

INSTALLATION PROCEDURE FOR PARAWEB REINFORCED SOIL RETAINING WALLS (RSRW) WITH DISCRETE PANELS AS FACIA

General

- i. The design of reinforced soil retaining strucutre is based on use of "MACCAFERRI RSRW System", ParaWeb™2E as reinforcement and discrete panel as Facia.
- ii. Details shown in the drawings are based on Paraweb and Panel details supplied by Maccaferri Environmental Solution Pvt. Ltd.
- iii. The work shall be executed as per section 3100 of MORT & H specifications.

Material identification, storage and handling.

Paraweb shall be supplied in coils / rolls and sealed with a packaging strip of unique colour assigned to the respective grade / strength. Each roll shall be identified with a durable gummed label or equivalent clearly legible on the outside. The label shall show the manufacturers name, the roll/lot no. and the year of manufacture.

While unloading or transferring the Paraweb from one location to another, damage to the core label, or the Paraweb itself shall be prevented. If the Paraweb is to be stored for an extended period of time, it should be located and placed in a manner that ensures the integrity of the Paraweb. This may be accomplished by elevating the Paraweb off the ground, laying flat or standing on end while ensuring that the Paraweb is adequately covered and protected from ultraviolet raidation including sunlight, chemicals that have strong acids or bases, fire or flames including welding sparks & temperature in excess of 70° C.

Excavation

The foundation soil shall be excavated to the lines and grades as shown in construction drawings. The Safe bearing capacity (SBC) shall be verified before placing the concrete for levelling pad and should be more than or equal to the design requirement.

The excavated area shall be compacted to minimum 97% of modified Proctor density at +- 2% of optimum moisture content.

The excavated area within the levelling pad location, where there are space restrictions for the roller to find access, can be compacted with a 100 kg plate vibrator/vibro tamper.

The surface on which the Paraweb is to be placed shall be free of any edge and protrusions that may damage the Paraweb.

Placement of levelling pad & Bottom Panels

Concrete levelling pad shall be cast in-situ as shown in the approved dwgs. The bottom panel shall then be placed over it in correct alignment. The panels used shall be cured for a period of 14 days. The bottom panels shall be propped from outside before placing the backfill soil. The filling around the foundation of the abutment up to bottom of levelling pad for RS wall shall be done in layers not exceeding 200mm compacted thickness. Compaction shall be done to achieve minimum of 97% MDD as per modified proctor test.

The panels shall be installed with a backward lean of around 15-20mm (over a height of 1.6m). The lean recovers slowly as the panel rotates back to its vertical position during the compaction of the backfill soil. The correct lean to be provided to the panels needs to be finalized at the site and is governed by the characteristic properties of the backfill soil.

Paraweb Installation

The roll identification, orientation and location shall be verified with the construction drawing before unrolling of the Paraweb roll. Inspection for damage or defects shall be made during unrolling of the Paraweb rolls. Paraweb damage during handling and storage shall not be used.

Paraweb shall be laid at proper elevation and orientation as shown in the construction drawing. Correct orientation of the Paraweb is essential and shall be verified by the Site Engineer.

After the panel is placed in position and filling is done upto the elevation of connection, commence laying of Paraweb of specified grade by looping it around the rear anchor bar allowing a 2.0m overlap. Pull the Paraweb towards the panel and by looping it around connection & return the Paraweb towards rear anchor. Repeat this sequence until the Paraweb has been loosly laid over whole area and then adjust the spacing by tightening the Paraweb.

Paraweb shall be laid only in quantities required for work to minimize undue damage risks. After a layer of Paraweb has been placed, the succeeding layer of soil shall be placed, compacted and prepared as appropriate. After the soil layer has been placed, the next Paraweb layer shall be placed. The process shall be repeated for each subsequent layer of ParaWeb and soil compaction.

To ensure that the panels do not move and are firmly held in place during further operations hardwood wedges with the right combination shall be placed into the panel joints. One set should be placed in the vertical joints near the bottom of the panel being secured and another one near the shoulder. Care should be taken that these wedges are atleast 150mm away from the corners of the panel.

Timber support clamps should be used to maintain the alignment of adjacent panels during fill placing and compaction.

Backfill Placement

The backfill soil shall be compacted to minimum 97% of modified Proctor density. Moisture content of each layer of soil shall be checked in accordance with IS: 2720 (Part-2) and unless otherwise mentioned, shall be so adjusted, making due allowance for evaporation losses, so that at the time of compaction moisture content is in the range of 1 percent above to 2 percent below. It is recommended that soils be compacted in lifts not exceeding 200mm.

Backfill within 2.0m from the face line shall be compacted with vibratory plate compactor of weight not exceeding 1000 kg.

Drainage

A geocomposite MacDrain shall be used for drainage purpose behind the panels. Geotextile of MacDrain shall be made from continuous filament thermally bonded nonwoven thermally attached on both sides of extruded high-density polyethylene bi-planar type geonet.

Geotextile of MacDrain shall be uniformly adhered to geonet core using thermal lamination. Adhesion of geotextile to geonet using glue or adhesive or tying or binding shall not be permitted.

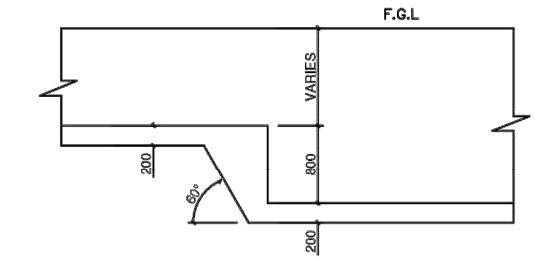
Backfill soil shall be graded away from the structure and rolled at the end of each day's work to prevent ponding of water on the surface of reinforced soil mass. The site shall be maintained such that the flow water will be properly drained away both during construction and after completion of work.

If unexpected ground water springs are found during excavation and back filling the same shall be brought to the notice of Design Engineer.

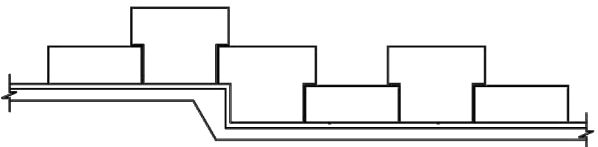
A perforated PVC/HDPE pipe shall be provided close to the existing GL/SRL, wrapped with filter fabrics/non-woven Geotextile for drainage. At the PVC pipe location the geotextile of MacDrain shall be wrapped over the upper half of the pipe.

Geotextile shall be cut to length and dimensions to wrap the circumference of the pipe with an overlap of 50mm. The overlap area will be stapled using staple pins, 200mm apart. The pipe sections shall be joined with subsequent lengths by using couplers. The drainage pipe shall be laid at a longitudinal slope of 1 in 200, having outlets by using T-junction couplers at every 50m.

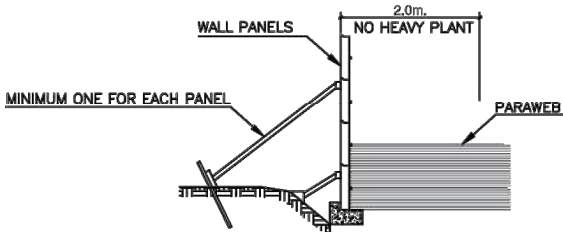
At locations of outlets of drainage pipe a gap in the panels to fit the outlet diameter of 160mm shall be provided.



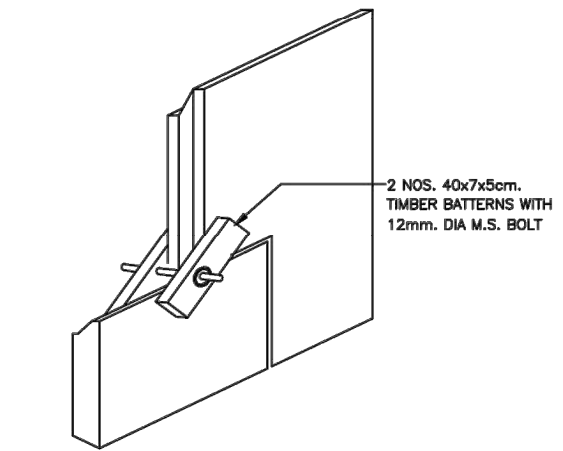
LEVELLING PAD (FOOTING) ELEVATION

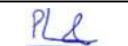
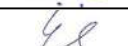


FRONT ELEVATION



PROPPING CROSS SECTION

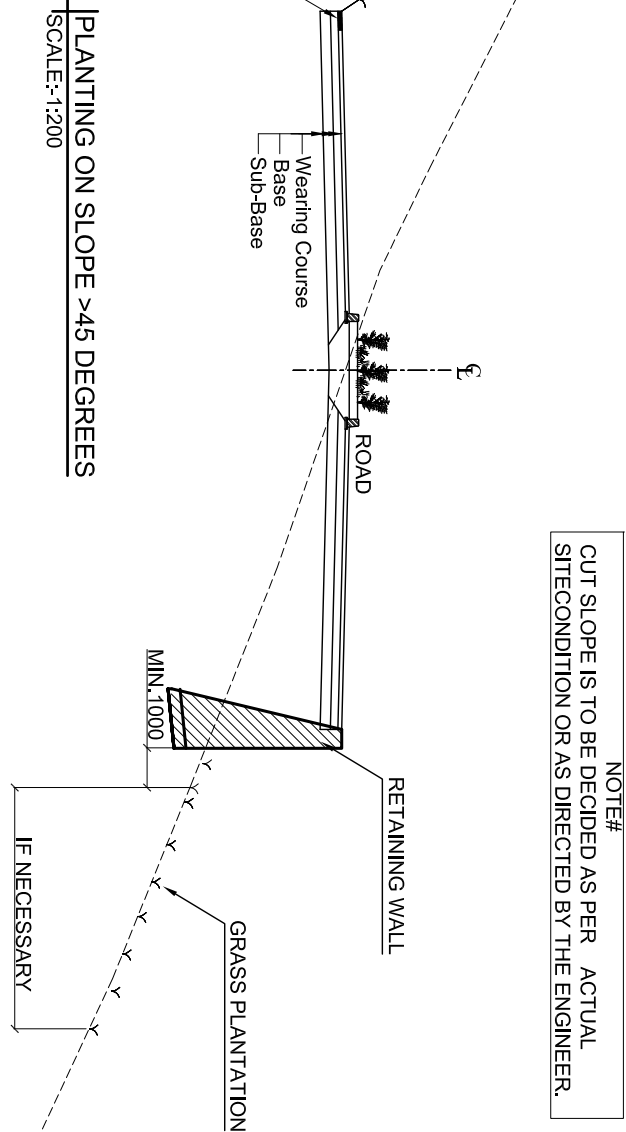
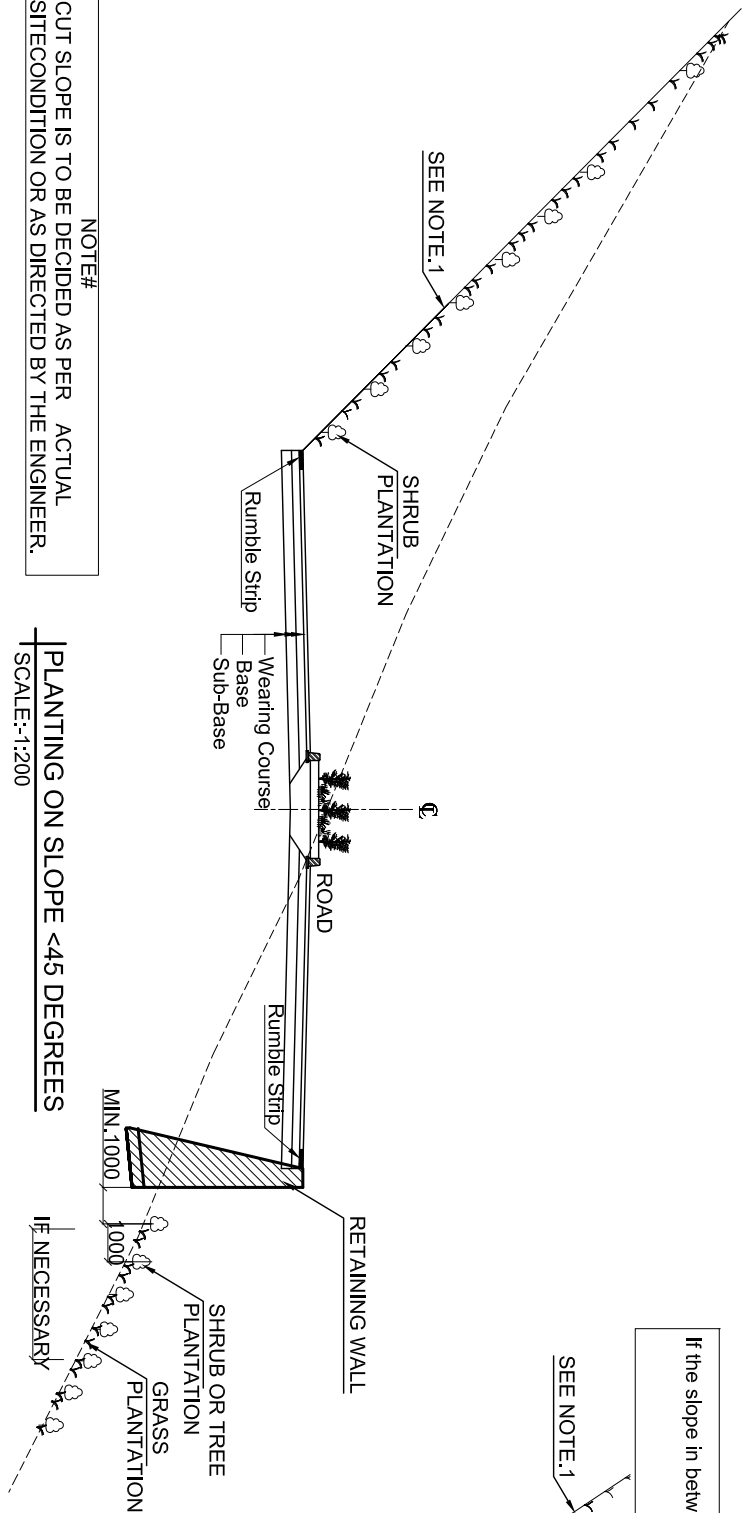


Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with  ERM P (Ltd), Nepal and  TPE-Tech Studio of Engineering	IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butawal -Gorusinghe Section	SHEET TITLE: Typical Drawing of Earth Reinforcement Wall	SCALE: 1:35		NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022
					DESIGNED BY:	S.B. Shrestha				DWG.NO.: 5.2
					CHECKED BY:	P. Upadhyaya				SHEET NO.: 5
					APPROVED BY:	Dr. T.H.Choi				



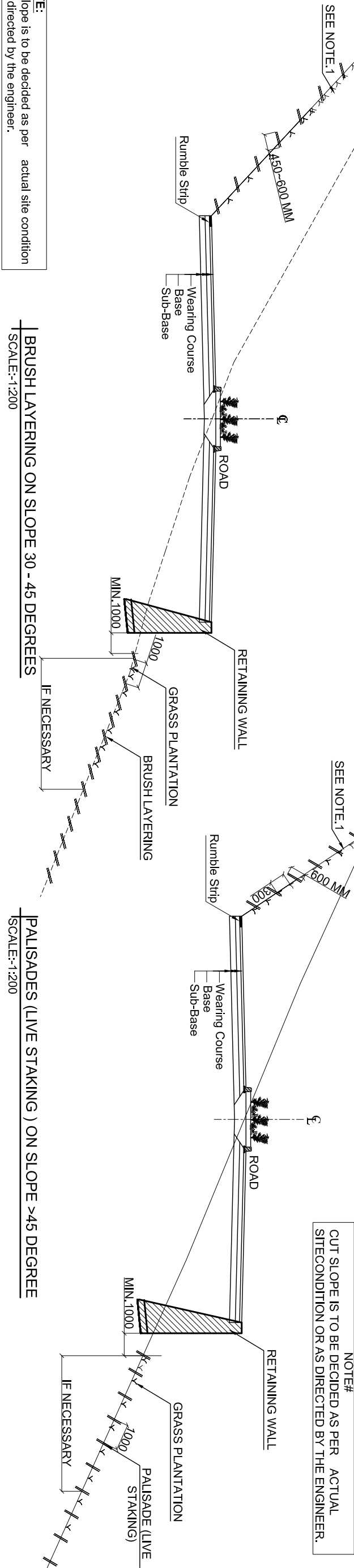
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with  ERMC P (Ltd), Nepal and  TPE-Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butawal -Gorusinghe Section	SHEET TITLE: Typical Drawing of Earth Reinforcement Wall	SCALE: 1:35	DESIGNED BY: S.B. Shrestha		REV NO.	DESCRIPTION	DATE: November, 2022
						CHECKED BY: P. Upadhyaya				DWG.NO.: 5.2
						APPROVED BY: Dr. T.H.Choi				SHEET NO.: 6

If the slope in between >45 degree, rooted grass slips will be planted at the spacing of 100mm. x 100mm. By digging holes to a maximum of 50mm. Depth with metal rod or wooden peg.



IF THE SLOPE LESS THAN 45 DEGREE, PLANTING TREE SEEDLINGS WILL BE DONE ALONG THE SLOPE AT AN INTERVAL OF 1M C/C. BY DIGGING PITS 300MM. DIAMETER AND 300 MM. DEPTH. MIX COMPOST WITH SOIL UPTO 1/4 OF PIT VOLUME. IN BETWEEN THE TWO TERRACES, ROOTED GRASS SLIPS WILL BE PLANTED AT THE SPACING 100x100MM BY DIGGING PLANTING HOLES TO A MAXIMUM OF 50MM. DEPTH WITH METAL ROD OR WOOD PEG.

IF THE SLOPE IS >45 DEGREES, LIVE STAKES OF MINIMUM 50MM. DIA. AND 600 MM. LONG OF SUITABLE SPECIES ARE DIPPED INTO THE GROUND AT RIGHT ANGLE TO THE INCLINED SLOPE, SO THAT MAX. 150MM. IS ALLOWED TO STICK OUT OF THE GROUND. LIVE STAKES SHOULD BE SPACED AT 50MM. ALONG THE CONTOUR AND 1M. ALONG THE SLOPES. ON SLOPE IN BETWEEN THE LIVE STAKINGS, ROOTED GRASS SLIPS WILL BE PLANTED.

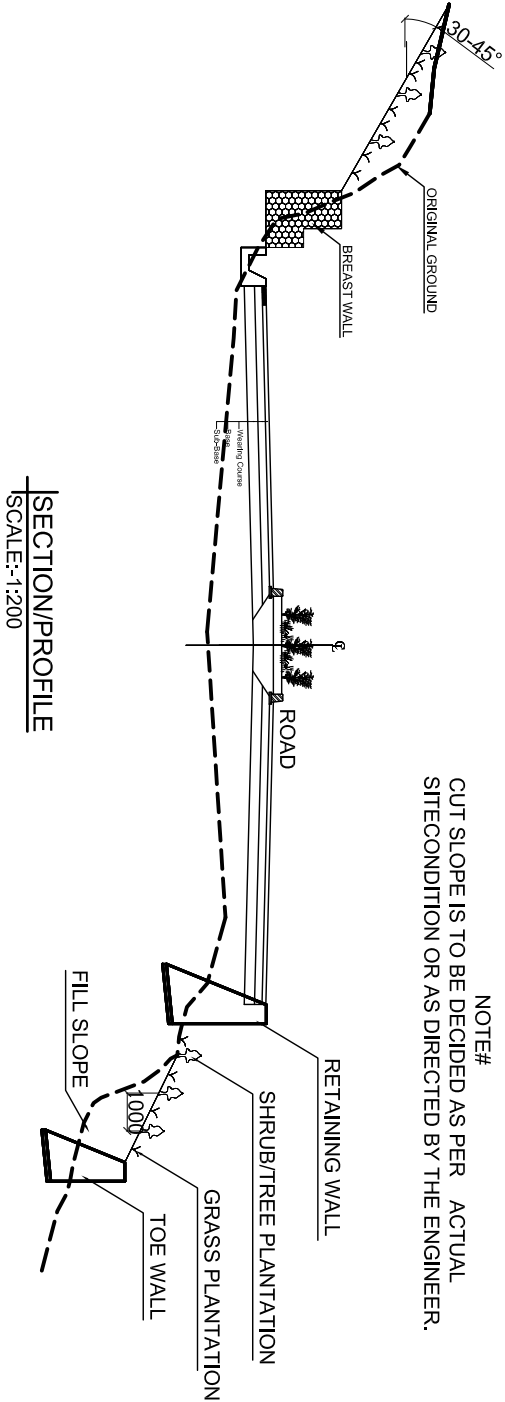
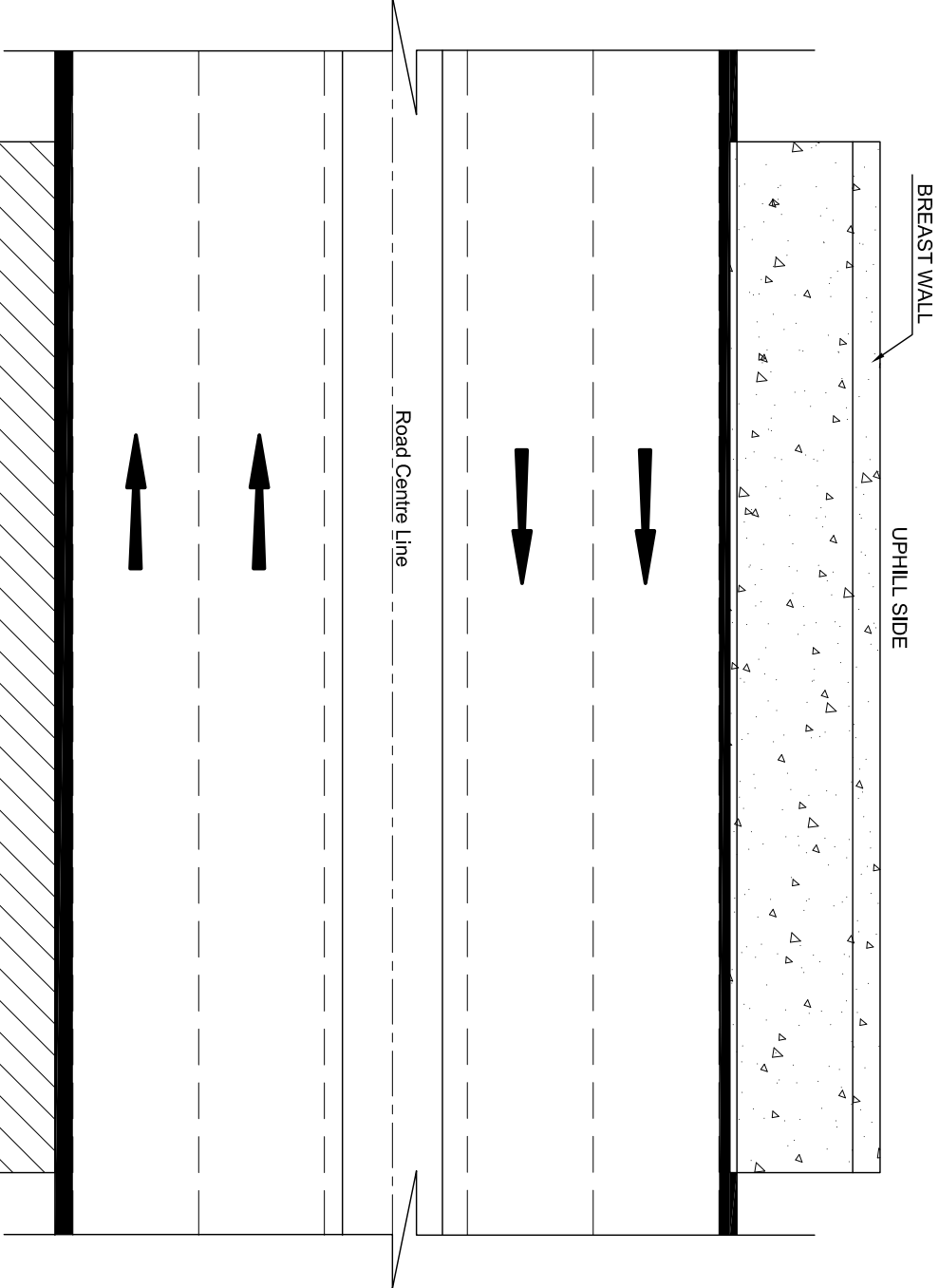


NOTE:
Cut slope is to be decided as per actual site condition or as directed by the engineer.

