Highway (H01)						Dr. T.H.Choi		Dr. T.H.Choi							
		Butwal - Gorusinghe Section														SHEET NO. 29/32	



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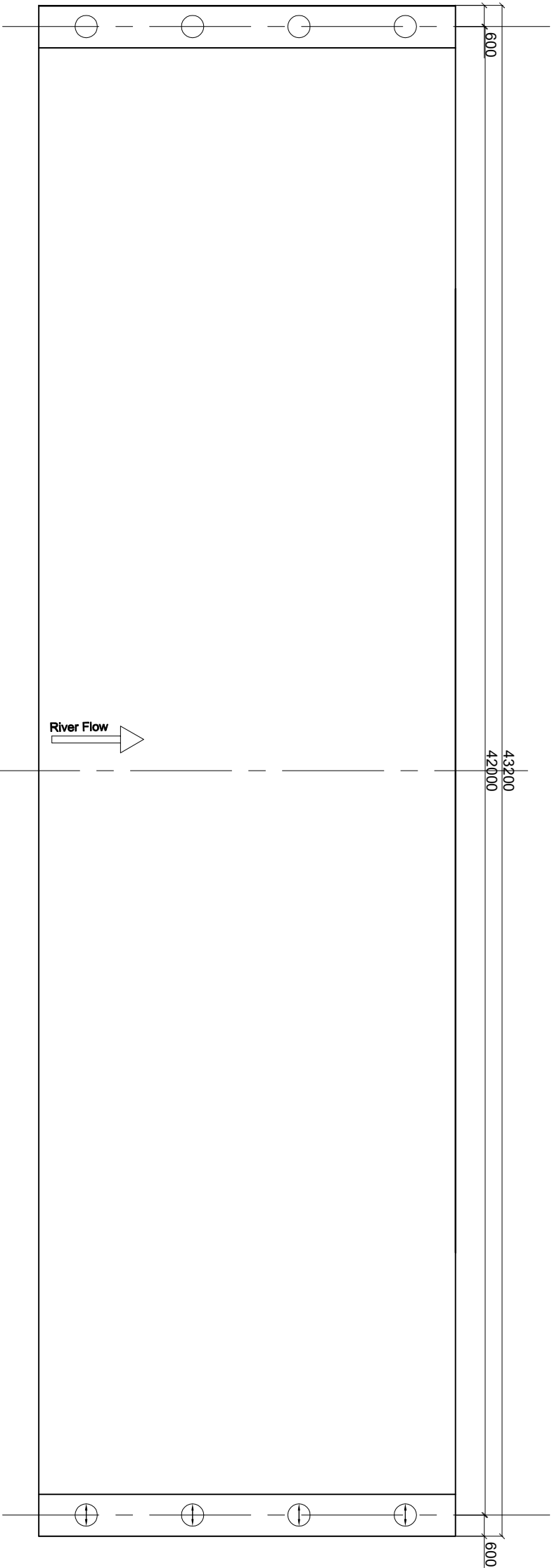


Layout Plan
Scale:-1:300



Section at A-A
Scale:-1:300

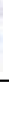
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										Designed by:	Saroj Bhattacharai			DWG.NO.: 314_Kundra
										Checked by:	P. Upadhyaya			
										Approved by:	Dr. T.H.Choi			SHEET NO.: (31/32)



Layout of Bearing
Scale:-1:150

Legend

-  Elastomeric bearing.
Partial movement allowed in longitudinal direction.
Restrained to transverse movement.Free to rotate in any direction.
-  Fixed Pot-bearing.
Restrained to lateral movement,Free to rotate in aney direction.
-  Free Pot-bearing.
Partial movement allowed in longitudinal direction.
Restrained to transverse movement.Free to rotate in any direction.

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ROAD NAME:									
East West Highway (H01)									
Butwal - Gorusinghe Section					Checked by: P. Upadhyaya				DWG.NO.: 314_Kundra
					Approved by: Dr. T.H.Choi				SHEET NO.: 

Government of Nepal
Ministry of Physical Infrastructure and Transport
Department of Roads

Project Directorate (ADB)

Implementing Agency : DOR, DCID

Project Preparatory Consultants Under

SASEC Highway Improvement Project (SHIP-PPC)

(ADB Loan No: 3722 Nep)

Contract No. SHIP/PPC/2020/02

Ghorahi Nala Bridge(47-H001-315_A)

St. Ch : 636+734.65 ~ End Ch : 636+757.35

Detailed Drawing

Butwal - Gorusinghe Sector

November, 2022

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5.	Reinforcement Details of Slab.	7	1
6.	Reinforcement Details of Main Girder.	8	1
7.	Reinforcement Details of Cross Girder.	9	1
8.	Bar Bending Schedule of Slab & Main Girder.	10	1
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10.	Reinforcement Details of Abutment.	12	1
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GENERAL NOTES

General

- Metric system of measurement is used in all drawings. Elevation and Stations are shown in Meter and all other dimensions are in Millimeters, except indicated otherwise.
- In case of contradictions, specific notes on respective sheet shall supersede the General Notes
- No dimensions shall be scaled from the drawings. Only written dimensions shall be followed. Any doubtful matter in the drawings shall be brought to the attention of the engineer-in-charge for any corrections before the execution of the works.

Design Notes

The design codes followed:

- For RCC and PSC concrete - IRC:112-2020
- For loads and stresses - IRC:6-2017
- For substructure and foundations - IRC:78-2014
- For seismic design - IRC:SP:14-2018. Seismic zone V. Importance factor 1.2

Design live loads:

For urban area bridges

- Case 1 - 3 lanes of class A + pedestrians; 1 lane of class A + 1 lane of class 70R + pedestrians
- Case 2 - 4 lanes or class A; 2 lanes of class A + 1 lane of class 70R. No pedestrians
- For non-urban area bridges
- Case 1 - 2 lanes of class A + pedestrians; 1 lane of class 70R + pedestrians
- Case 2 - 3 lanes of class A; 1 lane of class A + 1 lane of class 70R. No pedestrians.

Notes on Concrete

In General the grade of concrete to be used shall be as follows:

(unless otherwise specified in the respective drawing sheets)

- For superstructure deck slab, wearing course, crash barriers: M30
- For raised footpaths: M25
- For main girders and cross girders of superstructure with PSC girders: M45
- For main girders and cross girders of superstructure with RCC girders: M30
- For substructure: Abutment stem, ballast wall, stoppers, bearing pedestals, pier cap, pier stem and pile caps: M30
- For bored and cast in situ piles: M35
- For leveling course: M15
- The maximum size of aggregate shall be as per IRC:112-2020, clause 18.4.4.2

Admixture to the concrete

To improve workability and/or increase initial setting time of concrete and cement grout, admixture conforming to IS:9103 and ASTM C-494, (Type F – High Range Water Reducing admixture) can be added in appropriate dosage, subject to their satisfactory proven use.

Clear Cover to reinforcement (unless otherwise specified in the respective drawing sheets)

- Reinforcement bars of all components of the superstructure: 40mm
- Prestressing ducts or strands in superstructure: 75mm
- All components of abutment, pier, pile caps and piles (except stoppers and bearing pedestals): 75mm
- Bearing pedestals and Stoppers: 50mm
- Cover shall be ensured with the use of properly sized cement concrete blocks which can be secured to the re-bars or other devices approved by the engineer-in-charge. Use of loose stones or wooden pieces is not permitted.

Notes on Reinforcement

- All reinforcing steel bars shall be High Strength Deformed bars with grade Fe500 conforming to IS:1786
- Laps and Splices shall conform to IRC:112-2020, Clause 15.2.5. Use of mechanical coupler is permitted upon approval by the engineer.

Notes on Prestressing

- Prestressing strands shall be Class-2, uncoated 7 ply, low relaxation type with ultimate tensile stress 1862 N/mm², conforming to IS:14268.
- The diameter of strands, their number in a tendon and the total jacking force to be applied is specified in the respective drawing sheet. All the initial and long term losses are already incorporated in design.
- Corrugated HDPE Sheathing ducts shall be used with the minimum internal diameter not less than three times the cross sectional area of the tendon. The wall thickness and other properties of the sheathing shall be as per IRC:112-2020, clause 13.4.3
- The specified profile and the alignment of the ducts shall be strictly maintained by properly securing the ducts to the re-bars. If required, pieces of re-bars can be added or the re-bars slightly repositioned or bent to maintain the profile and alignment, with approval of the engineer-in-charge.
- The jacking equipment shall be fitted with appropriate force measuring device and shall be regularly checked and calibrated as prescribed by the manufacturer.
- Jacking shall be done from both ends simultaneously and gradually, recording the elongation both sides. The expected final elongation mentioned in the respective drawings sheet is based on modulus of elasticity of the strands (Es) equal to 1.95x10⁵ MPa. If the Es of supplied strands is different then the elongation values shall be recalculated by multiplying the Design values of elongation by the ratio of Design Es / Actual Es.
- In case the total elongation is not achieved at the prescribed jacking force, the jacking operation can be continued until the force reaches the maximum allowable value. If the required elongation is achieved at jacking force lower than the prescribed value, the jacking operation shall continue until the prescribed force is reached, provided the Sum of the additional elongations thus achieved is not more than 5% of the sum of the prescribed elongations.
- In adverse condition to any of the cases above, the jacking operation shall be stopped, the tendons removed and this matter reported to the engineer-in-charge for further instruction. The jacking force should NEVER exceed the Maximum allowable value.

Grouting

- The tendons which satisfy the above conditions shall be grouted properly, ensuring the duct is free of any foreign material and there is no leak or damage around the joints between the anchors and the ducts. Grouting can be normally done immediately after successful completion of tensioning operations and shall not be delayed by more than 5 days of tensioning of the cables.
- The grout shall be prepared with Ordinary Portland cement with suitable expansive admixture approved by the engineer. Admixture containing chloride and nitrate are not permitted. The water/cement ratio shall not be more than 0.48. Retempering of the grout shall not be permitted. The grout shall be mixed with mechanical mixers and shall be continuously kept agitated until pumped in.

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		DOR, DCID		ROAD NAME:		General Notes of Ghorai Nala Bridge (47/H001/315_A)		As Shown		Designed by:		Saroj Bhartarai						November, 2022	
		East West Highway (H01)								Checked by:		P. Upadhyaya						DWG.NO.: 315_Ghorai Nala	
		Butwal- Gorusinghe Section								Approved by:		Dr. T.H.Choi							
																		SHEET NO.: 01/20	

Stages and sequence of Prestressing

- The Precast composite girders shall be prestressed in two stages. The specified number of the tendons shall be tensioned in the prescribed sequence shown in the respective drawing sheet.
- The remaining tendons shall be tensioned after specified days after casting of the deck slab, in the sequence shown in the respective drawing sheet.
- The prestressing of the precast girder shall be started only after confirming that the cube specimen has achieved 100% of the prescribed compressive strength. No early prestressing allowed.

Construction methodology and sequence for Precast Prestressed Composite superstructure

- The main girders are be precast near the bridge site at suitable location (approach road or dry river bed, if available) on well prepared casting yard. The choice of location also depends upon the equipment available for lifting or launching the girders. After completion of the prestressing works the girders are either lifted by suitable cranes or pushed/launched with the help of rails and jacks or launching girders and placed carefully over the already completed substructure. Care shall be taken that all the preparatory works for the bearings are done properly before the launching/placing of the girders.
- Lifting shall be done only by the hooks provided at both ends. In case of jacking the jacking points shall be only just under the location of the hooks. No support, lifting or jacking is allowed at any other section of the girder
- After placing all the main girders and finishing the works on the bearings, the formwork for deck slab and cross girders are prepared. All the formwork for deck slab and cross girders shall be supported by the main girders. The main girders shall remain un-propped during casting of the deck slab. Similarly there shall be no false-work or props from the ground or part of substructure during casting of the deck slab.
- The Contractor shall ensure stability of the girders during all stages of construction.
- Dimensional tolerances for the precast girders shall be as per IRC:SP-71-2018, Clause 4.10. If not prescribed otherwise, transportation and handling operation shall follow the guidelines in Clause 4.9 of the same documents.
- The prescribed time-line for construction of the superstructure is as follows

Prestressing of Precast Girder only (Stage 1)	After 28 days of casting or confirming 100% compressive strength of concrete
Lifting/Launching of the Girder	Within 14 days of first stage prestressing
Casting of the Deck Slab	Within 14 days of placing of girder over substructure
Prestressing of Girder (Stage 2)	After 14 days of casting of deck slab
Casting of Footpath, Crash Barrier, Wearing Course etc	Preferably within 7 days but not later than 14 days of Second stage prestressing

Deviation from the above time-line is subject to approval by the engineer. No other vehicle except the concreting apparatus are allowed on the deck until the deck slab has attained its full specified strength.

Construction methodology for Cast-in-situ RCC superstructure

- Construction of Monolithic cast in situ RCC superstructure shall follow the standard practices. The falsework for the girders and deck slab are supported on the ground and removed after specified time period.

Notes on Bearings

- The contractor shall supply, provide and install the bearings designed according to the loadings and other relevant information provided in the drawings or BOQ.
- The dimension and number of layers of the Elastomeric bearings shown in the drawings are tentative. The bearings shall be designed, fabricated, tested and installed as per IRC:83 - 2018, Part-2 for elastomeric bearing and Part-3 for Pot-PTFE bearings, as the case applies.

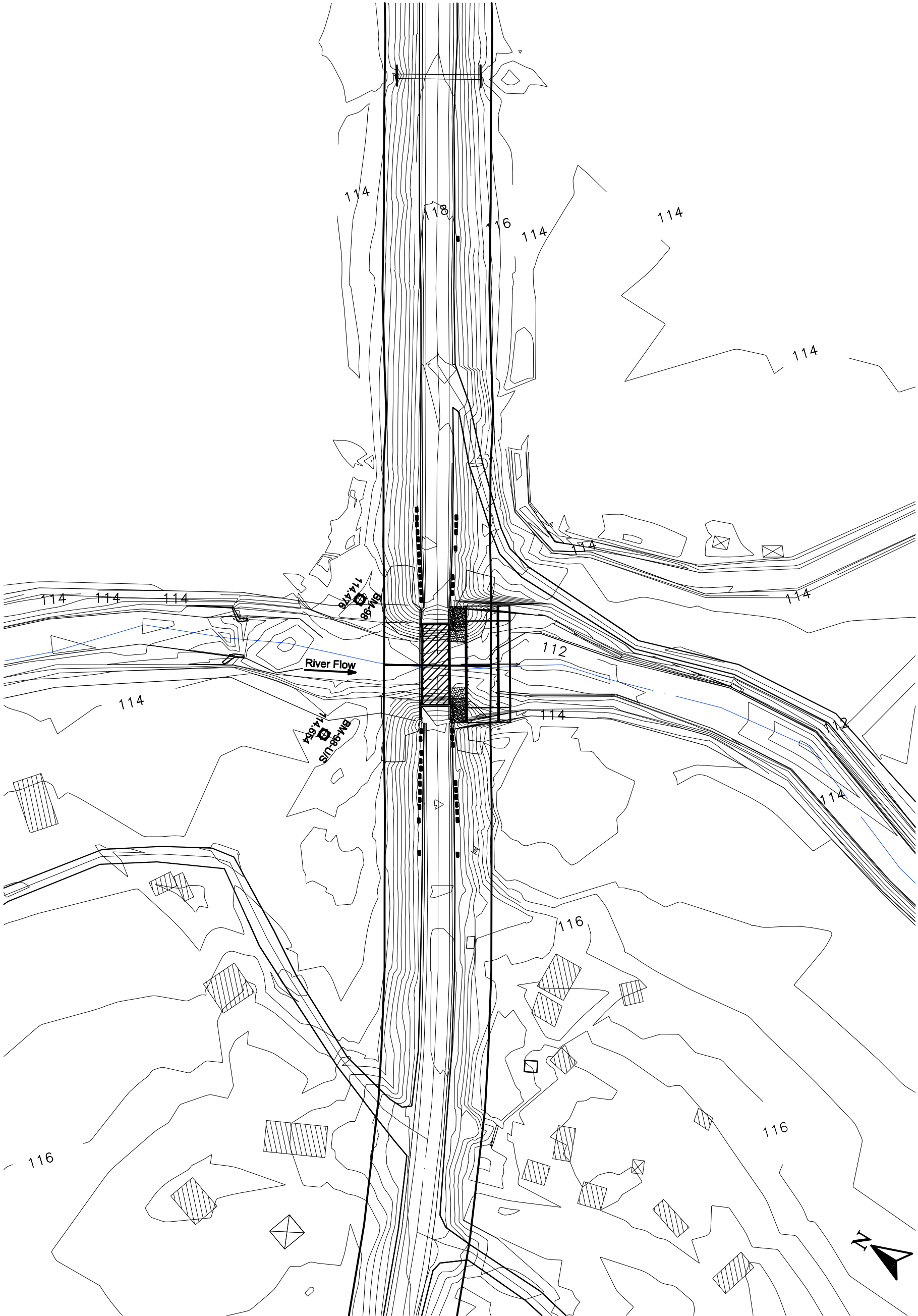
Notes on Foundation and Substructure

- Standard Specifications and Special provisions to the Standard Specifications (if any) and specific notes on the drawings shall be followed for the construction of the abutments, piers and foundations.
- Backfill behind the abutment shall be places only after the concrete has achieved full 28 days strength. Heavy compaction equipment weighing more than 10 Ton shall not be used within 2.0 meters from the back of the abutment until all the works on superstructure is completed.
- The graded backfill behind the abutment shall be at a slope not steeper than 62 degrees, starting from the back of the footing. The back fill material dry density shall be within 1900 to 2200 kN/m³ and moisture content between 9 to 15%
- In case of new bridge adjacent to the existing bridge, care shall be taken not to render any damage to the elements of the existing bridge. Particular attention shall be paid to the foundation of the existing bridge. The contractor shall ensure that excavation for the foundation of the new bridge does not cause instability or settlement of the foundation of the existing bridge.
- If the existing bridge has a shallow foundation, the contractor shall protect the existing foundation by sheet piling or any other suitable means to the satisfaction of the engineer, before excavating for the foundation of the new bridge.

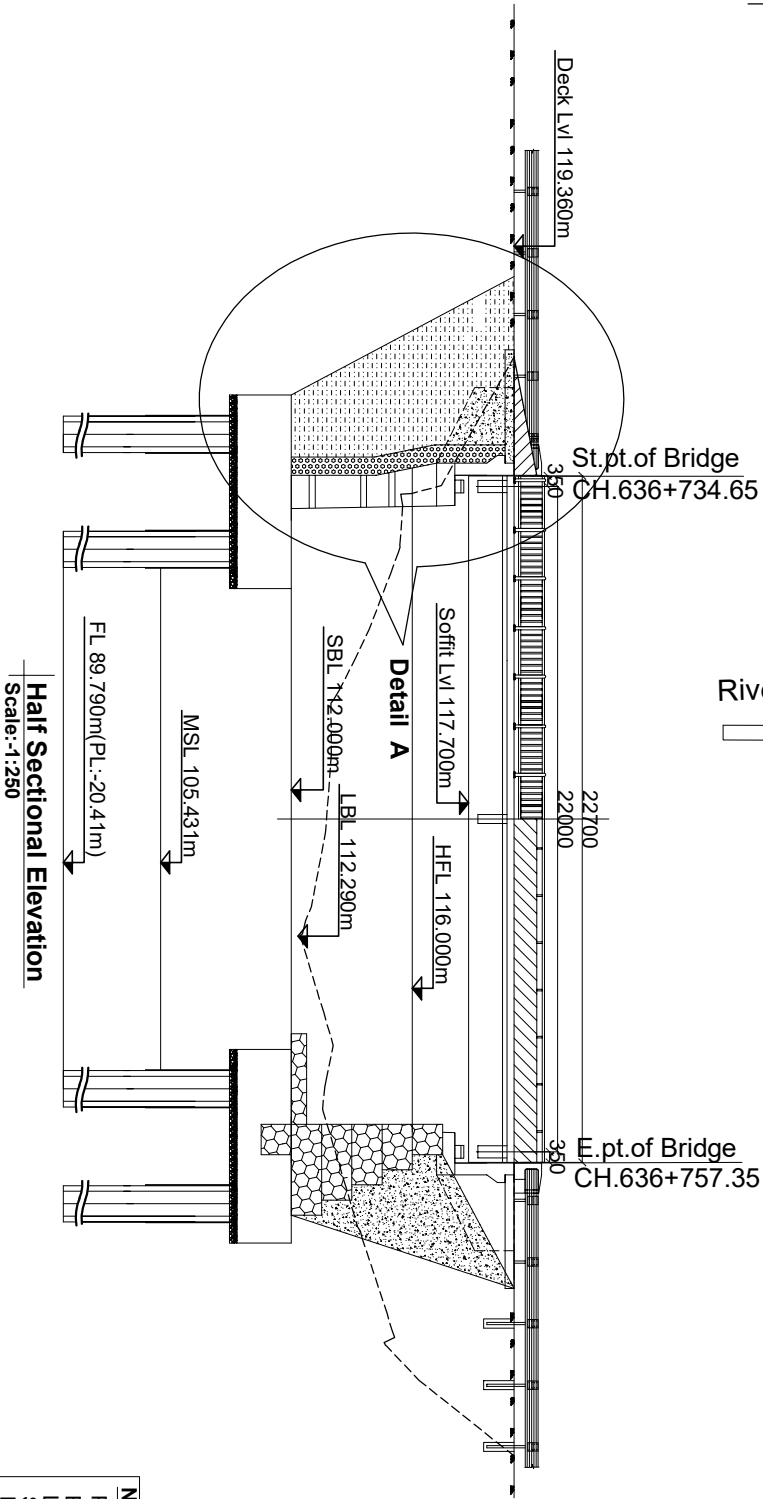
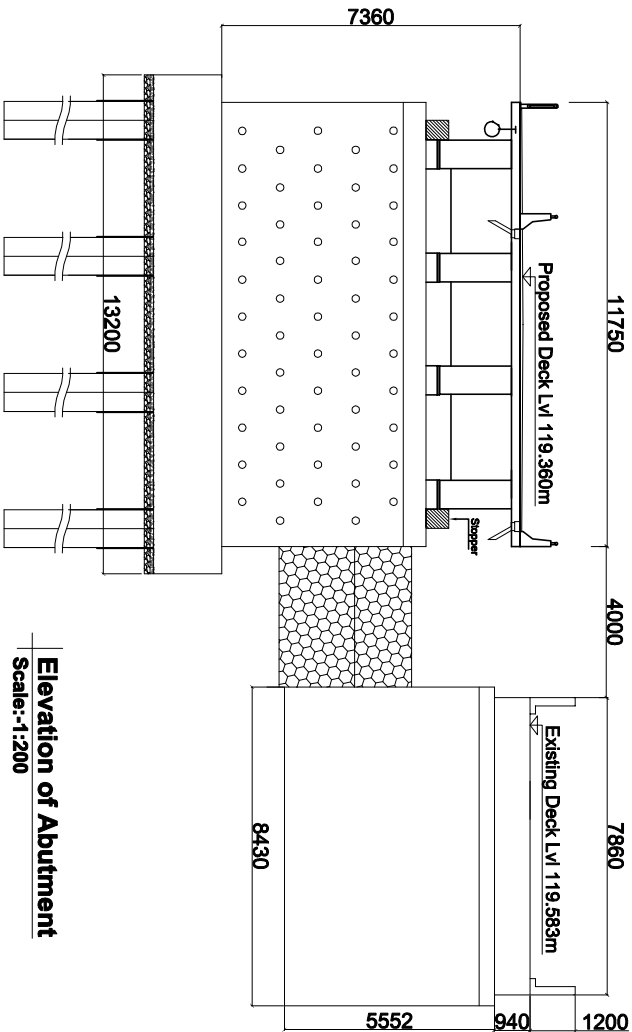
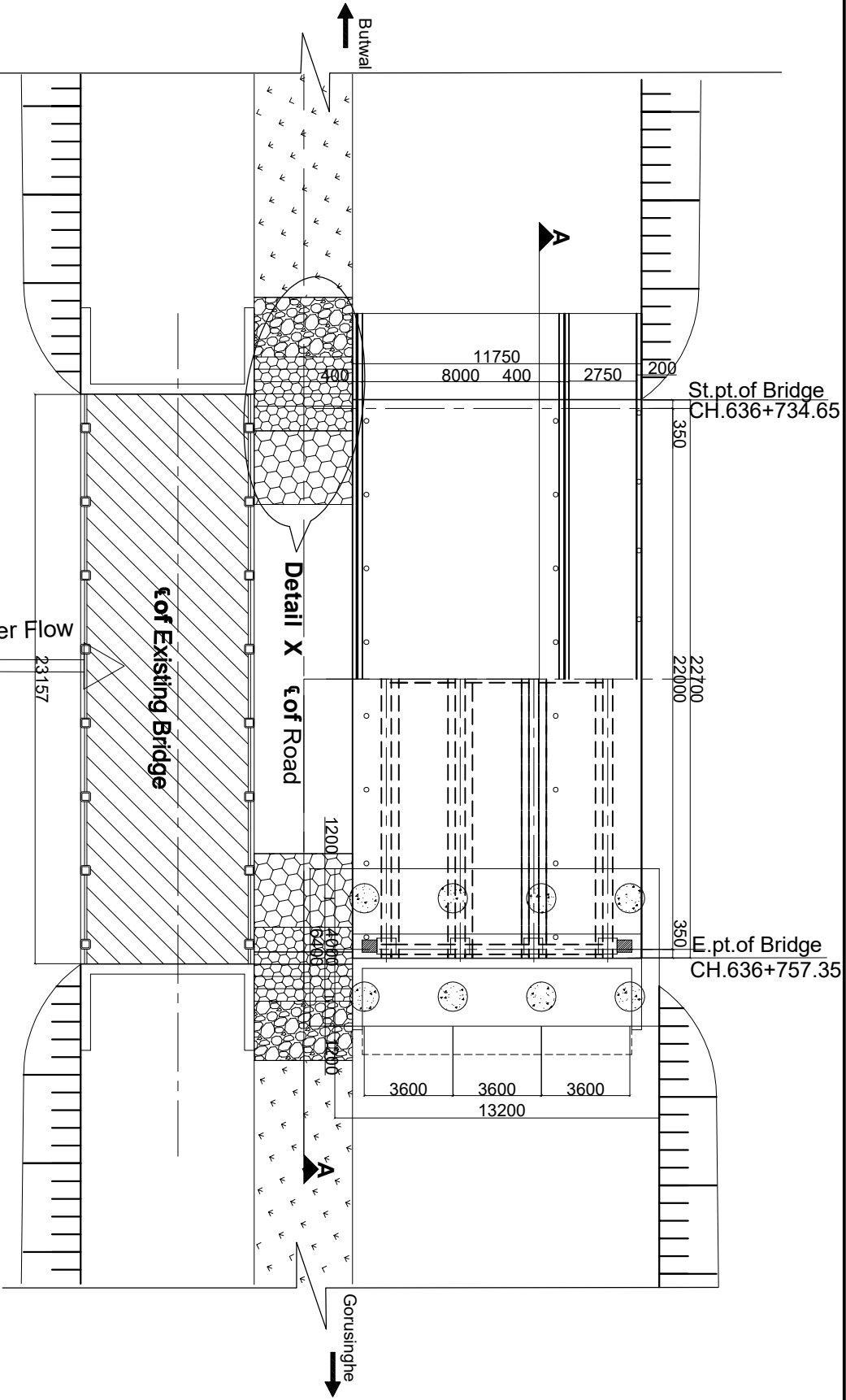
General Note: (For all Pile Foundation)

- Drilling/Boring works for pile is allowed only with rotary or oscillator type drilling equipment.No percussion method is allowed. Stability of borehole shall be ensured by the use of temporary casing. Use of other methods of borehole stability is subject to approval by the engineer, but in such case use of water/air/chemical jetting for boring process shall not be allowed.
- In case of drilling/boring without temporary casing, the contractor should ensure the stability and uniformity of the borehole before lowering the reinforcement cage and during concreting. Boring/Drilling of the piles is preferred in a staggered pattern. Boring/Drilling for any pile shall not be commenced before the abutment foundation is completed with a minimum of 6 meters from its center.
- In case of drilling/boring without temporary casing , the pile shall be lined with 6mm thick permanent casing from the bottom of the pile cap down to 0.5 m below the maximum scour depth or 1.5 m whichever is larger.