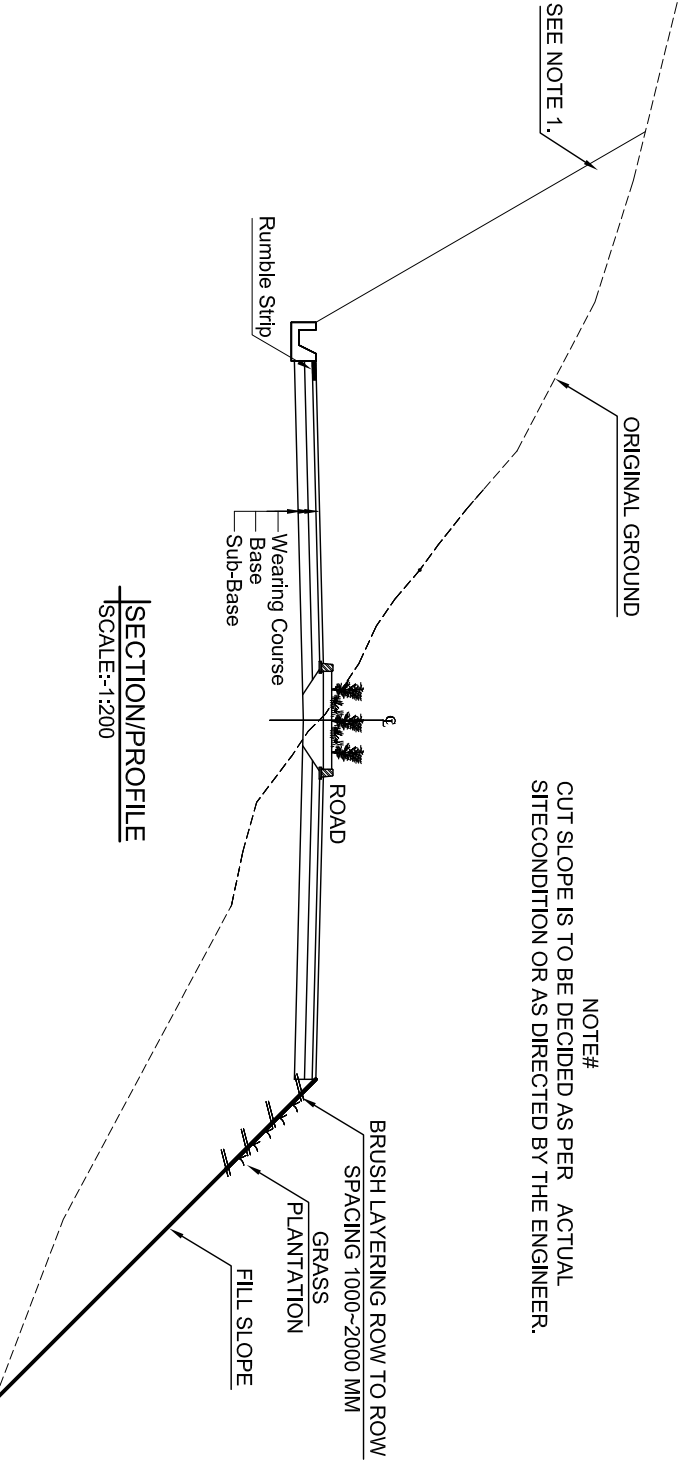
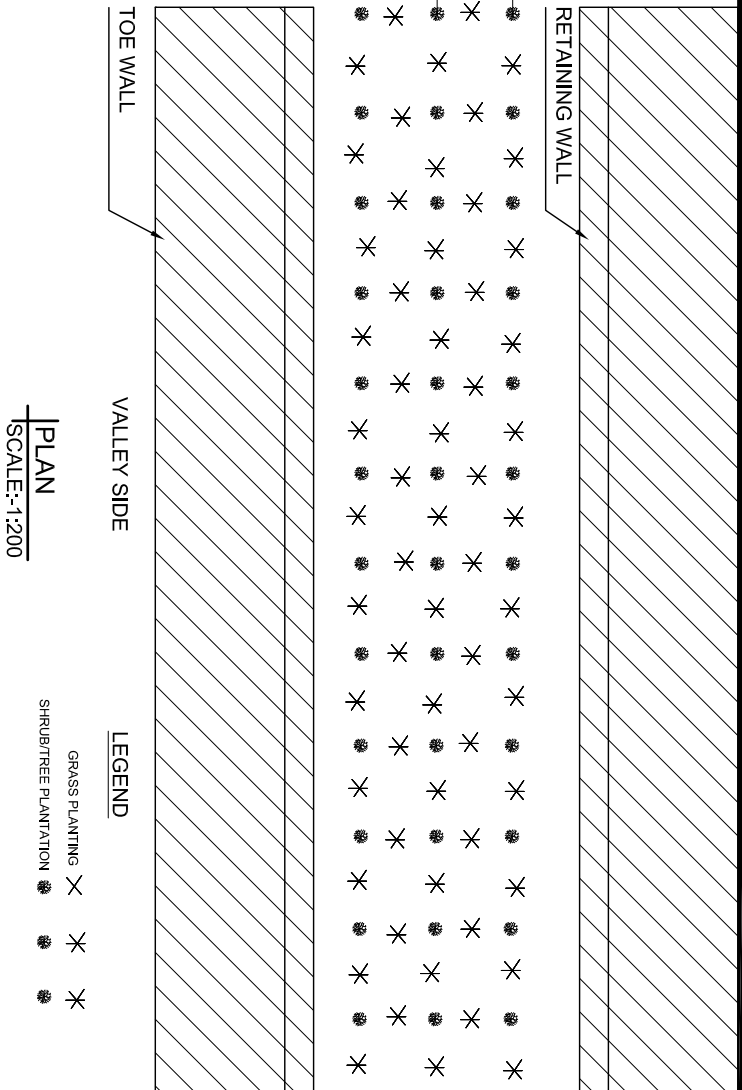
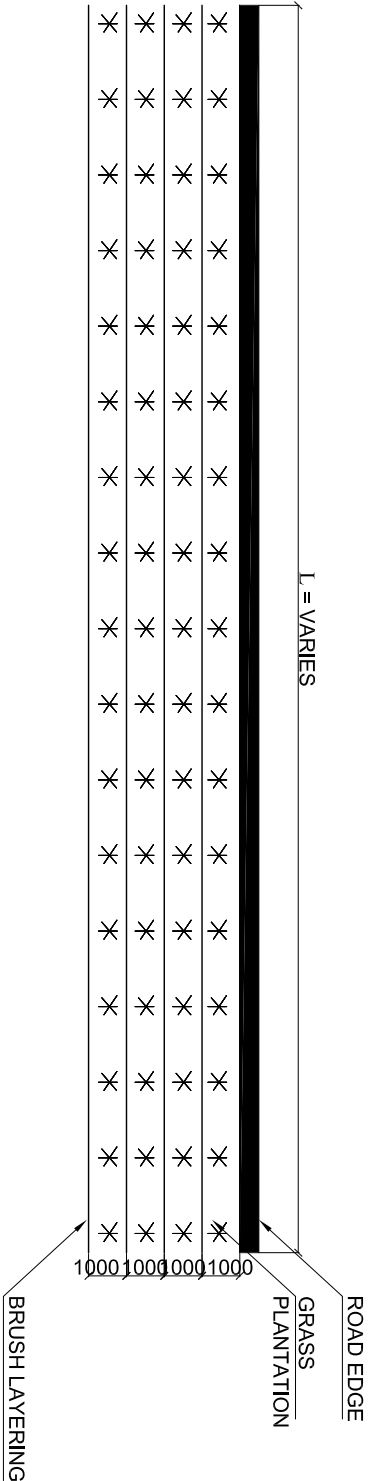
IF THE SLOPE IN BETWEEN 30-45 DEGREE, TRENCHES ARE DUG UP TO 200MM. DEPTH ALONG THE CONTOUR AND LIVE BRANCHES OF CUTTINGS ARE PLACED WISE IN THE TRENCHES EXPOSING 1/3 OF THE TOTAL LENGTH ABOVE THE GROUND. IN THE SLOPE BETWEEN THE TWO TRENCHES, ROOTED GRASS SLIPS WILL BE PLANTED.

Government of Nepal Ministry of Physical Infrastructure and Transport		CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE:	
Department of Roads		Soosung Engineering Co. Ltd,		DOR, DCID						S.B. Shrestha								November, 2022	
Project Directorate Office (ADB)		in association with		ROAD NAME:						Checked by:								DWG.NO.:	
SASEC Highway Improvement Project-		ERM C P (Ltd)		East West Highway (H01)						P. Upadhyaya								6	
Project Preparatory Consultant (SHIP-PPC)		and		Butwal - Gorusinghe Section						Approved by:								SHEET NO.:	
ADB Loan No: 3722-NEP		JYK - Tech Studio of Engineering Nepal								Dr. T.H. Choi								1	

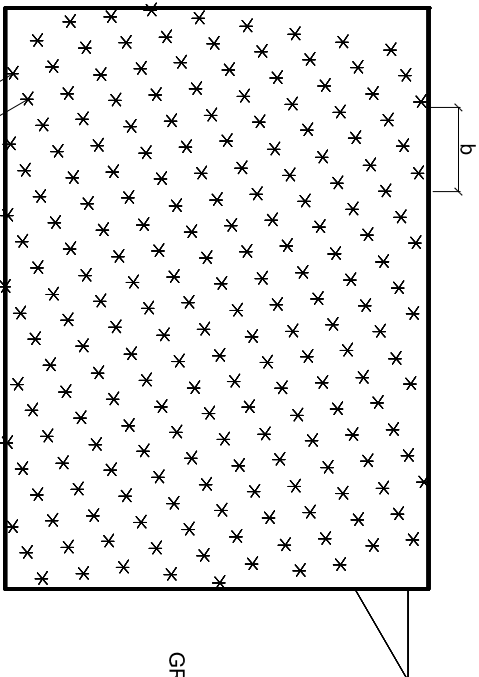
COMBINED BREASTWALL WITH BIOENGINEERING WORKS ON BACKFILL AND CUT SLOPE.



BIOENGINEERING WORKS ON FILL SLOPE.

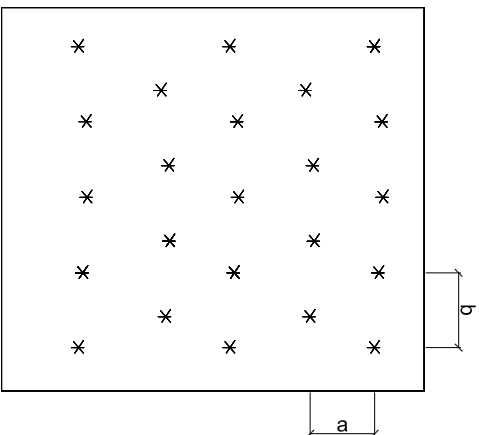


Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP			CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERMCo P (Ltd) and  JYK-Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE:		SCALE:				NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November, 2022	
												Designed by:		S.B. Shrestha								
												Checked by:		P. Upadhyaya								
												Approved by:		Dr. T.H.Choi								
																				DWG.NO.: 6		
																				SHEET NO.: 2		

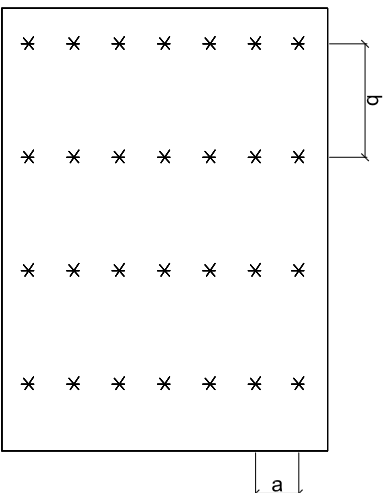


LEGEND

GRASS PLANTATION * * *



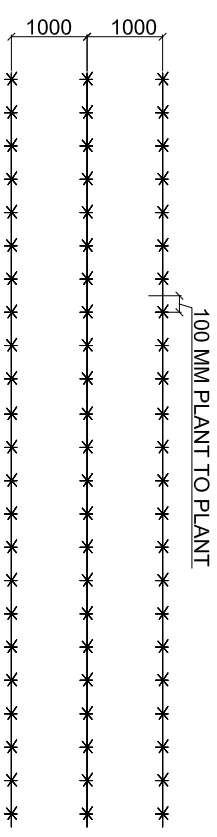
GRASS PLANTING LINES, RANDOM
SCALE:1:000



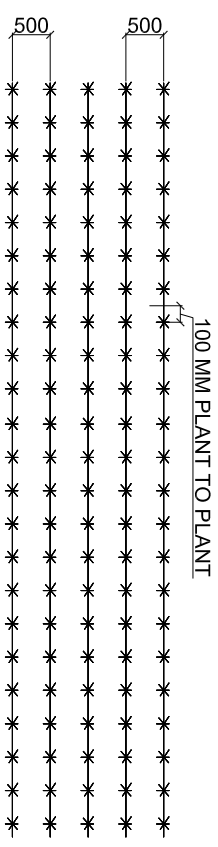
GRASS PLANTING LINES, DOWN SLOPE
SCALE:-1:100

SPACING DETAIL FOR GRASS PLANTING			
Planting configuration	Slope steepness	Spacing	
		Plant to Plant [a]	Row to Row [b]
Contour Lines	Slope less than 30°	100 mm	1000 mm
	Slope 30°-45°	100 mm	500 mm
	Slope more than 45°	100 mm	300 mm
Diagonal	Slopes less than 45°	100 mm	500 mm
	Slope more than 45°	100 mm	300 mm
	All Slopes	100 mm	300 mm
Down slopes lines	All Slopes	100 mm	100 mm
Random lines	All Slopes	100 mm	100 mm

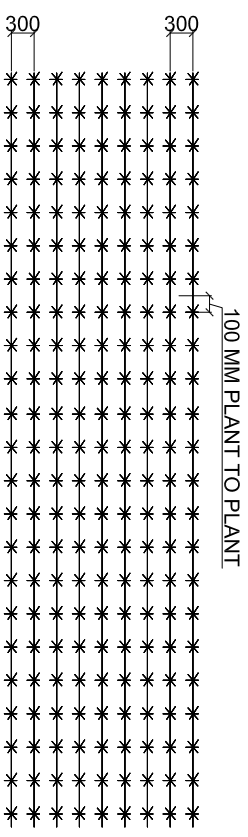
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERMCo P (Ltd) and  JYE-Tech Studio of Engineering Nepal	IMPLEMENTING AGENCY: DOR, DCID	SHEET TITLE:	SCALE:		NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022
		ROAD NAME: East West Highway (H01)	Bio - Engineering	As Shown	Designed by:	S.B. Shrestha				DWG. NO.: 6
					Checked by:	P. Upadhyaya				
		Butwal - Gorusinghe Section			Approved by:	Dr. T.H. Choi				SHEET NO.: 3



GRASS PLANTING LINES CONTOUR/ HORIZONTAL, SLOPE <30°
SCALE:1:100

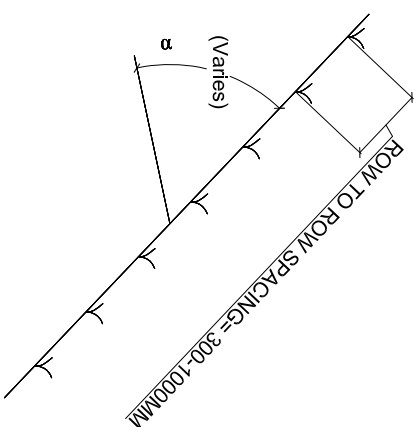


GRASS PLANTING LINES CONTOUR/ HORIZONTAL, SLOPE <30°-45°
SCALE:1:100

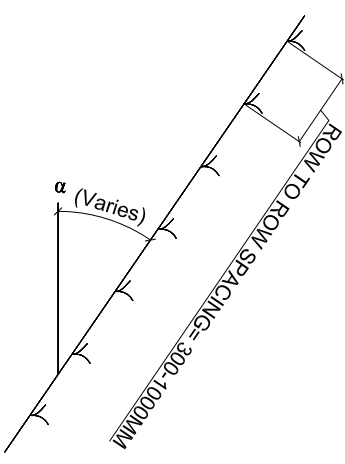


GRASS PLANTING LINES CONTOUR/ HORIZONTAL, SLOPE $>45^\circ$
SCALE: 1:100

A) CUT SLOPES



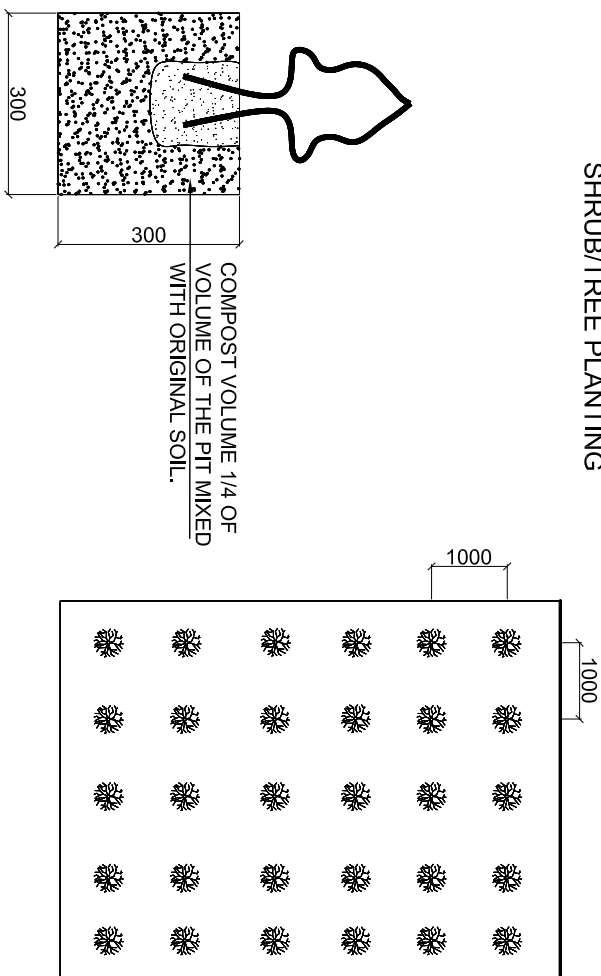
B) VALLEY SLOPES



SIDE VIEW OF GRASS PLANTATION
SCALE:-1:100

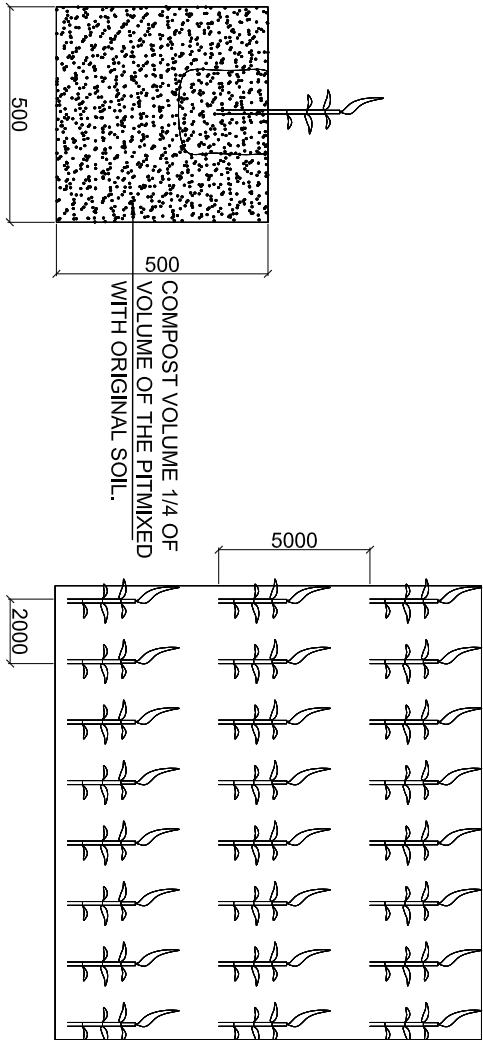
					DATE: November, 2022
Designed by:	S.B. Shrestha				DWG. NO.: 6
Checked by:	P. Upadhyaya				SHEET NO.: 3
Approved by:	Dr. T.H. Choi				

SHRUB/TREE PLANTING



PIT SIZE
SCALE:-1:100

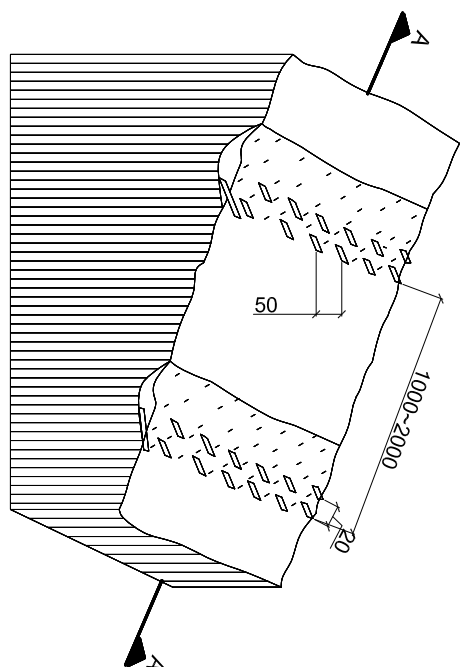
SHRUB/TREE PLANTING
SCALE:-1:100



PIT SIZE
SCALE:-1:100

BAMBOO RHIZOME PLANTING
SCALE:-1:100

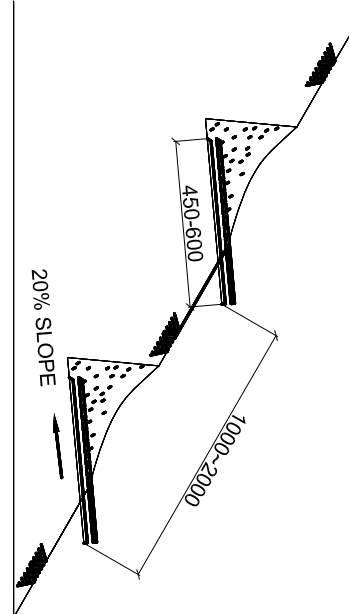
BRUSH LAYERING /PALISADE



SLOPE ANGLE	DISTANCE	TO BE LAID IN A DOUBLE LAYER WITH 21 CUTTINGS PER RUNNING METRE. PER RUNNING METRE.
<30°	2000 MM	
30°-45°	1000 MM	
	1000 MM	

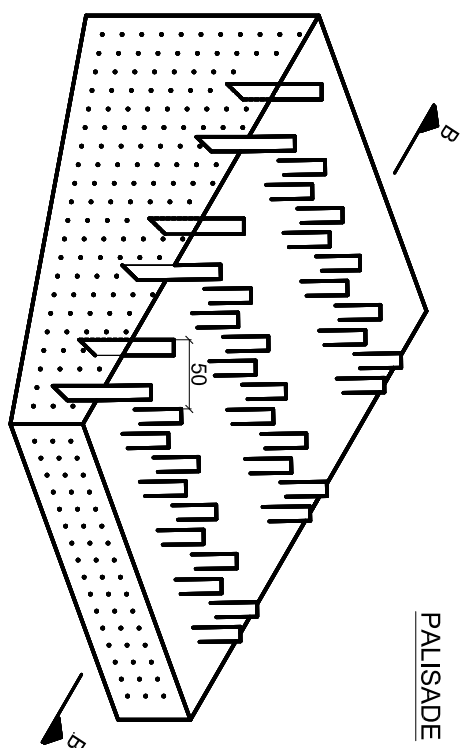
NOTE: TO BE USED IN SOFT SOIL/DEBRIS

PLAN VIEW
SCALE:-1:100



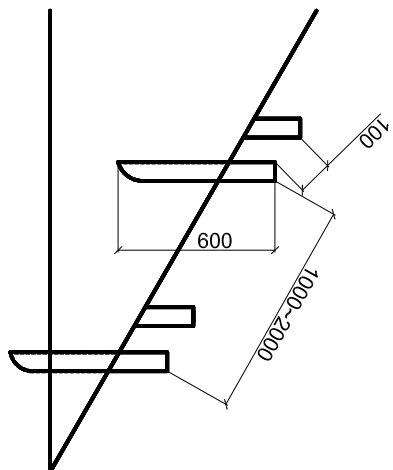
SECTION
SCALE:-1:100

PALISADE



SLOPE ANGLE	DISTANCE
<30°	2000 MM
30°-60°	1000 MM

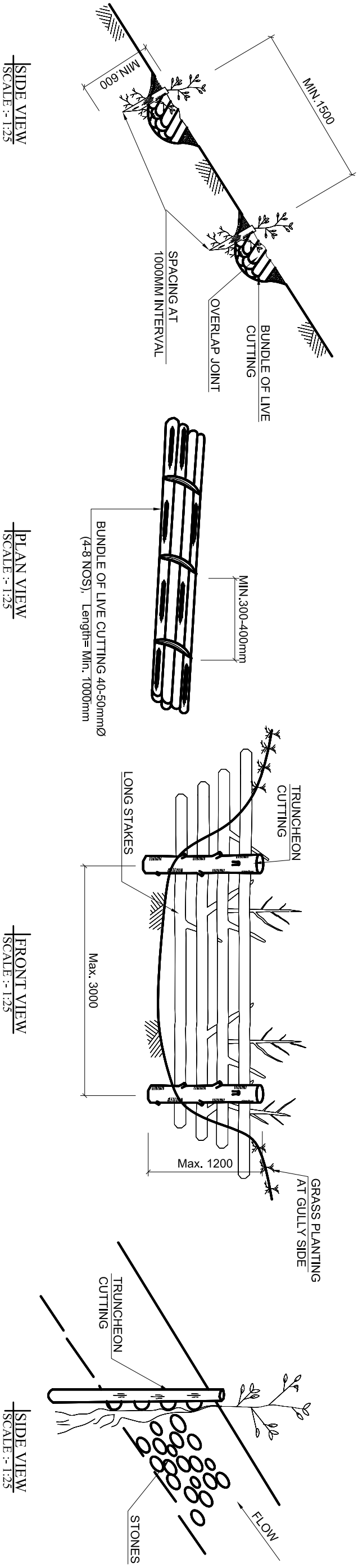
NOTE: TO BE USED IN HARD SOIL



PLAN VIEW
SCALE:-1:100

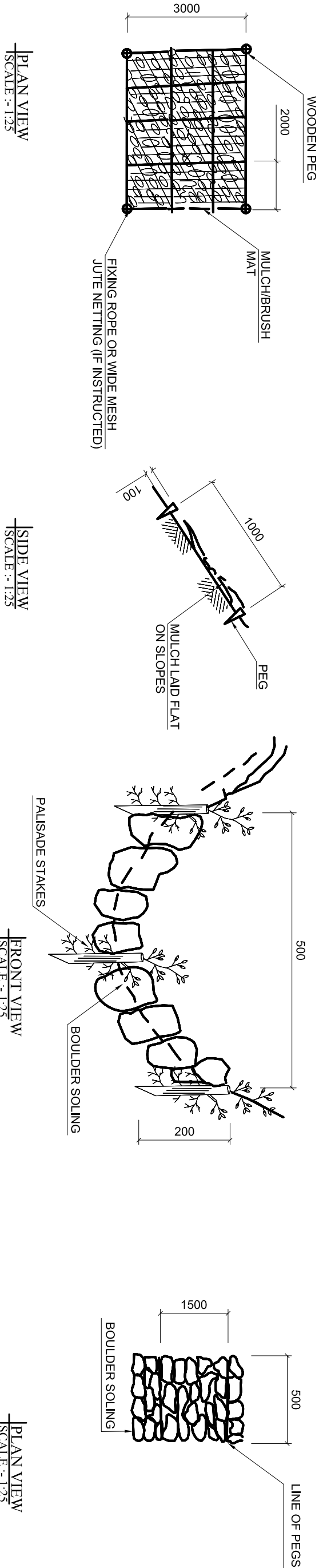
SECTION
SCALE:-1:100

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  JYV-Tech Studio of Engineering Nepal	IMPLEMENTING AGENCY:	SHEET TITLE:	SCALE:			NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022	
		DOR, DCID										
		ROAD NAME:										
		East West Highway (H01)										
		Butwal – Gorusinghe Section										
		Bio - Engineering		As Shown			Designed by:	S.B. Shrestha				DWG.NO.: 6
				Checked by:	P. Upadhyaya							
				Approved by:	Dr. T.H.Choi							
												SHEET NO.: 4