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) and  JYK - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:				NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November, 2022	
				DOR, DCID		General Notes of Choral Nala Bridge (47/H001/315_A)		As Shown				Designed by:								DWG.NO.: 315_Choral Nala	
				ROAD NAME: East West Highway (H01)								Checked by:								SHEET NO.: 	
				Butwal- Gorusinghe Section								Approved by:									



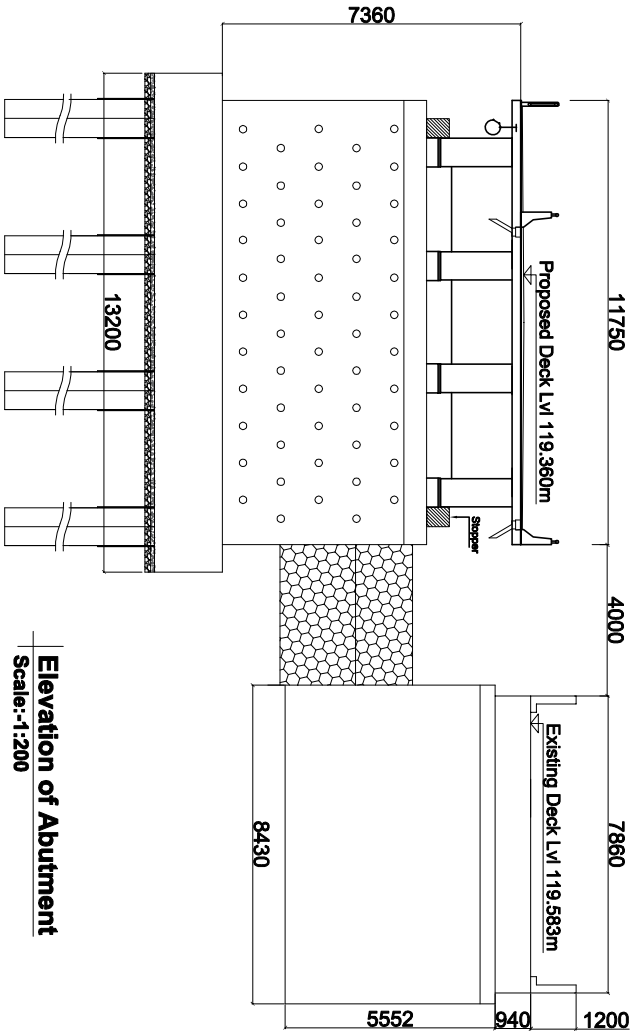
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP			CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and  JYV - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID		SHEET TITLE: Topographic Map of Choral Nala Bridge (47/H001/315_A)		SCALE: 1:1		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022
ROAD NAME: East West Highway (H01)			Butwal - Gorusinghe Section		Designed by:		Saroj Bhattachari				Checked by:		P. Upadhyaya			DWG.NO.: 315_Ghorai Nala
					Approved by:		Dr. T.H.Choi									SHEET NO.: 2/120



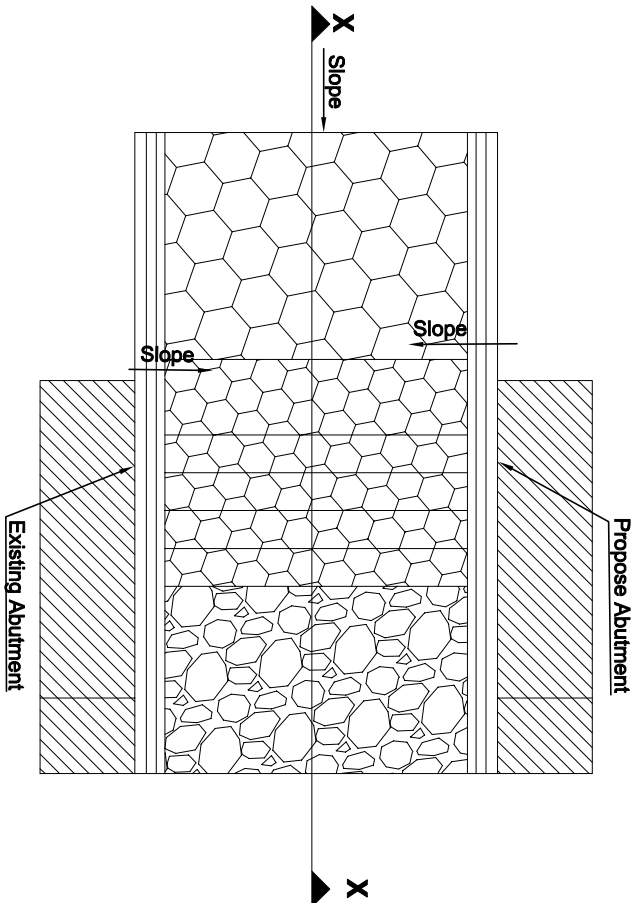
Notes:-
PBL = Proposed Bridge Level
EBL = Existing Bridge Level
LBL = Lowest Bed Level
SBL = Stem Base Level
MSL = Maximum Scour Level
PL = Pile Length

Name(NEC Number)		Signature
P. Engineer	P. Upadhyaya (Civil A 675)	
Structure Engineer	K.P. Wagle(Civil A 127) / P. Shrestha(Civil A 676) / S. Bhattacharj (Civil A 904)	
Hydrologist	Dr. P. C. Jha(Civil A 166) / S. Adhikari (Civil A 408)	
Geotechnical Engineer	A. Adhikari(ka 199) / Dr. V. R. S. Shahi	

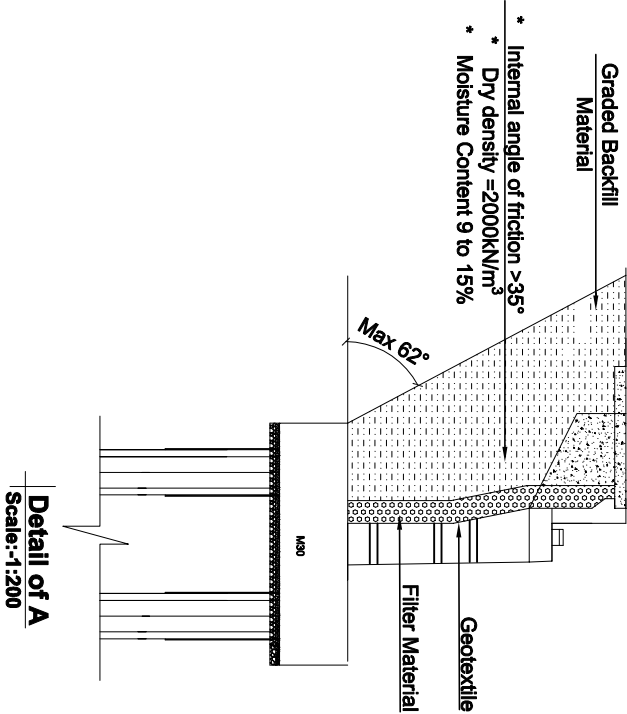
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NFP		CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and JWC - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: General Arrangement of Choral Nala Bridge (47/H001/315_A)		SCALE: As Shown		Designed by: Saroj Bhattacharj Checked by: P. Upadhyaya Approved by: Dr. T.H. Choi		DATE: November, 2022 DWG. NO.: 315_Gchoral Nala SHEET NO.: 03/20	
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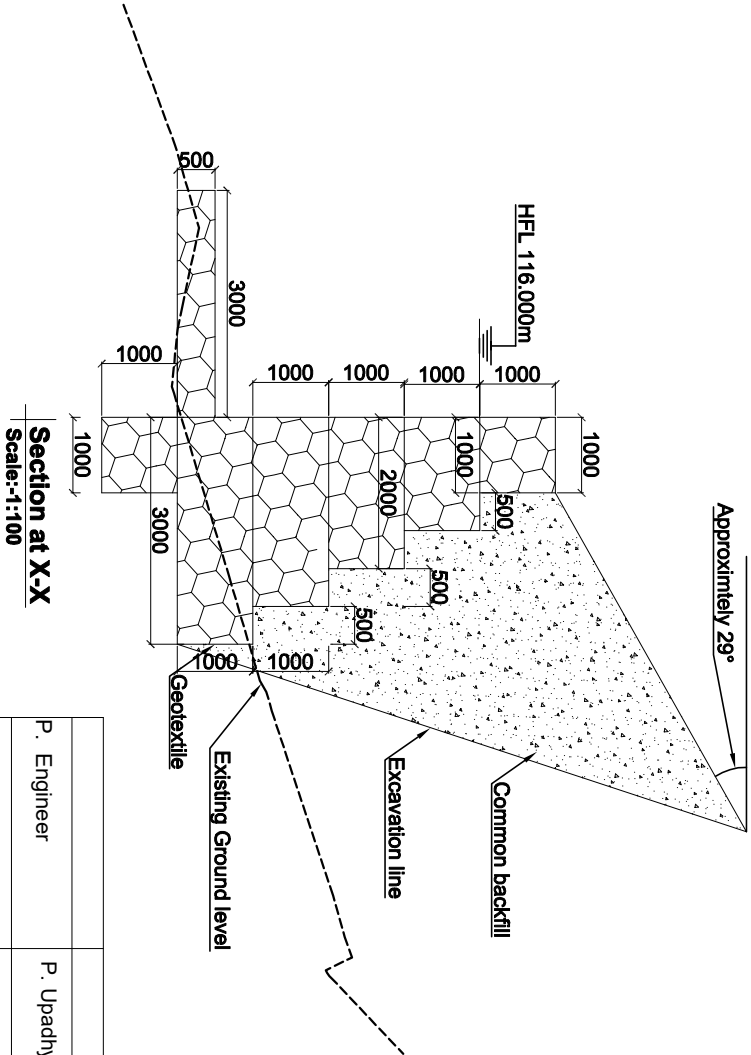
Elevation of Abutment
Scale:-1:200



Detail Plan of X
(Transition Between Approach Embankment)
Scale:-1:100



Detail of A
Scale:-1:200



Section at X-X
Scale:-1:100

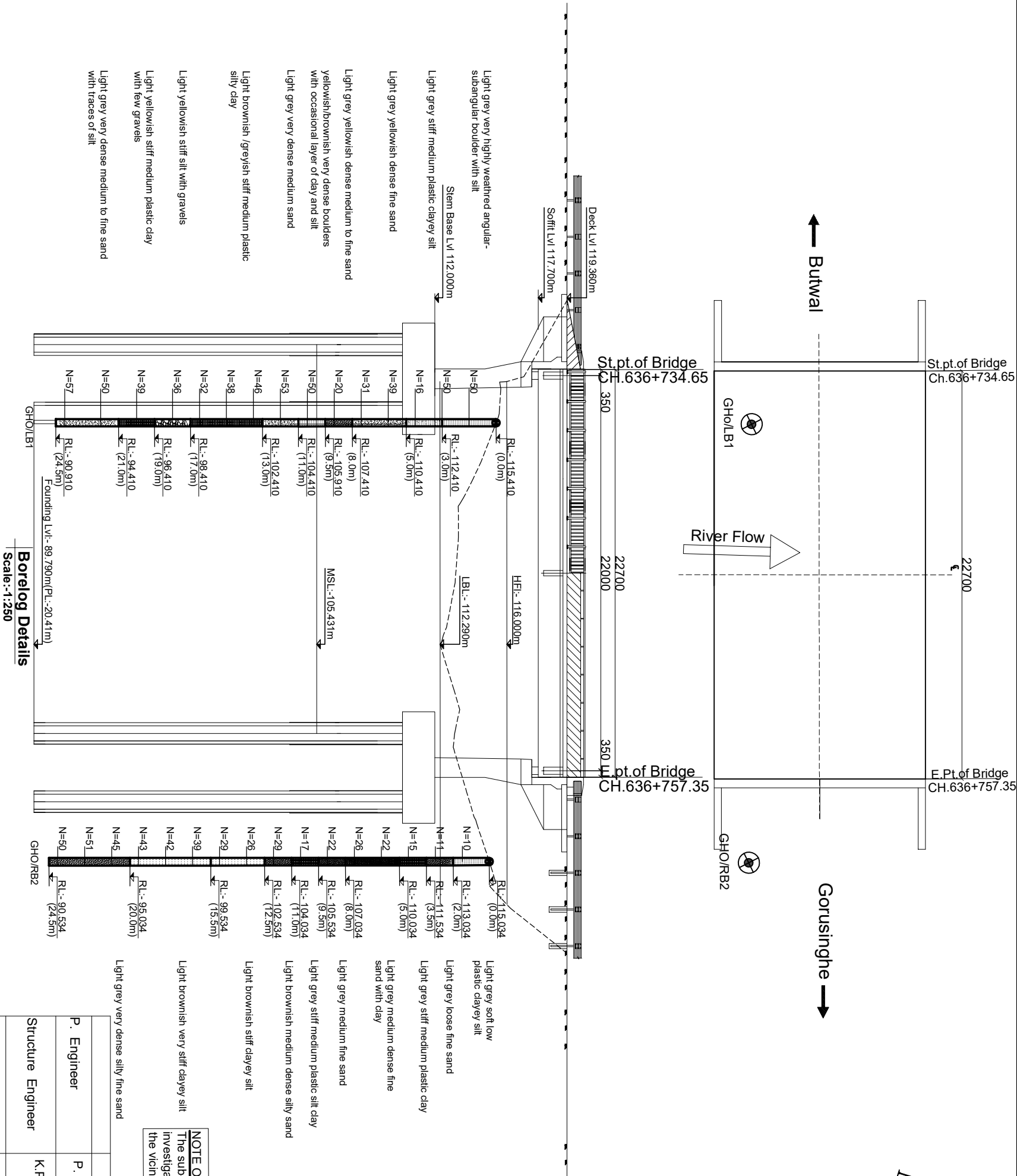
Name(NEC Number)			Signature
P. Engineer	P. Upadhyaya (Civil A 675)		
Structure Engineer	K.P. Wagle(Civil A 127) / P. Shrestha(Civil A 676) / S. Bhattarai (Civil A 904)		
Hydrologist	Dr. P. C. Jha(Civil A 166) / S. Adhikari (Civil A 408)		
Geotechnical Engineer	A. Adhikari(ka 199) / Dr. V. R. S. Shahi		

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  JYV Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: General Arrangement of Ghorai Nala bridge (47/H001/315_A)		SCALE: As Shown		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November, 2022	
						Designed by:		Saroj Bhattarai										DWG.NO.: 315_Ghorai Nala		
						Checked by:		P. Upadhyaya												
						Approved by:		Dr. T.H. Choi										SHEET NO.: 04/20		

Borehole No : GHOLB-1
Easting : 83° 1' 47.95"
Northing : 27° 39' 31.51"
Elevation, m : 115.410
Borehole No : GHORB-2
Easting : 83° 01' 47.36"
Northing : 27° 39' 30.89"
Elevation, m : 115.034

Notes:-
HFL = High Flood Level
MSL =Maximum Scour Level
RL =Reduced Level
LBL =Lowest Bed Level

Notes:-
PBL=Proposed Bridge Level
EBL =Existing Bridge Level
LBL =Lowest Bed Level
SBL =Stem Base Level
MSL =Maximum Scour Level
FL =Founding Level
PL =Pile Length

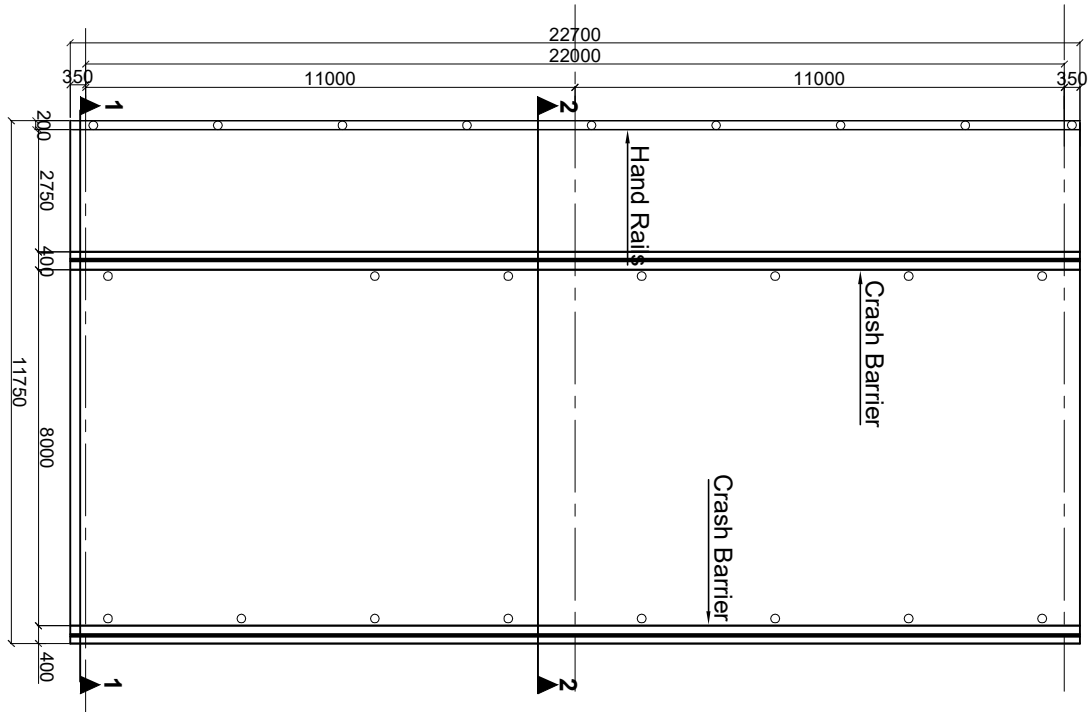


NOTE ON SUB-SOIL PROFILE
The sub-soil profile shown here is based on extrapolation of information obtained from the investigation bore-holes at the locations as shown. The actual soil type away from the vicinity of the boreholes may differ .

Name(NEC Number)			Signature
P. Engineer	P. Upadhyaya (Civil A 675)		
Structure Engineer	K.P. Wagle(Civil A 127) / P.Shrestha(Civil A 676) / S.Bhattarai (Civil A 904)		
Hydrologist	Dr. P.C. Jha(Civil A 166) / S. Adhikari (Civil A 408)		
Geotechnical Engineer	A. Adhikari(ka 199) / Dr. V. R. S. Shahi		

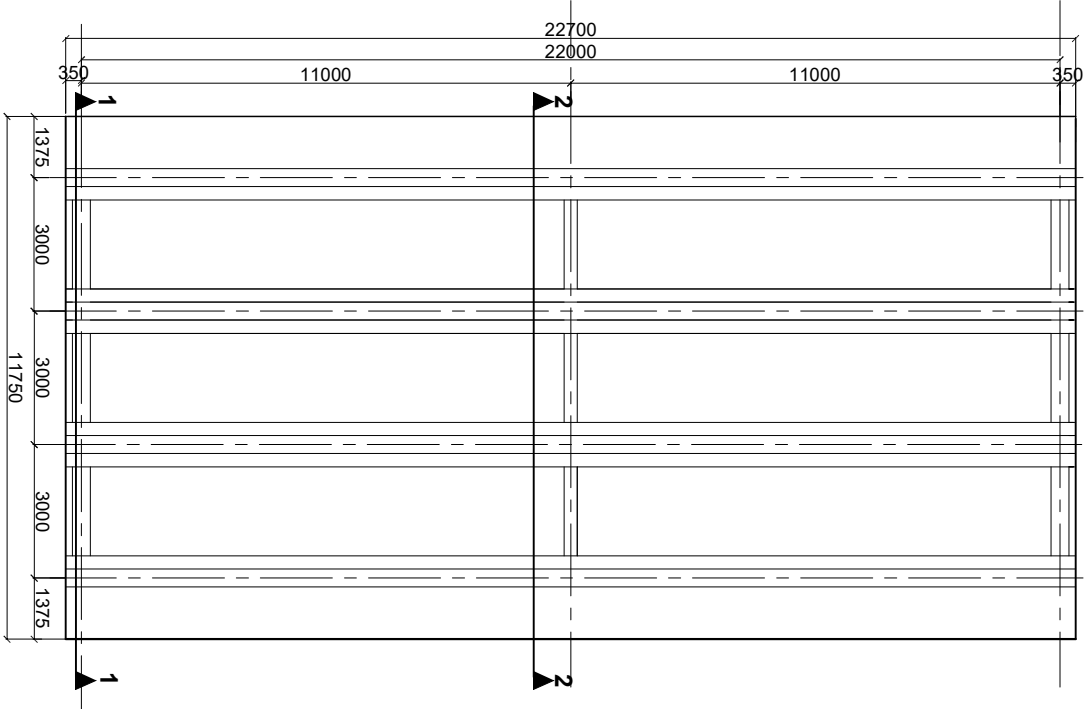
Location	Design Pile Length m	Design Working load on pile (non - seismic case)kn	Allowable Bearing Capacity on pile (Scour case) kn	Allowable Bearing Capacity of the Pile (Non Scour case)kn
Abutment	20.41	1751	2259	4106
Pier	0.00	0.00	0.00	0.00

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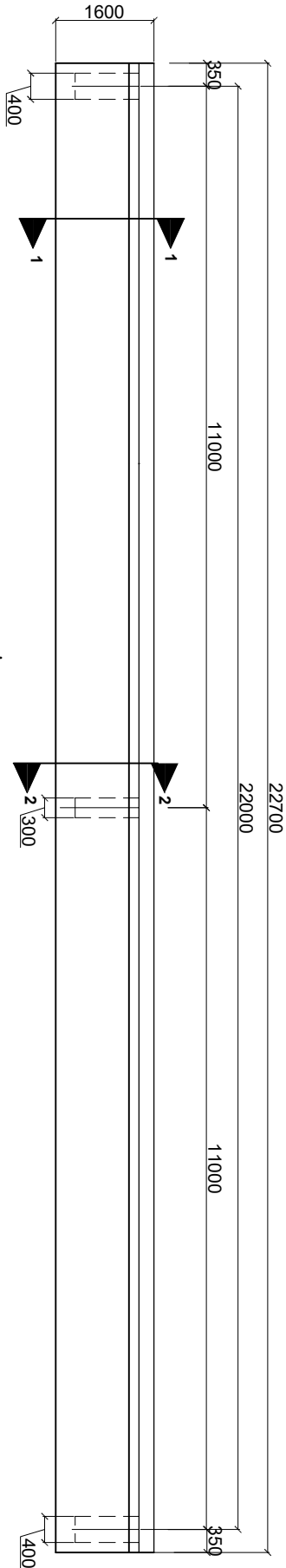
Plan Of Deck

Scale:-1:150



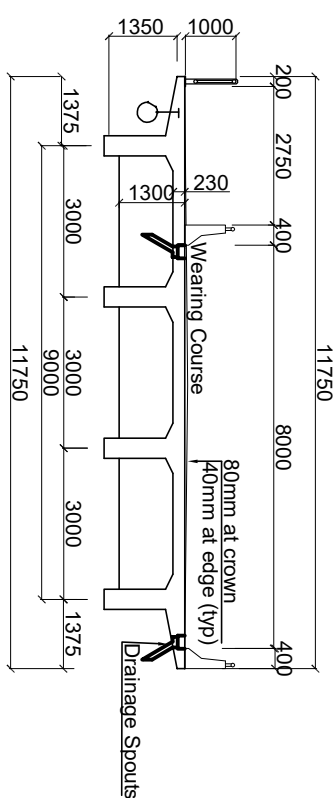
Plan Of Girder

Scale:-1:150



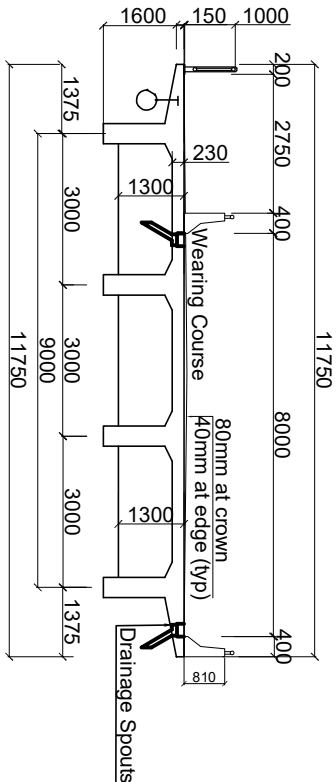
Longitudinal Sectional Elevation

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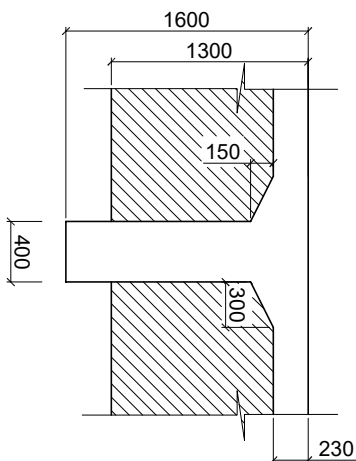
Section at 1-1

Scale:-1:150



Section at 2-2

Scale:-1:150



Section 1-1 Main Girder

Scale:-1:50

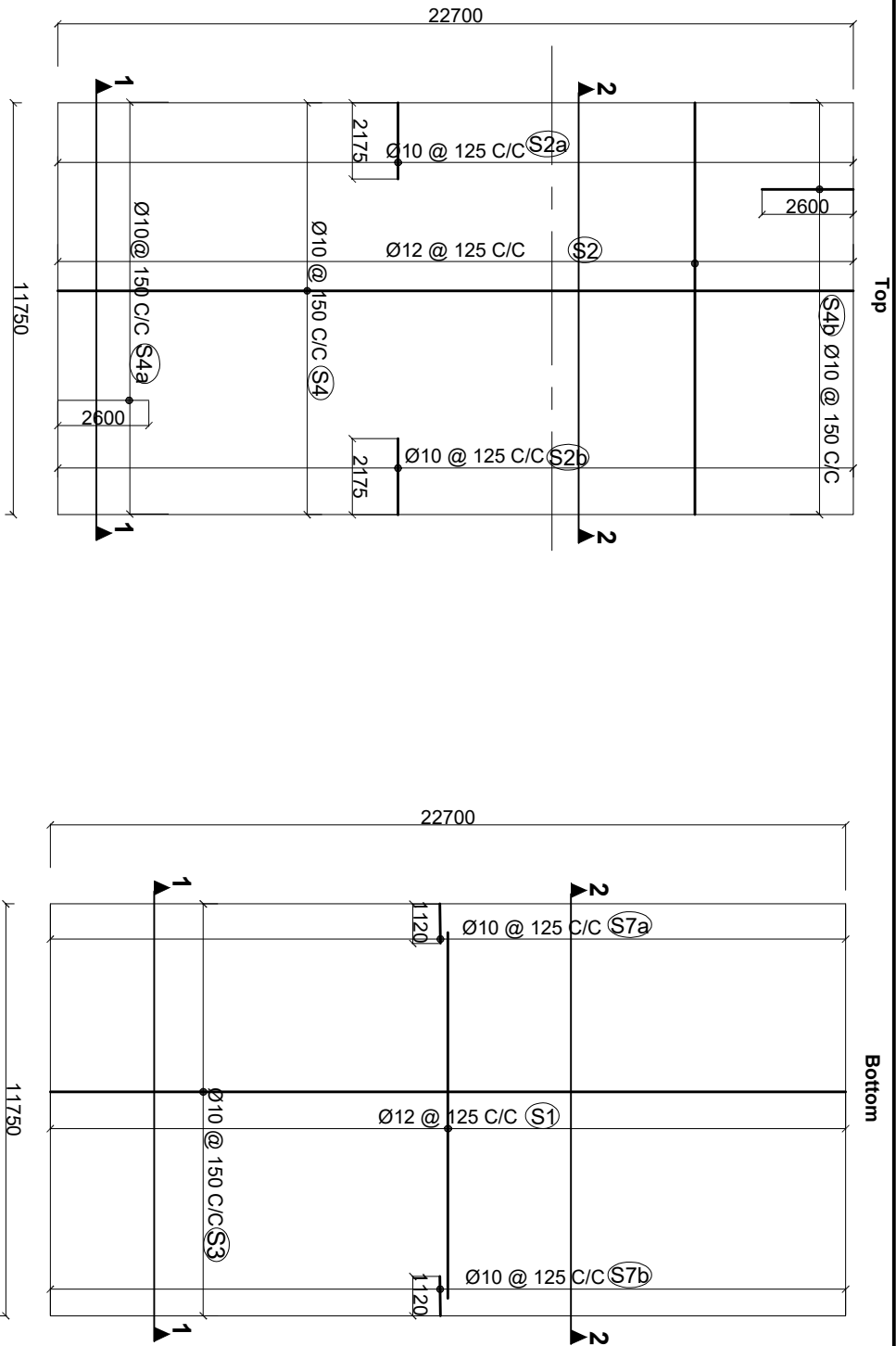
NOTES:

Dowel bars similar to the longitudinal bars of the cross section girders shall be placed in the precast main girder before casting. The longitudinal bars of the cross girder shall be lapped to the dowel bars, which shall have a lap length of 60 dia. of the corresponding bars.