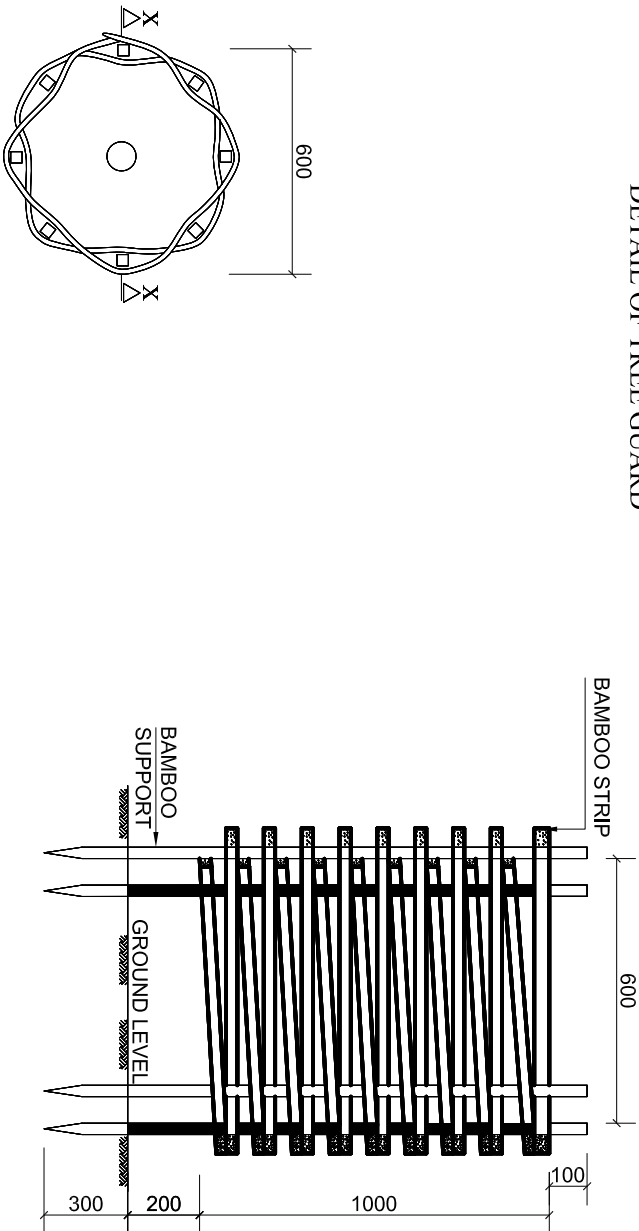
MULCHING/BRUSHING MATTING

VEGETATIVE RIP-RAP



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 JYV - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID		SHEET TITLE:		SCALE:		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE:	
ROAD NAME: East West Highway (H01)		Bio - Engineering		As Shown		Designed by: S.B. Shrestha		Checked by: P. Upadhyaya		Approved by: Dr. T.H.Choi		DWG.NO.: 6		SHEET NO.: 5		November, 2022			

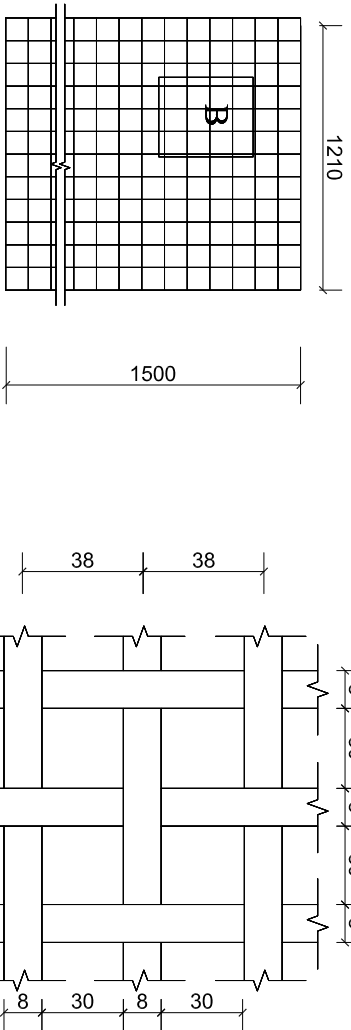
DETAIL OF TREE GUARD



PLAN
SCALE :- 1:10

SECTION X-X
SCALE :- 1:10

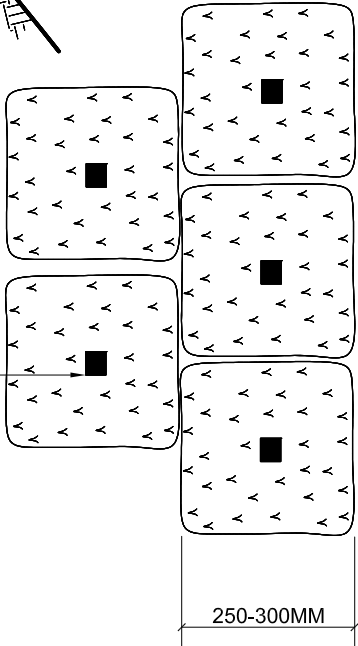
STANDARD JUTE NET



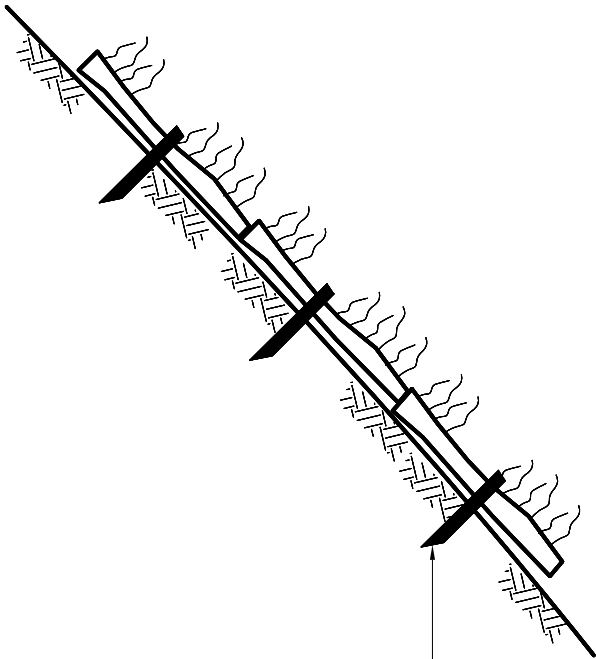
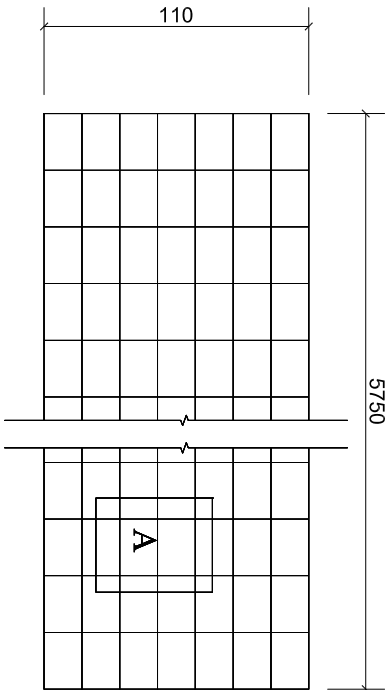
PLAN
SCALE :- 1:10

DETAIL B
SCALE :- 1:10

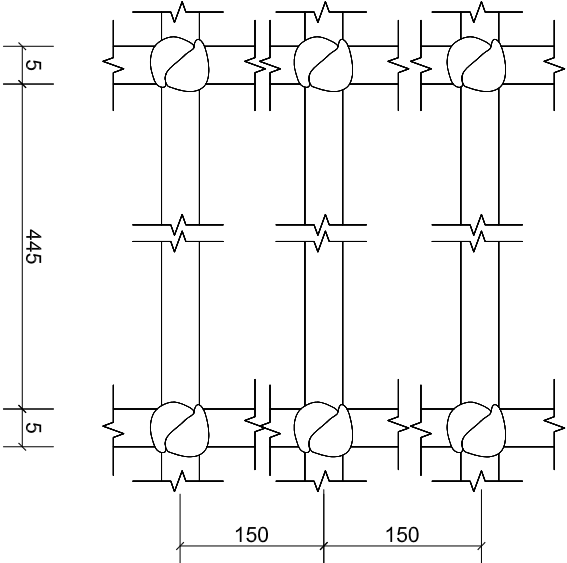
WIDE MESH JUTE NET TO HOLD MULCH ON SLOPE



PLAN
SCALE :- 1:10

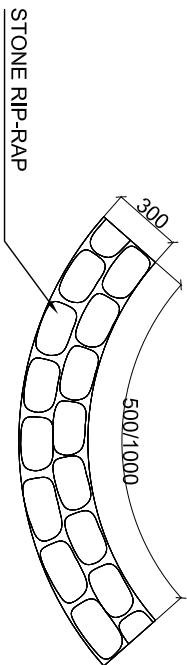
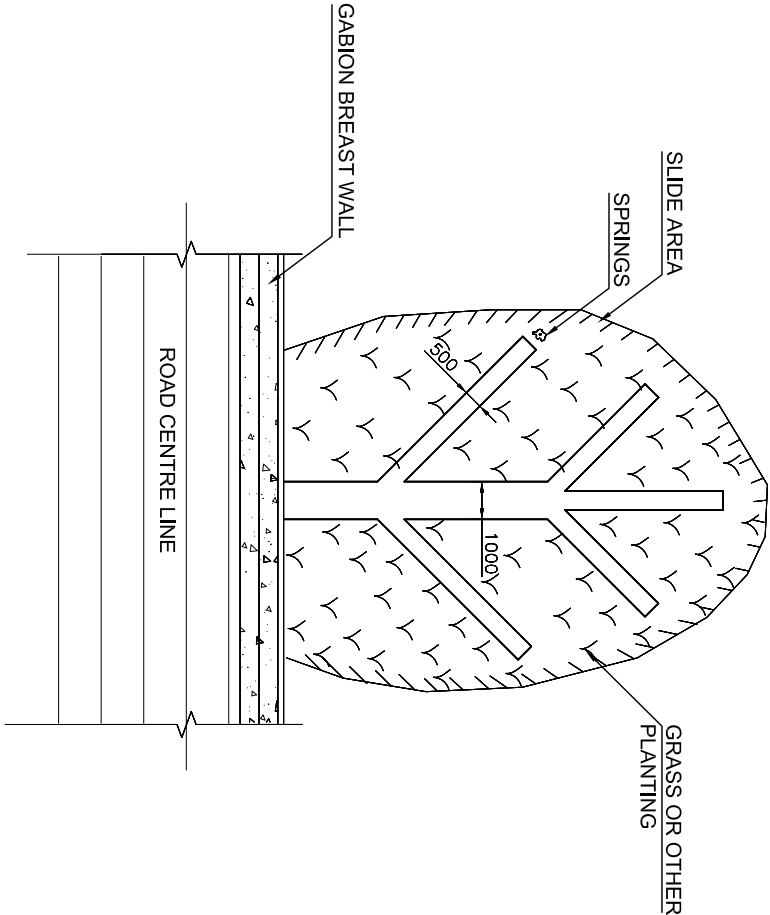


SODDING
SCALE :- 1:10

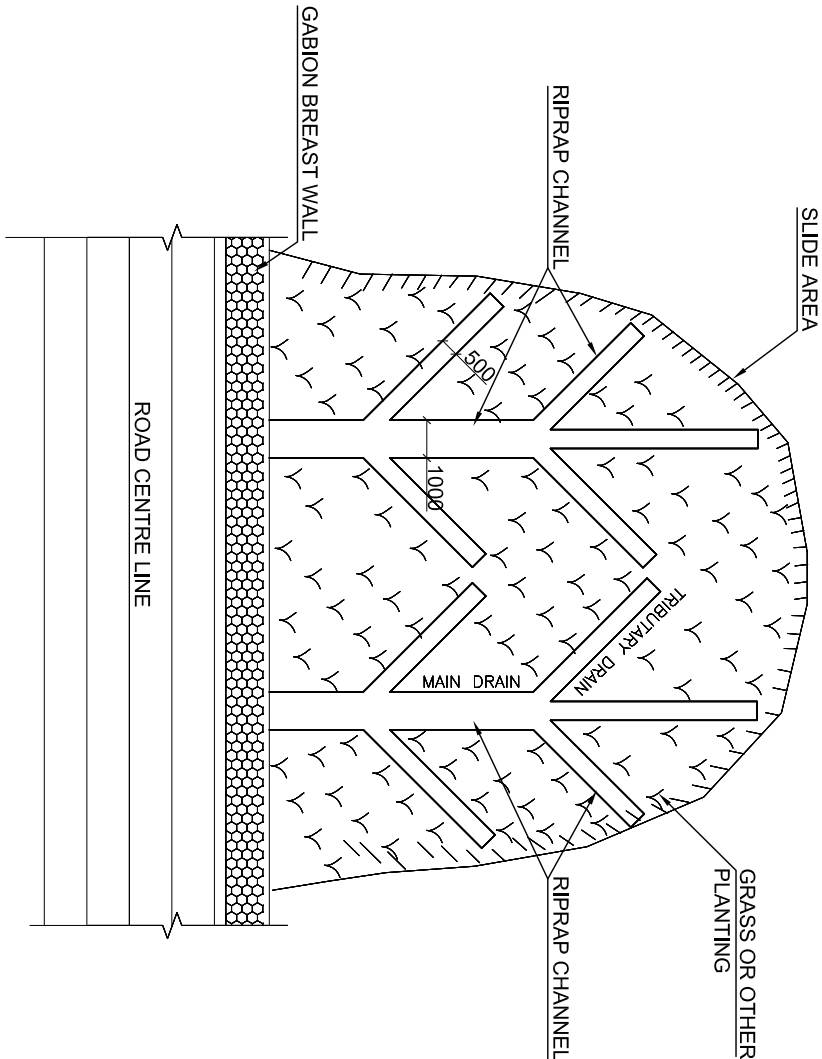


DETAIL B
SCALE :- 1:10

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 ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE:		SCALE:		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE:	DWG.NO.:	SHEET NO.:
										Designed by: S.B. Shrestha		<i>S.B. Shrestha</i>			November, 2022	6	6
										Checked by: P. Upadhyaya		<i>P. Upadhyaya</i>					
										Approved by: Dr. T.H.Choi		<i>Dr. T.H.Choi</i>					

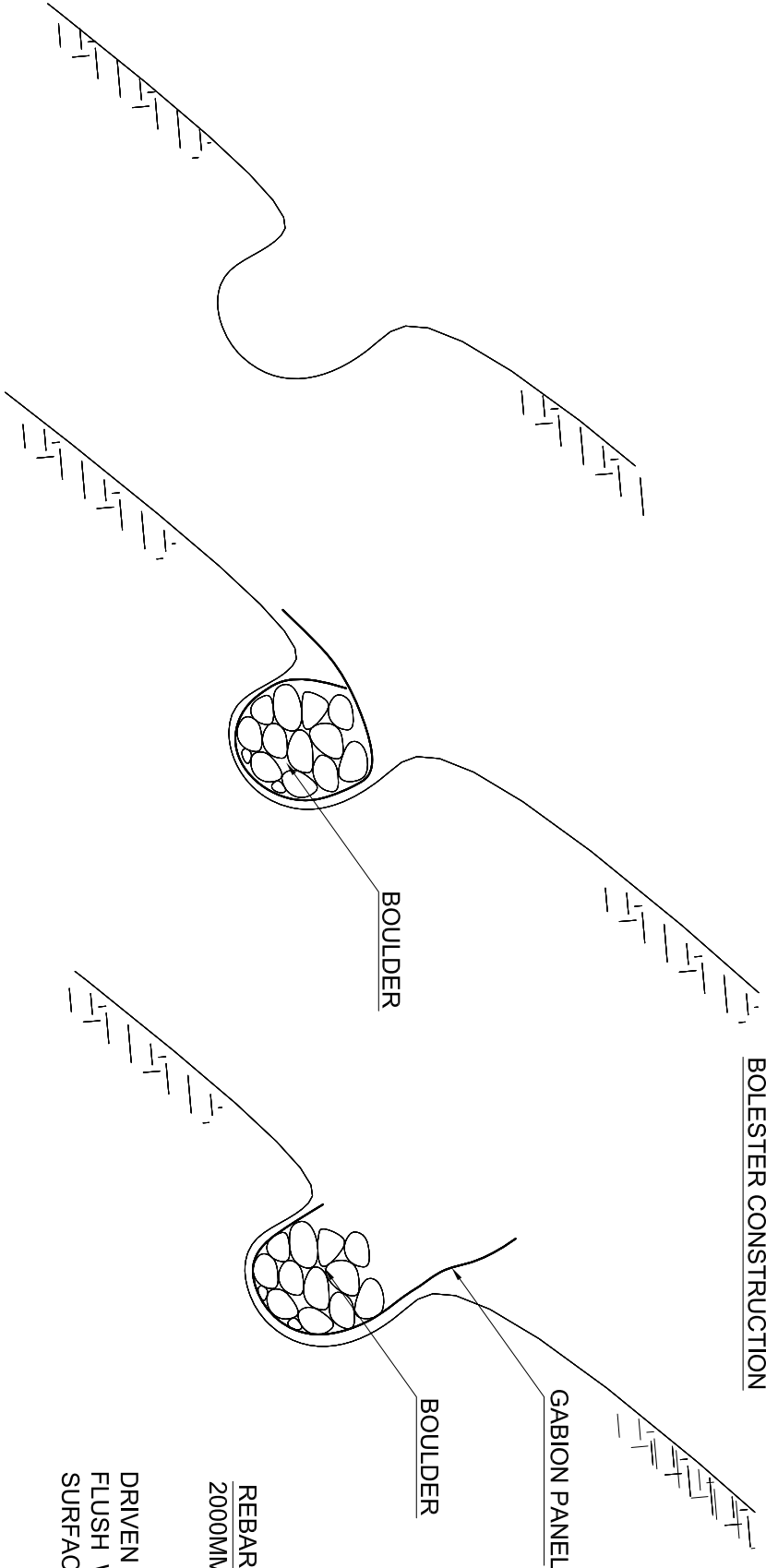


NOTE#
1. THE DETAILS OF RIP-RAP CHANNEL IS GIVEN AT BIOICAL DRAWINGS OF RIP-RAP CHANNELS.



RIP-RAP CHANNEL SECTION 1
SCALE:-1:200

RIP-RAP CHANNEL SECTION 2
SCALE:-1:200



SPACING OF BOLSTER	
SLOPE ANGLE	SPACING (CENTRES)
<30°	2000 MM
<30°-45°	1500 MM

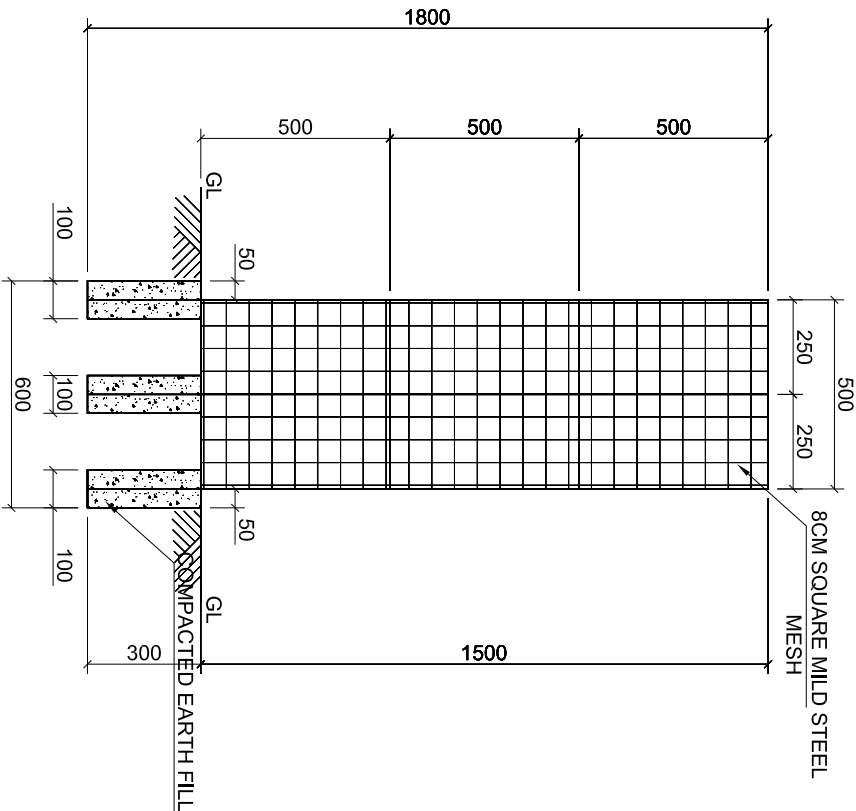
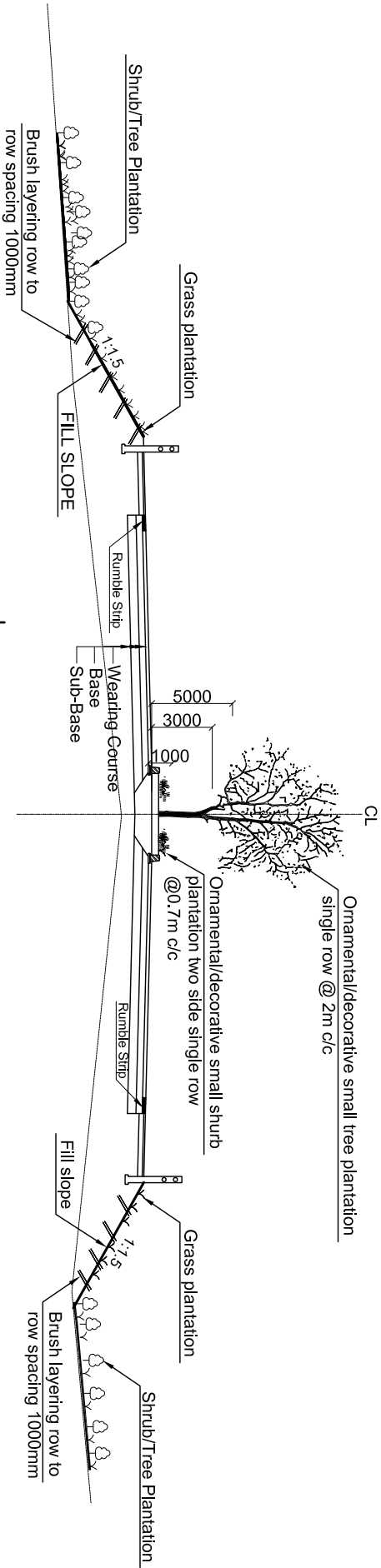
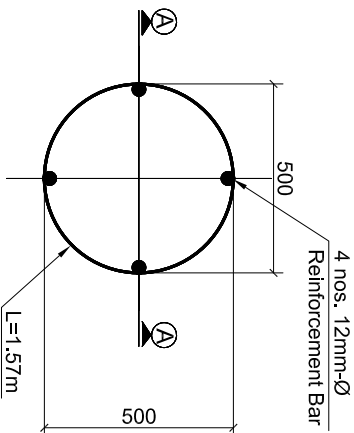
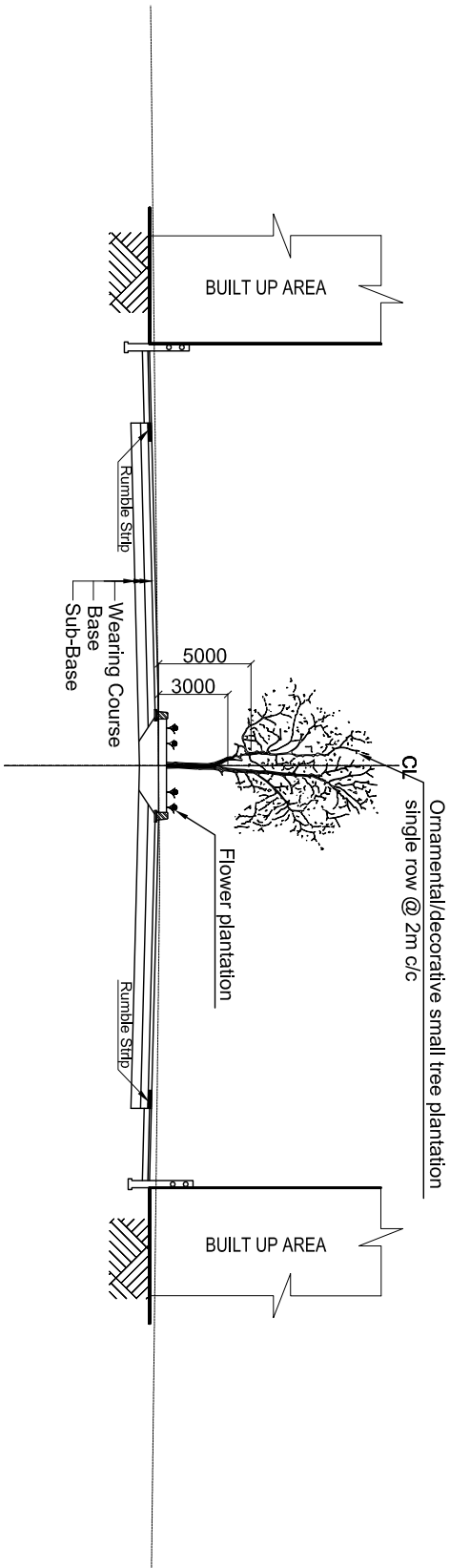
EXCAVATION OF TRENCH
SCALE :- 1:20