NOTES:

To lift the deck for maintenance, the jacks shall be placed under the positions marked "J".

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				ROAD NAME: East West Highway (H01)						Designed by: Saroj Bhartarai										DWG.NO.: 315_Ghorai Nala	
		Butwal- Gorusinghe Section								Checked by: P. Upadhyaya											
										Approved by: Dr. T.H.Choi										SHEET NO.: 06/20	

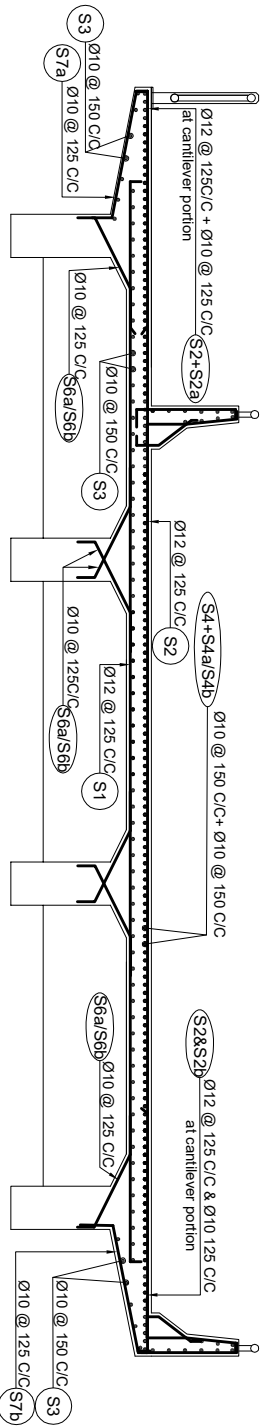


Reinforcement Details Of Deck Slab

Scale:-1:200

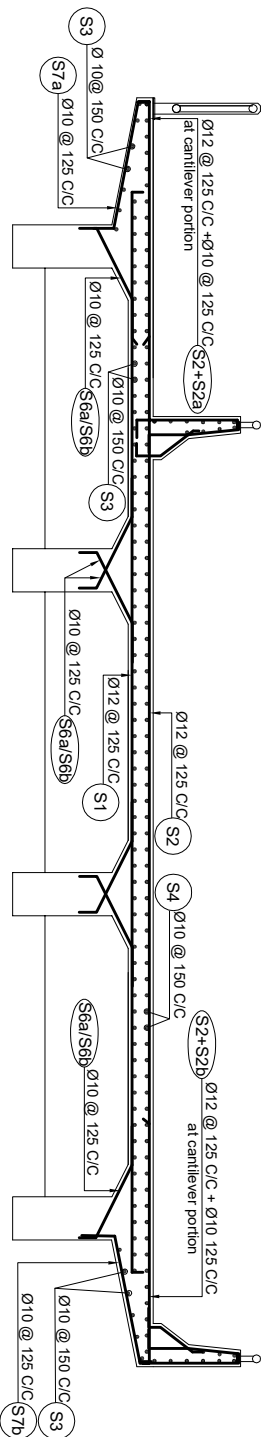
Reinforcement Details Of Deck Slab

Scale:-1:200



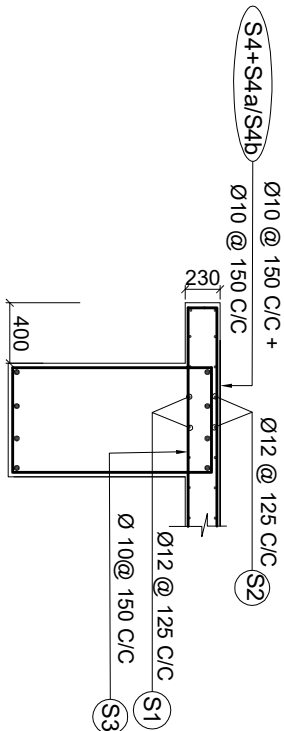
Section at 1-1

Scale:-1:50



Section at 2-2

Scale:-1:50



Reinforcement Details At Deck Extension

Between The Main Girder

NOTES:

1.ON SHEAR CONNECTION:

The transverse bars of the deck slab(S2) shall be tied to vertical stirrups of the longitudinal girders.

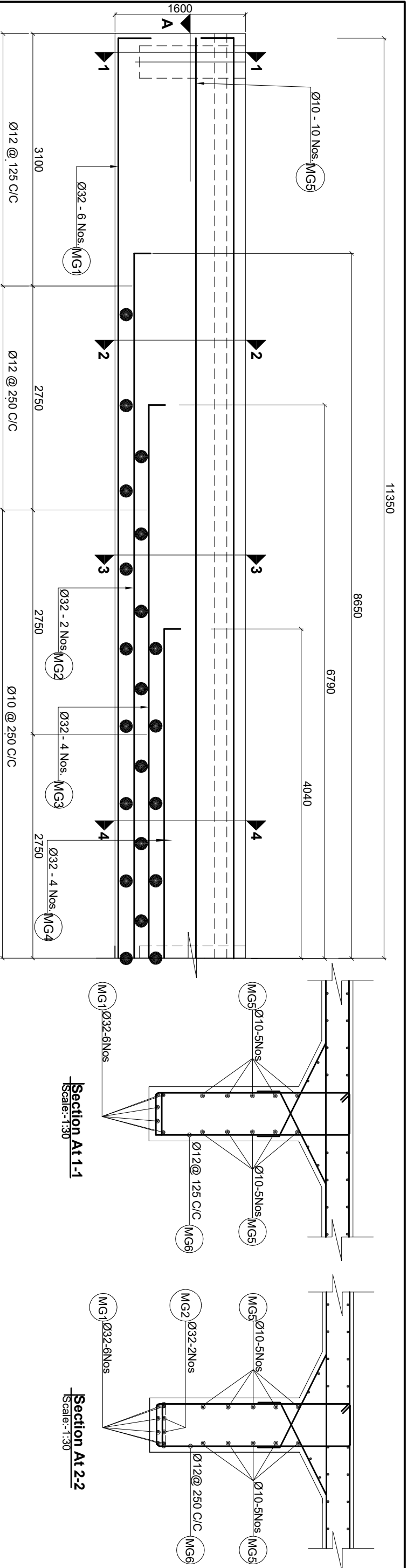
2.TOP SURFACE OF THE MAIN GIRDER:

Surface to be roughened by wire brush immediately after initial setting. The surface shall be properly cleaned by pressure blower prior to casting of the deck concrete

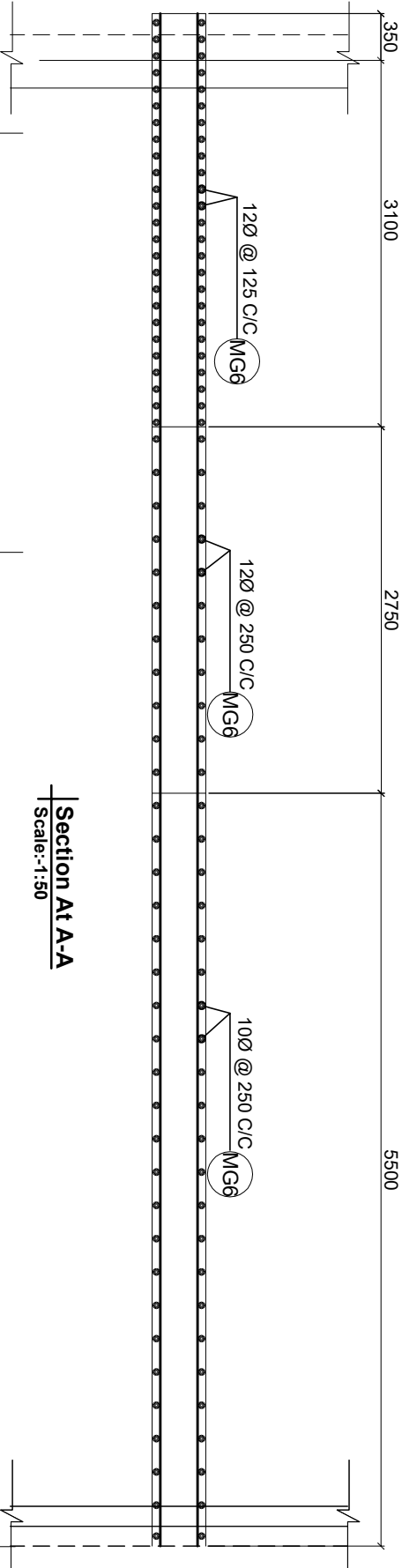
3.ON WEARING COURSE:

The level of wearing course along the longitudinal direction shall be kept horizontal throughout the length of the deck. The thickness of wearing course towards the ends along the deck shall be increased suitably to compensate for the slope due to hogging of the girder by pre stress.

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Reinforcement Details At Sectional Elevation Of Main Girder
Scale:-1:50



Section At A-A
Scale:-1:50

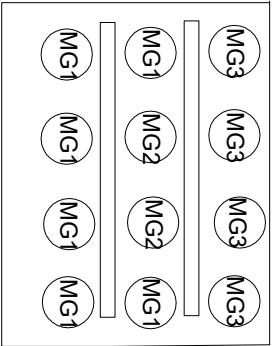
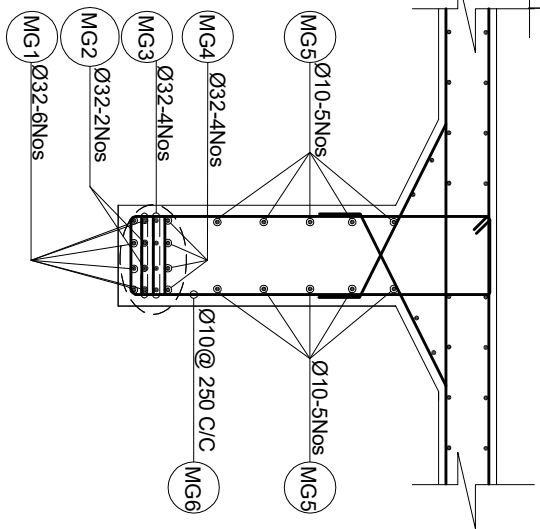


Diagram of Bar Position
Section at 3-3

Section At 3-3
Scale:-1:30



Section At 4-4
Scale:-1:30

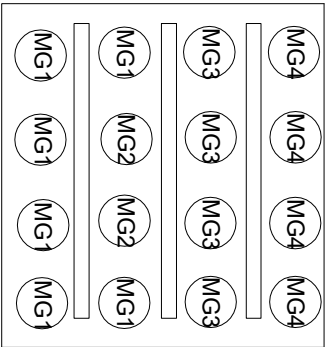
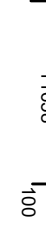
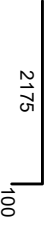
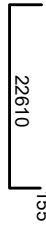
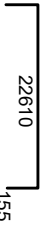
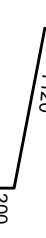
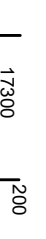
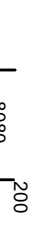
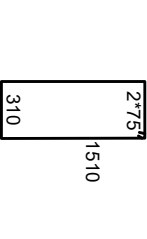
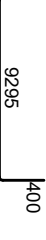
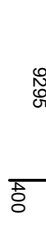
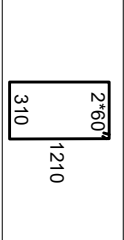
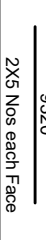


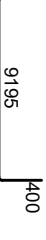
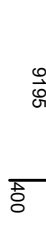
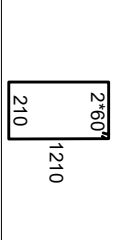
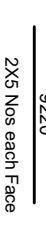
Diagram of Bar Position
Section at 4-4

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-NFP	 Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and JWC - Tech Studio of Engineering Nepal	CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE:	
		DOR, DCID		ROAD NAME:		Reinforcements Details of Main Girder of		As Shown		Designed by:		Checked by:		Approved by:		DWG.NO.:		November,2022	
		East West Highway (H01)		Choral Nala Bridge (47/H001/315_A)						Saroj Bhartarai		P. Upadhyaya		Dr. T.H.Choi		315_Gchorai Nala			
		Butwal- Gorusinghe Section														SHEET NO.:		08/20	

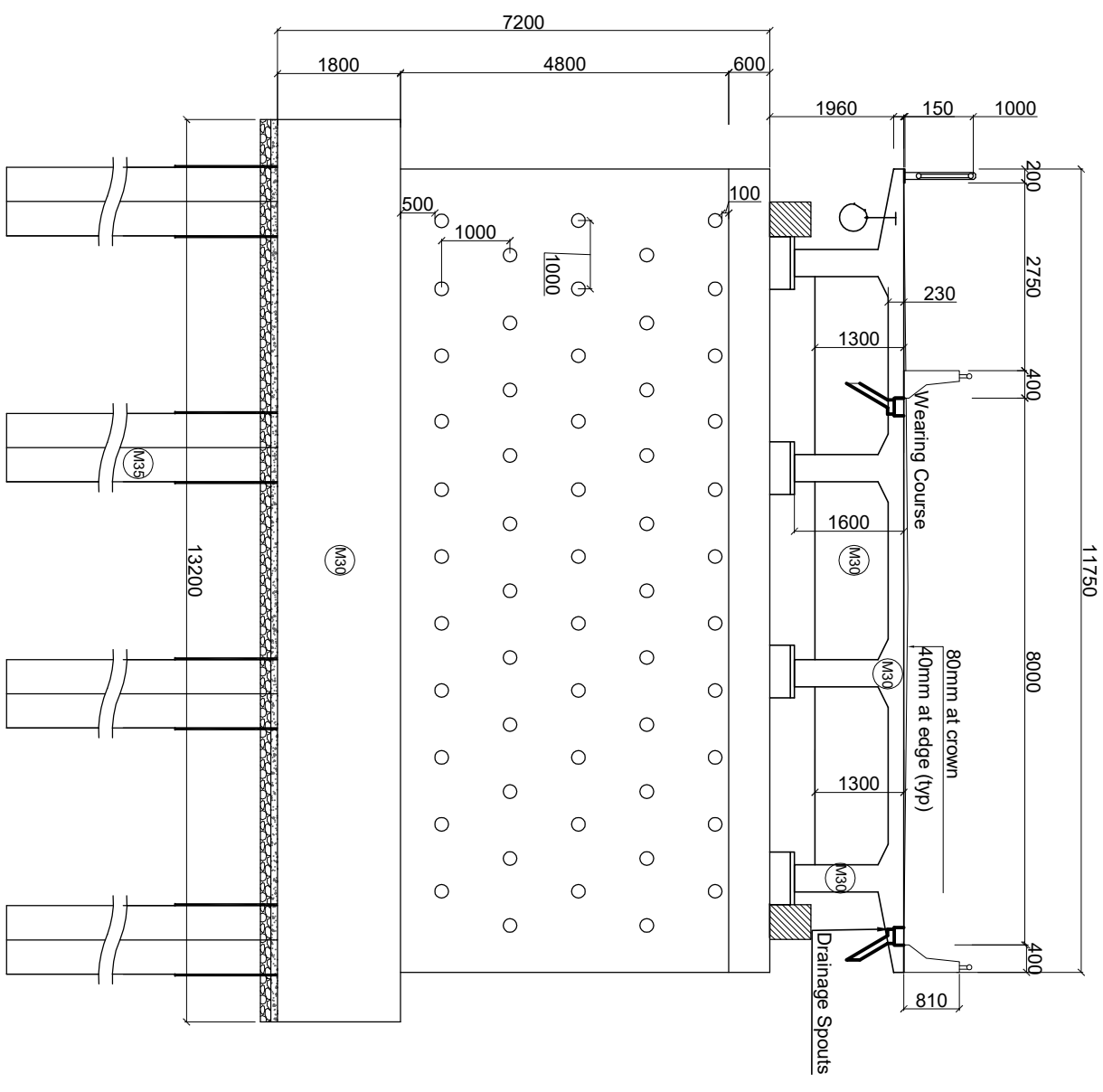
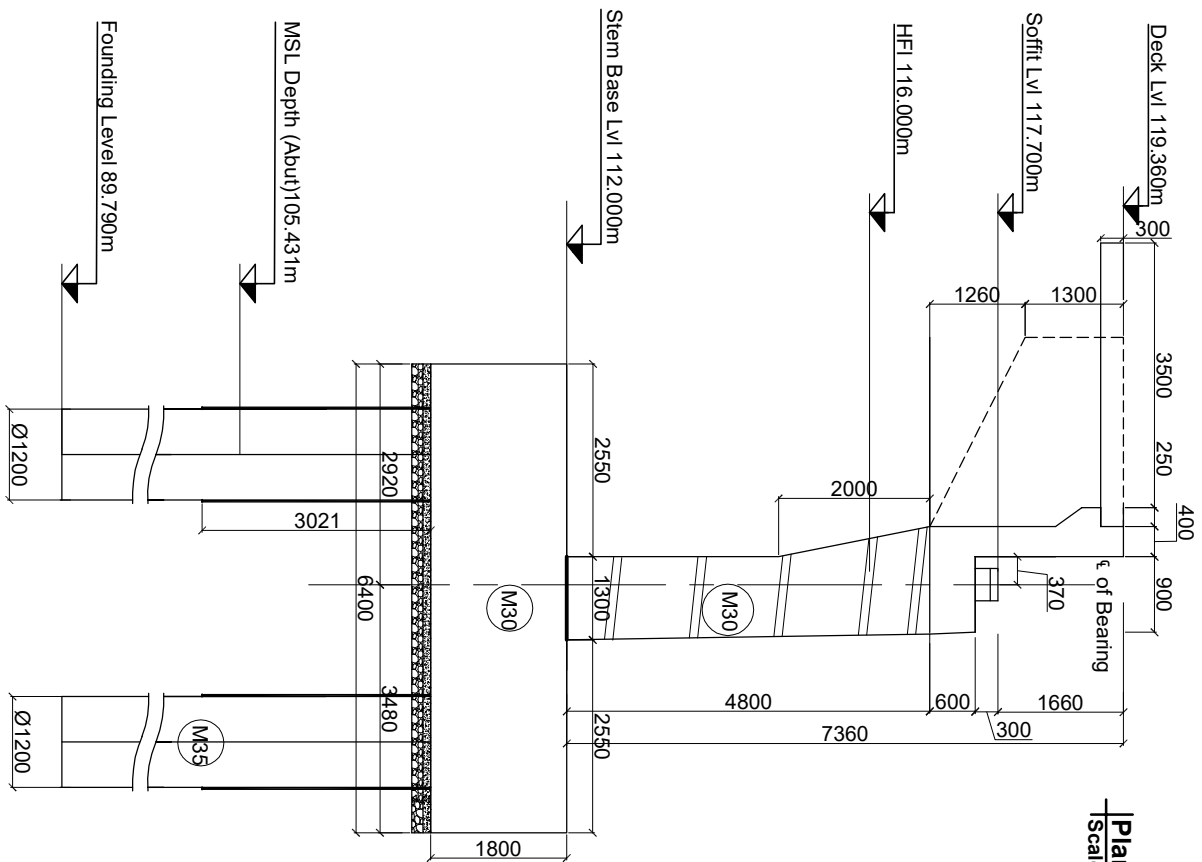
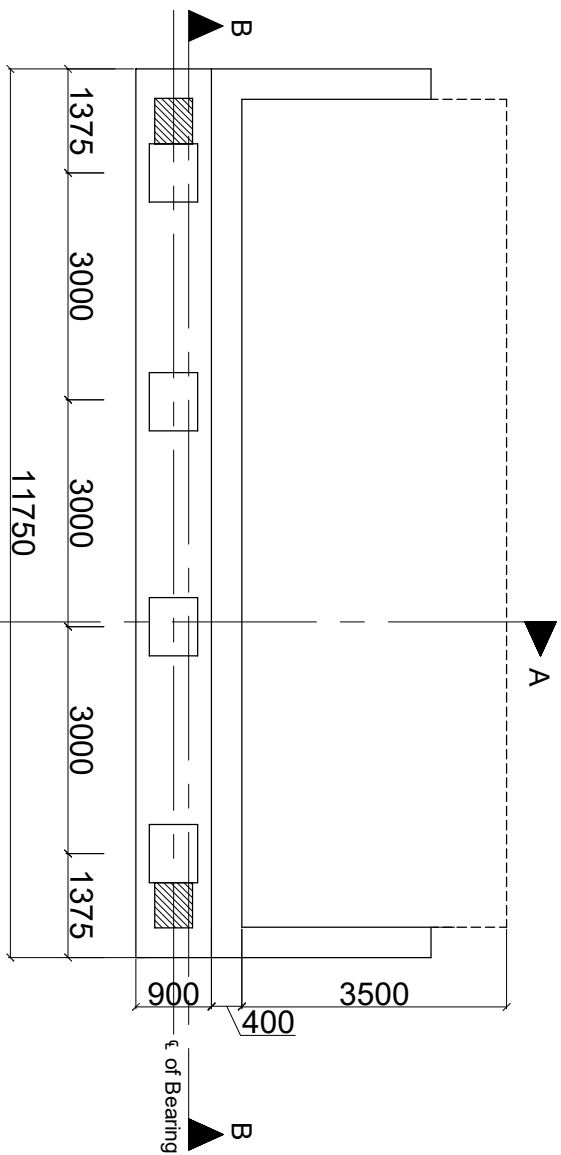
BAR BENDING SCHEDULE OF DECK SLAB							
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACING (mm)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (Kg/m)	TOTAL WEIGHT (Kg)
S1		125 8Nos meter	12	182	10.200	0.888	1648.142
S2		125 8Nos meter	12	182	11.860	0.888	1916.369
S2a	 Additional Bars At Left Cantilever	125 In Between S2	10	182	2.280	0.617	255.839
S2b	 Additional Bars At Right Cantilever	125 In Between S2	10	182	2.280	0.617	255.839
S3		Med Deck 150	10	68	22.920	0.617	960.913
		Left Cantilever 150	10	10	22.920	0.617	141.311
		Left Cantilever 150	10	10	22.920	0.617	141.311
S4		150 7Nos Per Meter	10	79	22.920	0.617	1116.355
S4a	 Additional Bars At DeckEnd,Left	150 In Between S4	10	79	2.755	0.617	134.187
S4b	 Additional Bars At DeckEnd,Right	150 In Between S4	10	79	2.755	0.617	134.187
S6a		125	10	1014	1.380	0.617	862.735
S7a	 (Outer sides Left exterior girder)	125 8Nos Per Meter	10	366	1.420	0.617	320.428
S7b	 (Outer sides Right exterior girder)	125 8Nos Per Meter	10	366	1.420	0.617	320.428
TOTAL KG							8208.042
TOTAL WEIGHT (IN METRIC TON)							8.208

BAR BENDING SCHEDULE FOR RCC MAIN GIRDER						
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (kg/m)	TOTAL WEIGHT (kg)
MG1		32	6	23.390	6.313	886.017
MG2		32	2	17.700	6.313	223.493
MG3		32	4	13.980	6.313	353.043
MG4		32	4	8.480	6.313	214.149
MG5		10	10	22.620	0.617	139.461
MG6		10	22	3.790	0.617	51.407
		12	94	3.790	0.888	316.293
MG7	 Spacer Bar	32	38	0.320	6.313	76.770
TOTAL WEIGHT IN 1GIRDER						2260.634
TOTAL NUMBER OF GIRDERS AND TOTAL WEIGHT (IN METRIC TON)						2.261

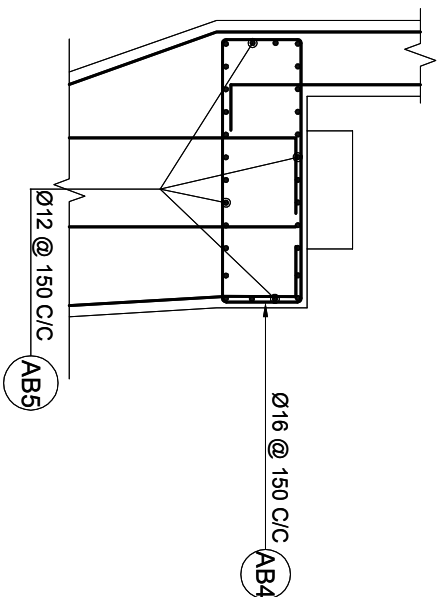
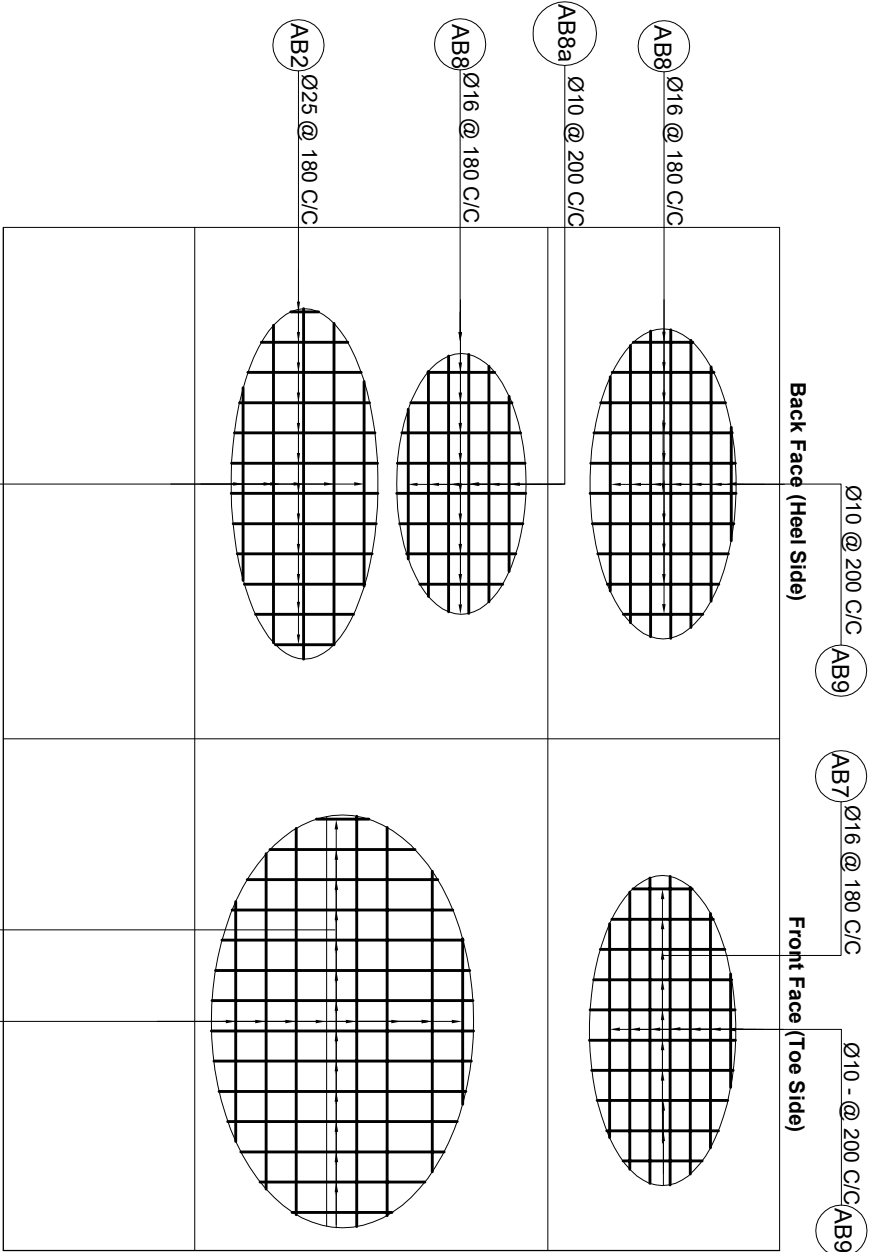
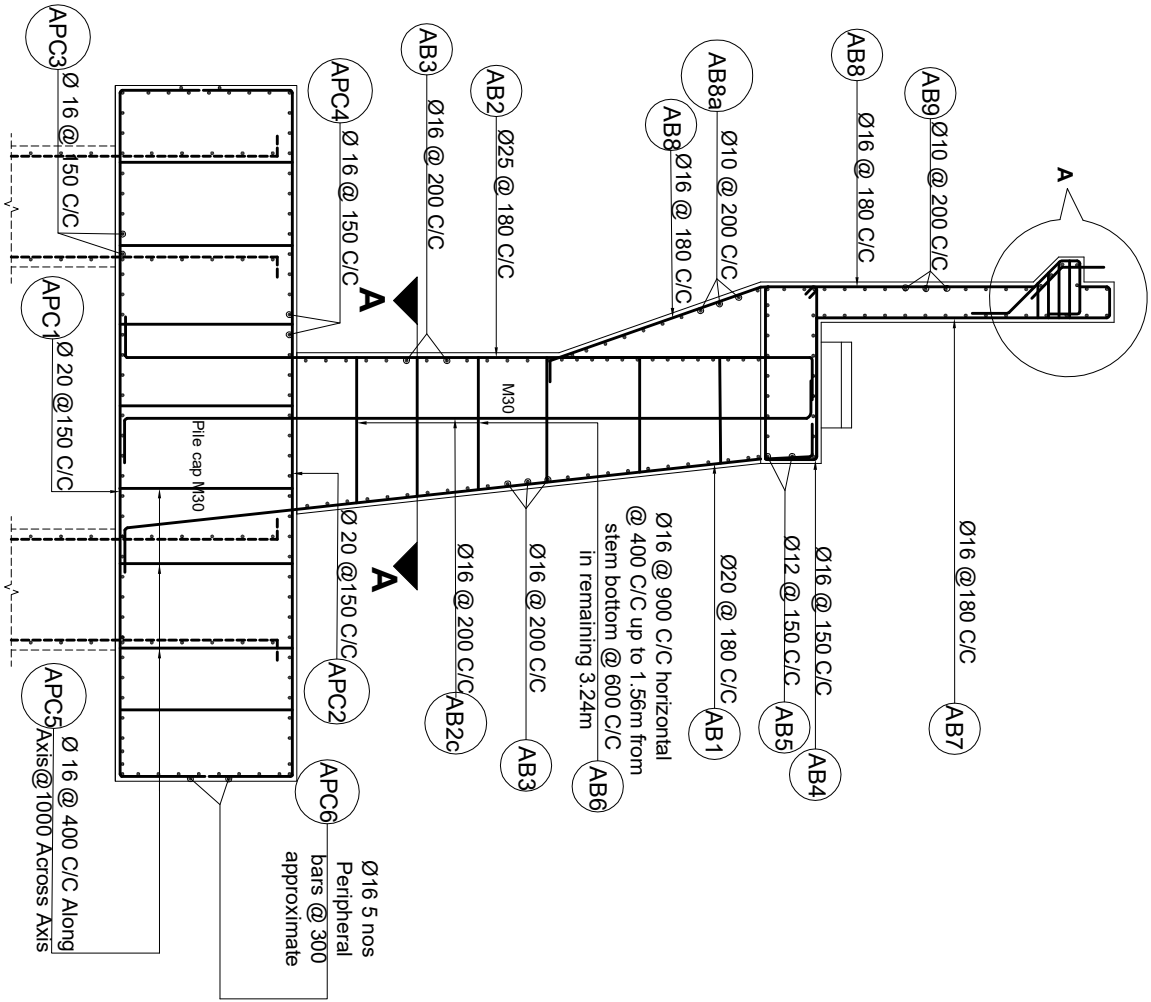
BAR BENDING SCHEDULE FOR END CROSS GIRDERS							
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACIN G (mm)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (Kg/m)	TOTAL WEIGHT (Kg)
EC1		0	25	5	10.095	3.853	194.499
EC2		0	25	6	10.095	3.853	233.399
EC3		200	10	48	3.160	0.617	93.517
EC4		300	10	10	9.320	0.617	57.461
TOTAL WEIGHT IN 1GIRDER							578.875
TOTAL NUMBER OF GIRDERS AND TOTAL WEIGHT 2 (IN METRIC TON)							1.158

BAR BENDING SCHEDULE FOR INTERMEDIATE CROSS GIRDERS							
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACIN G (mm)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (Kg/m)	TOTAL WEIGHT (Kg)
MC1		0	25	5	9.995	3.853	192.572
MC2		0	20	2	9.995	2.466	49.298
MC3		200	10	45	2.960	0.617	82.123
MC4		300	10	10	9.220	0.617	56.845
TOTAL WEIGHT IN 1GIRDER							380.838
TOTAL NUMBER OF GIRDERS AND TOTAL WEIGHT (IN METRIC TON)							0.381

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) and  JWC - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID		SHEET TITLE: B.B.S of Slab & Main Girder of Ghorai Nala Bridge (47/H001/315_A)		SCALE: As Shown		Designed by: Saroj Bhartarai		DATE: November,2022	
				ROAD NAME: East West Highway (H01)						Checked by: P. Upadhyaya		DWG.NO.: 315_Ghorai Nala	
				Butwal- Gorusinghe Section						Approved by: Dr. T.H.Choi		SHEET NO.: 10/20	

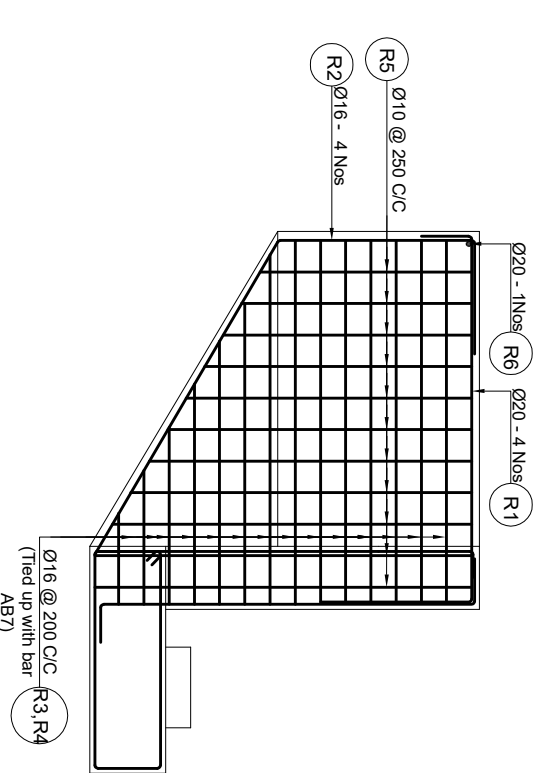


Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:			NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE:	
	 Soosung Engineering Co. Ltd, Korea In association with ERMCP P (Ltd) and  JSC-Tech Studio of Engineering Nepal		DOR, DCID ROAD NAME: East West Highway (H01) Butwal- Gorusinghe Section		Detail of Abutment of Ghorai Nala Bridge (47/H001/315_A)		As Shown								November, 2022
									Designed by:	Saroj Bhattachari				DWG.NO.:	
									Checked by:	P . Upadhyaya				315_Ghorai Nala	
									Approved by:	Dr. T.H.Choi					SHEET NO.:
															(11/20)



Reinforcement Details Of Abutment

Scale:-1:75

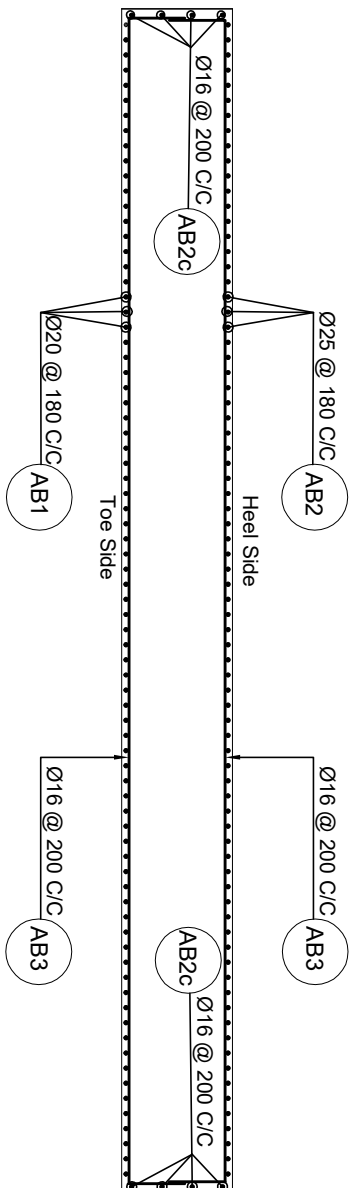


Reinforcement Details Of Wingwall

Scale:-1:50

Reinforcement Details Of Abutment

Scale:-1:75



Section at A-A

Scale:-1:75

Detail At A

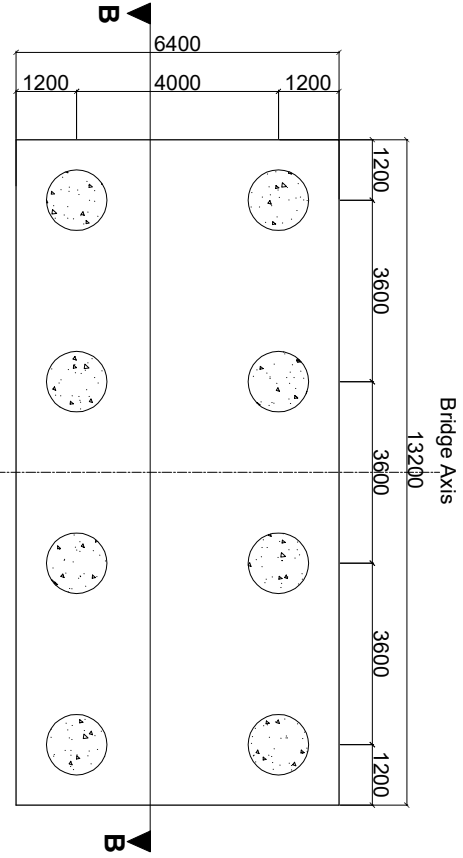
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Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NFP			CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERMCo P (Ltd) and  JWC-Tech Studio of Engineering Nepal								
IMPLEMENTING AGENCY:		SHEET TITLE:	SCALE:		NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE:		
DOR, DCID		Reinforcement Details of Abutment of Ghorai Nala Bridge (47/H001/315_A)	As Shown	Designed by:	Saroj Bhattacharai				November,2022		
ROAD NAME:					Checked by:	P. Upadhyaya					DWG.NO.: 315_Ghorai Nala
East West Highway (H01)								Approved by:		Dr. T.H.Choi	
Butwal- Gorusinghe Section											

BAR BENDING SCHEDULE OF ABUTMENT						
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)
AB1		180	20	66	7.790	2.466
AB2		180	25	66	7.991	3.853
AB2c		200	16	13	7.490	1.578
AB3		200	16	50	24.870	1.578
AB4		150	16	80	3.500	1.578
AB5		150	12	22	11.600	0.888
AB6		16	131	1.383	1.578	285.953
AB7		180	16	66	3.110	1.578
AB8		180	16	66	5.075	1.578
AB8a		200	10	12	11.600	0.617
AB9		200	10	11	23.716	0.617
AB10		200	16	55	1.747	1.578
AB11		12	110	0.900	0.888	87.894
AB11a		12	110	0.650	0.888	63.479
AB12		20	1	11.600	2.466	28.607
AB13		16	2	11.600	1.578	36.617
AB14		20	39	0.900	2.466	86.562
TOTAL WEIGHT IN ONE ABUTMENT						7925.158
TOTAL WEIGHT IN METRIC TON						7.925

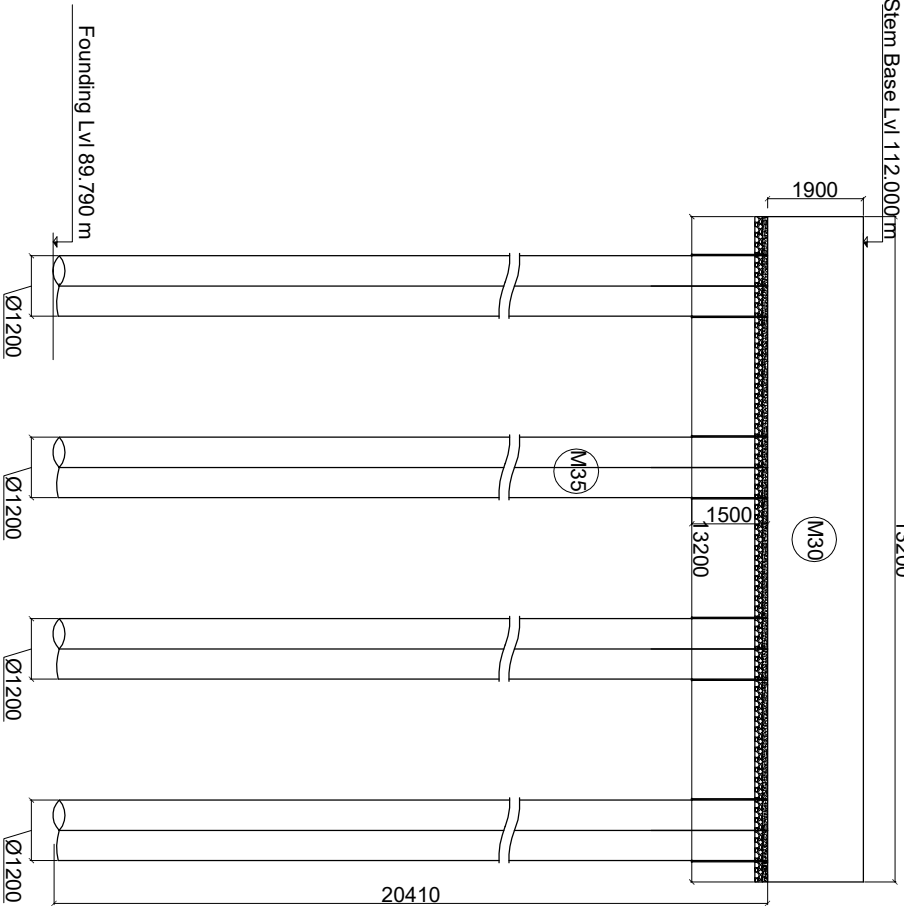
BAR BENDING SCHEDULE OF WING WALL						
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACING (MM)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (kg/m)
R1		20	8	4.907	2.466	96.811
R2		16	8	4.762	1.578	60.128
R3		16	14	7.156	1.578	158.124
R4		16	14	3.928	1.578	86.796
R5		10	26	4.520	0.617	72.456
R6		20	2	0.307	2.466	1.514
R7		10	0	3.300	0.617	0.000
R8		10	0	1.320	0.617	0.000
TOTAL IN 2 WING WALL IN ONE ABUTMENT						475.830
TOTAL WEIGHT IN METRIC TON						0.476

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 Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and  JYK - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal- Gorusinghe Section		SHEET TITLE: B.B.S of Abutment Wingwall & Pilecap of Ghorai Nala Bridge (47/H001/315_A)		SCALE: As Shown		NAME Saroj Bhartarai P. Upadhyaya Dr. T.H.Choi		SIGNATURE   		REV NO.		DESCRIPTION		DATE: November,2022 DWG.NO.: 315_Ghorai Nala SHEET NO.: 13/20	
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Plan Of Abutment Piles

Scale:-1:150

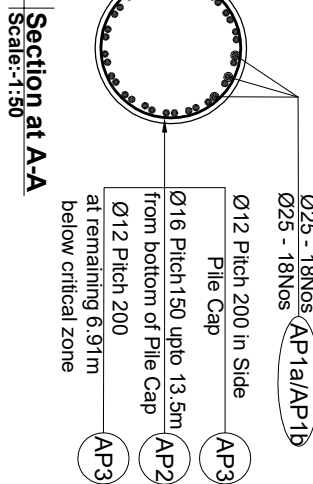


Note On MS permanent casing on piles: In case piling works are done without temporary casing, the piles shall be lined with 6mm thick MS steel permanent casing up to 1.5 m or 0.5m below MSL whichever is larger (Subject to instruction and approval by the Engineer)

Piles Section At B-B

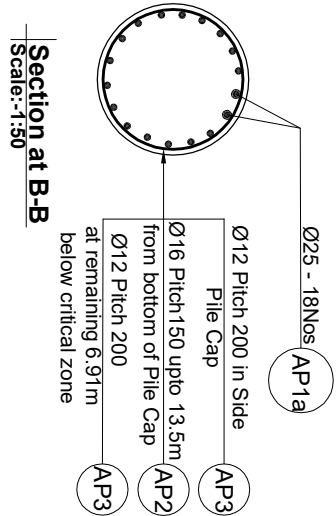
Scale:-1:150

Location	Design Pile Length m	Design Working load on pile (non - seismic case)kn	Allowable Bearing Capacity on pile (Scour case) kn	Allowable Bearing Capacity of the Pile (Non Scour case)kn
Abutment	20.41	1751	2259	4106
Pier	0.00	0.00	0.00	0.00



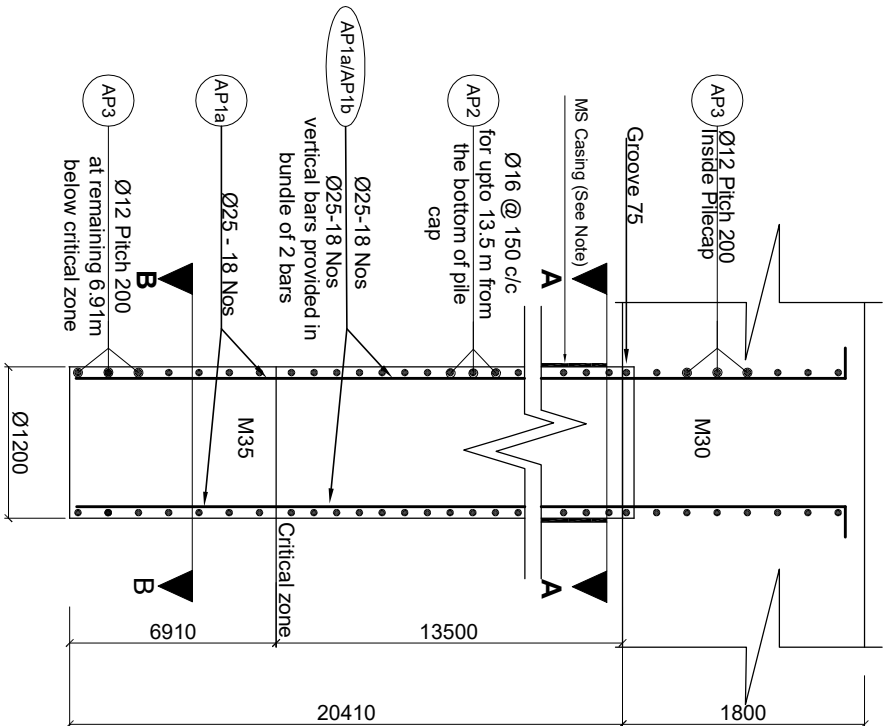
Section at A-A

Scale:-1:50



Section at B-B

Scale:-1:50



Reinforcement Details Of Pile

Scale:-1:50

BAR BENDING SCHEDULE OF ABUTMENT PILECAP

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)	TOTAL WEIGHT (KG)
APC1	1080 6230 1080		20	88	8.390	2.466	1820.812
APC2	1080 6230 1080		20	88	8.390	2.466	1820.812
APC3	1080 13034 1080		16	43	15.194	1.578	1031.196
APC4	1080 13034 1080		16	43	15.194	1.578	1031.196
APC5	11570 11570 Curve length 251 Curve radius 40 Hook length 80	400 C/C along axis	16	272	2.232	1.578	958.216
APC6	13050 6250		16	5	38.600	1.578	304.620

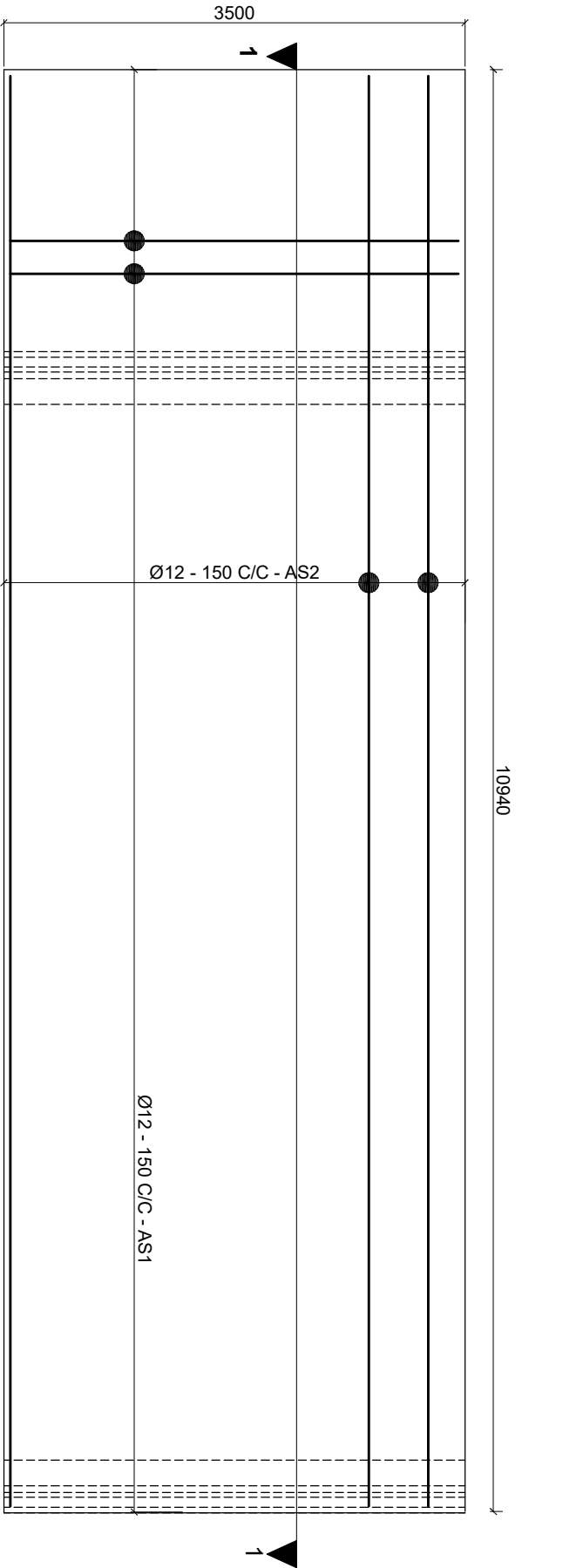
TOTAL IN PILE CAP OF ONE ABUTMENT							6966.852
TOTAL WEIGHT IN METRIC TON							6.967

BAR BENDING SCHEDULE FOR ABUTMENT PILES

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)	TOTAL WEIGHT (KG)
AP1a	22015 200 Vertical bars provided in bundle of 2 bars		25	18	22.220	3.853	1541.193
AP1b	15200 200 bundled bars		25	18	15.400	3.853	1068.154
AP2	Dia-1034 Pitch-150 13.5m from bottom of pile cap		16	1	295.420	1.578	466.273
AP3	Dia-1038, Pitch-200 inside Pile cap 200 Below Critical Zone		12	1	142.440	0.888	126.461

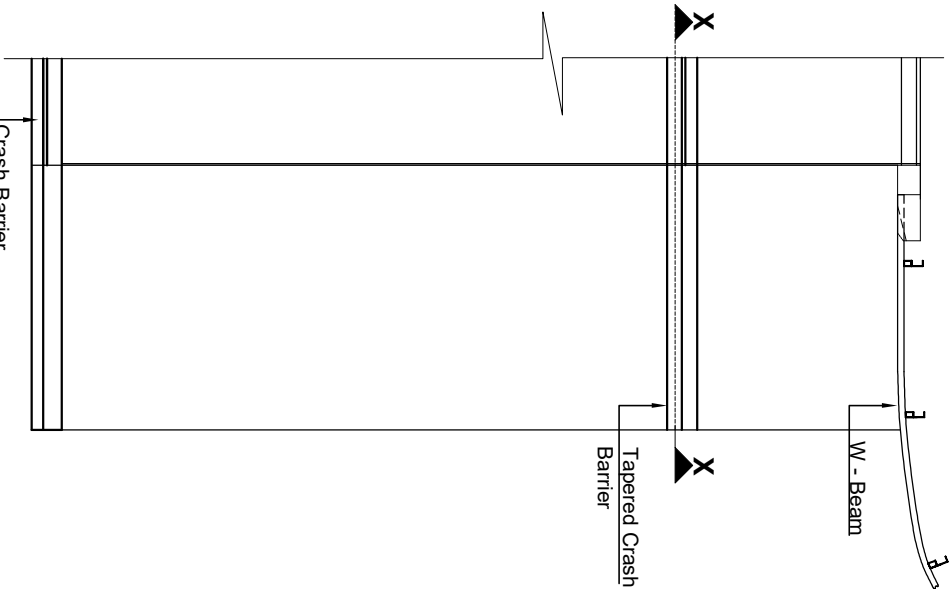
TOTAL WEIGHT IN KG							3202.081
TOTAL IN 8 PILE WEIGHT IN MT							25.617

Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASAC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NFP										CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and  JYV-Tech Studio of Engineering Nepal										IMPLEMENTING AGENCY:			SHEET TITLE:			SCALE:			NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE:	
										DOR, DCID			Reinforcement Details of Abutment Piles of Ghorai Nala Bridge (47/H001/315_A)			As Shown			Designed by: Saroj Bhartarai										DWG.NO.:									
																													315_Ghorai Nala									
																													SHEET NO.:									
																													14/20									
										Butwal- Gorusinghe Section						Checked by: P. Upadhyaya																						
																Approved by: Dr. T.H.Choi																						



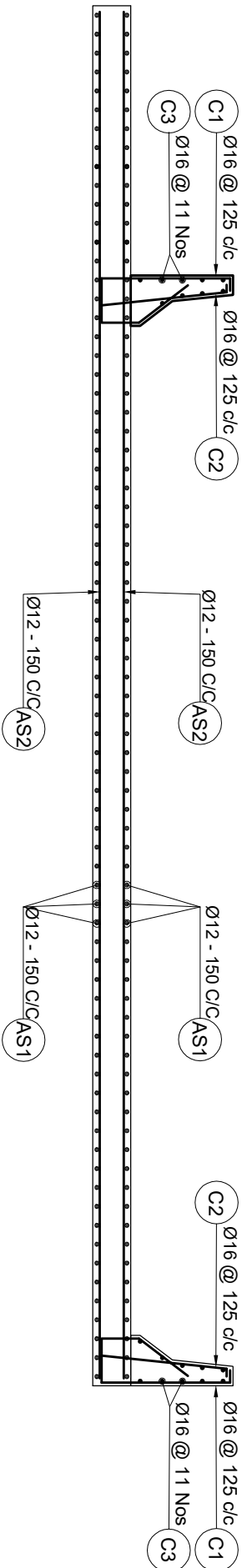
Plan of Reinforcement Details of Approach Slab