TURNING THE END OF PANEL FOR CLOSING
SCALE :- 1:20

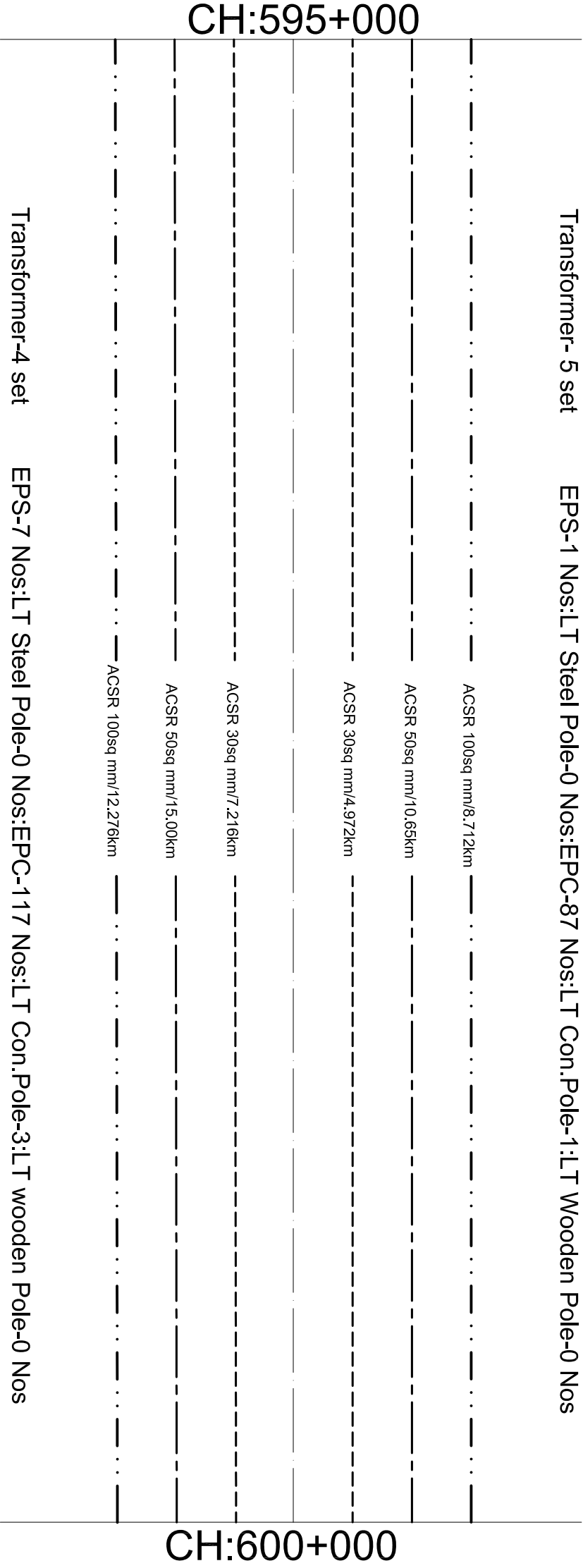
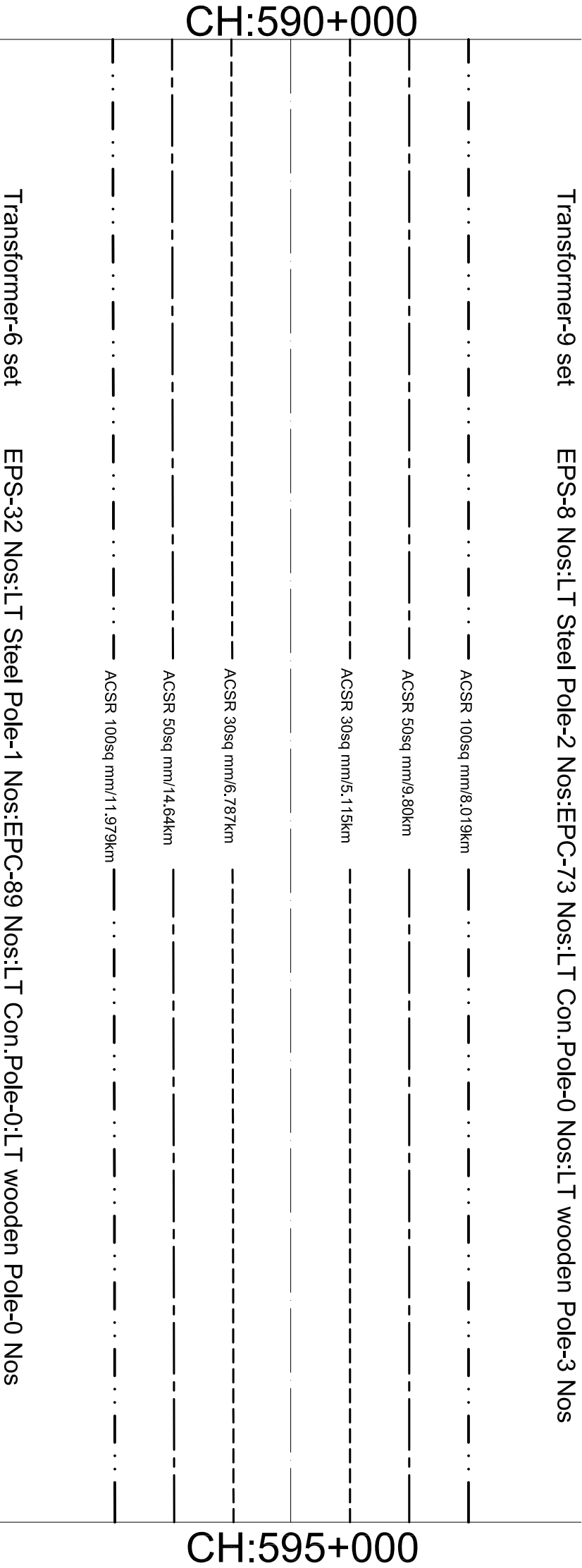
PLACING GABION PANEL IN POSITION AND BOULDER FILLING
SCALE :- 1:20

FIXING REBARS AND BACKFILLING
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) and JYV - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Bio - Engineering		SCALE: As Shown		NAME S.B. Shrestha P. Upadhyaya Dr. T.H.Choi		SIGNATURE <i>S.B. Shrestha</i> <i>P. Upadhyaya</i> <i>Dr. T.H.Choi</i>		REV NO.		DESCRIPTION		DATE: November, 2022		DWG.NO.: 6		SHEET NO.: 7	
---	--	--	--	---	--	-----------------------------------	--	--------------------	--	---	--	---	--	---------	--	-------------	--	-------------------------	--	---------------	--	-----------------	--



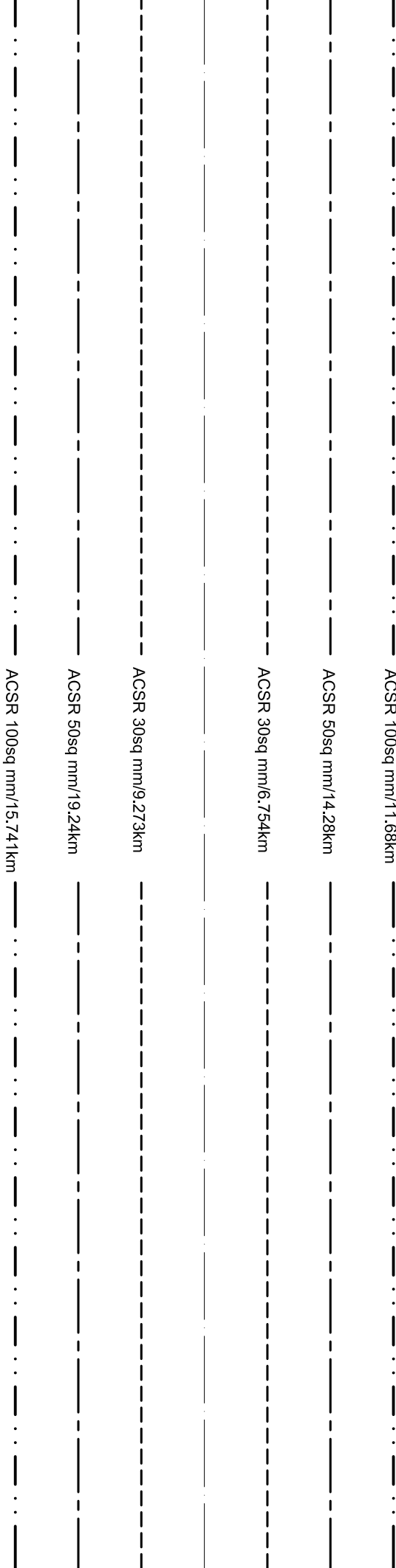
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NFP		CONSULTANT: Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and JYK - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID		SHEET TITLE:		SCALE:		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE:	
ROAD NAME:		East West Highway (H01)		Bio - Engineering		As Shown		Designed by:		S.B. Shrestha		Signature		Rev No.		Description		November, 2022	
Butwal - Gorusinghe Section								Checked by:		P. Upadhyaya		Signature		Rev No.		Description		DWG.NO.: 6	
								Approved by:		Dr. T.H.Choi		Signature		Rev No.		Description		SHEET NO.: 8	



Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and JYK - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID		ROAD NAME: East West Highway (H01)		SHEET TITLE: Schematic drawing of Electrical Work		SCALE:		DESIGNED BY: Checked by: Approved by:		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November, 2022		DWG.NO.: 7		SHEET NO.: 1	
---	--	--	--	-----------------------------------	--	---------------------------------------	--	--	--	--------	--	---	--	------	--	-----------	--	---------	--	-------------	--	-------------------------	--	---------------	--	-----------------	--

CH:600+000

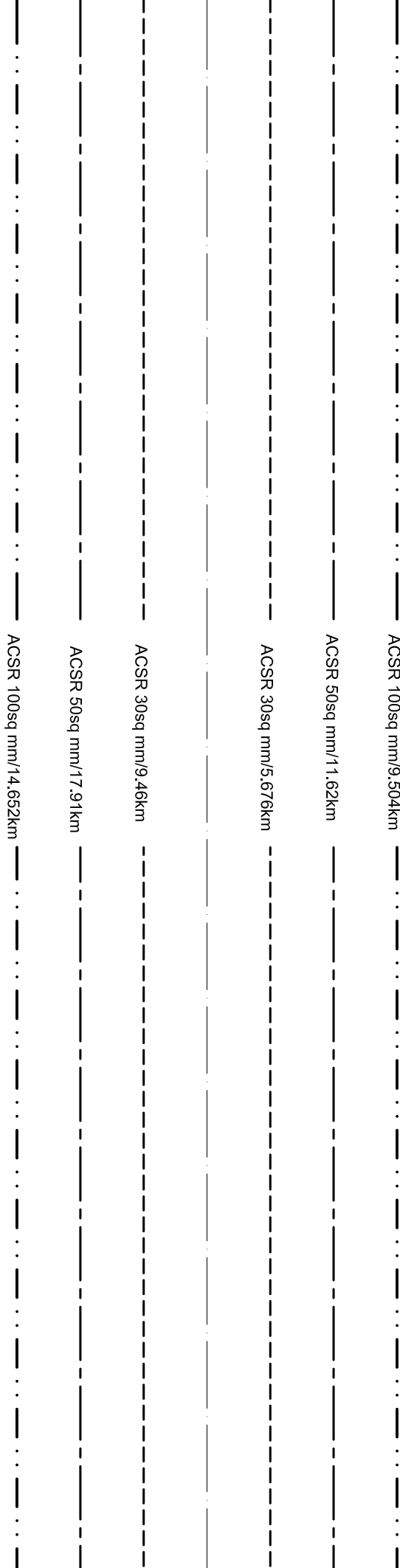
Transformer-10set EPS-1 Nos:LT Steel Pole-0 Nos:EPC-117 Nos:LT Con.Pole-2:LT wooden Pole-0 Nos



CH:605+000

Transformer-2 set EPS-0 Nos:LT Steel Pole-0 Nos:EPC-159 Nos:LT Con.Pole-4:LT wooden Pole-0 Nos

Transformer-8 set EPS-1 Nos:LT Steel Pole-0 Nos:EPC-95 Nos:LT Con.Pole-2:LT wooden Pole-1 Nos



CH:605+000

CH:610+000

Transformer-2 set EPS-2 Nos:LT Steel Pole-0 Nos:EPC-146 Nos:LT Con.Pole-:10Nos LT wooden Pole-0Nos

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 ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Schematic drawing of Electrical Work		SCALE:		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November, 2022		DWG.NO.: 7		SHEET NO.: 2	
---	--	--	--	---	--	--	--	--------	--	------	--	-----------	--	---------	--	-------------	--	-------------------------	--	---------------	--	-----------------	--

CH:610+000

Transformer-3 set EPS-1 Nos:LT Steel Pole-0 Nos:EPC-99 Nos:LT Con.Pole-0:LT Wooden Pole-0 Nos

ACSR 100sq mm/9.9km

ACSR 50sq mm/12.10km

ACSR 30sq mm/5.5km

ACSR 30sq mm/3.762km

ACSR 50sq mm/7.99km

ACSR 100sq mm/6.534km

CH:615+000

Transformer-0 set EPS-0 Nos:LT Steel Pole-0 Nos:EPC-66 Nos:LT Con.Pole-1:LT Wooden Pole-0 Nos

Transformer-5 set EPS-25 Nos:LT Steel Pole-0 Nos:EPC-84Nos:LTCon.Pole-3 Nos:LTwooden Pole-1Nos

ACSR 100sq mm/10.79km

ACSR 50sq mm/13.19km

ACSR 30sq mm/6.523km

ACSR 30sq mm/4.446km

ACSR 50sq mm/8.95km

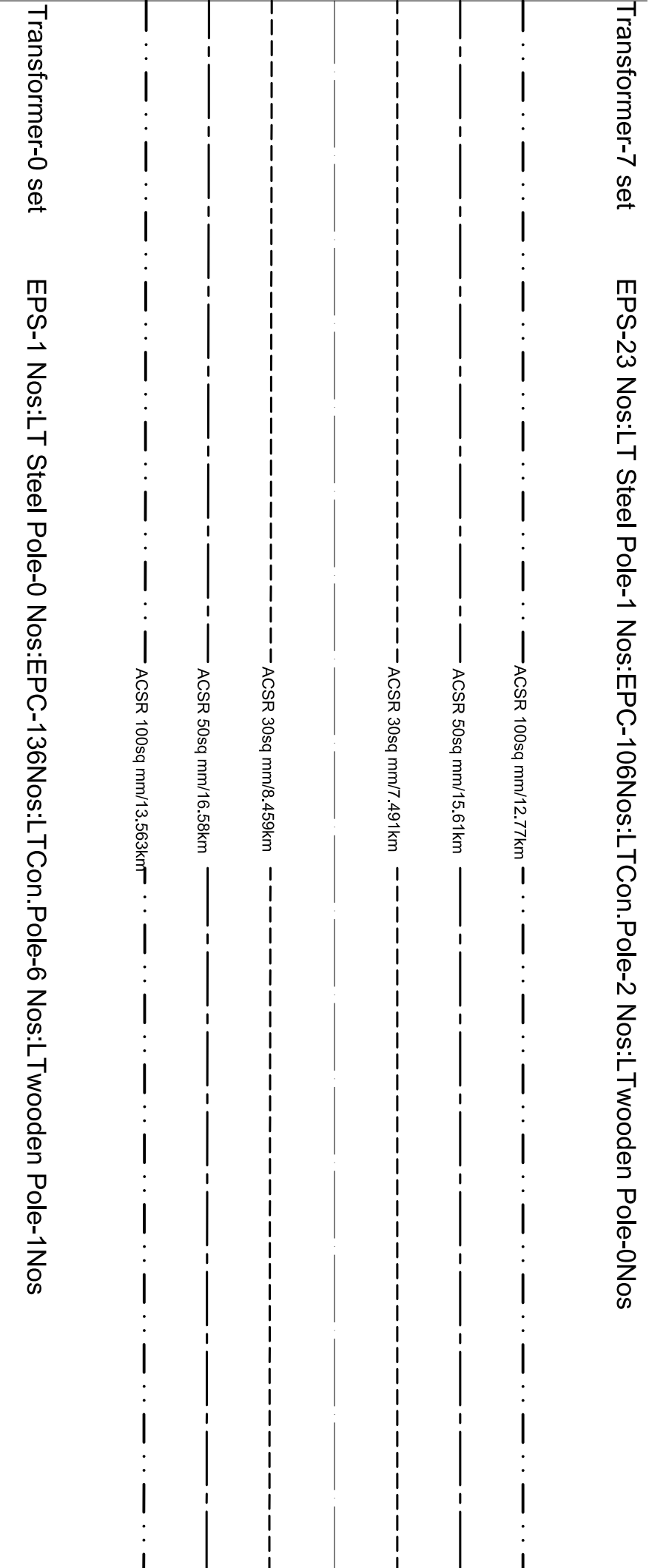
ACSR 100sq mm/7.326km

CH:620+000

Transformer-0 set EPS-2 Nos:LT Steel Pole-0 Nos:EPC-72Nos:LTCon.Pole-2 Nos:LTwooden Pole-1Nos

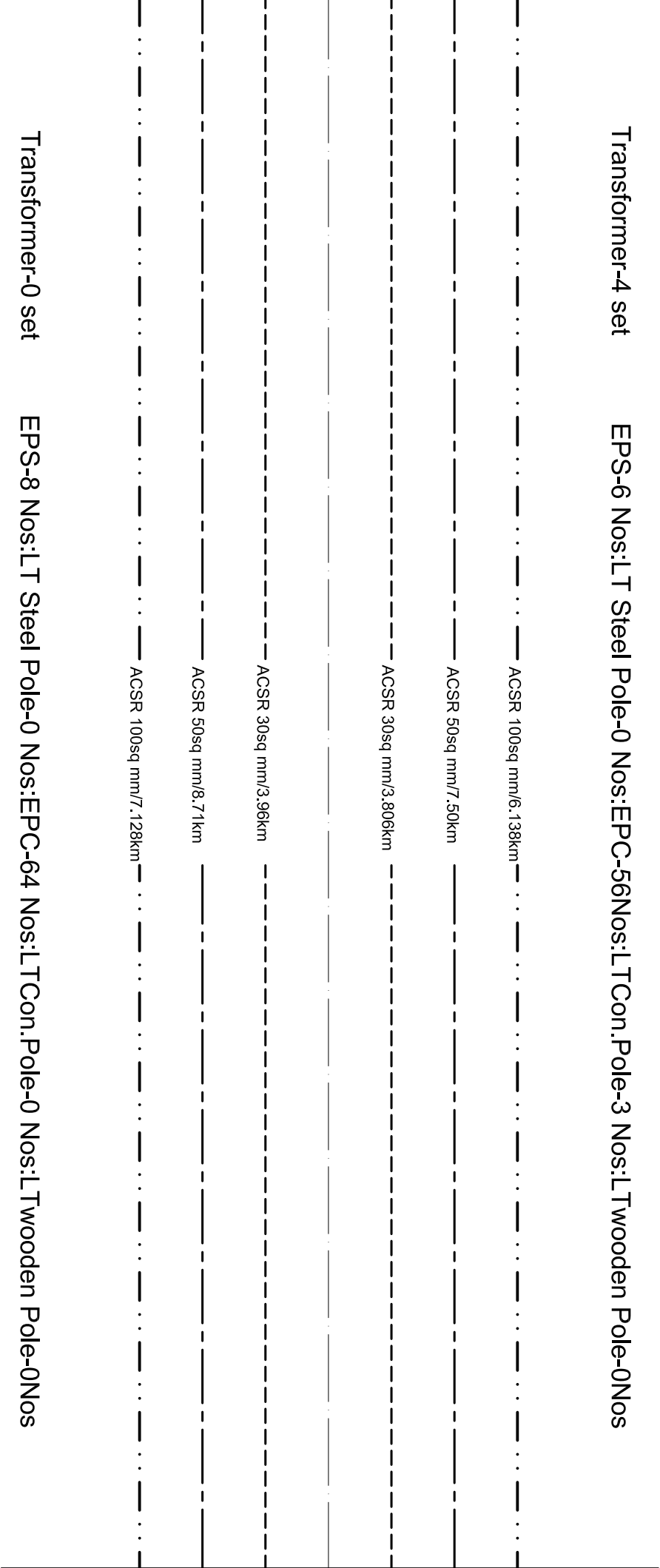
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NFP		CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd) and JYK - Tech Studio of Engineering Nepal		IMPLEMENTING AGENCY: DOR, DCID		SHEET TITLE:		SCALE:		NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022
		ROAD NAME: East West Highway (H01)		Schematic drawing of Electrical Work		Not in Scale		Designed by:						DWG.NO.: 7
		Butwal - Gorusinghe Section				Checked by:		Approved by:						SHEET NO.: 3

										Transformer-0 set										EPS-38 Nos:LT SteelPole-0 Nos:EPC-0Nos:LTCon.Pole-8 Nos:L Twooden Pole-0 Nos																																																																															
																				ACSR 100sq mm/3.762km																																																																															
																				ACSR 50sq mm/4.60km																																																																															
																				ACSR 30sq mm/3.146km																																																																															
																				ACSR 30sq mm/0km																																																																															
																				ACSR 50sq mm/0km																																																																															
																				ACSR 100sq mm/0km																																																																															
										Transformer-0 set										EPS-0 Nos:LT Steel Pole-0 Nos:EPC-0 Nos:LTCon.Pole-0 Nos:LTwooden Pole-0Nos																																																																															
										Transformer-1 set										EPS-5 Nos:LT Steel Pole-0 Nos:EPC-13Nos:LTCon.Pole-4 Nos:LTwooden Pole-0 Nos																																																																															
																				ACSR 100sq mm/1.782km																																																																															
																				ACSR 50sq mm/2.18km																																																																															
																				ACSR 30sq mm/1.518km																																																																															
																				ACSR 30sq mm/4.059km																																																																															
																				ACSR 50sq mm/8.35km																																																																															
																				ACSR 100sq mm/6.831km																																																																															
										CH:635+000										CH:640+000																																																																															
Transformer-1 set										EPS-2 Nos:LT Steel Pole-0 Nos:EPC-67 Nos:LTCon.Pole-2 Nos:LTwooden Pole-0Nos																																																																																									
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 TTC - Tech Studio of Engineering Nepal										IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section										SHEET TITLE: Schematic drawing of Electrical Work										SCALE: Not In Scale										NAME										SIGNATURE										REV NO.										DESCRIPTION										DATE: November, 2022									
																																																																																										DWG.NO.: 7									
																																																																																										SHEET NO.: 4									



CH:620+000

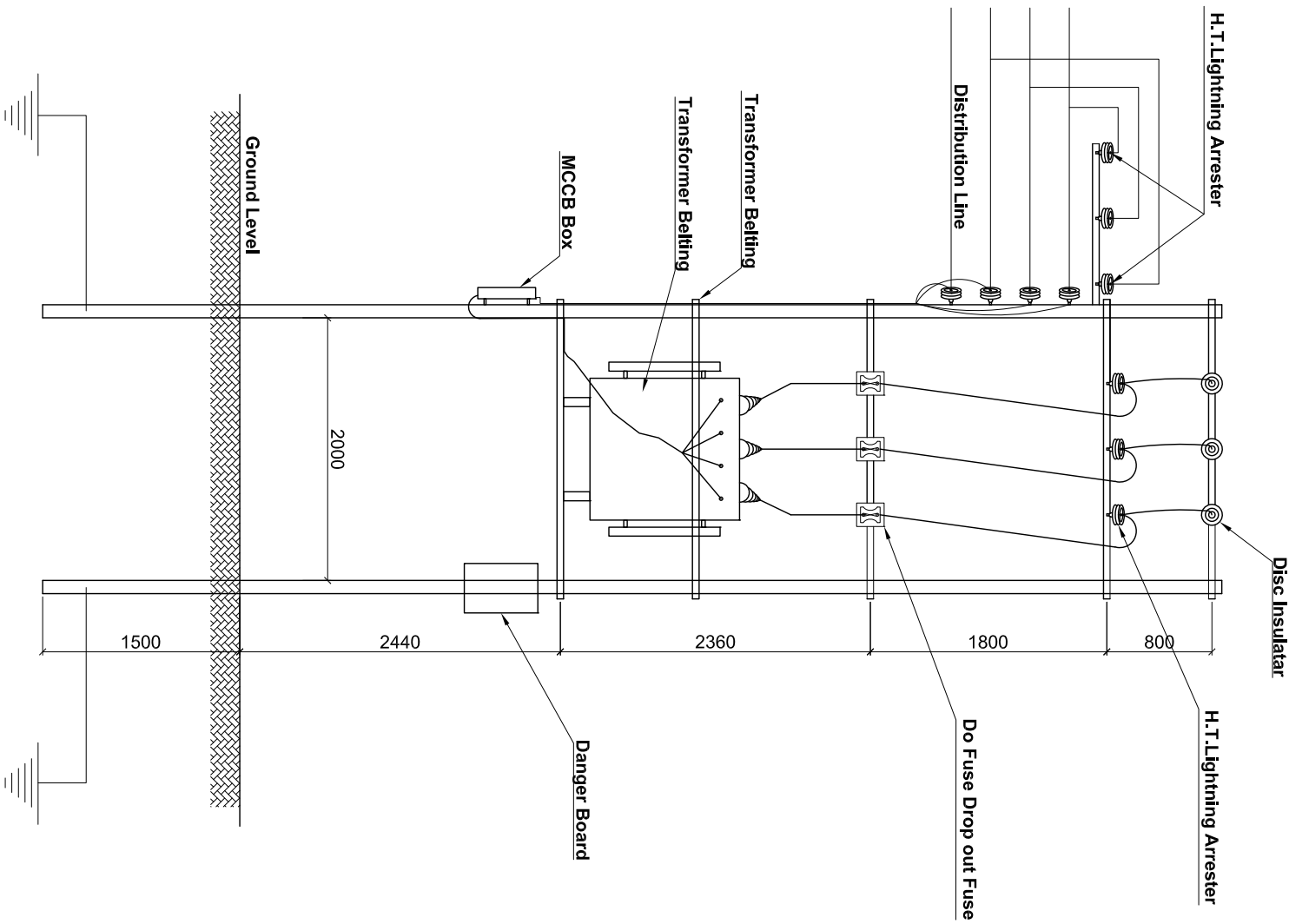
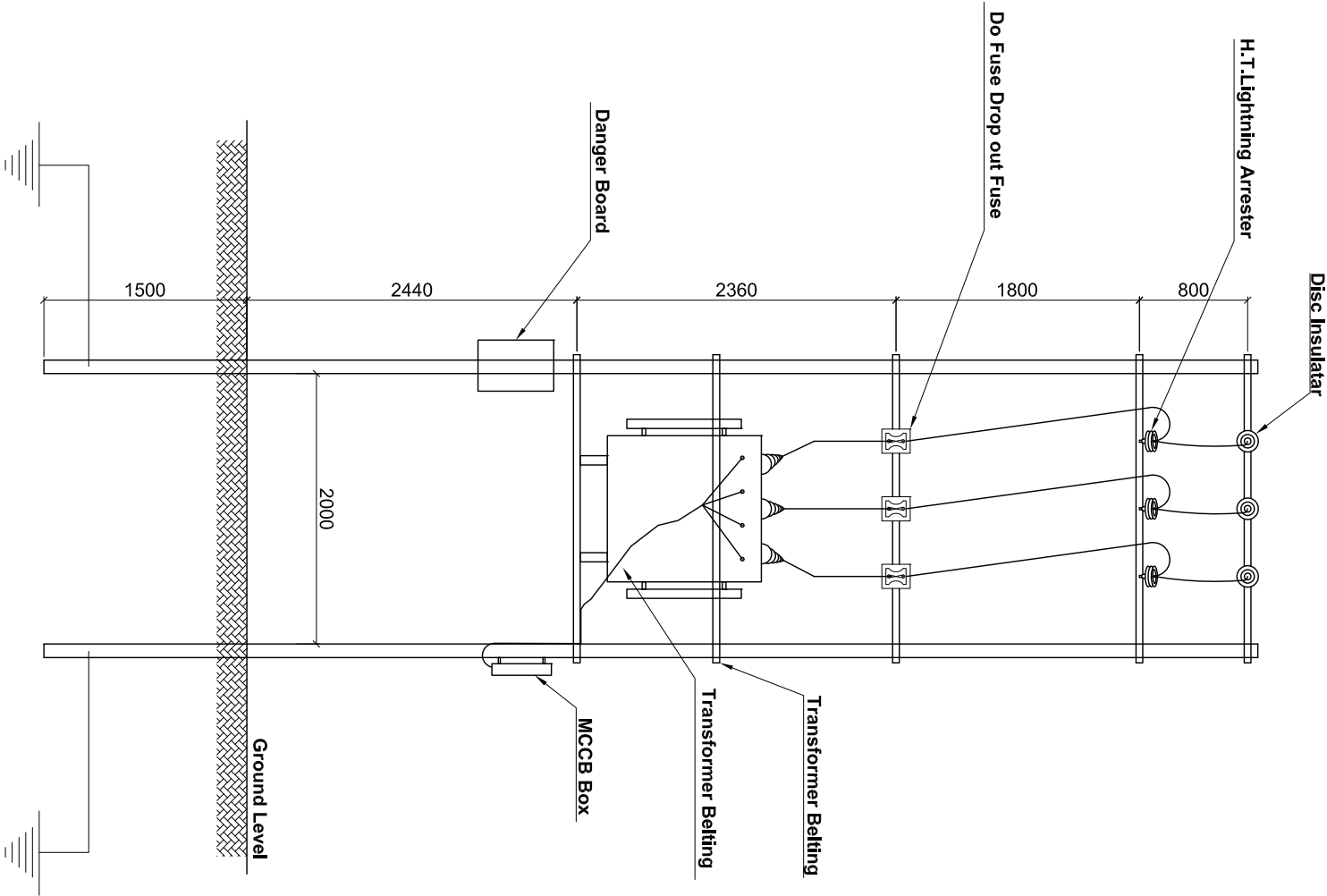
CH:625+000

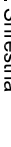


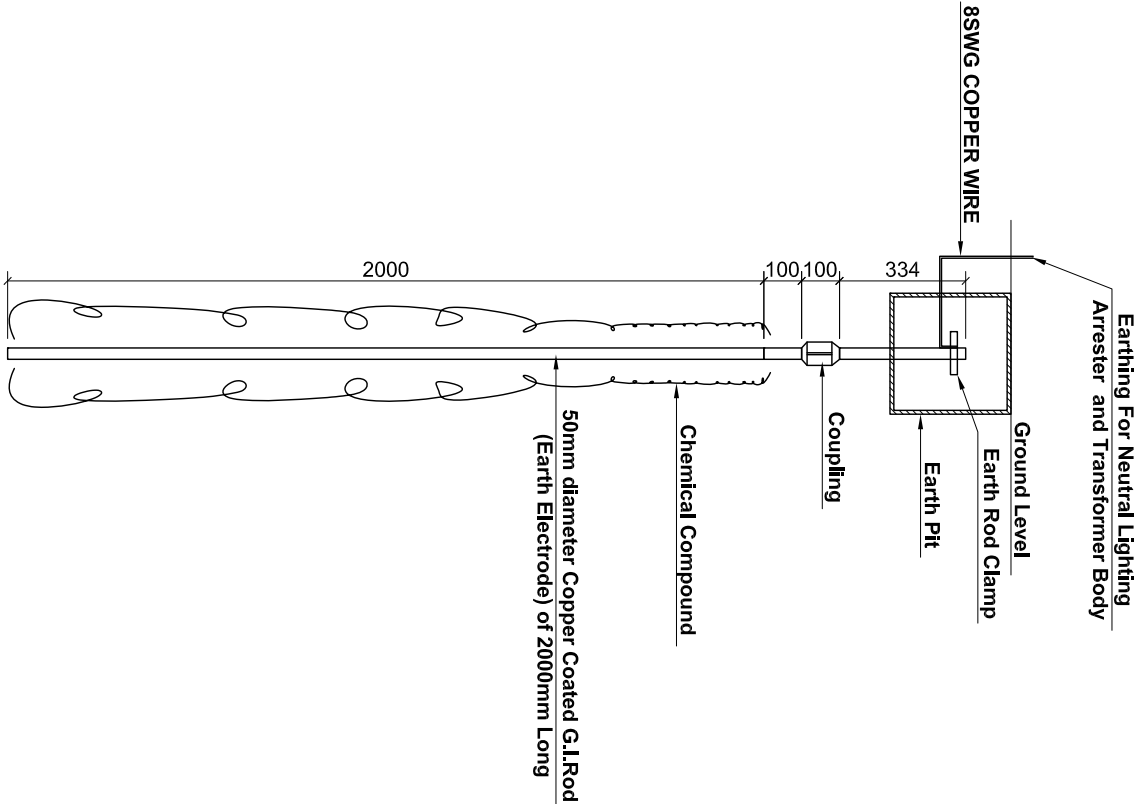
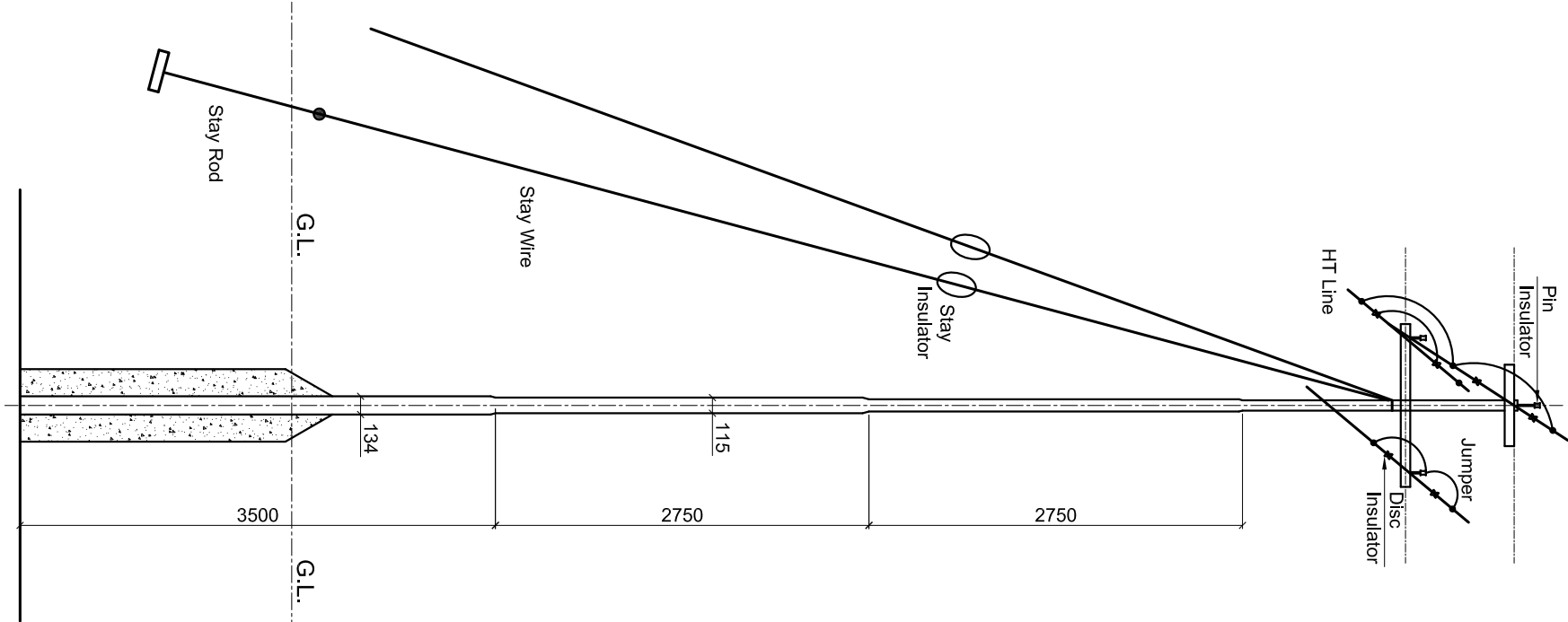
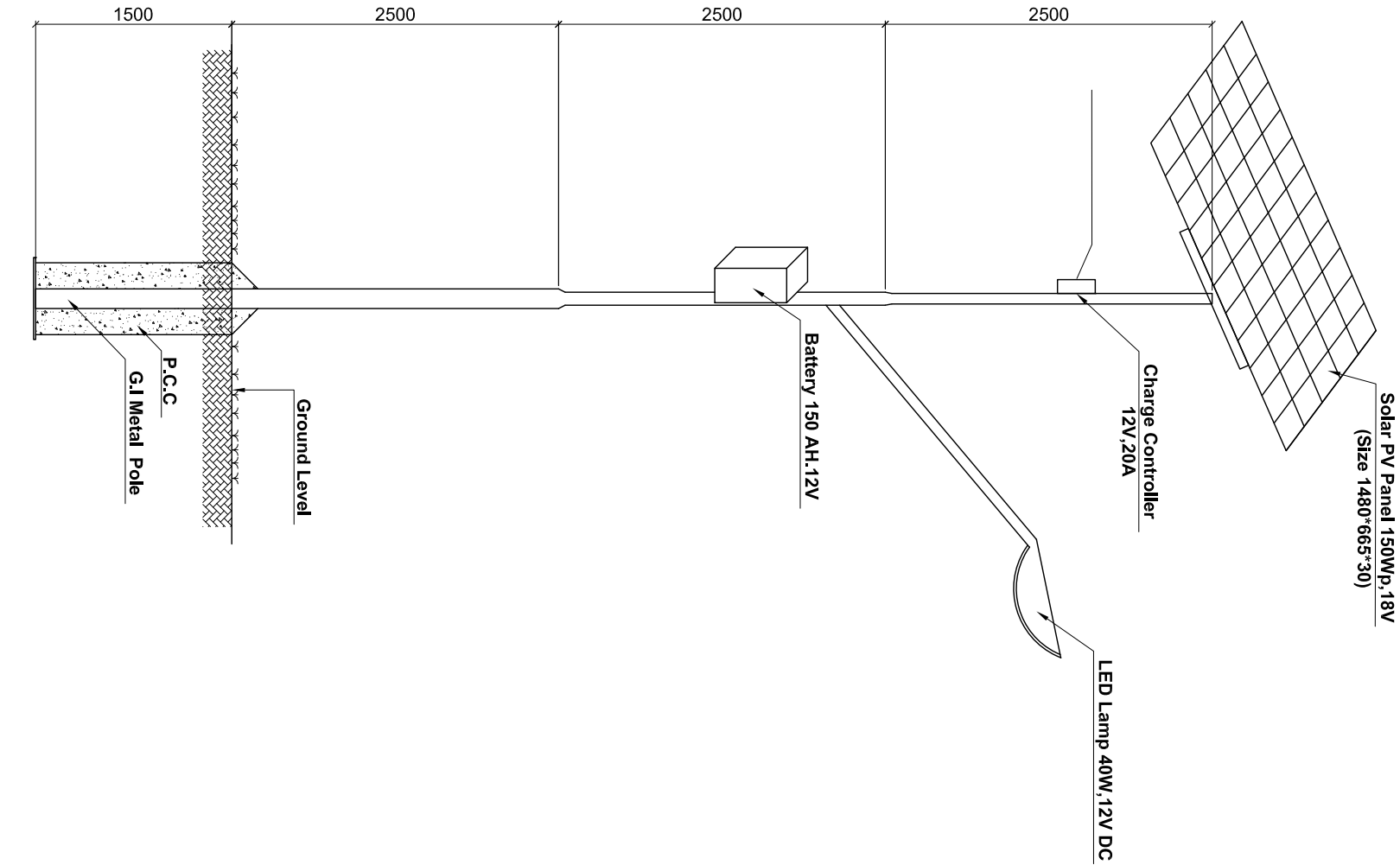
CH:625+000

CH:630+000

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: Schematic drawing of Electrical Work		SCALE:		DESIGNED BY:		CHECKED BY:		APPROVED BY:		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November, 2022		DWG.NO.: 7		SHEET NO.: 5	
---	--	--	--	-----------------------------------	--	---------------------------------------	--	-----------------------------	--	--	--	--------	--	--------------	--	-------------	--	--------------	--	------	--	-----------	--	---------	--	-------------	--	-------------------------	--	---------------	--	-----------------	--



Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		 Soosung Engineering Co. Ltd, Korea in association with ERM C P (Ltd), Nepal and JYR-Tech Studio of Engineering															
CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE:	
		DOR, DCID				1:5		DESIGNED BY:		S.B. Shrestha						November, 2022	
		ROAD NAME:		Transformer Details				CHECKED BY:		P. Upadhyaya						DWG.NO.: 7	
		East West Highway (H01)						APPROVED BY:		Dr. T.H.Choi						SHEET NO.: 6	
		Butwal - Gorusinghe Section															

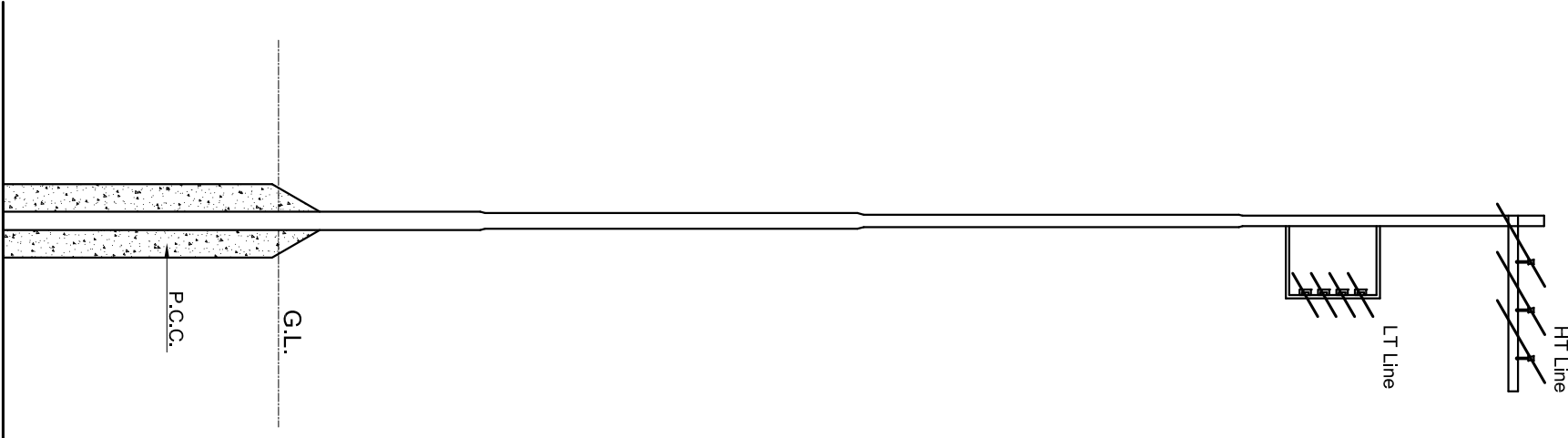
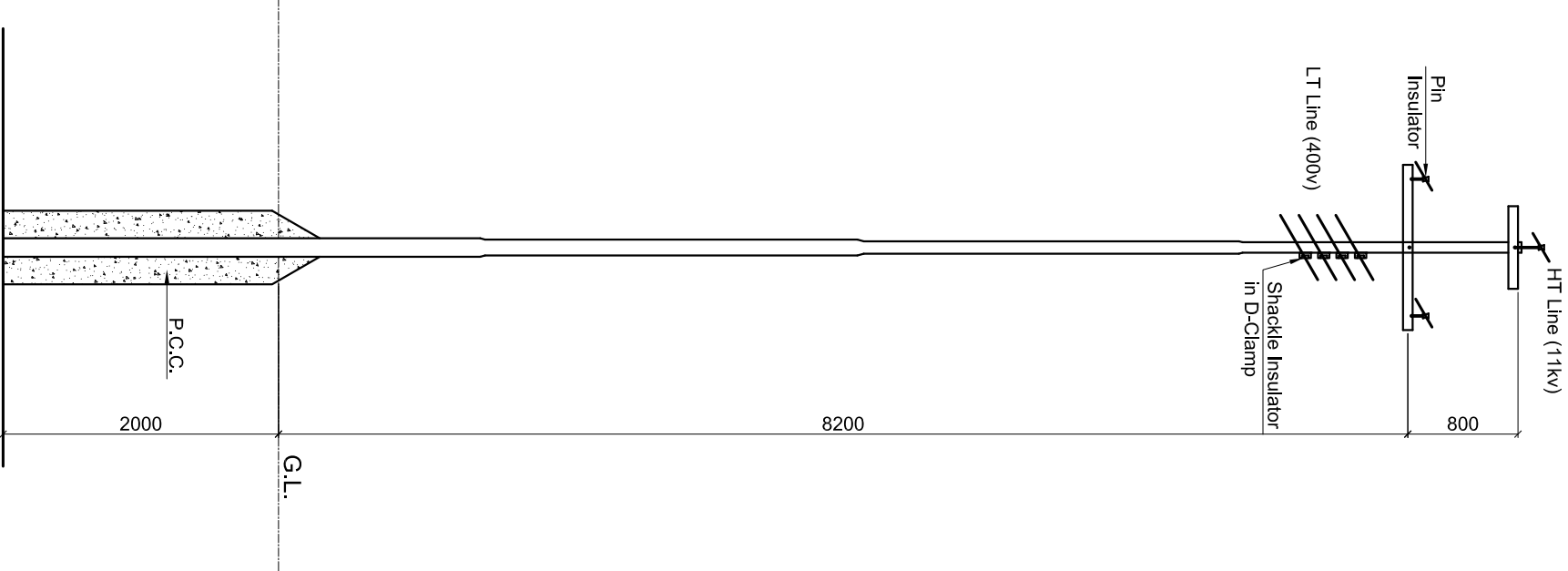