Scale:-1:50



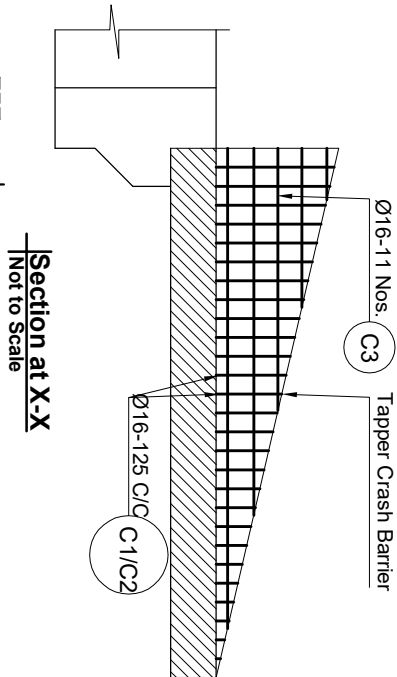
Plan of Approach Slab

Not to Scale



Section at 1-1

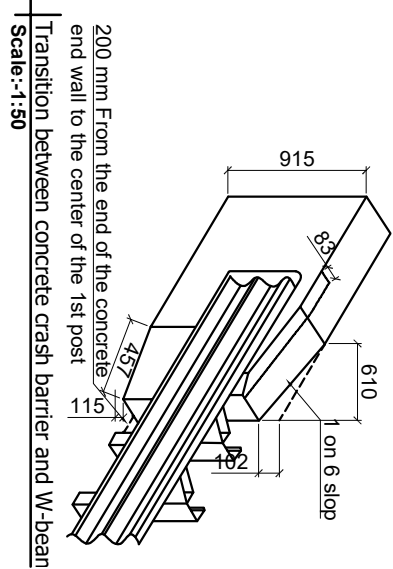
Scale:-1:50



Section at X-X

Not to Scale

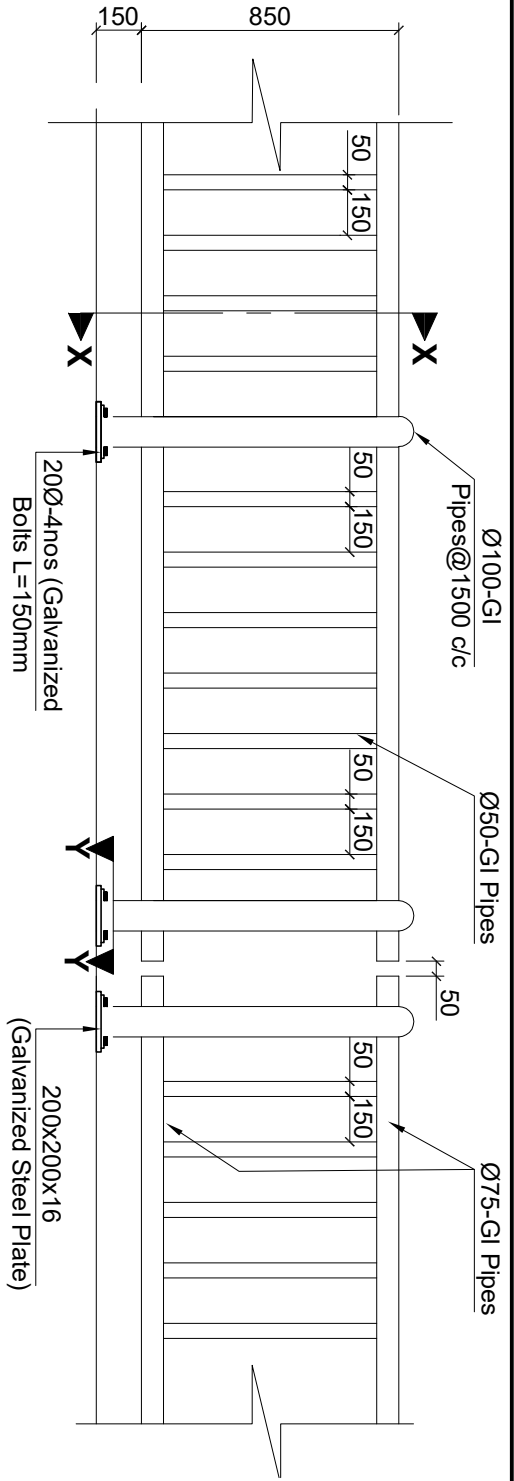
BAR BENDING SCHEDULE OF APPROACH SLAB						
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (Kg/m)	TOTAL WEIGHT (kg)
AS1	<u>3400</u>	12	148	3.400	0.888	446.749
AS2	<u>10850</u>	12	48	10.850	0.888	462.375
TOTAL IN ONE APPROACH SLAB						909.124
TOTAL WEIGHT IN METRIC TON						0.909



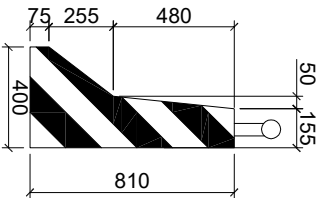
Elevation

Scale:-1:50

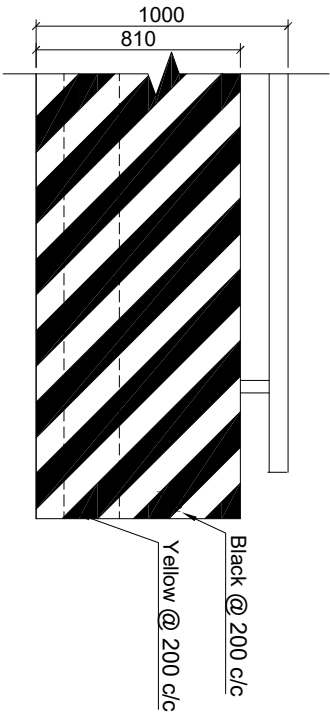
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NFP		CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and JWC - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal- Gorusinghe Section		SHEET TITLE: Reinforcement Details of Approach Slab of Ghorai Nala Bridge (47/H001/315_A)		SCALE: As Shown		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November, 2022	
										Designed by: Saroj Bhattacharai		Checked by: P. Upadhyaya		Approved by: Dr. T.H.Choi				DWG.NO.: 315_Ghorai Nala	
																		SHEET NO.: 15/20	



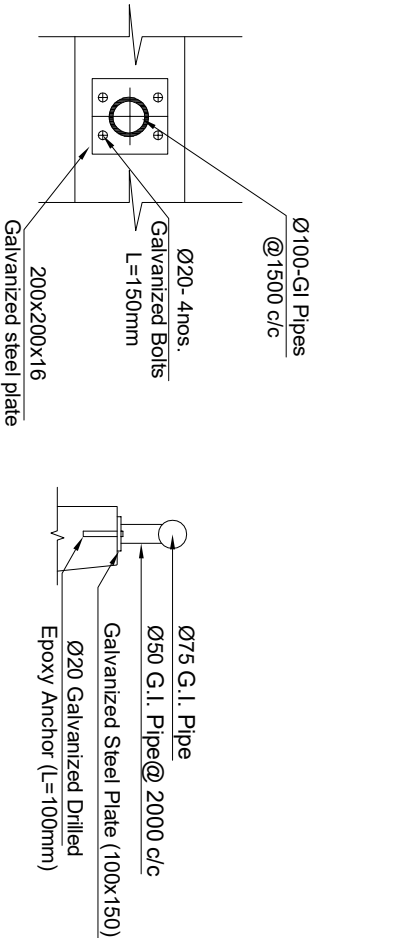
Railing Post Details
Scale:-1:30



Painting Work on Crash Barrier
Scale:-1:30

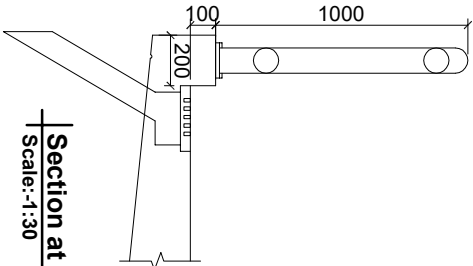


Painting Work on Crash Barrier
on The Surface Facing Towards Carriageway
Scale:-1:30

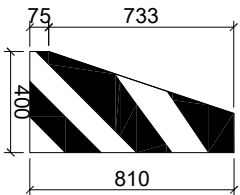


Section at Y-Y
Scale:-1:20

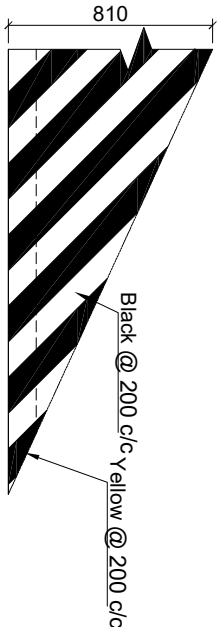
Details at A-A
Scale:-1:20



Section at X-X
Scale:-1:30



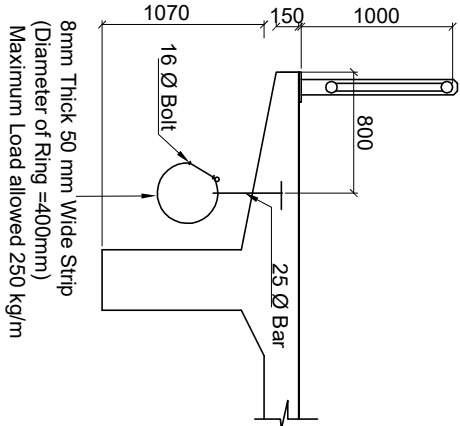
Painting Work on Tapper Crash Barrier
Scale:-1:30



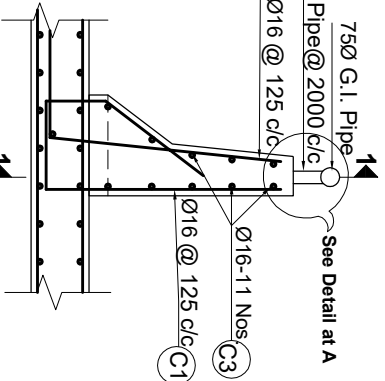
Painting Work on Crash Barrier
on The Surface Facing Towards Carriageway
Scale:-1:30

BAR BENDING SCHEDULE OF CRASH BARRIER (For each 1m)

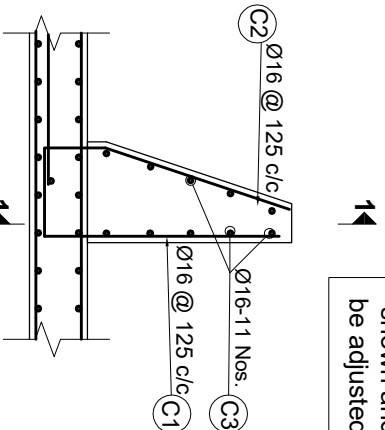
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACING (mm)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (Kg/m)	TOTAL WEIGHT (Kg)
C1		125 Approximate	16	8	2.030	1.578	25.632
C2		125 Approximate	16	8	1.415	1.578	17.867
C3			16	11	0.960	1.578	16.667
TOTAL FOR 10 M							60.166
TOTAL FOR 1.0M (IN METRIC TON)							0.006



Utility hanger Detail
Scale:-1:50



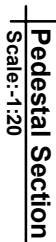
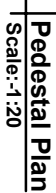
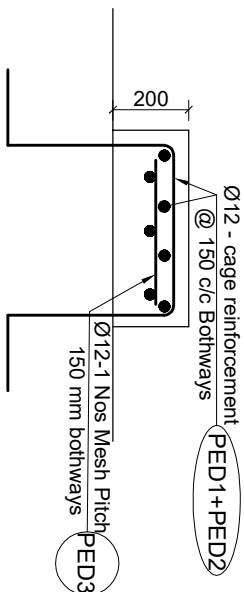
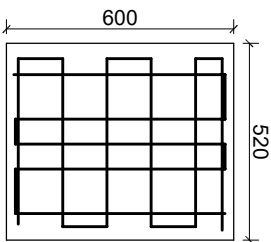
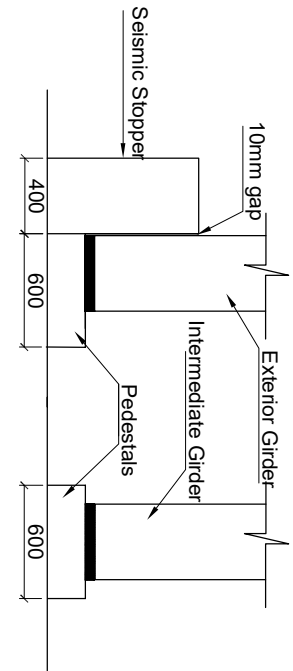
Crash Barrier Detail at The Bridge Deck
Scale:-1:30



Crash Barrier Detail at The Tapered End
Scale:-1:30

NOTES:
The crash barrier shall be sloped at both ends of the bridge as shown and the reinforcement shall be adjusted according to the slope.

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 Engineering Co. Ltd, Korea in association with ERMCo P (Ltd) and JYV - Tech Studio of Engineering Nepal	IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01)		SHEET TITLE: Miscellaneous Details - 1 of Choral Nala Bridge (47/H001/315_A)	SCALE: As Shown		Designed by: Saroj Bhartarai	SIGNATURE 	REV NO.	DESCRIPTION	DATE: November, 2022
								Checked by: P. Upadhyaya	SIGNATURE 			DWG.NO.: 315_Choral Nala
			Butwal- Gorusinghe Section					Approved by: Dr. T.H.Choi	SIGNATURE 			SHEET NO.: 16/20



NOTE:
To match the height of ballast wall, the thickness shall be suitably modified.

ISA 100*100*8

min 200 long anchor bars $\varnothing 12$ @ 300 C/C

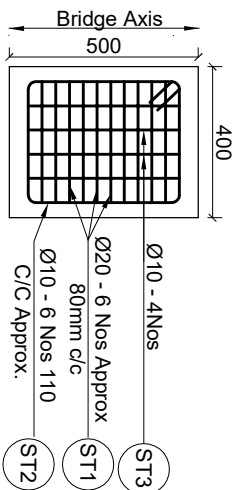
welded to the angles

40mm gap Allowable movement

40mm

Compression Seal Joint

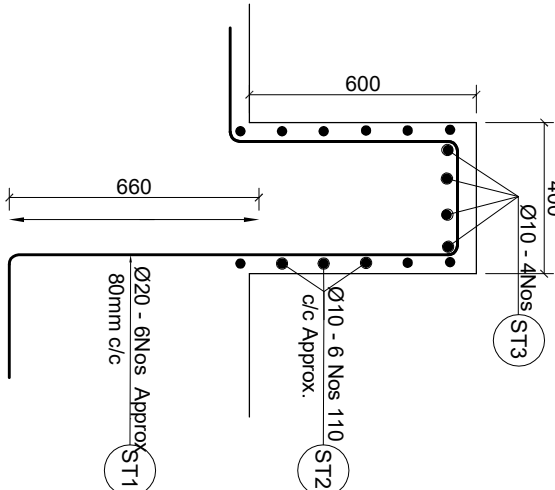
Scale:-1:5



Stoppers Plan
Scale:-1:20

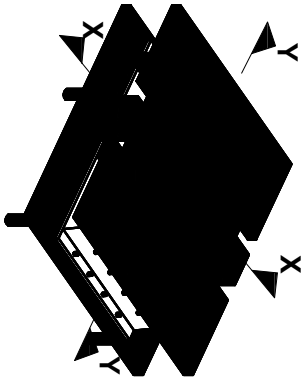
Notes on Elastomeric Bearings

The dimensions and properties of the bearings shown are tentative, based on IRC:83-2018, Part II, Table B2. The actual design shall be carried out by the manufacturer on the basis of provided load & deformation data. The effective stiffness shall not exceed the shown value.



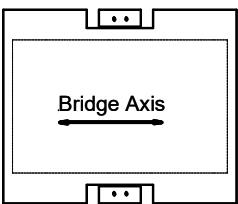
Stoppers Details
Scale:-1:20

Lateral stiffness corresponding to overall area and total thickness of elastomer = 2286 N/mm

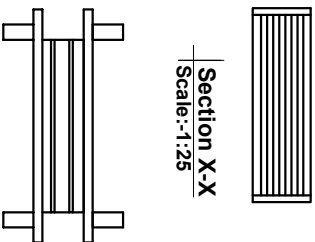


**Elastrometric Bearing
(partially free at longitudinal direction Fixed at Transverse direction)**

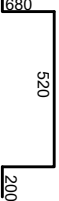
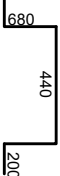
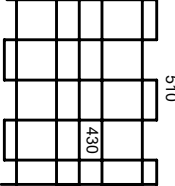
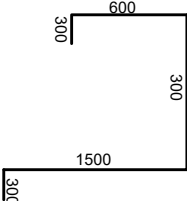
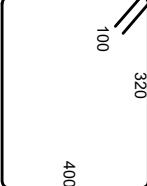
Scale:-1:25



Elastomeric Longitudinal Bearing
Scale:-1:25



Section Y-Y
Scale:-1:25

BAR BENDING SCHEDULE OF PEDESTAL							
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACIN G (mm)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (kg/m)	TOTAL WEIGHT (Kg)
PE1		150	12	4	2.280	0.888	8.097
PE2		150	12	5	1.960	0.888	8.701
PE3		150	10	2	4.620	0.617	5.697
TOTAL BAR BENDING SCHEDULE OF PEDESTAL							22.494
TOTAL WEIGHT (IN METRIC TON)							0.022
BAR BENDING SCHEDULE OF STOPPER							
BAR ID	SHAPE OF BAR IN mm (NOT TO SCALE)	SPACIN G (mm)	Ø OF BARS (mm)	NO. OF BARS	LENGTH (m)	WEIGHT/LENGTH (kg/m)	TOTAL WEIGHT (Kg)
ST1		80	20	6	3.000	2.466	44.391
ST2		110	10	6	1.640	0.617	6.067
ST3		0	10	4	0.400	0.617	0.986
TOTAL BAR BENDING SCHEDULE OF STOPPER							51.444
TOTAL WEIGHT (IN METRIC TON)							0.051

Design Data For Bearing (Elastomeric Bearing)	All loads unfactored
Maximum permanent and superimposed dead loads	450.4 kN
Maximum load from surfacing (wearing course)	33.8 kN
Maximum live load reaction (including impact)	598.2 kN
Maximum horizontal seismic force	81 kN
Maximum braking force	89.7 kN
Total Maximum elongation of the deck	8 mm
Maximum Rotation due to dead load _	0.0022 rad
Maximum Rotation due to live load _	0.0016 rad
Maximum rotation due to dead load + live load _	0.0038 rad
Concrete for superstructure	M 30
Concrete for substructure	M25/M30
Width of girder at bearings	400 mm
Length of bearing (along bridge axis) assumed	320 mm

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
JSC-Tech Studio of Engineering
Nepal

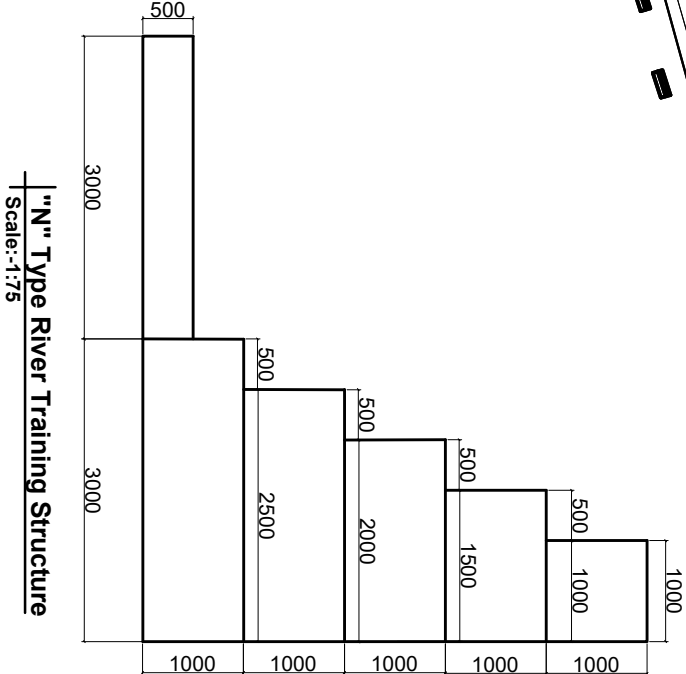
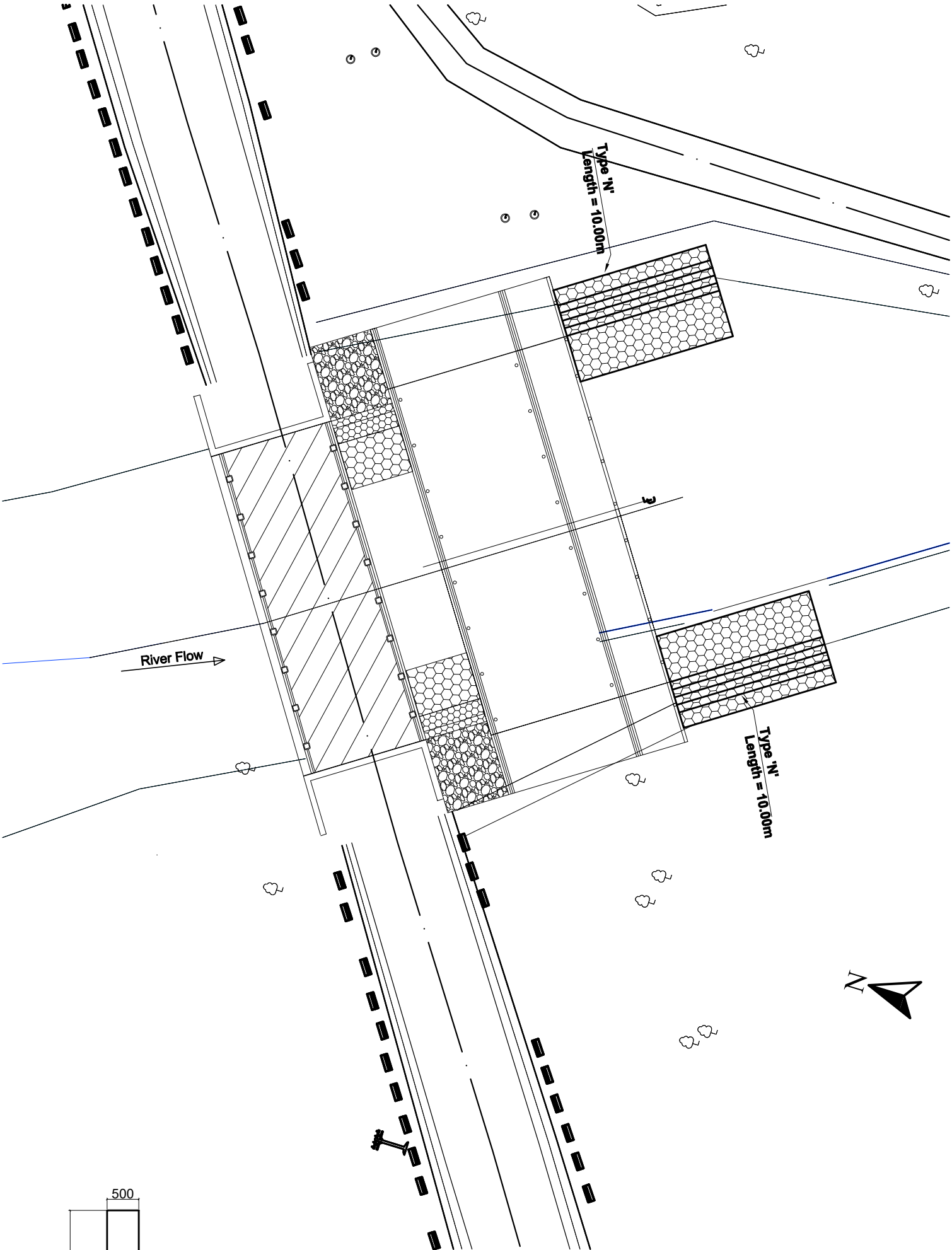
IMPLEMENTING AGENCY:
DOR, DCID
ROAD NAME:
East West Highway (H01)
Butwal - Gorusinghe Section

Miscellaneous Details - 2
of
Ghorai Nala Bridge
(47/H001/315_A)

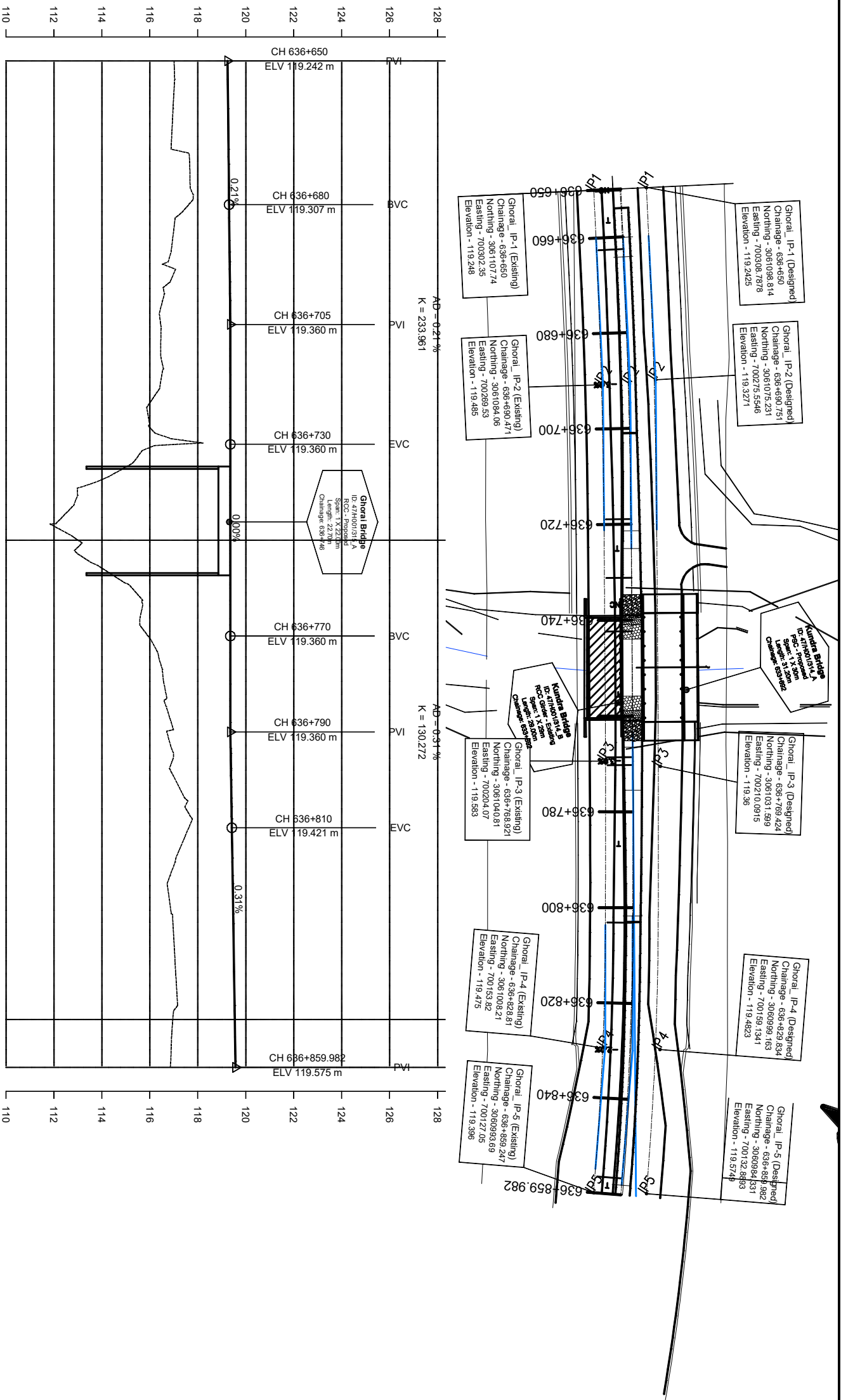
Ghorai Nala Bridge (47/H001/315_A)	
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	NAME	SIGNATURE	REV NO.	DESCRIPTION
Designed by:	Saroj Bhattacharai			
Checked by:	P. Upadhyaya			
Approved by:	Dr. T.H. Choi			

DATE:	November,2022
DWG.NO.:	315_Ghorai Nala
SHEET NO.:	17/20

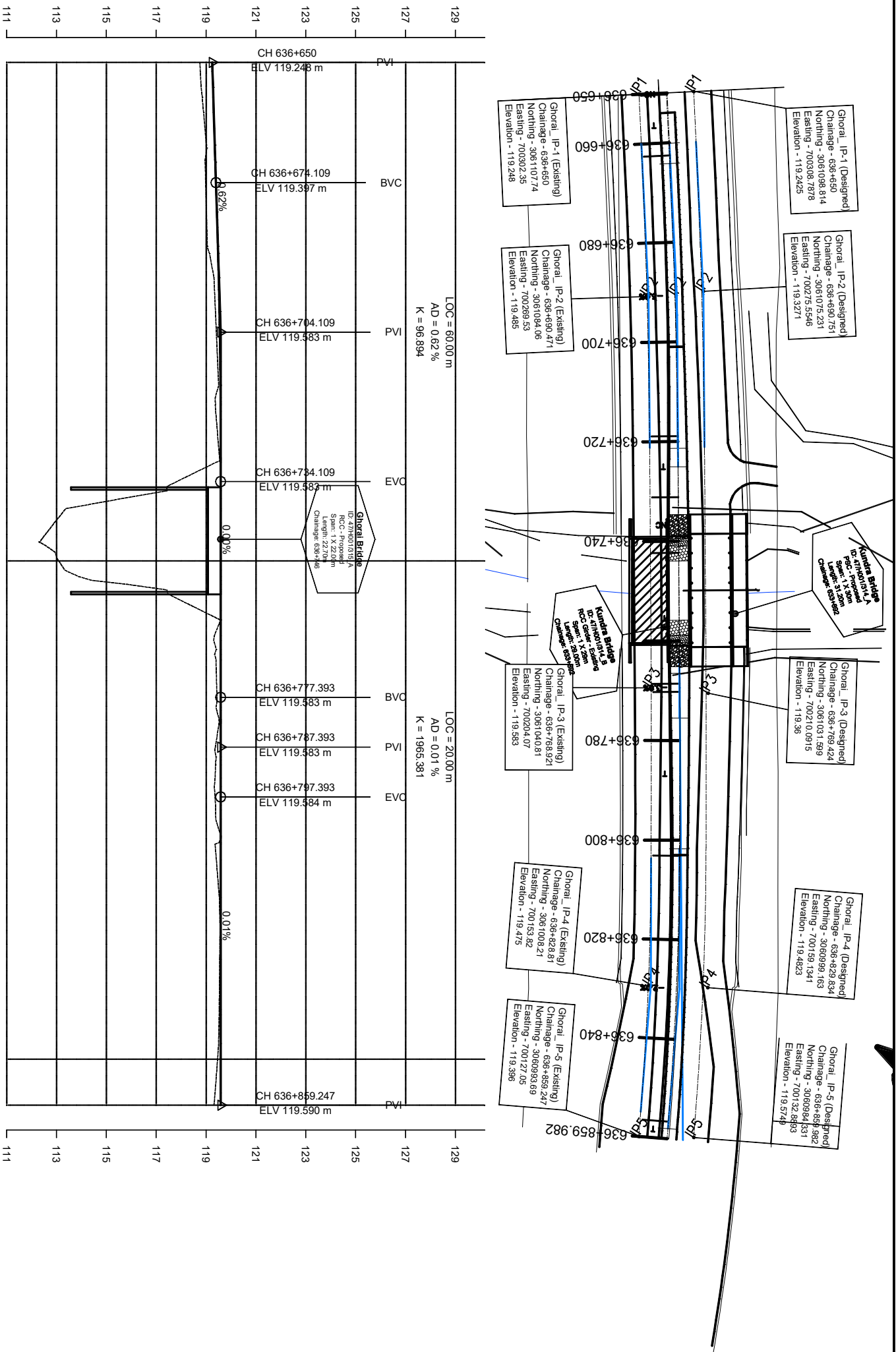


Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:				NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE:	
	 Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and  JYK - Tech Studio of Engineering Nepal		DOR, DCID		River Training Work of Choral Nala Bridge (47/H001/315_A)		As Shown		Designed by:		Saroj Bhartari					November,2022	
	ROAD NAME:		East West Highway (H01)				Checked by:		P. Upadhyaya							DWG.NO.: 315_Ghorai Nala	
	Butwal- Gorusinghe Section						Approved by:		Dr. T.H.Choi							SHEET NO.: (17.120)	



DESIGN LEVEL(m)	EXISTING LEVEL(m)	HORIZONTAL ALIGNMENT		SUPER ELEVATION	CHAINAGE(Km)
		RIGHT	LEFT		
119.242	117.014	IP-1 R=0.00	NC	636+650	636+650
119.264	116.969		T		
119.285	117.648			636+662.576	636+660
119.307	117.622				636+670
119.326	116.880	IP-2 R=1505.50	3		636+680
119.341	116.535				636+690
119.351	116.453				636+700
119.358	116.183		T	636+718.926	636+710
119.360	117.135		NC	636+731.176	636+720
119.360	112.985			636+742.345	636+730
119.360	113.008		T		636+740
119.360	115.262				636+750
119.360	115.928	IP-3 R=1500.00	3	636+768.595 636+770.254	636+760
119.364	116.596		T		636+770
119.375	116.712				636+780
119.395	117.070			636+803.122	636+790
119.421	117.623				636+800
119.452	116.844				636+810
119.483	116.967	IP-4 R=700.00	2		636+820
119.514	117.075				636+830
119.544	116.958		T	636+856.547 636+859.982	636+840

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 TSE-Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Plan & Profile of Ghorai Nala Bridge 636+650-636+850		SCALE: Vertical Scale Horizontal Scale		DESIGNED BY: Saroj Bhattacharai		CHECKED BY: P. Upadhyaya		APPROVED BY: Dr. T.H.Choi		DATE: November, 2022		DWG. NO.: 315_Ghorai Nala		SHEET NO.: 18/20	
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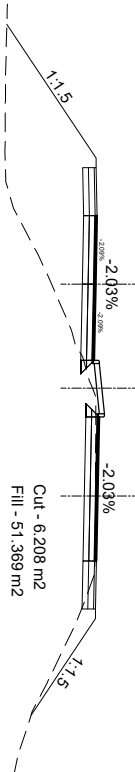
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		RIGHT	LEFT		
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119.310	118.899				
119.372	118.964				
119.432	119.015				
119.483	119.200	IP-2 R=1494.50		-2	
119.523	119.377				
119.553	119.462				
119.573	119.388				
119.582	119.547				
119.583	113.299			NC	
119.583	113.086				
119.583	118.818				
119.583	119.398	IP-3 R=1500.00		-2	
119.583	119.430				
119.583	119.393				
119.584	119.385				
119.585	119.412				
119.586	119.544				
119.587	119.547	IP-4 R=650.00		-2	
119.588	119.528				
119.589	119.462	IP-5 R=0.00			

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 TSE-Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Plan & Profile of Existing Ghorai Nala Bridge 636+650 - 636+850		SCALE: Vertical Scale Horizontal Scale		DESIGNED BY: Saroj Bhattacharai		CHECKED BY: P. Upadhyaya		APPROVED BY: Dr. T.H.Choi		DATE: November,2022		DWG.NO.: 315_Ghorai Nala		SHEET NO. 19/20	
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DL:119.583

GL: 117.100
DL: 119.395

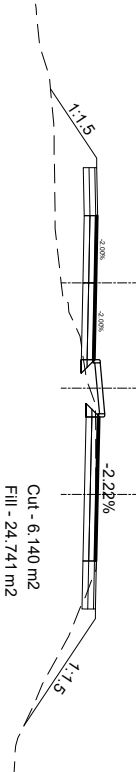
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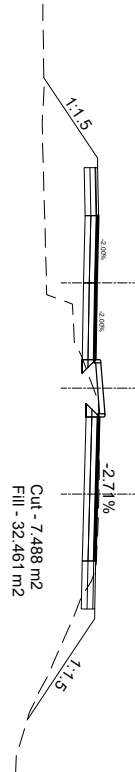
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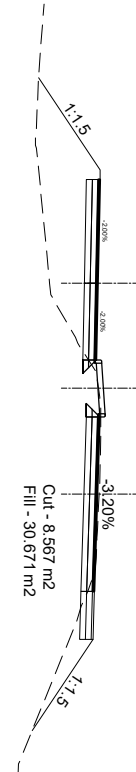
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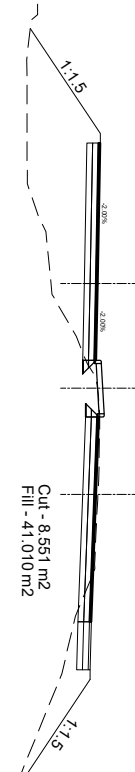
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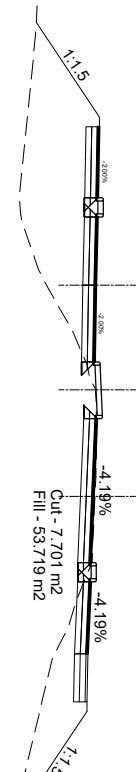
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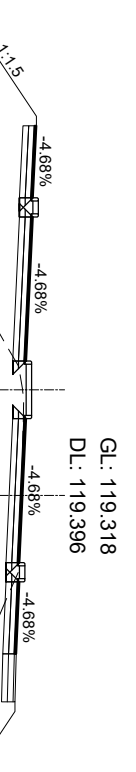
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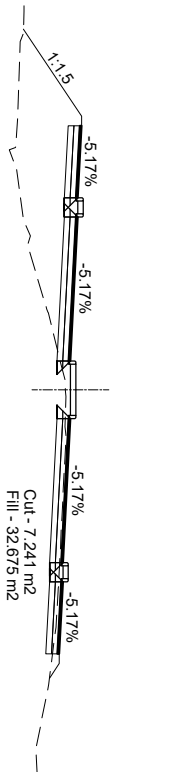
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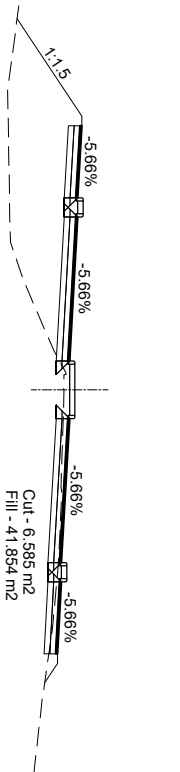
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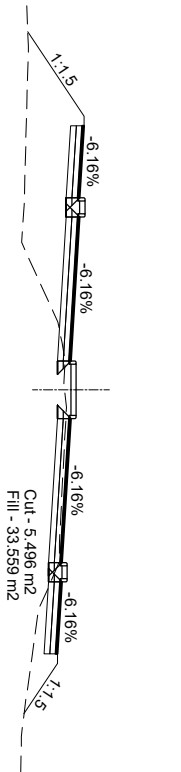
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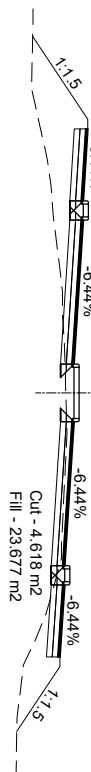


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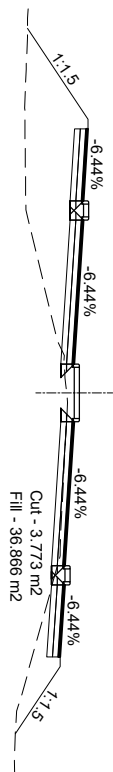
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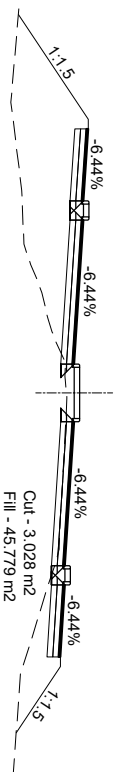
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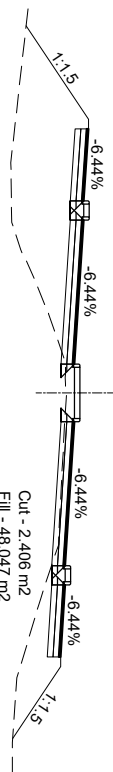
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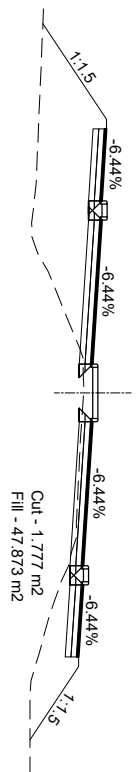
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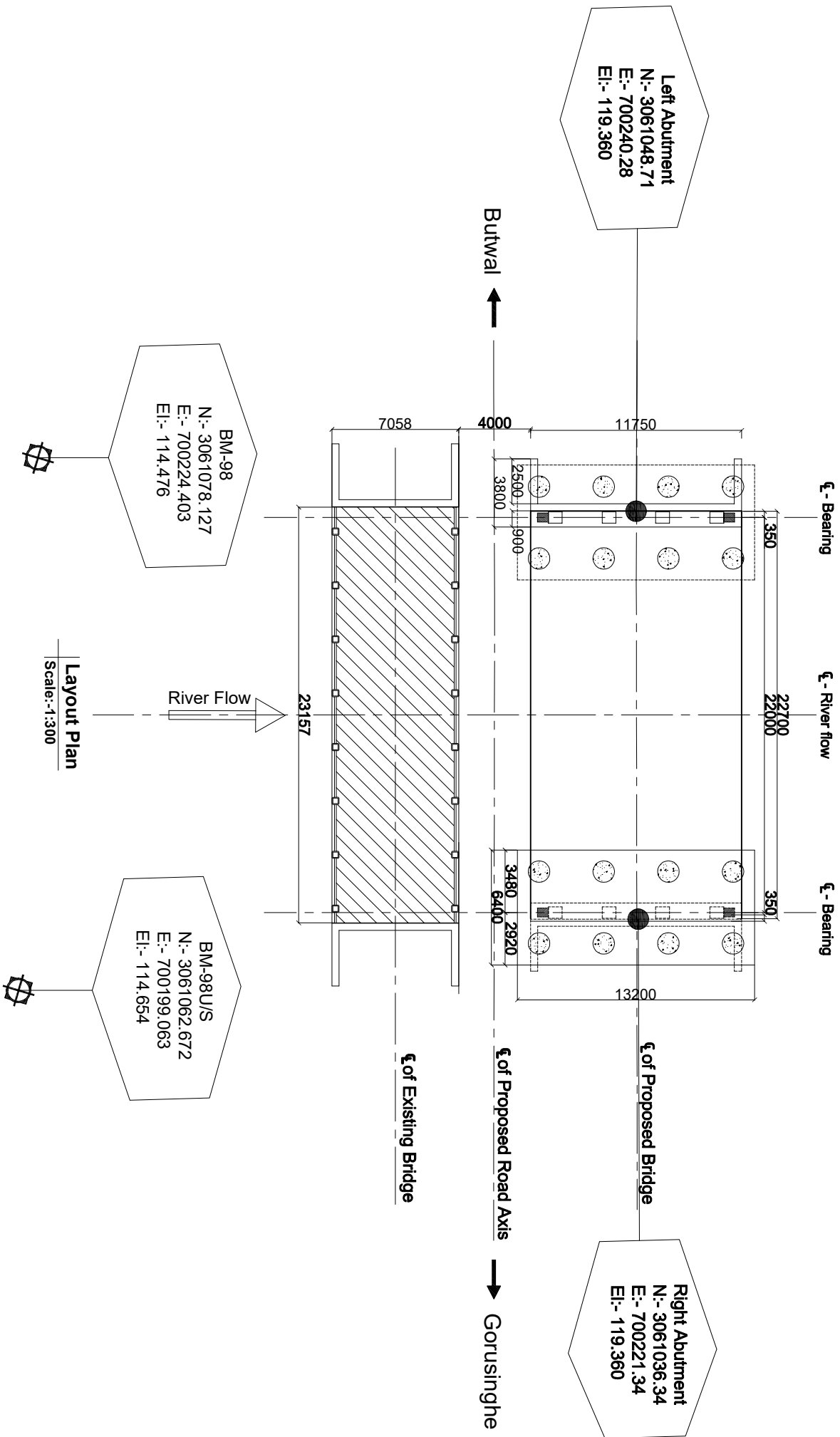
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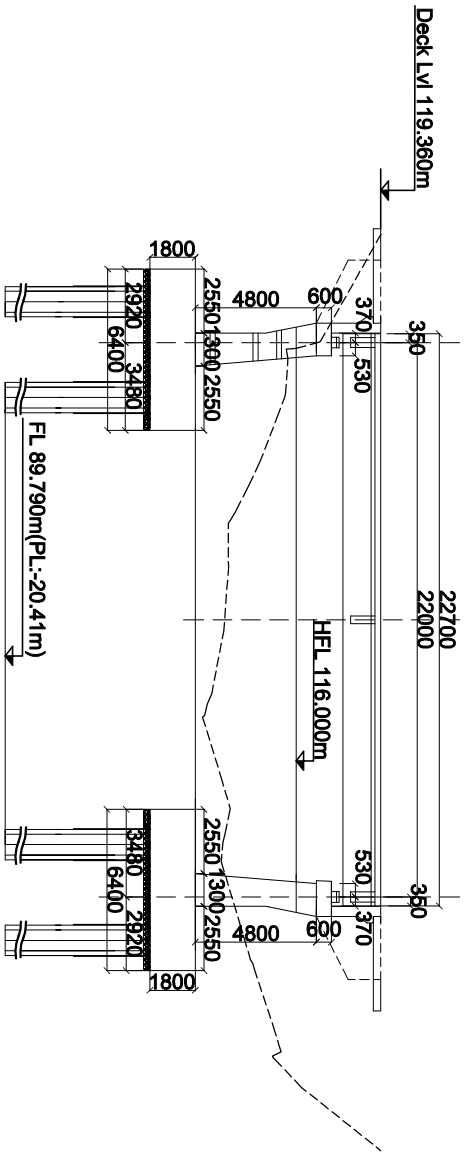
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Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with  ERM P (Ltd), Nepal and  TSE-Tech Studio of Engineering	IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE:	
		DOR, DCID		Cross Section of Ch:636+800 - 636+940		 Vertical Scale  Horizontal Scale		Saroj Bhattacharai								November, 2022	
		ROAD NAME:						P. Upadhyaya								315, Ghorai Nala	
		East West Highway (H01)						Dr. T.H.Choi									
		Butwal - Gorusinghe Section														SHEET NO. 19.3/20	

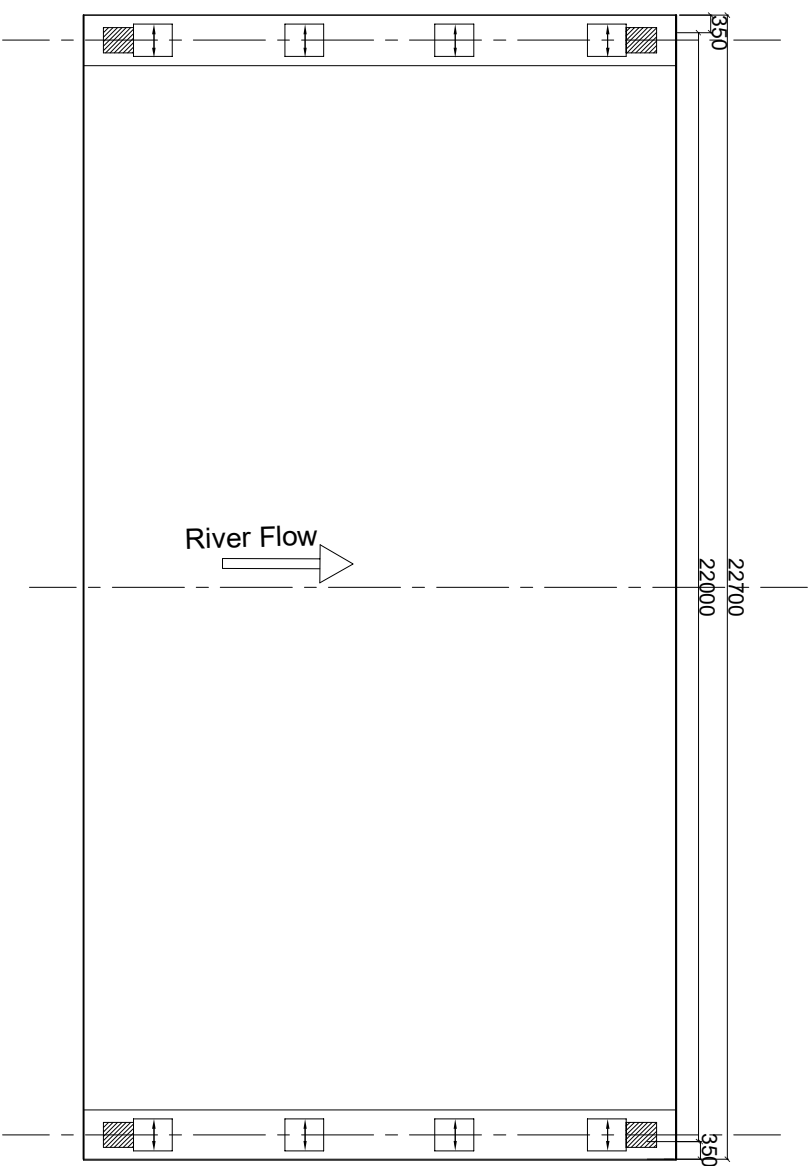


Layout Plan
Scale:-1:300



Section at A-A
Scale:-1:300

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  JWC Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Layout Plan of Ghorai Nala Bridge (47/H001/315_A)		SCALE: As Shown		 <	
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Layout of Bearing
Scale:-1:150

Scale:-1:150

Legend

Elastomeric bearing.

Partial movement allowed in longitudinal direction.

Restrained to transverse movement. Free to rotate in any direction.

Fixed Pot-bearing.

Restraint to lateral movement, Free to rotate in any direction.

Free Pot-bearing.

Partial movement allowed in longitudinal direction.

Free to rotate in any direction.
Restrained to transverse movement.

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  JYU-Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Layout Plan of Ghorai Nala Bridge (47/H001/315_A)		SCALE: As Shown		NAME Saroj Bhattacharai P. Upadhyaya Dr. T. H. Choi		SIGNATURE   		REV NO. 		DESCRIPTION 		DATE: November, 2022 DWG. NO.: 315_Ghorai Nala SHEET NO.: 20a/2	
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Government of Nepal
Ministry of Physical Infrastructure and Transport
Department of Roads
Project Directorate (ADB)
Implementing Agency : DOR, DCID

Project Preparatory Consultants
Under
SASEC Highway Improvement Project (SHIP-PPC)
(ADB Loan No: 3722 Nep)
Contract No. SHIP/PPC/2020/02

Dry Nala Bridge(47-H001-316_AB)

St. Ch : 639+808.80 ~ End Ch : 639+825.20

Detailed Drawing

Butwal - Gorusinghe Sector

November,2022

CONTENTS

S.No.	DESCRIPTION	DWG. NO	NO. OF SHEETS
1.	General Notes.	1	1
2.	Topographic Map.	2	1
3.	General Arrangement.	3	1
4.	BorLog Details.	4	1
5.	Concrete Outline.	5	1
6.	Reinforcement Details.	6	1
7.	Typical Drawing of Wing Wall.	7	1
8.	Bar Bending Schedule.	8	1
9.	Layout Plan.	9	1
10.	Plan & Profile.	10	1

GENERAL NOTES

a) Bridge Design Specifications

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

b) Bridge 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 65xdiameter of steel reinforcement.

Laps shall be in staggered position.

Lapped bars more tha 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

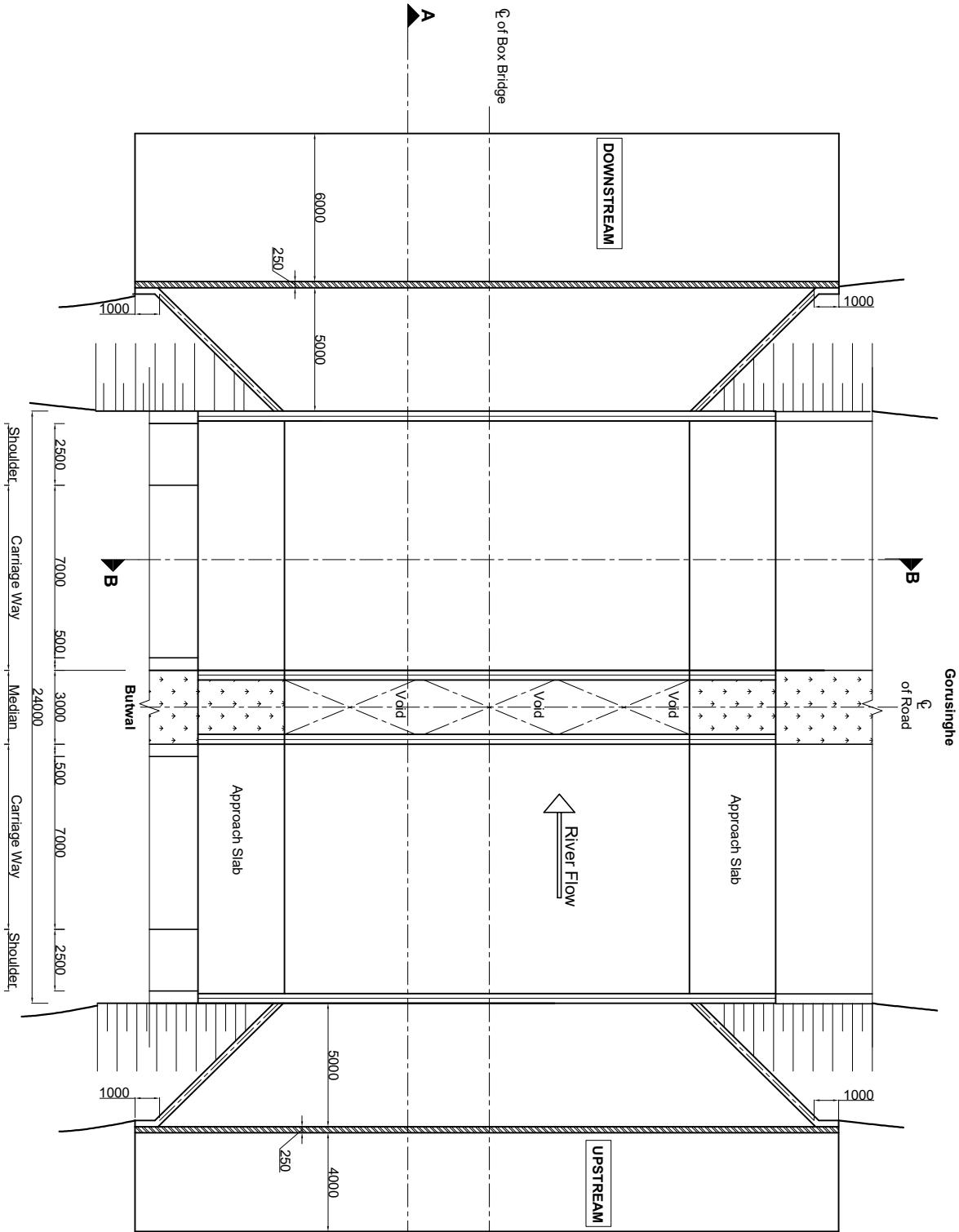
The clear cover to steel reinforcement steel is 40mm.