Typical Solar Street Light System

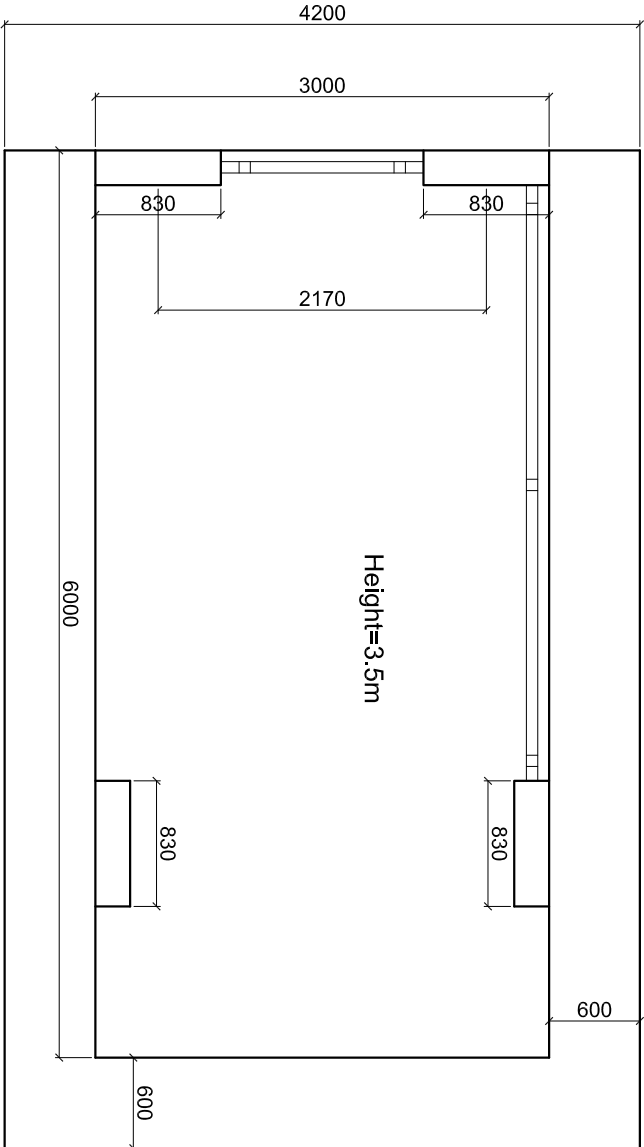
Dead-End Detail

Chemical Earthing Detail

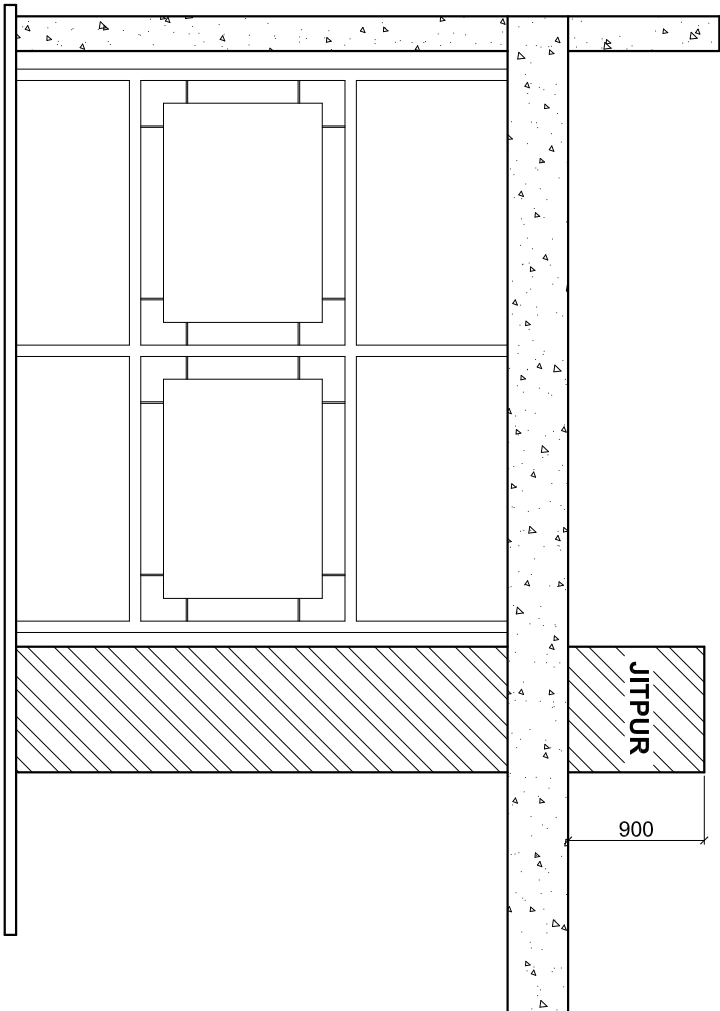
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE	REV NO.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



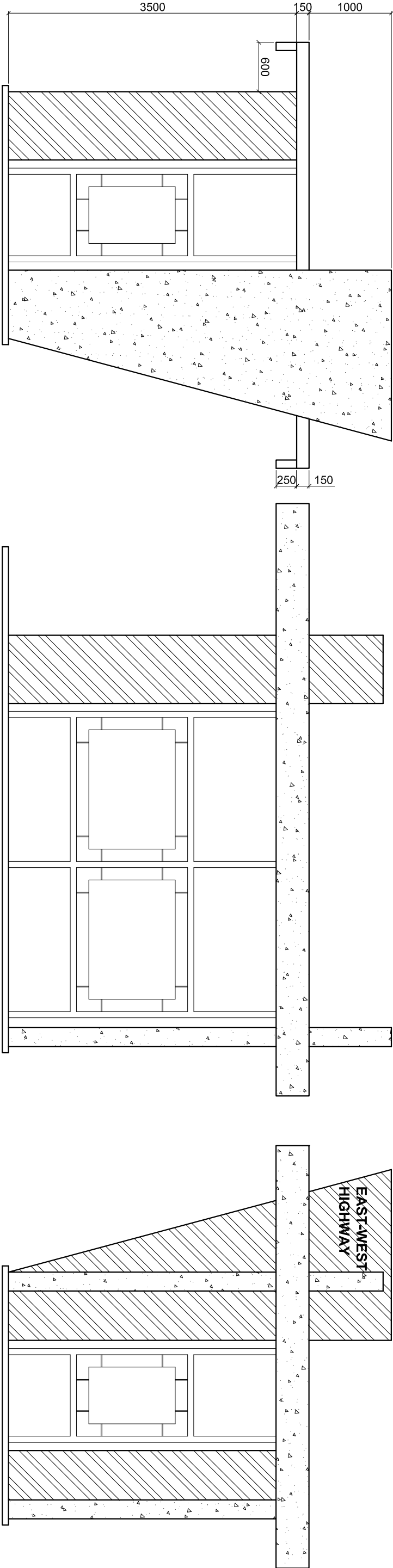
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP				CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERMCo P (Ltd), Nepal and  JYR -Tech Studio of Engineering			
IMPLEMENTING AGENCY:				SHEET TITLE:			
DOR, DCID				Typical Details of Electric Pole Erection 1:50			
ROAD NAME:							
East West Highway (H01)							
Butwal - Gorusinghe Section							
						SCALE:	
						NAME	
				DESIGNED BY:		S.B. Shrestha	
				CHECKED BY:		P. Upadhyaya	
				APPROVED BY:		Dr. T.H.Choi	
				SIGNATURE		REV NO.	
				DESCRIPTION		DATE:	
				DWG.NO.:		November, 2022	
				7			
				SHEET NO.:			
				8			



Plan
Scale:-1:50



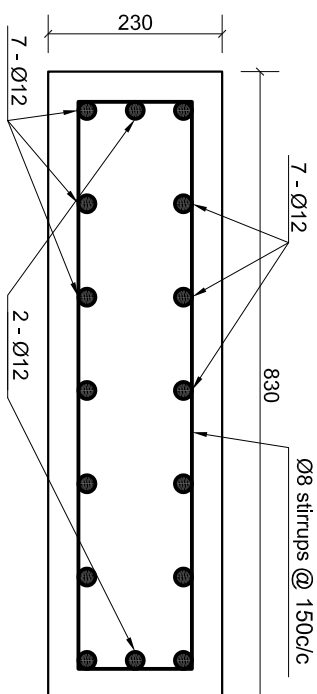
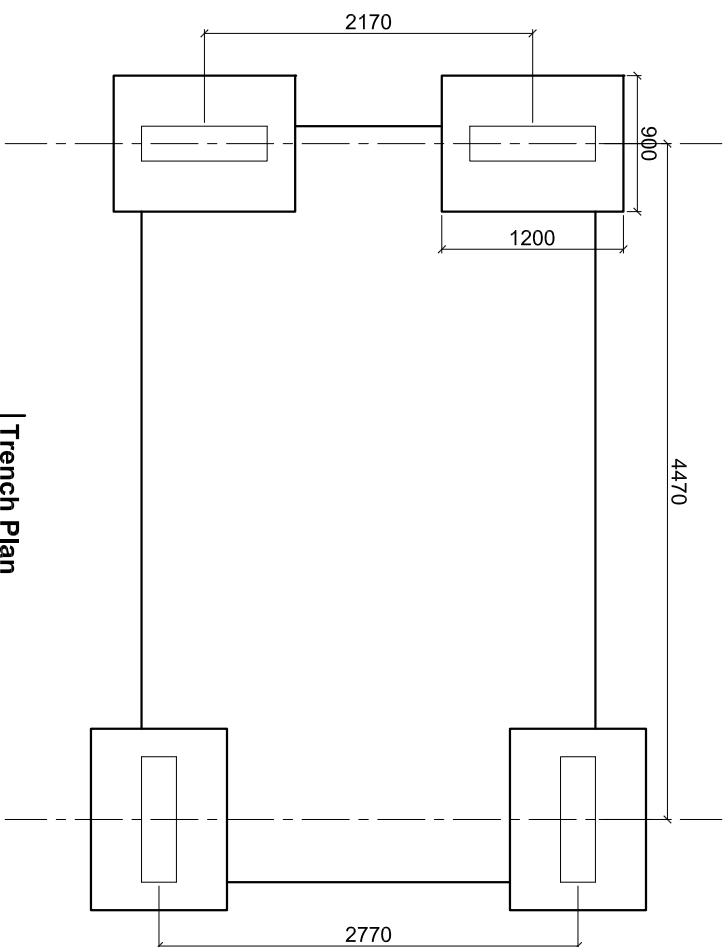
Front Elevation
Scale:-1:50



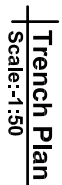
Side Elevation
Scale:-1:50

Back Elevation
Scale:-1:50

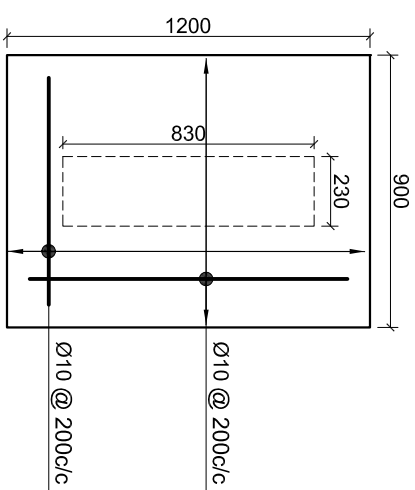
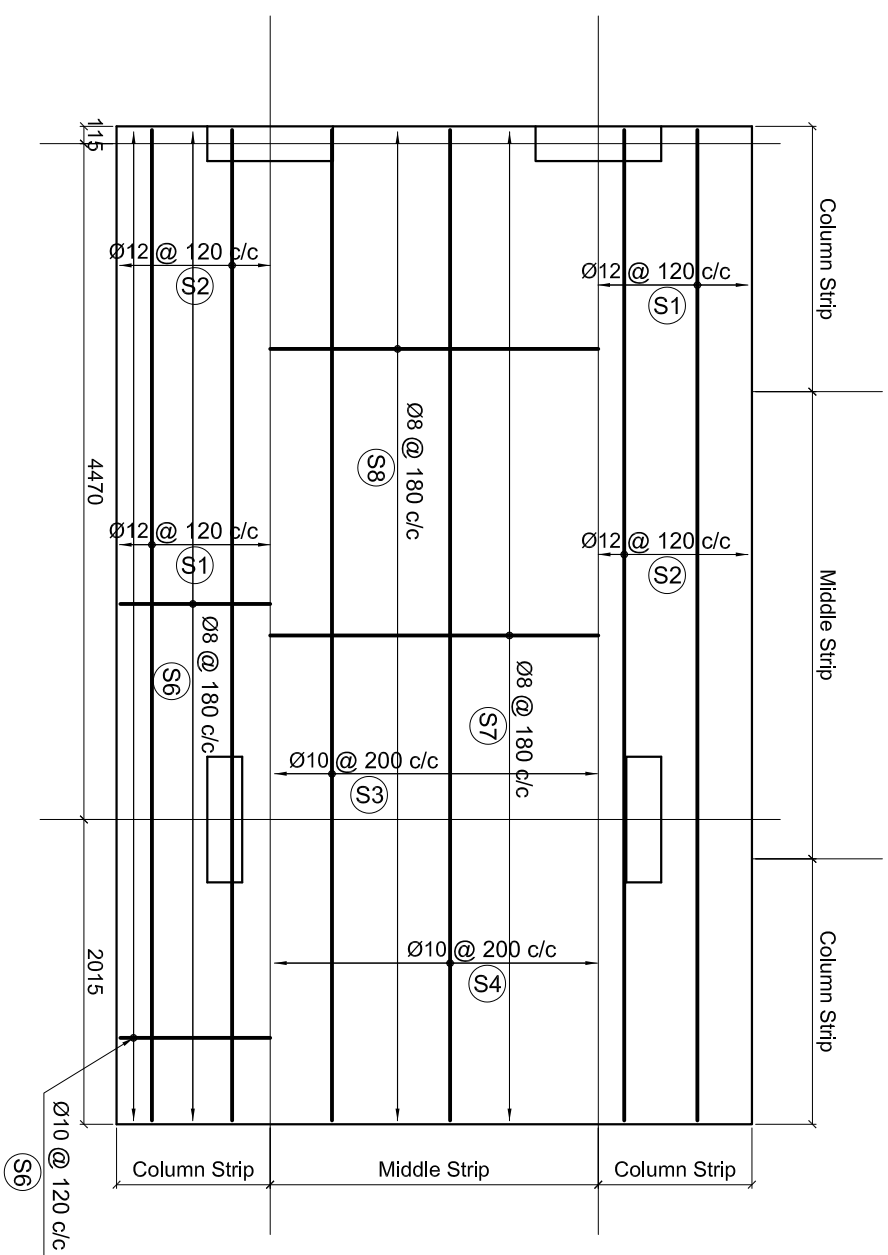
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT:  Soosung Soosung Engineering Co. Ltd, Korea in association with ERM/C P (Ltd), Nepal and JYK - Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID		SHEET TITLE: Bus Shed Details		SCALE: As Shown		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November, 2022	
ROAD NAME: East West Highway (H01)										DESIGNED BY: S.B. Shrestha									
Butwal - Gorusinghe Section										CHECKED BY: P. Upadhyaya									
										APPROVED BY: Dr. T.H.Choi									
																		SHEET NO.: November, 2022 8	
																		SHEET NO.: 1	



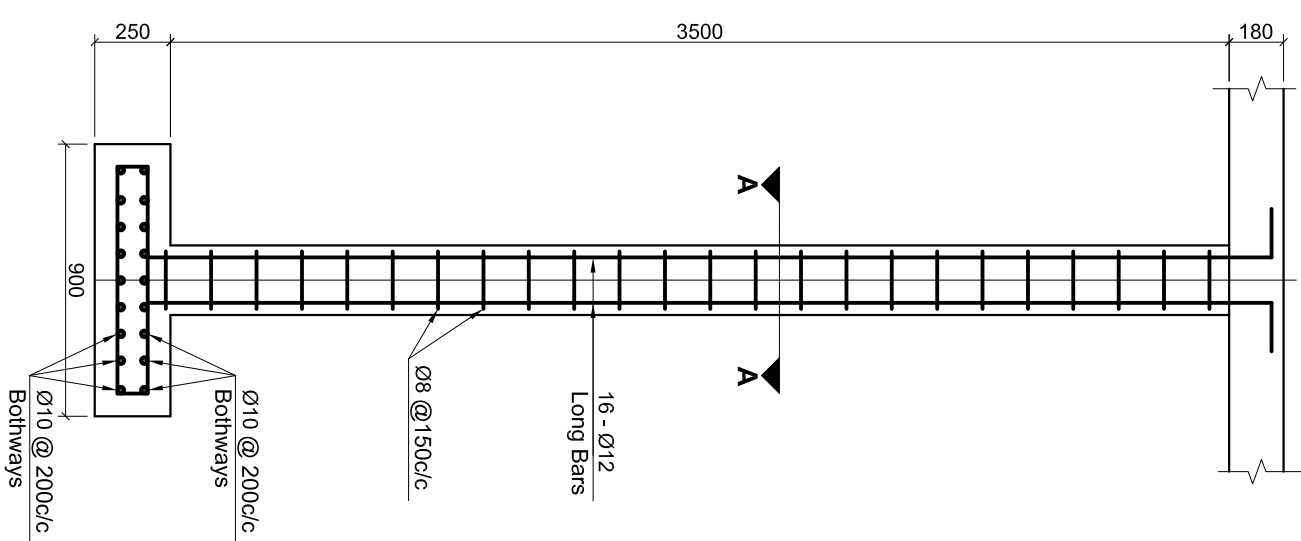
Column Detail
 Scale:-1:10



Scale:-1:50



Foundation Plan
Scale:-1:25

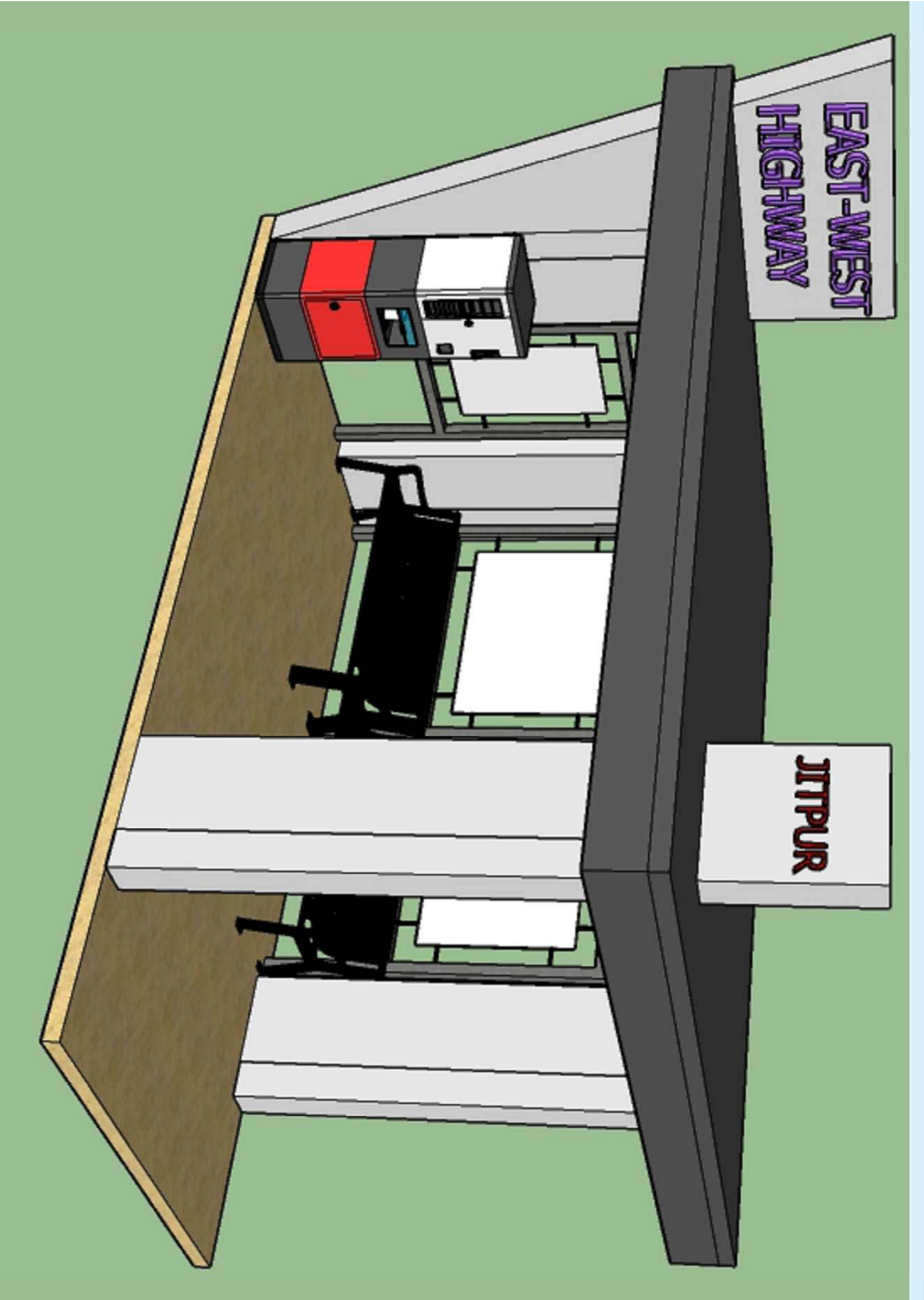


Column Detail
 Scale:-1:25

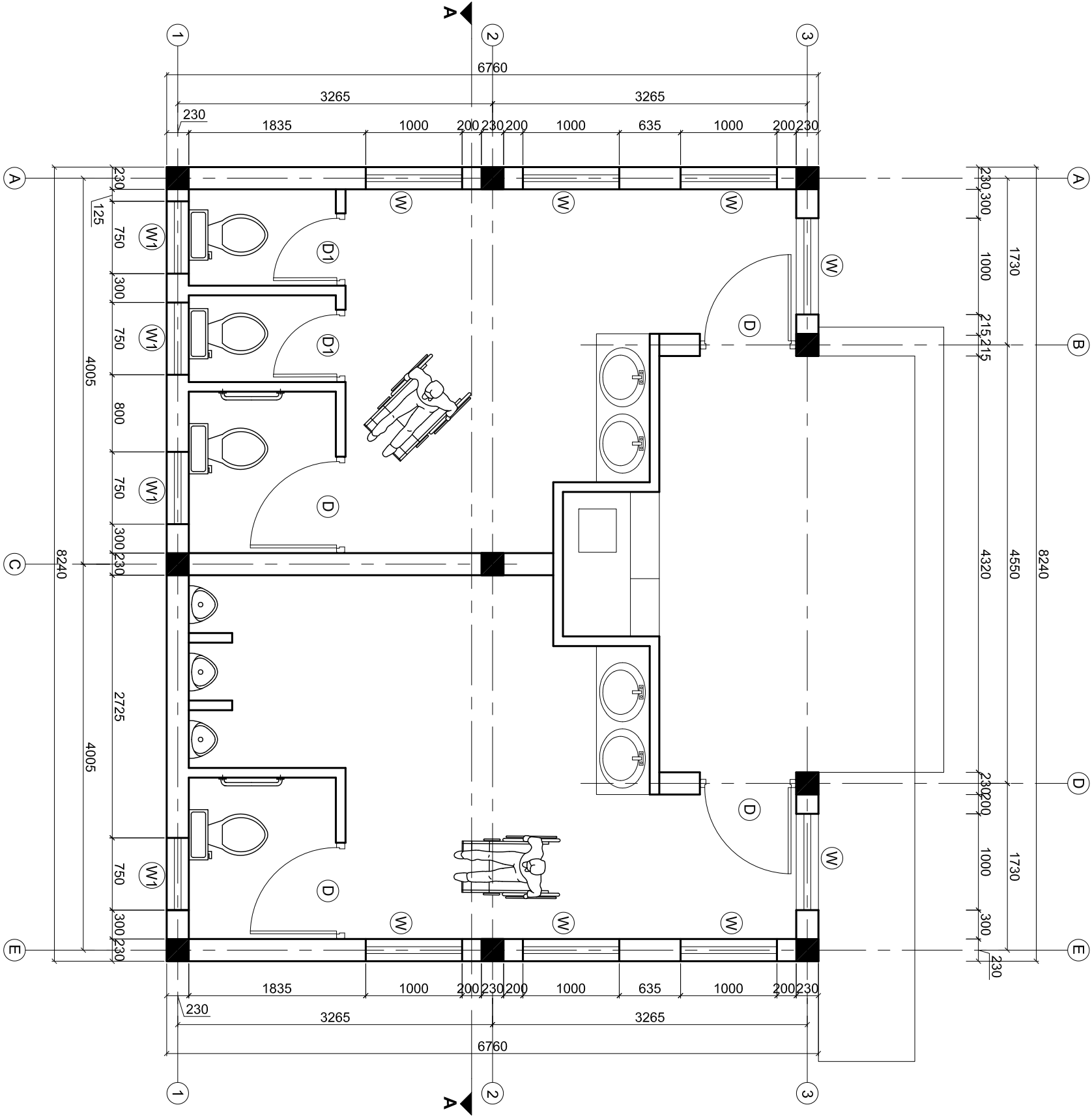
Slab Reinforcement (Plan)

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-NEP			CONSULTANT:  Soosung Engineering Co., Ltd, Korea In association with ERMC P (Ltd), Nepal and  JYEE-Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: Bus Shed Details		SCALE: As Shown		DESIGNED BY: S.B. Shrestha		CHECKED BY: P. Upadhyaya		APPROVED BY: Dr. T.H.Choi		SIGNATURE   		REV. NO.		DESCRIPTION		DATE: November, 2022		DWG.NO.: 8		SHEET NO.: 2	
--	--	--	--	--	---	--	--------------------------------------	--	------------------------	--	-------------------------------	--	-----------------------------	--	------------------------------	--	--	--	----------	--	-------------	--	-------------------------	--	---------------	--	-----------------	--



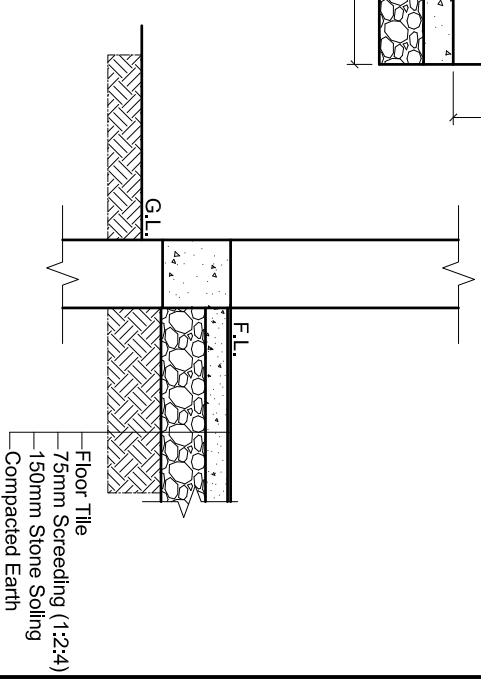
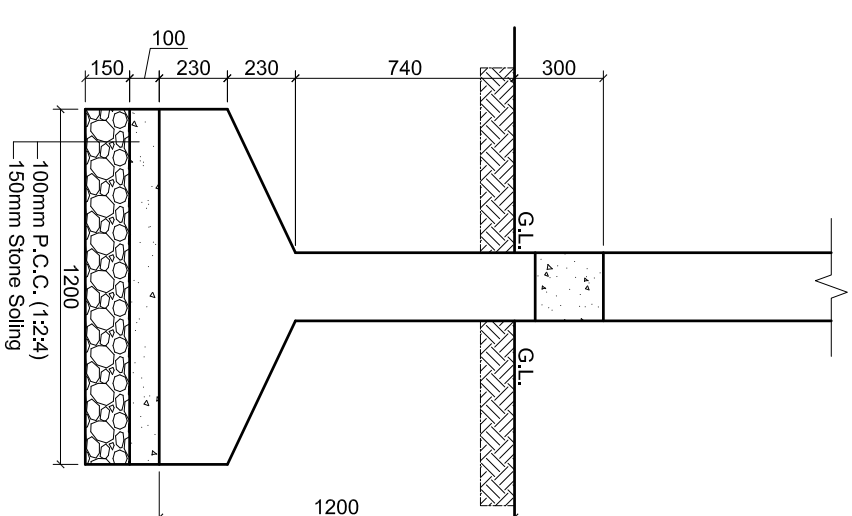
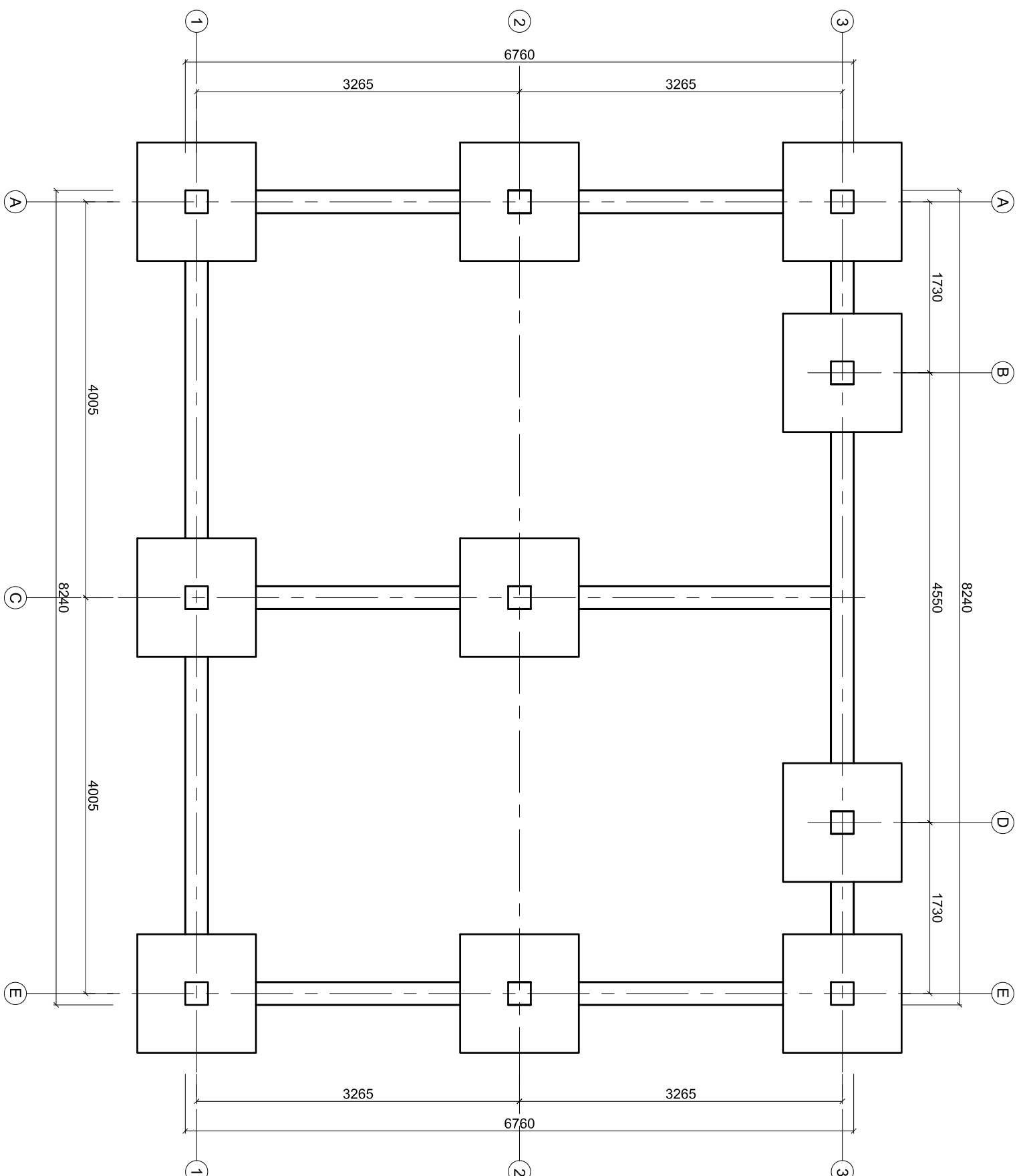
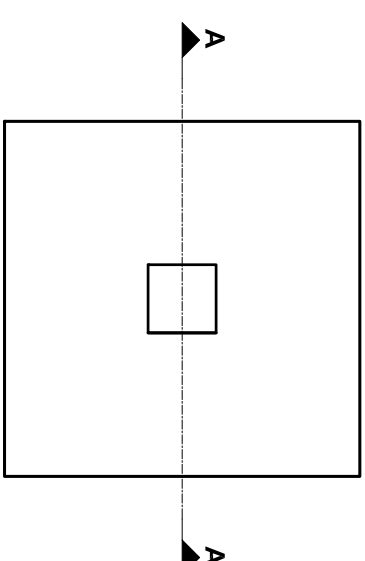
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with  ERMIC P (Ltd), Nepal and  JTC - Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorurunghe Section		SHEET TITLE: Bus Shed (3D Image)		SCALE:		DESIGNED BY: CHECKED BY: APPROVED BY:		NAME S.B. Shrestha P. Upadhyaya Dr. T.H.Choi		SIGNATURE   		REV NO.		DESCRIPTION		DATE: November, 2022	
																DWG.NO.: 8					
																		SHEET NO.: 3			



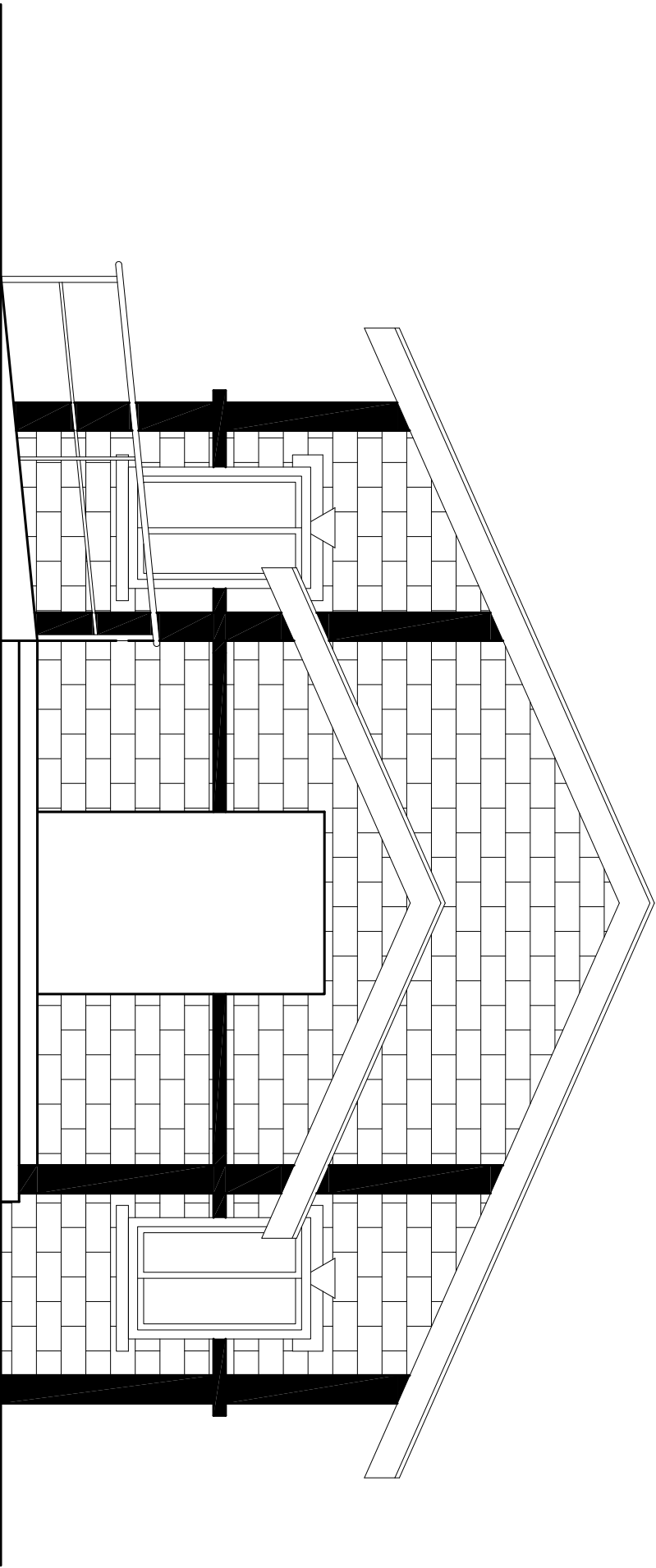
Ground Floor Plan (Area:- 55.70 sq.m.)

Scale:-1:50

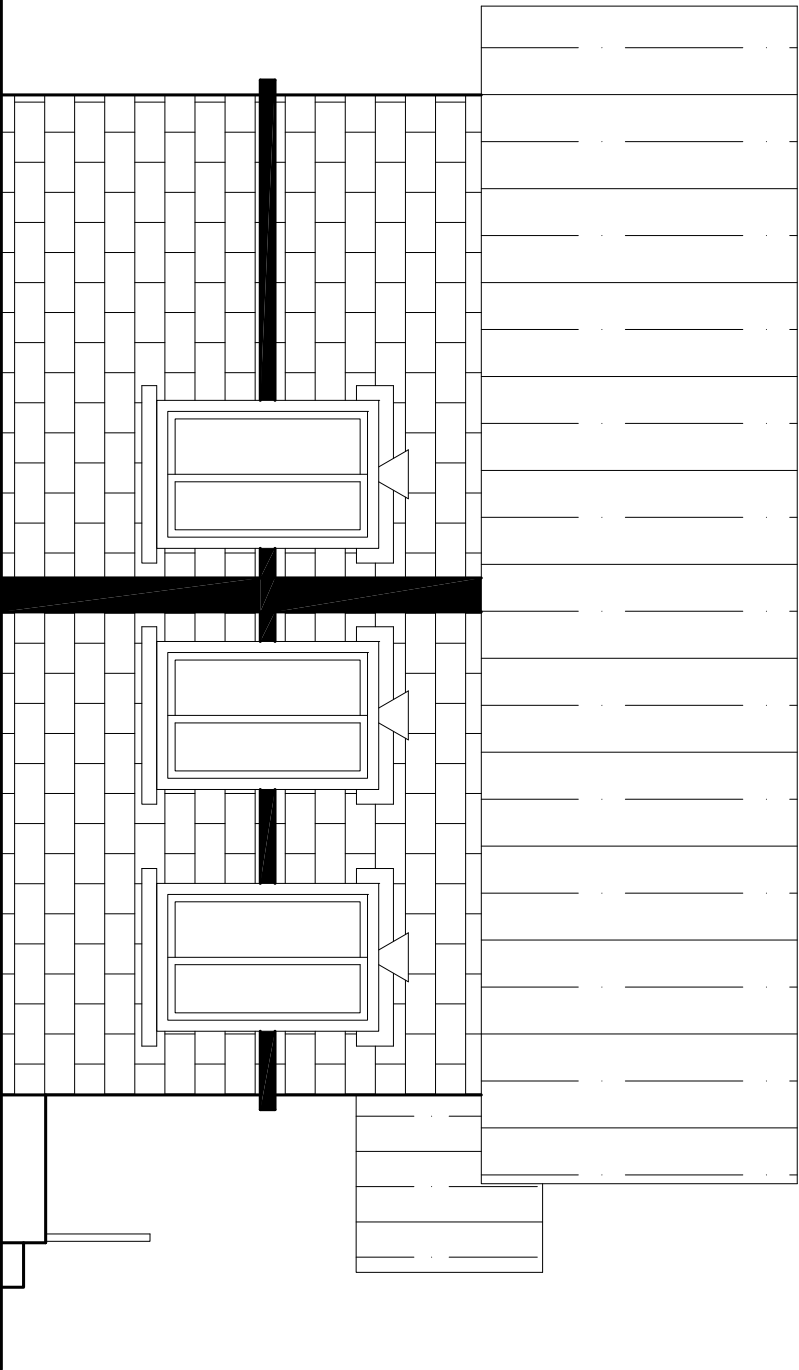
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP		CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM P (Ltd), Nepal and  JYK-Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID		SHEET TITLE: ROAD NAME: East West Highway (H01)		SCALE: Smart Toilet Details		As Shown		DESIGNED BY: S.B. Shrestha		CHECKED BY: P. Upadhyaya		APPROVED BY: Dr. T.H. Choi		SIGNATURE 		REV NO.		DESCRIPTION		DATE: November, 2022	
																						DWG.NO.: 10			
				Butwal - Gorusinghe Section																		SHEET NO.: 1			



Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No. 3722-NEP		CONSULTANT:	Soosung Engineering Co. Ltd, Korea In association with ERMC P (Ltd), Nepal and JYJ-Tech Studio of Engineering		IMPLEMENTING AGENCY:	DOR, DCID		ROAD NAME:	East West Highway (H01)		Butwal - Gorusinghe Section		SHEET TITLE:	Smart Toilet Details		SCALE:	As Shown		DESIGNED BY:	S.B. Shrestha		SIGNATURE	Rev No.		Description		DATE:	November, 2022		DWG.NO.:	10		SHEET NO.:	2	
---	--	-------------	---	--	----------------------	-----------	--	------------	-------------------------	--	-----------------------------	--	--------------	----------------------	--	--------	----------	--	--------------	---------------	--	-----------	---------	--	-------------	--	-------	----------------	--	----------	----	--	------------	---	--

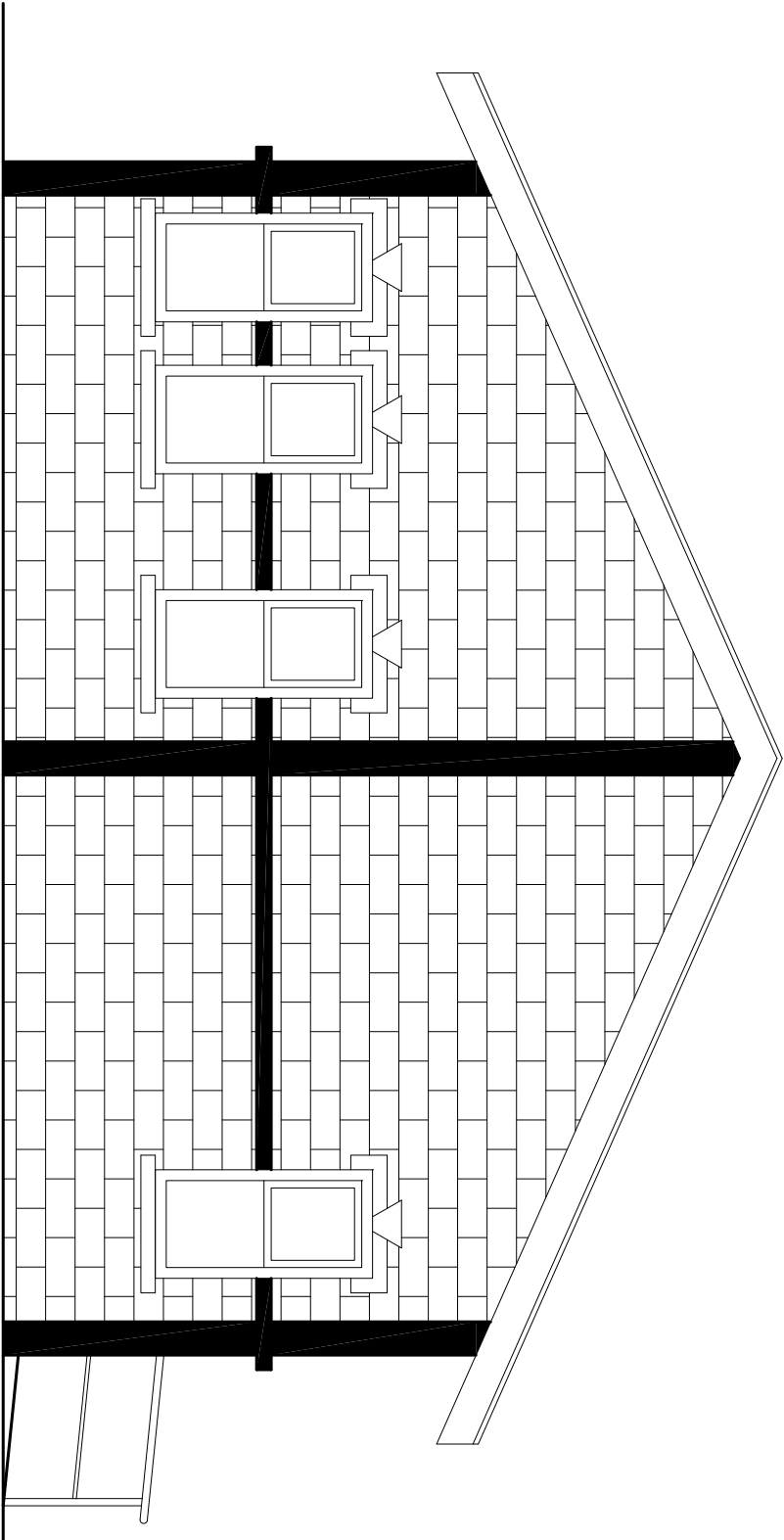


Front Elevation
Scale:-1:50



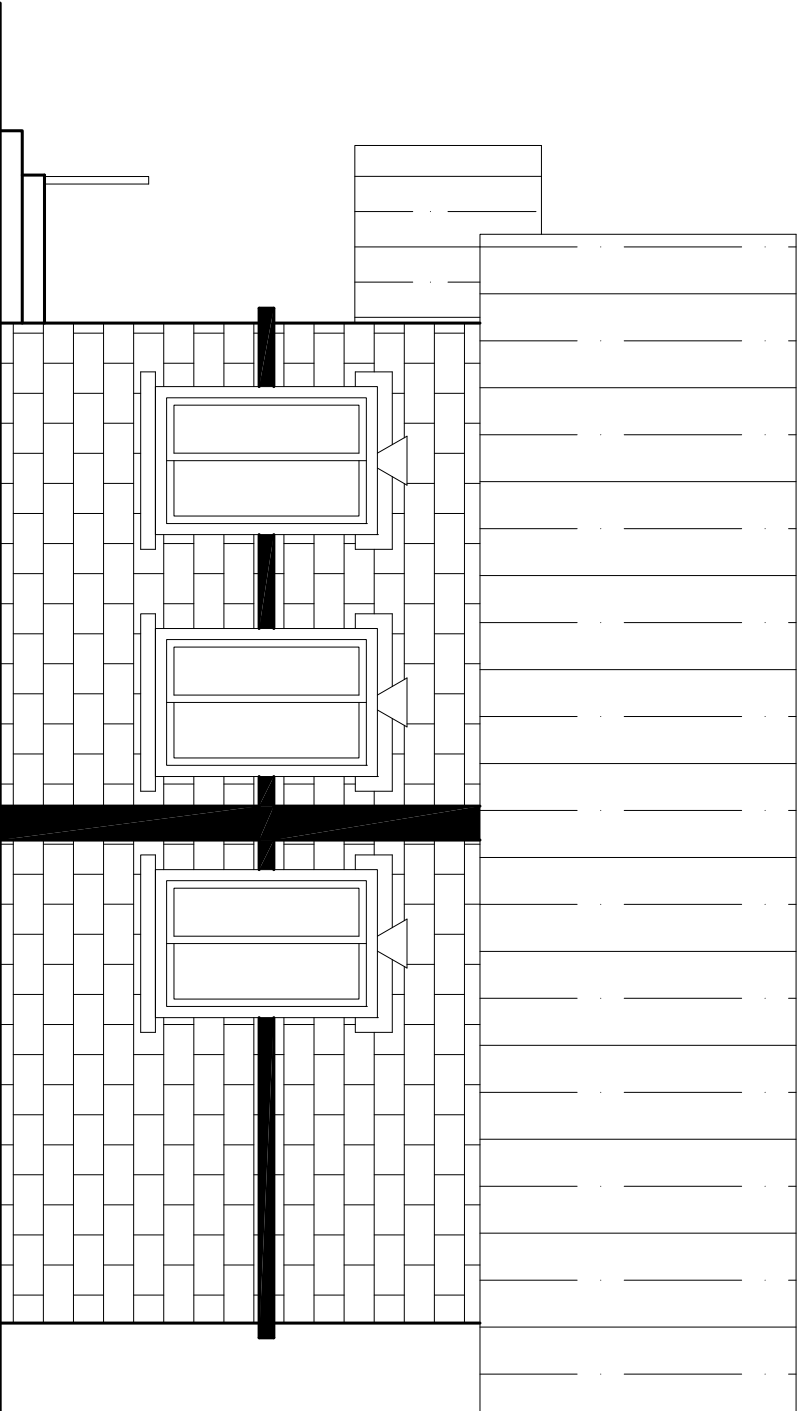
Side Elevation
Scale:-1:50

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-NP		 CONSULTANT: Soosung Soosung Engineering Co. Ltd, Korea in association with ERMCO P (Ltd), Nepal and  JYK-Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID ROAD NAME: East West Highway (H01) Butwal - Gorusinghe Section		SHEET TITLE: <	
--	--	--	--	--	--	--	--



Back Elevation

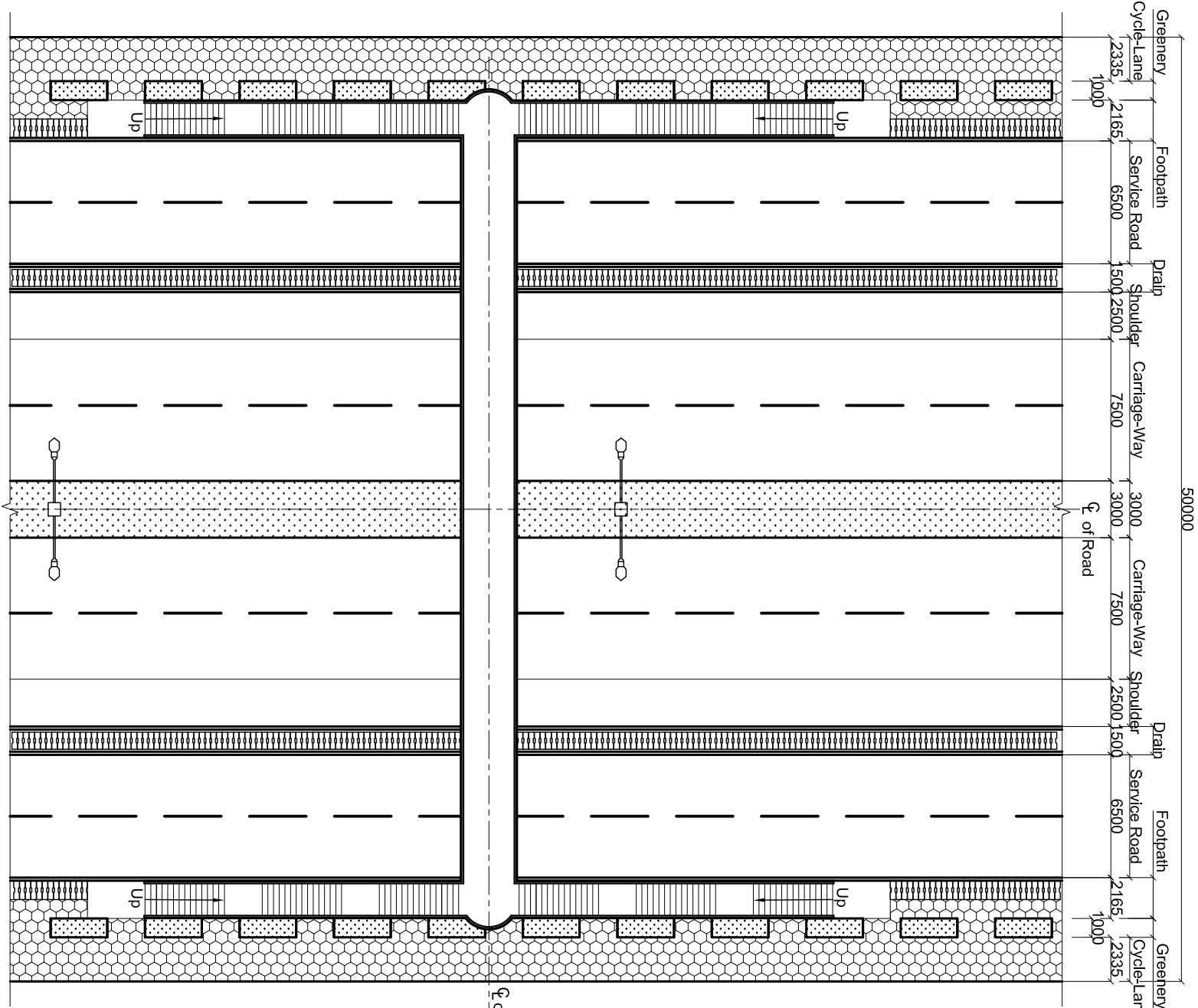
Scale:-1:50



Side Elevation

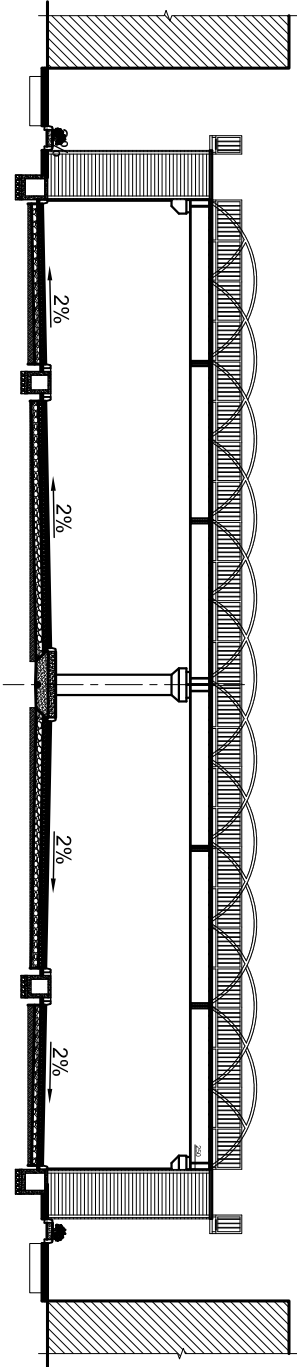
Scale:-1:50

Government of Nepal Ministry of Physical Infrastructure and Transport		CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE:
Department of Roads		Soosung Engineering Co. Ltd,		DOR, DCID						S.B. Shrestha					November, 2022
Project Directorate Office (ADB)		Korea In association with		ROAD NAME:		Smart Toilet Details		As Shown		P. Upadhyaya					
SASEC Highway Improvement Project-		ERM C P (Ltd), Nepal		East West Highway (H01)						APPROVED BY:					
Project Preparatory Consultant (SHIP-PPC)		and		Butwal - Gorusinghe Section						Dr. T.H. Choi					
ADB Loan No: 3722-NP		JYU-Tech Studio of Engineering													SHEET NO.: 10
															SHEET NO.: 4