Safety Kerb

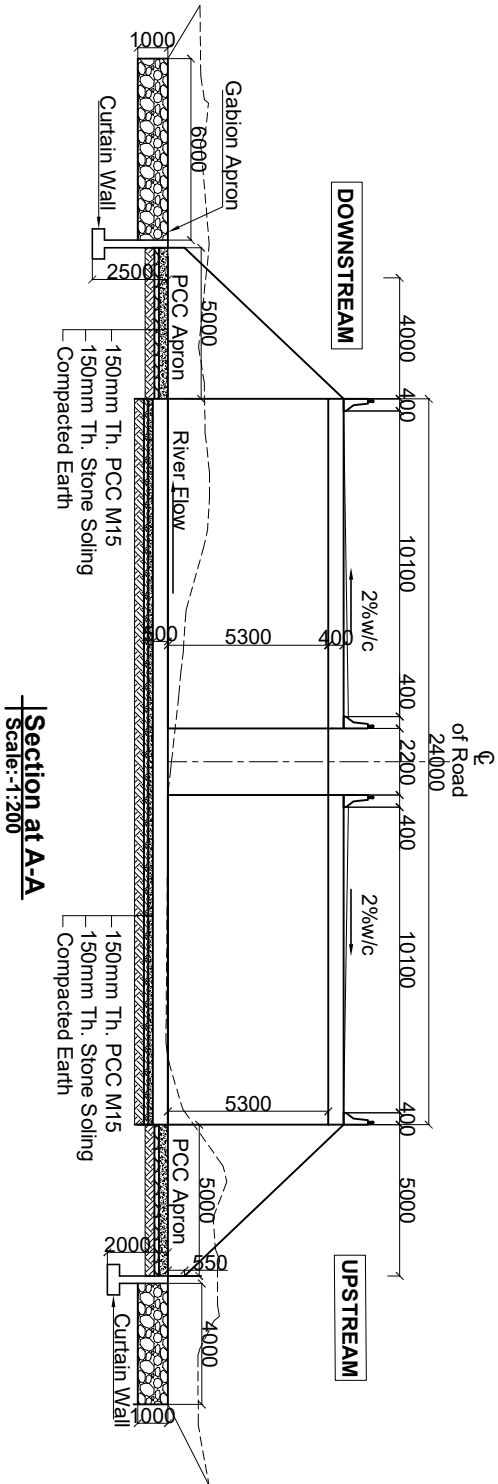
The clear cover to steel reinforcement steel is 25mm.

h) All dimensions are in millimeters except otherwise mentioned.

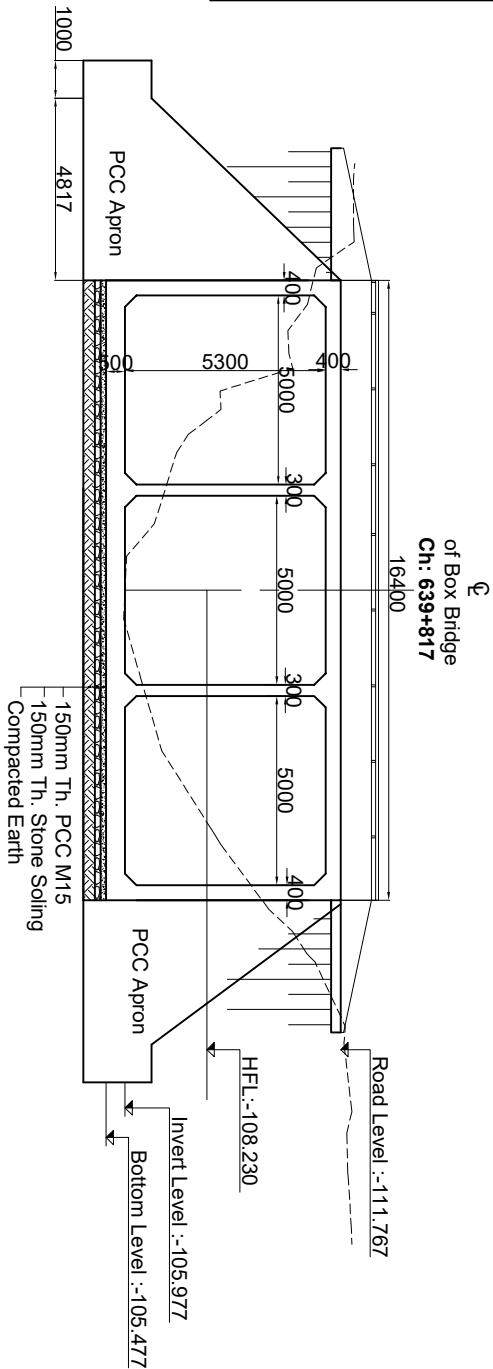
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERMCo P (Ltd) and  JYK - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:				NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: Nov,2022	
				DOR, DCID								Designed by:								DWG.NO.: 316_Dry Nala	
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				East West Highway (H01)																	
				Butwal - Gorusinghe Section								Approved by:									



Plan
Scale:-1:250



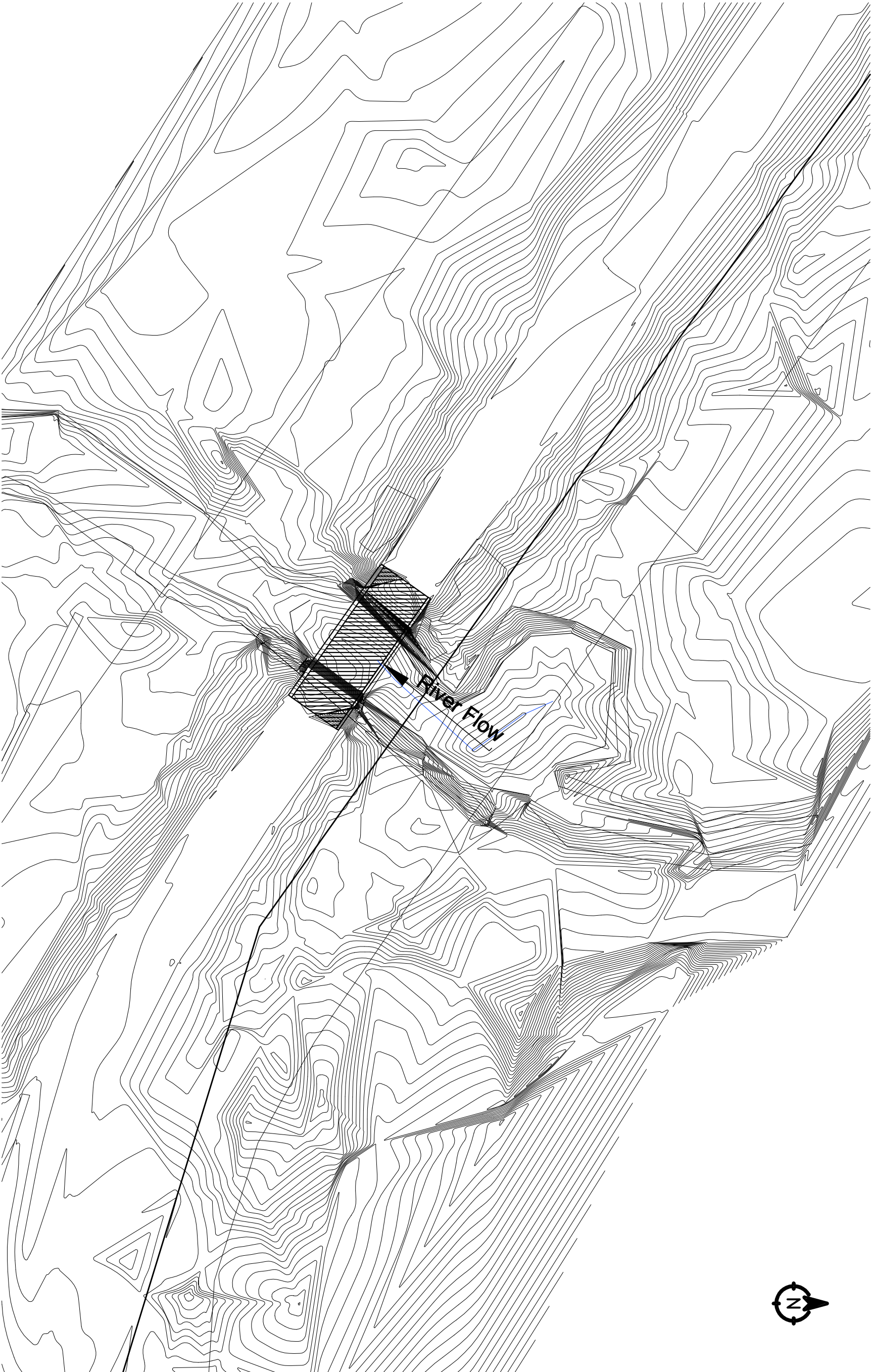
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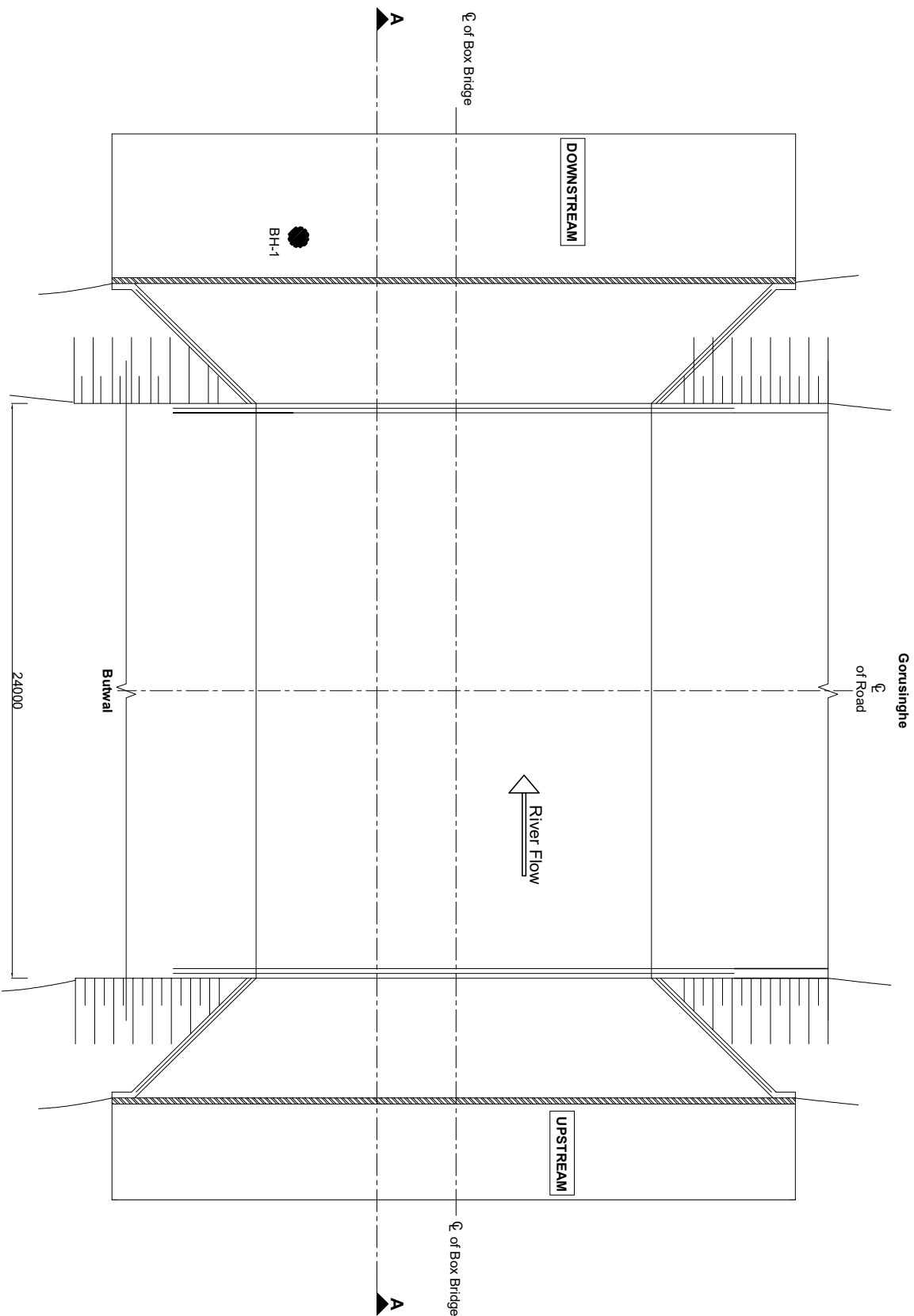
Section at B-B
Scale:-1:200

Name(NMC Number)		Signature
P. Engineer	P. Upadhyaya (Civil A 675)	
Structure Engineer	K.P.Wagle(Civil A 127) / P.Shrestha(Civil A 676) / S.Bhattarai (Civil A 904)	
Hydrologist	Dr. P.C. Jha(Civil A 166) / S. Adhikari (Civil A 408)	
Geotechnical Engineer	A. Adhikari(ka 199) / Dr. V. R. S. Shahi	

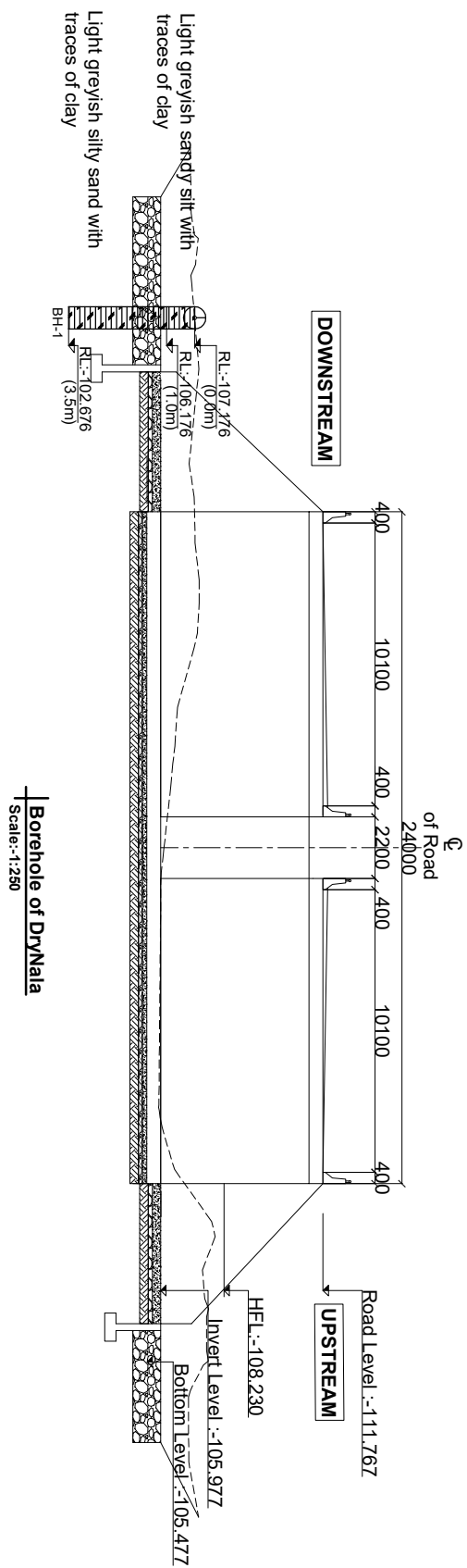
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NFP		CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and JWC - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:							
				DOR, DCID		General Arrangement of Dry Nala Box Bridge - (5x3.3) (47/H001/316_A,B) CH-639+817		As Shown							
				ROAD NAME:											
				East West Highway (H01)											
				Butwal - Gorusinghe Section										SHEET NO.:	
														DATE: Nov,2022	
														DWG.NO.:	
														316_Dry Nala	
														SHEET NO.:	
														03/10	



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: Topographic Map of Dry Nala Box Bridge - (5x5.3) (47/H001/316_A,B) CH-639+817		SCALE: 2:1		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE: Nov,2022	
ROAD NAME: East West Highway (H01)			Butwal - Gorusinghe Section								Designed by:	P. Shrestha				DWG.NO.: 316_Dry Nala	
											Checked by:	P. Upadhyaya				SHEET NO.: 02/10	
											Approved by:	Dr. T.H.Choi					



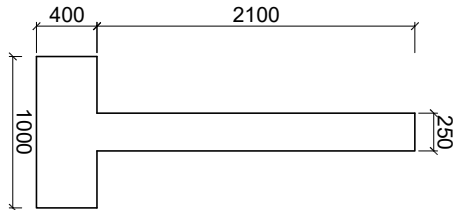
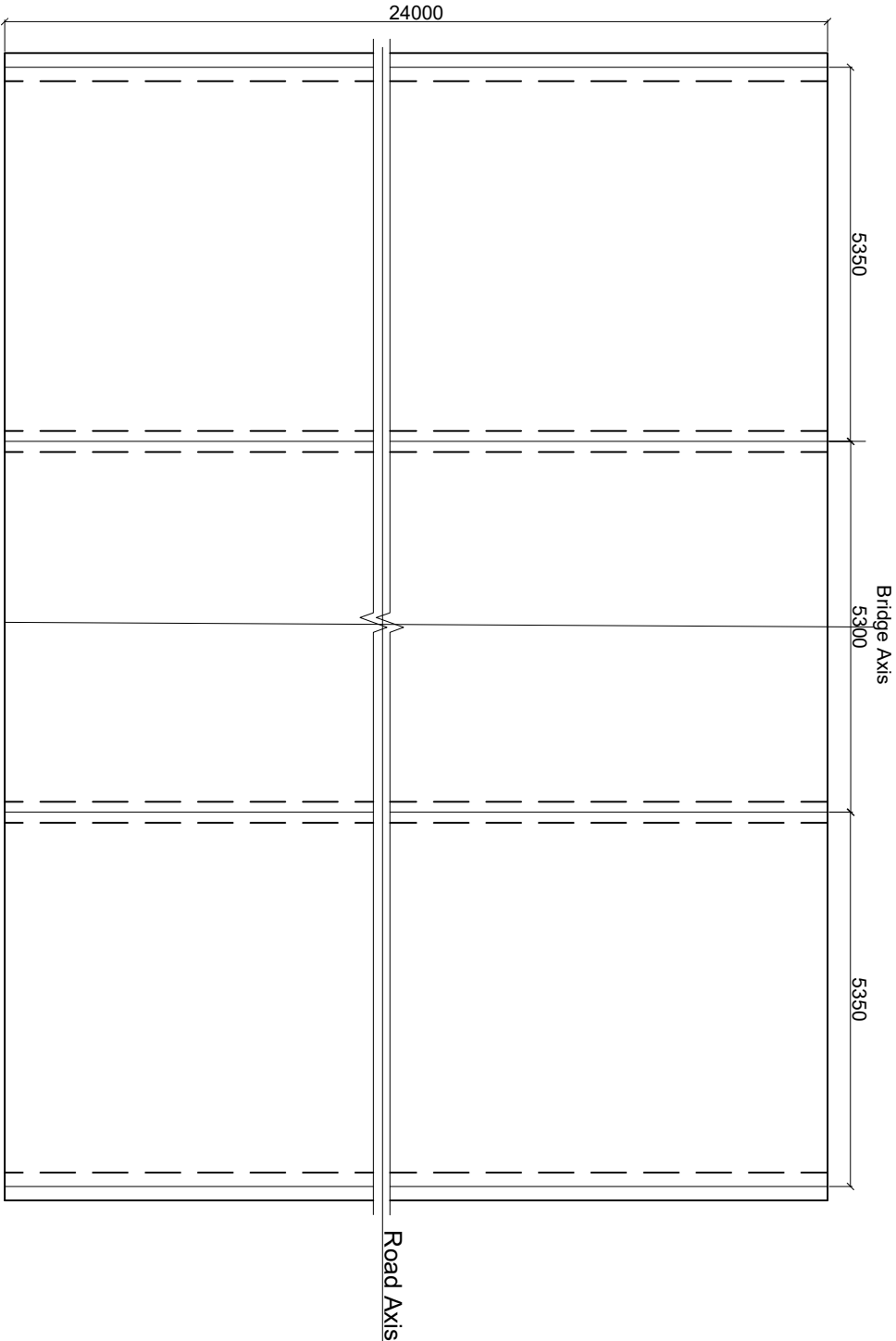
Bore Log Details
Scale: -1:250



Borehole of DryNala
Scale:-1:250

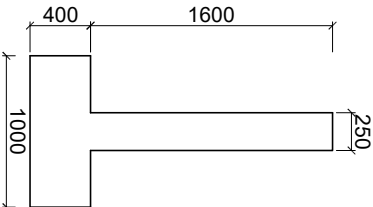
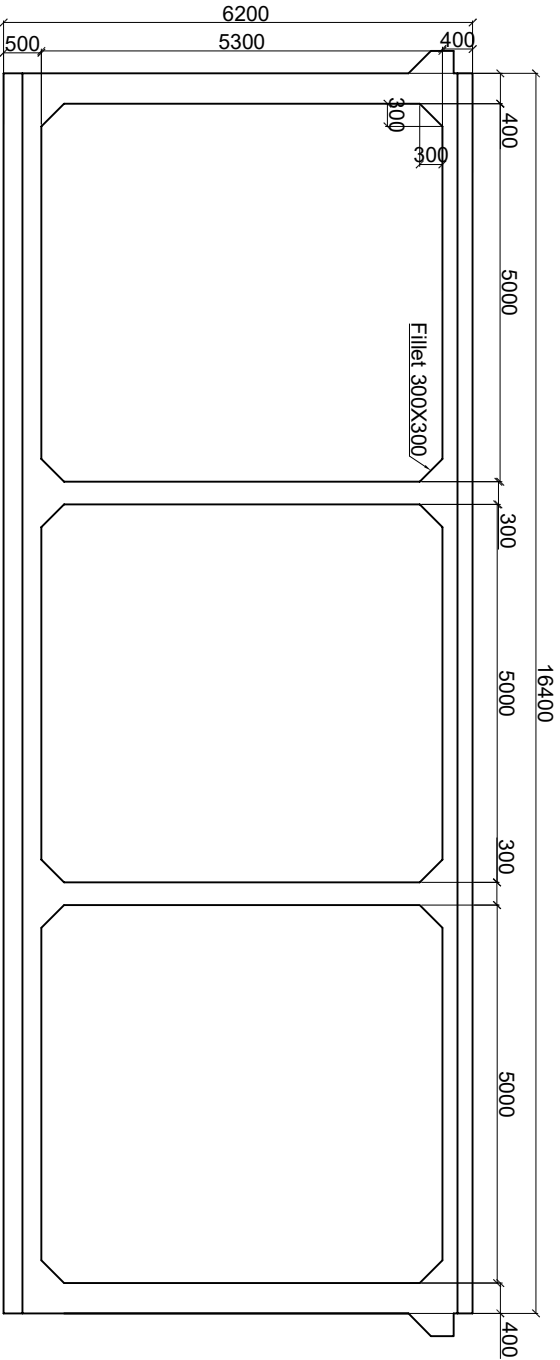
	Name(NMC Number)	Signature
P. Engineer	P. Upadhyaya (Civil A 675)	
Structure Engineer	K.P.Wagle(Civil A 127) / P.Shrestha(Civil A 676) / S.Bhattarai (Civil A 904)	 
Hydrologist	Dr. P. C. Jha(Civil A 166) / S. Adhikari (Civil A 408)	 
Geotechnical Engineer	A. Adhikari(ka 199) / Dr. V. R. S. Shahi	 

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 ERMCo P (Ltd) and  JYEC-Tech Studio of Engineering Nepal		DOR, DCID		Borlog of Dry Nala Box Bridge - (5x5.3) (477H001/316_A/B) CH-639+817		As Shown		Designed by:		P. Shrestha				Nov.2022		
									ROAD NAME:								
									East West Highway (H01)		Checked by:	P. Upadhyaya					DWG.NO.:
									Butwal - Gorusinghe Section		Approved by:	Dr. T.H. Choi					316_Dry Nala
														SHEET NO.:			
															04/		



Curtain Wall D/S
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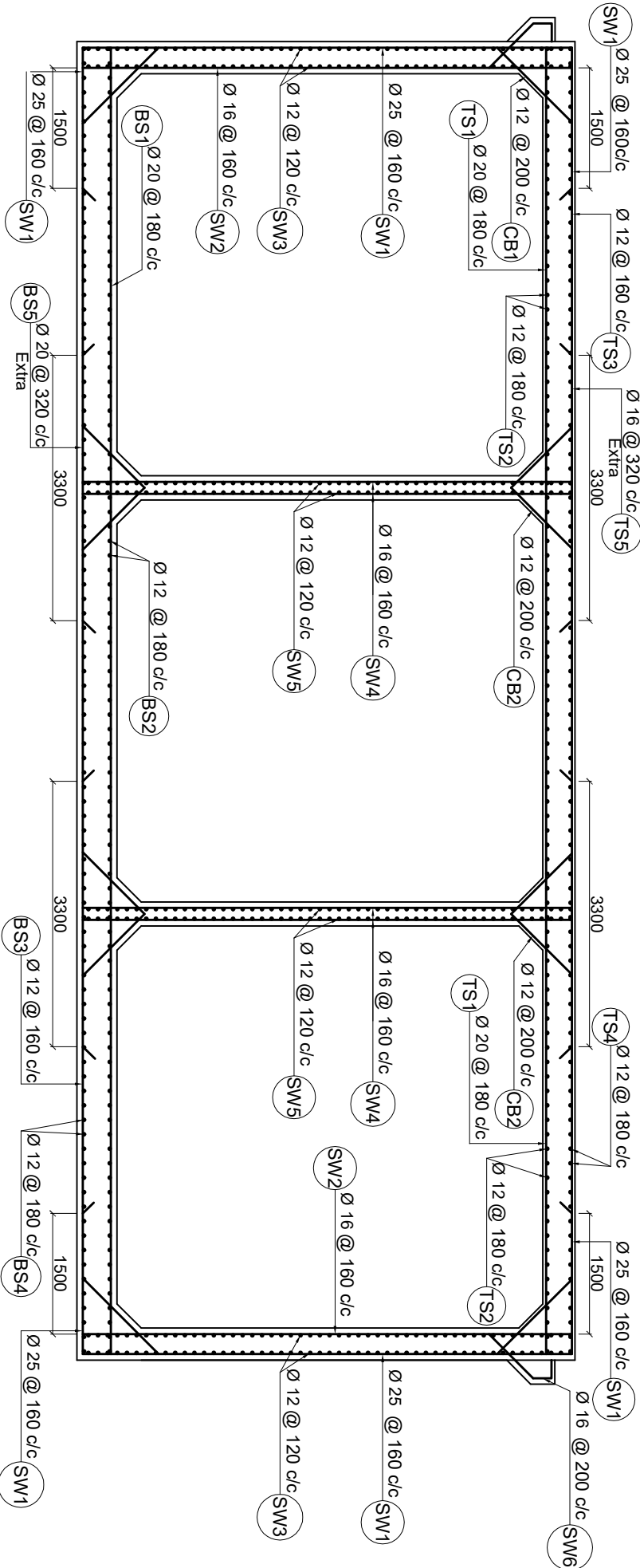
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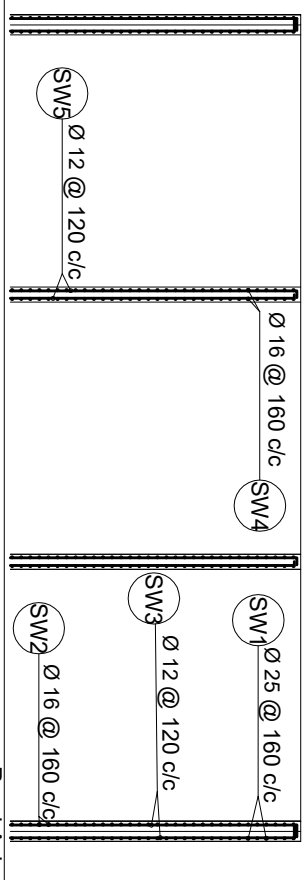
Curtain Wall U/S
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Concrete Sectional Elevation
Scale:-1:100

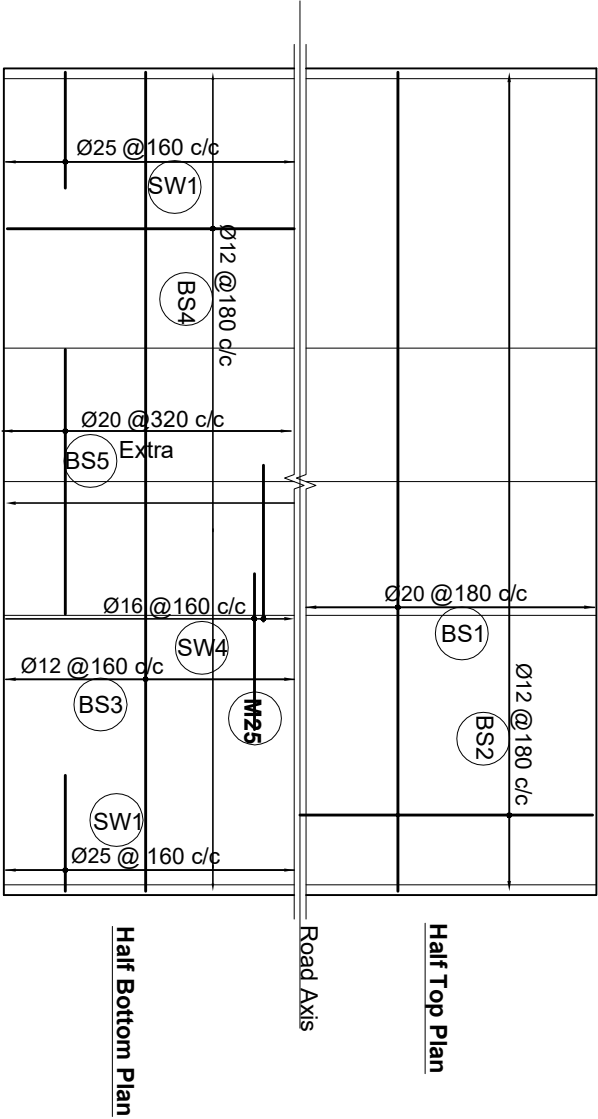
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and JYK - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID		SHEET TITLE: Concrete out Line of Dry Nala Box Bridge - (5x5.3) (47/H001/316_A,B) CH-639+817		SCALE: As Shown		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE: Nov, 2022
ROAD NAME: East West Highway (H01)		Butwal - Gorusinghe Section		Designed by: P. Shrestha		Checked by: P. Upadhyaya		Approved by: Dr. T.H. Choi		DWG. NO.: 316_Dry Nala		SHEET NO.: 05/10			



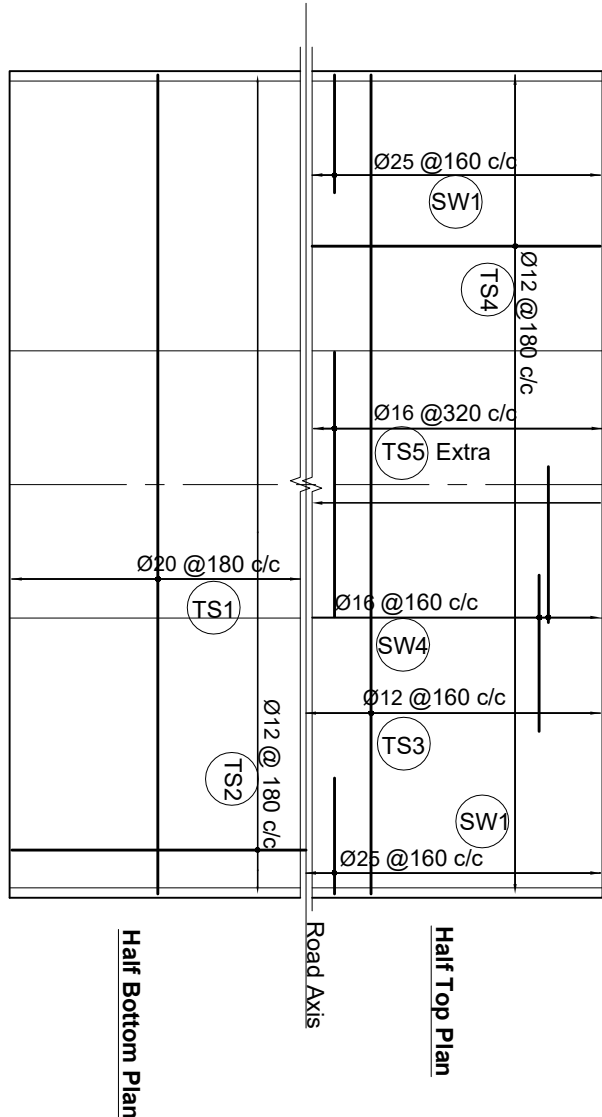
Sectional Elevation
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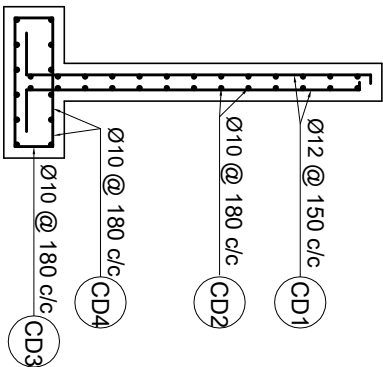
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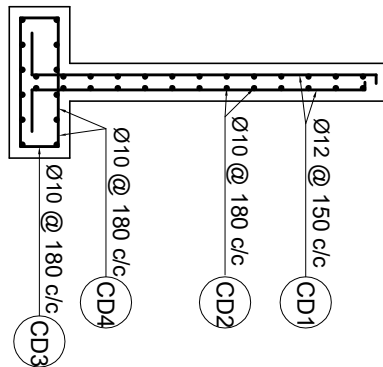
Bottom Sectional Plan
Scale:-1:150



Top Sectional Plan
Scale:-1:150

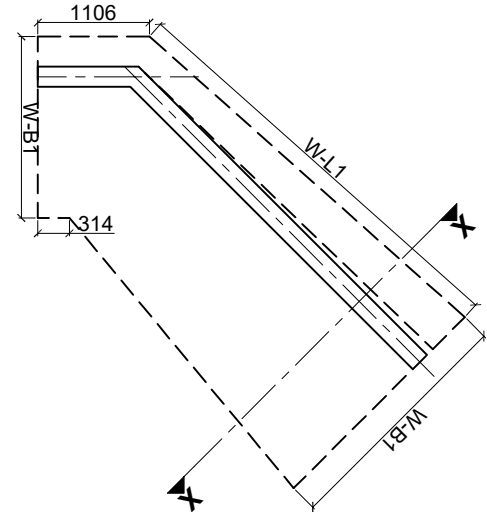


Downstream
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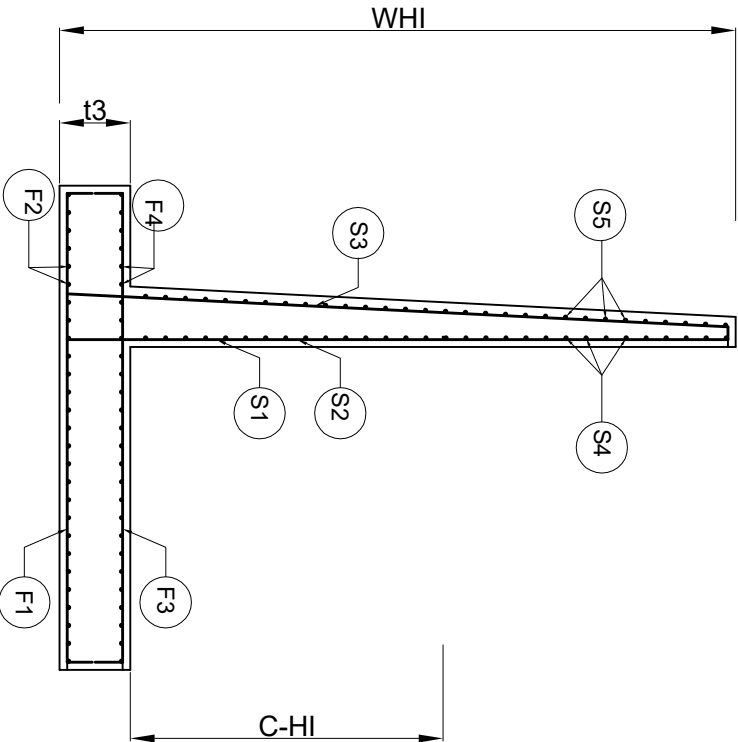


CURTAIN WALLS
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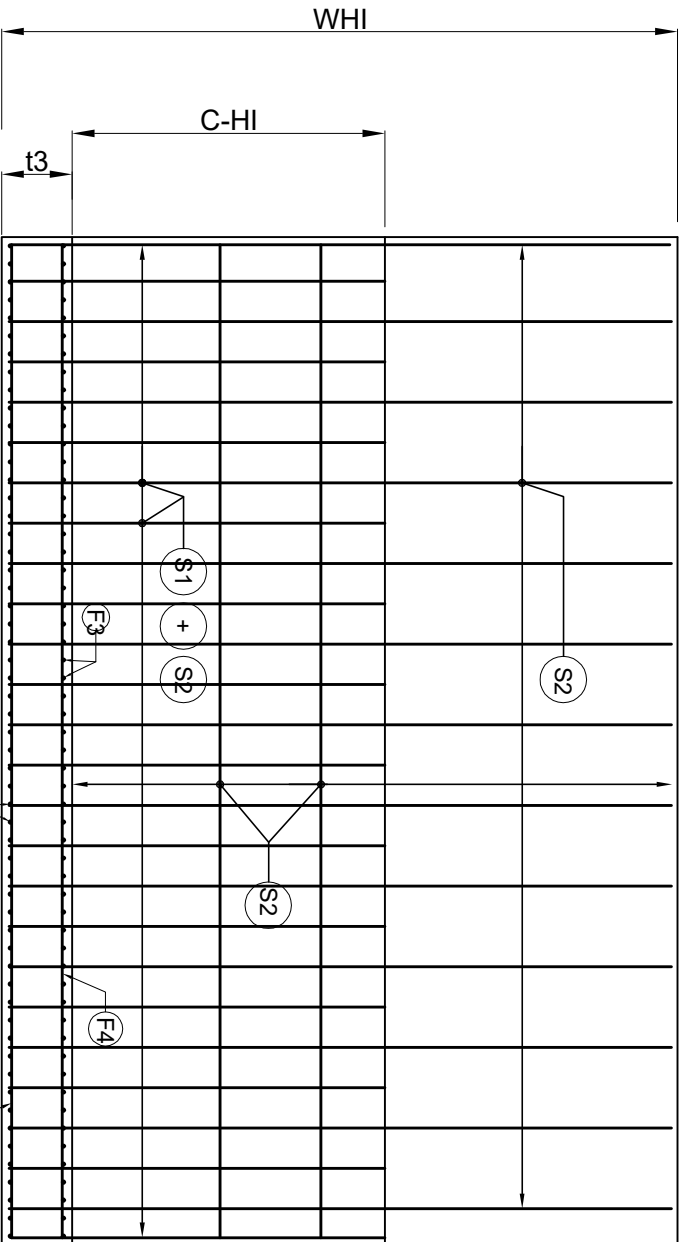
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NFP		CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and JYK - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Details of Reinforcement of Dry Nala Box Bridge - (5x5.3) (47/H001/316_A,B) CH-639+817		SCALE: As Shown		NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE: Nov, 2022
										Designed by:	P. Shrestha			DWG.NO.: 316_Dry Nala
										Checked by:	P. Upadhyaya			
										Approved by:	Dr. T.H.Choi			SHEET NO.: 06/10



Wing Wall Plan
Scale:-1:75



Section at X -X
Scale:-1:75



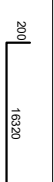
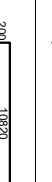
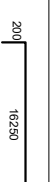
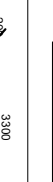
Typical Wing Wall
Scale:-1:75

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.	3.50	500	2800	1800	200	300	250	450	2050
5.	4.00	5700	3200	1800	250	350	300	500	2350
6.	4.50	6000	3500	1800	250	400	350	500	2600
7.	5.00	6500	4000	1800	300	500	500	800	2700
8.	6.00	7000	4800	1800	300	600	700	1000	3200

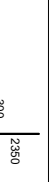
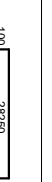
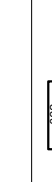
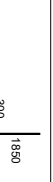
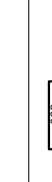
REINFORCEMENT DETAIL OF WING WALL

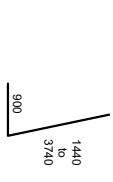
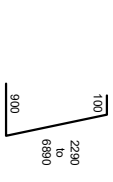
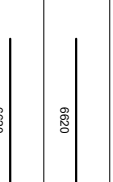
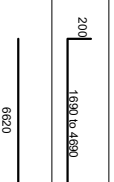
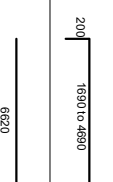
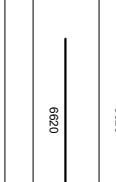
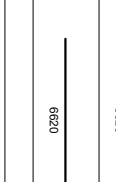
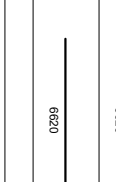
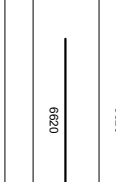
HEIGHT W-H1	Curtailment Height C-H1	F1		F2		F3		F4		S1		S2		S3		S4		S5		Remarks
		Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	Diameter	Spacing	
m	m	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
2.0		8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

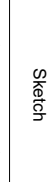
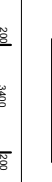
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NFP		CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and JWC - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Typical Drawing of Wing Wall of Dry Nala Box Bridge - (5x5.3) (47/H001/316_A,B) CH-639+817		SCALE: As Shown		NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE: Nov,2022
										Designed by:	P. Shrestha			DWG.NO.: 316_Dry Nala
										Checked by:	P. Upadhyaya			
										Approved by:	Dr. T.H.Choi			SHEET NO.: 07/10

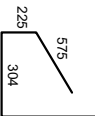
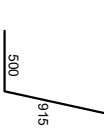
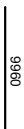
Bar Bending Schedule of Top Slab									
Sketch	Spacing (mm)	Bar Mark	Ø, mm	No	Lot	Length, m	Total Length, m	Weight Kg/m	Total wt. Kg
Top Slab									
	180	TS1	20	62	2	16.72	2073.28	2.47	5119.21
	180	TS2	12	92	2	11.22	2064.48	0.89	1835.09
	160	TS3	12	69	2	16.72	2307.36	0.89	2050.99
	180	TS4	12	92	2	11.22	2064.48	0.89	1835.09
	320	TS5	16	35	4	3.70	518.00	1.58	818.57
						Sub-Total (Top Slab) =		11659.0	
Base Slab									
	180	BS1	20	134	1	16.65	2231.10	2.47	5508.89
	180	BS2	12	92	1	24.25	2231.00	0.89	1983.11
	160	BS3	12	151	1	16.65	2514.15	0.89	2234.80
	180	BS4	12	92	1	24.25	2231.00	0.89	1983.11
	320	BS5	20	76	2	3.70	562.40	2.47	1388.64
						Sub-Total (Base Slab) =		13098.6	

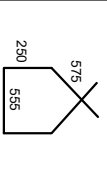
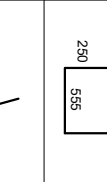
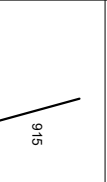
Bar Bending Schedule of Side Walls									
Sketch	spacing (mm)	Bar Mark	Ø, mm	No	Lot	Length, m	Total Length, m	Weight Kg/m	Total wt. Kg
	160	SW1	25	151	2	9.84	2970.17	3.86	11458.99
	160	SW2	16	151	2	6.39	1928.27	1.58	3047.14
	120	SW3	12	44	2	48.30	4250.40	0.89	3778.13
	160	SW4	16	151	4	9.64	5819.54	1.58	9196.31
	120	SW5	12	44	2	48.30	4250.40	0.89	3778.13
	200	SW6	16	121	4	1.83	884.75	1.58	1398.13
	200	CB 1	12	121	4	1.39	674.70	0.89	599.73
	200	CB 2	12	121	4	2.50	1211.94	0.89	1077.28
Sub-Total (Side Walls) =								34333.8	

Bar Bending Schedule of Curtain Walls									
Sketch	Spacing (mm)	Bar Mark	Ø, mm	No	Lot	Length, m	Total Length, m	Weight Kg/m	Total wt. Kg
Downstream									
	150	CD1	12	190	2	2.65	1007.00	0.89	895.11
	180	CD2	10	15	1	56.70	850.50	0.62	525.00
	180	CD3	10	158	1	2.20	347.60	0.62	214.57
	180	CD4	10	6	2	28.25	339.00	0.62	209.26
						Sub-Total (Downstream) =		1843.9	
Upstream									
	150	CU1	12	190	2	2.15	817.00	0.89	726.22
	180	CU2	10	12	1	56.70	680.40	0.62	420.00
	180	CU3	10	158	1	2.20	347.60	0.62	214.57
	180	CU4	10	6	2	28.25	339.00	0.62	209.26
						Sub-Total (Upstream) =		1570.0	

Bar Bending Schedule of Wing Wall									
Sketch	Spacing (mm)	Bar Mark	Ø, mm	No	Lot	Length, m	Total Length, m	Weight Kg/m	Total wt. Kg
	200	S1	20	34	4	3.49	119.01	2.47	293.85
	200	S2	20	34	4	5.59	190.62	2.47	470.66
	120	S3	12	56	4	5.59	313.97	0.89	279.09
	160	S4	10	30	4	6.62	198.60	0.62	122.59
	160	S5	10	30	4	6.62	198.60	0.62	122.59
	180	F1	12	38	4	3.59	135.62	0.89	120.55
	180	F2	10	19	4	6.62	125.78	0.62	77.64
	150	F3	12	45	4	3.59	162.03	0.89	144.03
	180	F4	10	19	4	6.62	125.78	0.62	77.64
		F5	10	6	4	6.62	39.72	0.62	24.52
Sub-Total (Base Slab) =								1733.2	

Bar Bending Schedule of Approach Slab									
Sketch	Spacing (mm)	Bar Mark	Ø, mm	No	Lot	Length, m	Total Length, m	Weight Kg/m	Total wt. Kg
	150	AS1	12	161	2	3.80	1223.60	0.89	1087.64
	150	AS2	12	24	2	24.30	1182.60	0.89	1051.20
	150	AS3	12	161	2	3.80	1223.60	0.89	1087.64
	150	AS4	12	24	2	24.30	1182.60	0.89	1051.20
Sub-Total (Approach Slab) =									4277.7

Bar Bending Schedule of Safety Barrier Type - 1									
Sketch	Spacing (mm)	Bar Mark	Ø, mm	No	Lot	Length, m	Total Length, m	Weight Kg/m	Total wt. Kg
	125	C1	16	81	1	2.03	164.59	1.58	260.10
	125	C2	16	81	1	1.42	114.62	1.58	181.12
		C3	16	11	1	9.96	109.56	1.58	173.13
Sub-Total of 10m (Safety Barrier Type - 1) =									614.3
For 58.8m Length									3612.1

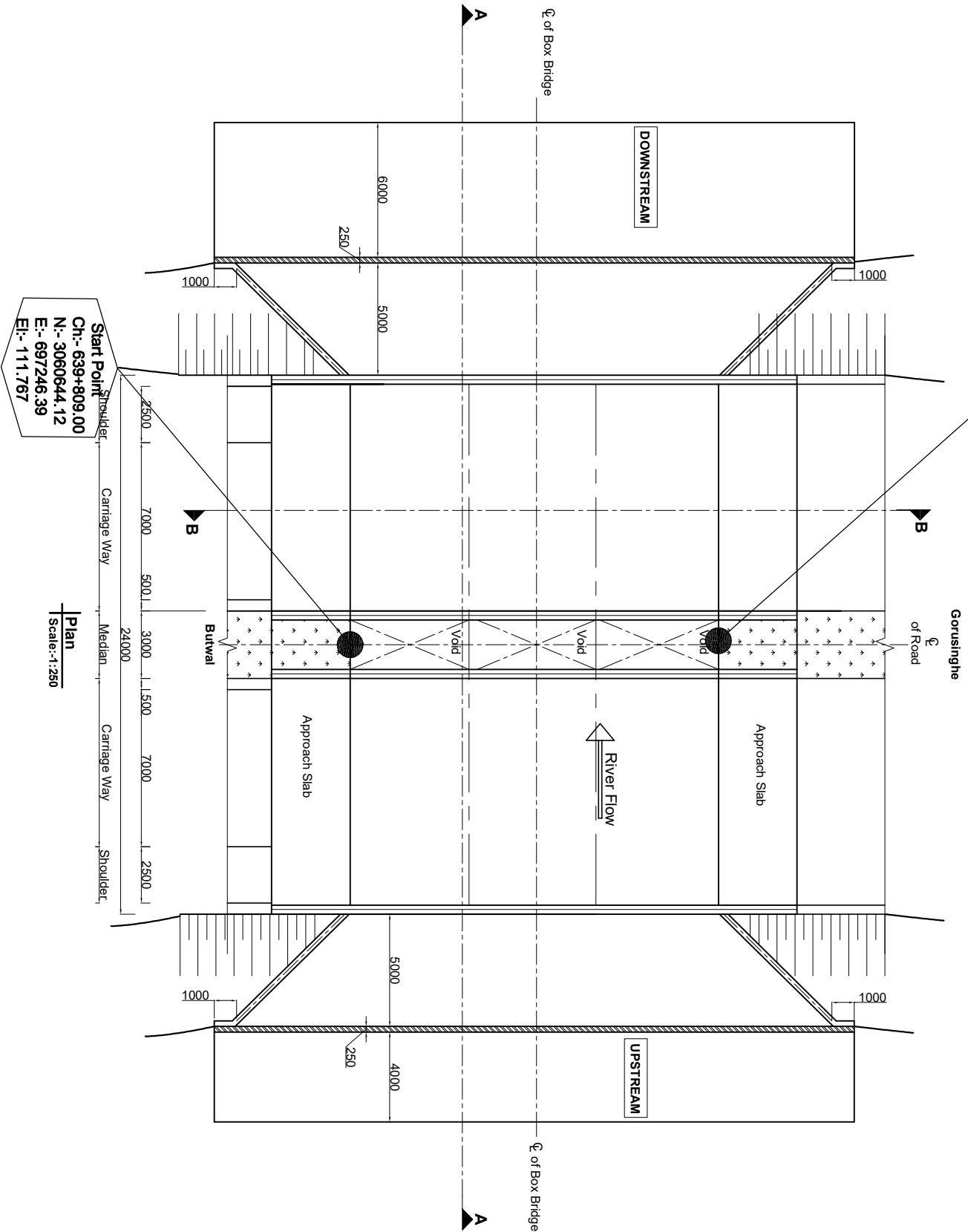
Bar Bending Schedule of Safety Barrier Type - 2									
Sketch	Spacing (mm)	Bar Mark	Ø, mm	No	Lot	Length, m	Total Length, m	Weight Kg/m	Total wt. Kg
	150	C1	16	8	1	2.21	17.64	1.58	27.88
	150	C2	16	16	1	1.65	26.32	1.58	41.59
		C3	16	12	1	0.96	11.52	1.58	18.20
Sub-Total (Safety Barrier Type - 2) =									87.7

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 Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and  JYK - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Bar Bending Schedule of Dry Nala Box Bridge - (5x5.3) (47/H001/316_A,B) CH-639+817		SCALE: As Shown		DATE: Nov, 2022	
				Designed by: P. Shrestha						DWG.NO.: 316_Dry Nala	
				Checked by: P. Upadhyaya						SHEET NO.: 08/10	
				Approved by: Dr. T.H.Choi							

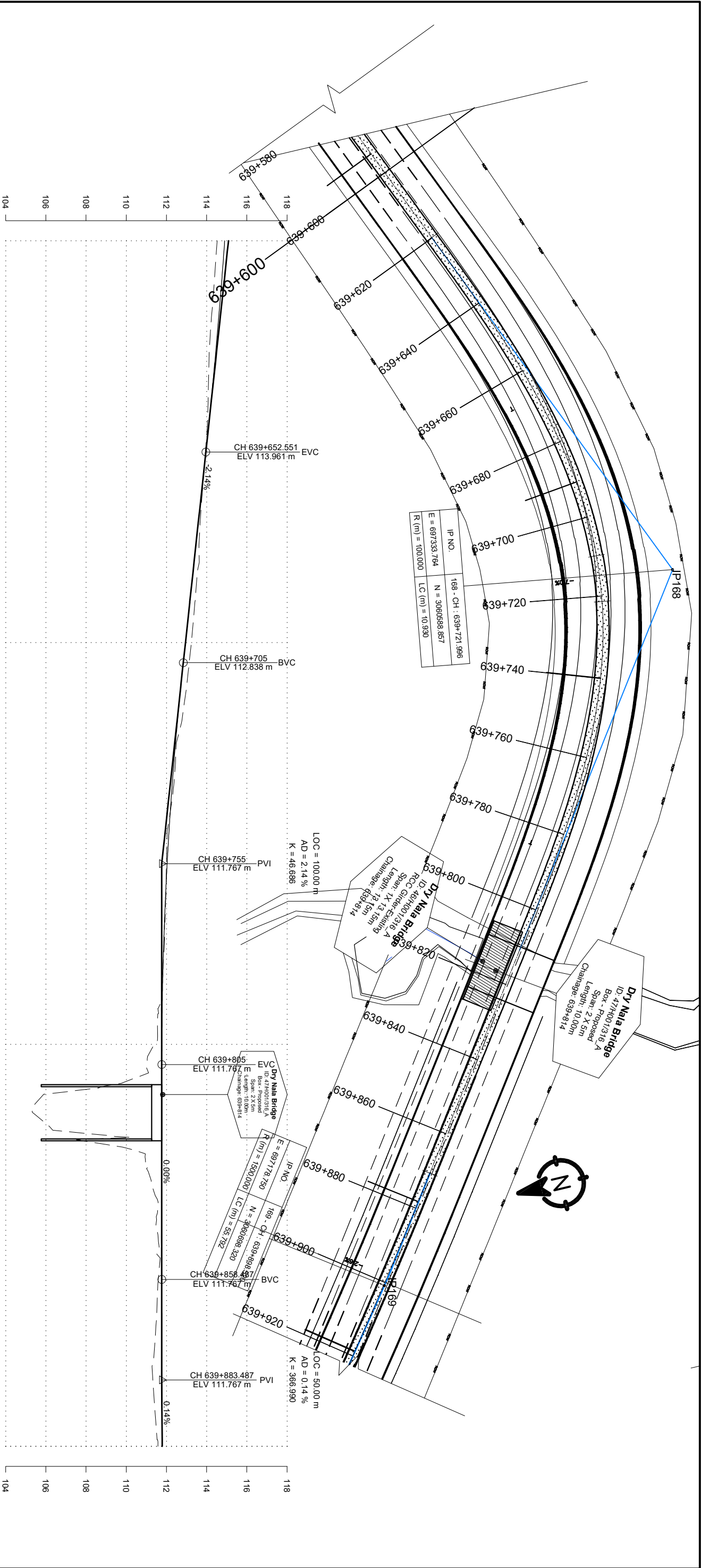
End Point
Ch:-639+825.00
N:-3060649.89
E:-697238.23
Ei:- 111.767

BM-103
N:- 3060896.96
E:- 696938.68
Ei:- 109.881

Note:-
BM Not Seen In Scale.



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: Layout Plan of Dry Nala Box Bridge - (5x5.3) (47/H001/316_A,B) CH-639+817		SCALE: As Shown		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE: Nov,2022
ROAD NAME: East West Highway (H01)		Butwal - Gorusinghe Section		Designed by: P. Shrestha		Checked by: P. Upadhyaya		Approved by: Dr. T.H.Choi		DWG.NO.: 316_Dry Nala		SHEET NO.: 09/10			



DESIGN LEVEL(m)	EXISTING LEVEL(m)	HORIZONTAL ALIGNMENT		SUPER ELEVATION	CHAINAGE(Km)
		RIGHT	LEFT		
114.898	114.522	IP-168 R=100.00		639+600	639+600
114.749	114.380			639+610	
114.586	114.226			639+620	
114.410	114.113			639+630	
114.219	114.072			639+640	
114.016	113.976			639+650	
113.802	113.827			639+660	
113.588	113.676			639+670	
113.373	113.634			639+680	
113.159	113.414			639+690	
112.945	113.243	IP-169 R=1500.00		639+700	639+700
112.734	113.025			639+710	
112.541	112.748			639+720	
112.369	112.450			639+730	
112.219	112.257			639+740	
112.091	112.025			639+750	
111.984	111.983			639+760	
111.898	111.910			639+770	
111.834	111.835			639+780	
111.791	111.684			639+790	
111.770	111.410	IP-169 R=1500.00		639+800	639+800
111.767	109.351			639+810	
111.767	106.084			639+820	
111.767	110.973			639+830	
111.767	111.576			639+840	
111.767	111.624			639+850	
111.767	111.568			639+860	
111.769	111.480			639+870	
111.773	111.287			639+880	
111.781	111.409			639+890	
111.790	111.581	639+900			

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