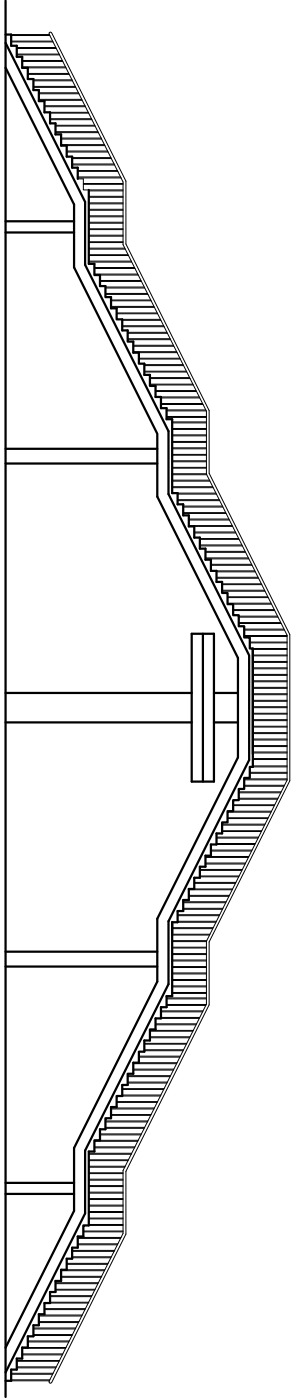
Typical Plan of Pedestrian Crossing

Scale:-1:300



Typical Elevation of Pedestrian Crossing

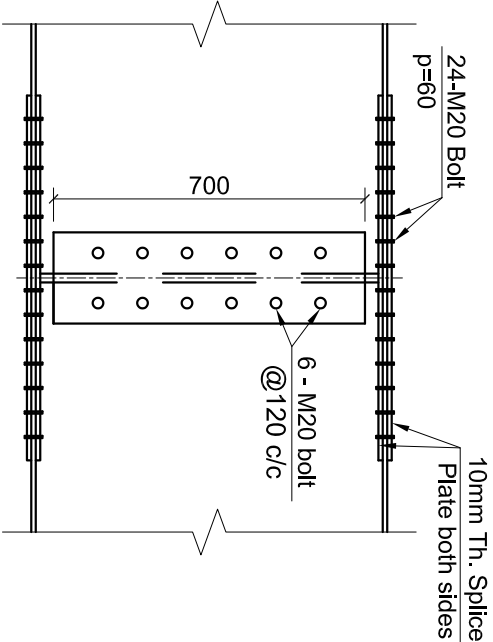
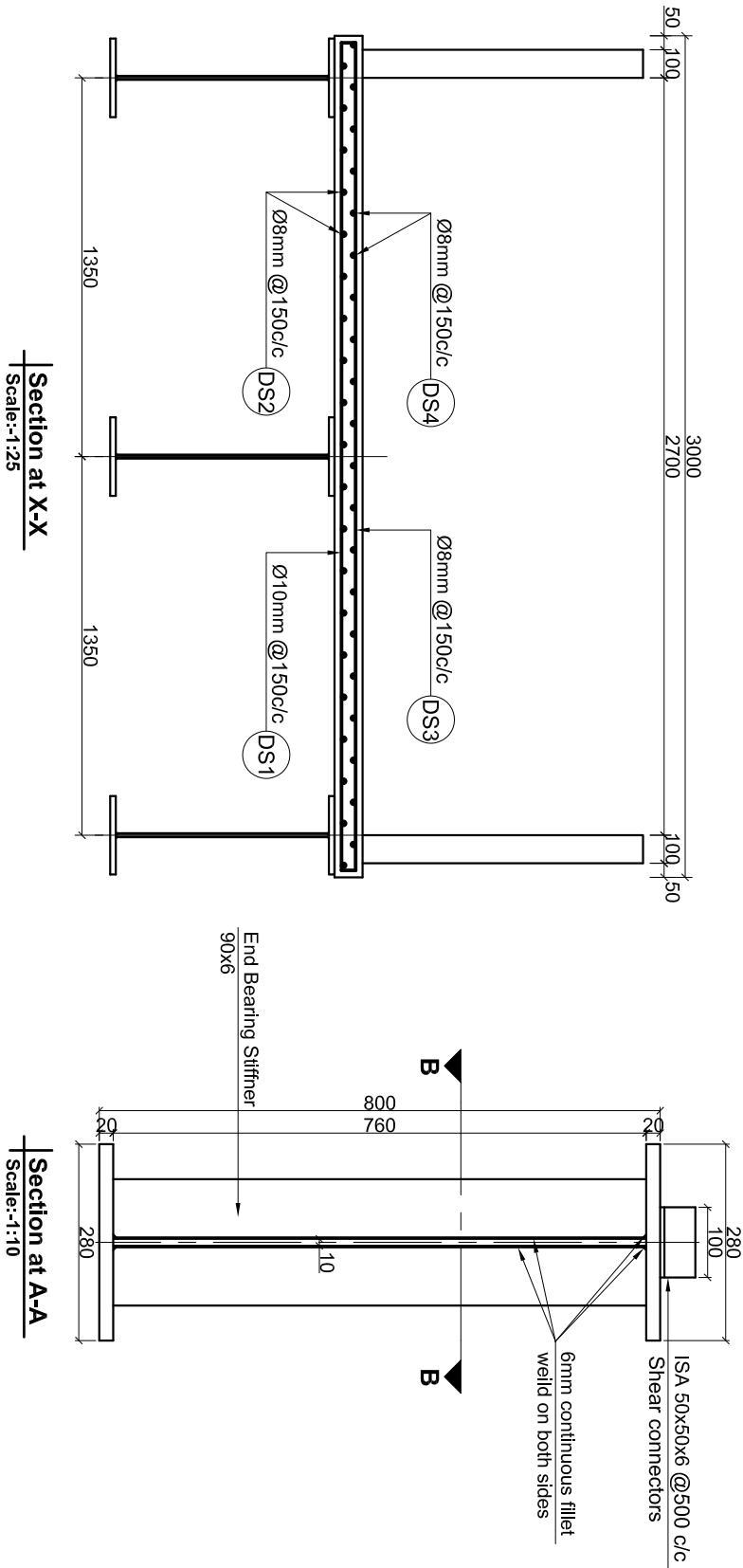
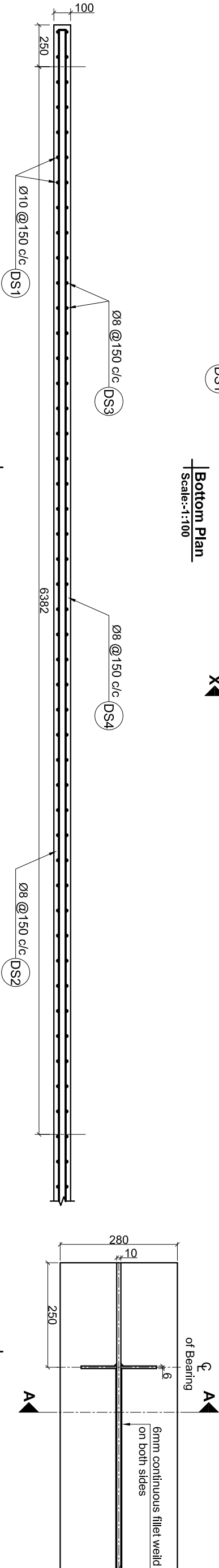
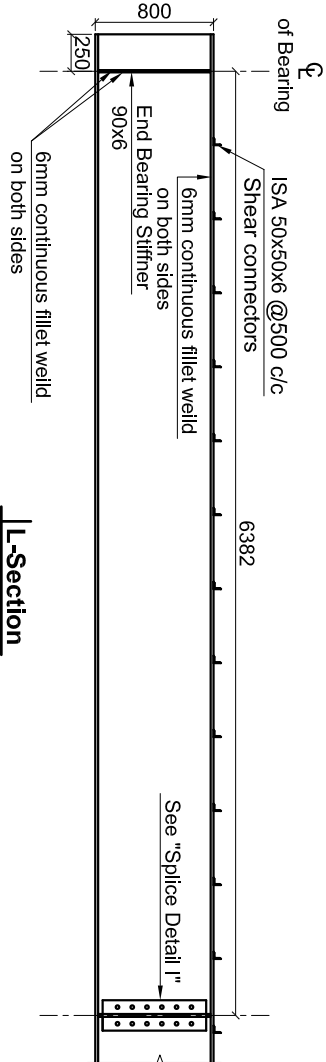
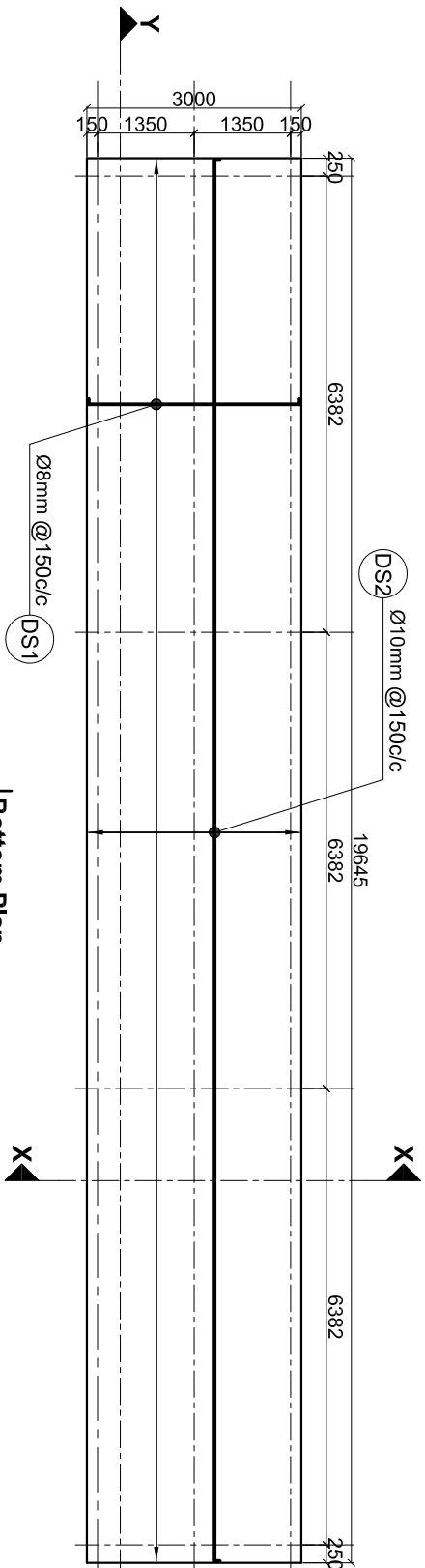
Scale:-1:300



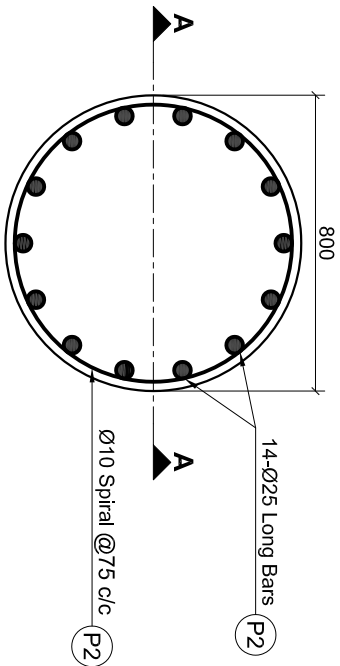
Typical Elevation of Pedestrian Crossing

Scale:-1:200

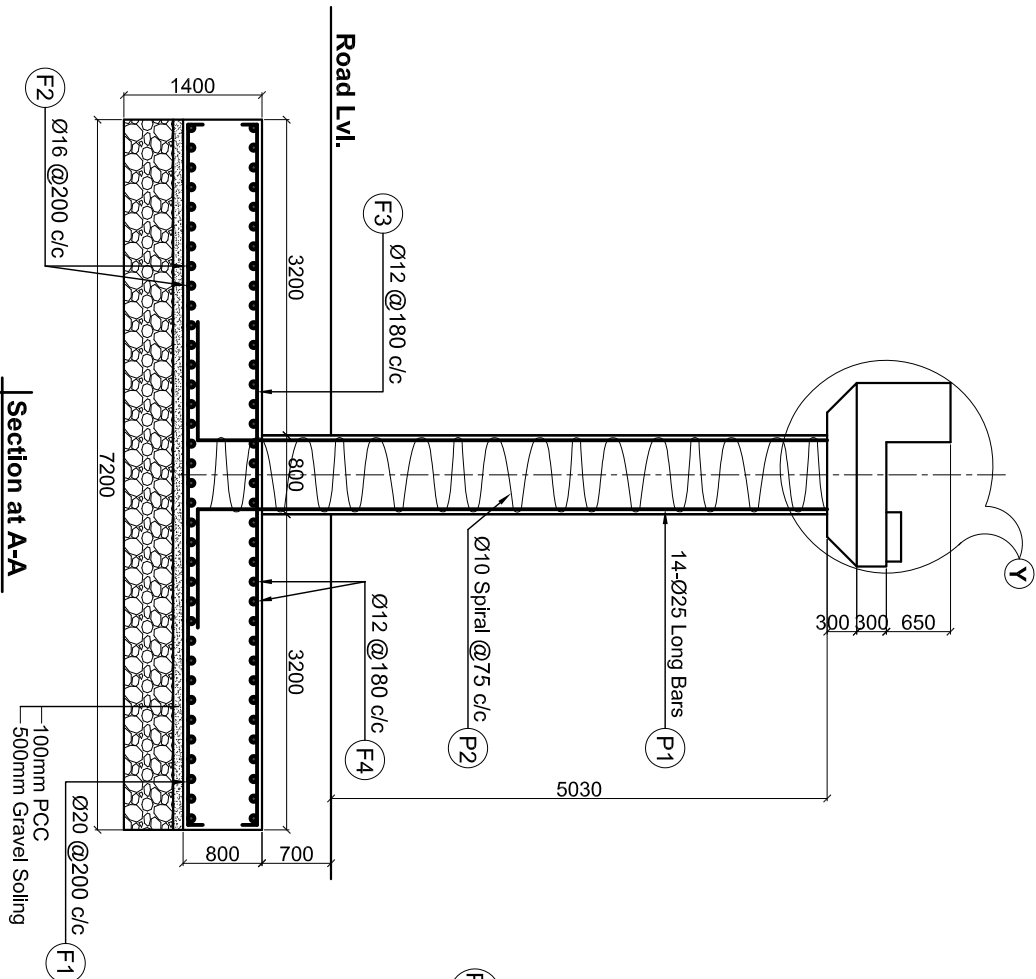
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with  ERM C P (Ltd), Nepal and  JYK-Tech Studio of Engineering	IMPLEMENTING AGENCY: DOR, DCID	SHEET TITLE: Pedestrian Crossing	SCALE: 1:300	DESIGNED BY: S.B. Shrestha	NAME	SIGNATURE 	REV NO.	DESCRIPTION	DATE: November, 2022				
											ROAD NAME: East West Highway (H01)	CHECKED BY: P. Upadhyaya	APPROVED BY: Dr. T.H.Choi	SHEET NO.: 1



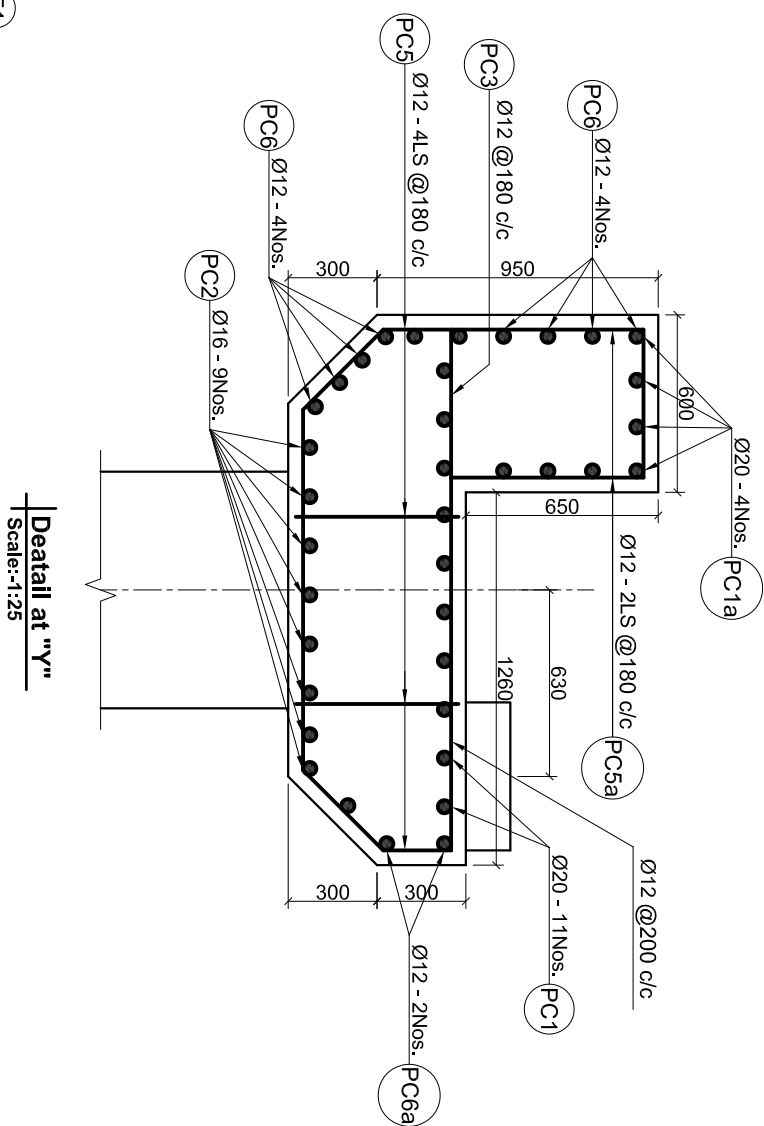
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with ERM P (Ltd), Nepal and JYK-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.: 11
		East West Highway (H01)		Pedestrian Crossing Detail		P. Upadhyaya				SHEET NO.: 2							
		Butwal - Gorusinghe Section															



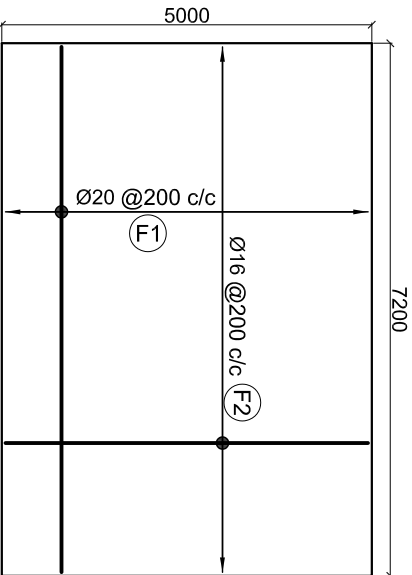
Plan of Column (C1)
Scale:-1:20



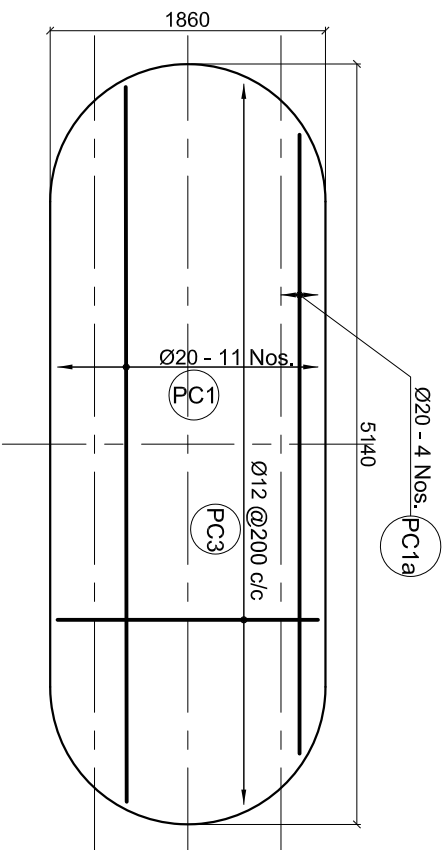
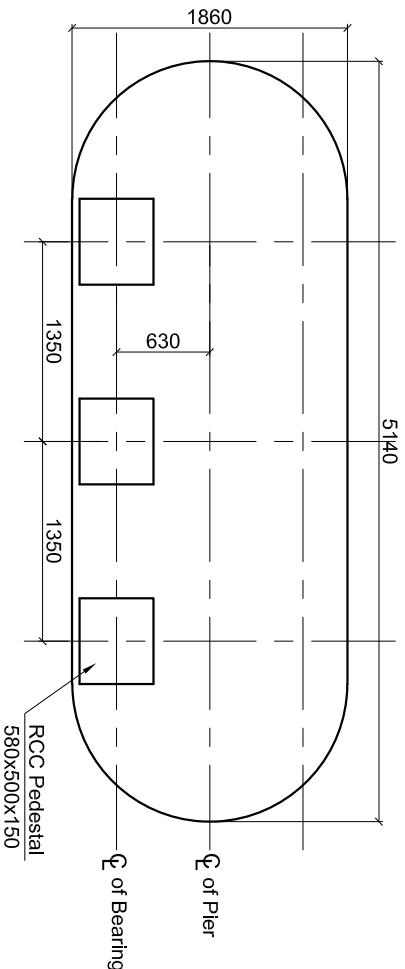
Section at A-A
Scale:-1:75



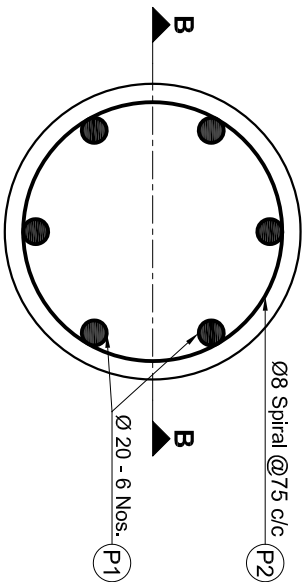
Detail at "Y"
Scale:-1:25



Bottom Plan
Scale:-1:100

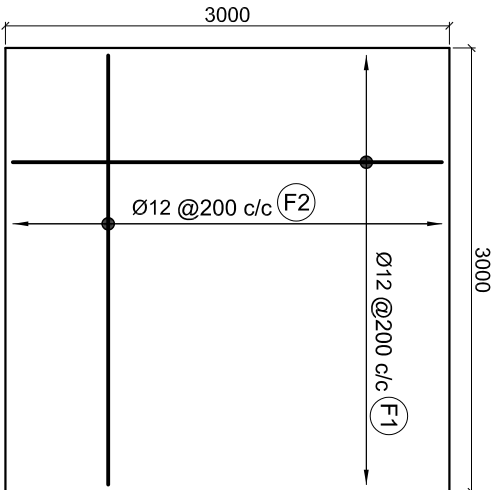


Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NEP	CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022 DWG.NO.: 11 SHEET NO.: 3
	Soosung Soosung Engineering Co. Ltd, Korea In association with ERMCo P (Ltd), Nepal and Jyoti-Tech Studio of Engineering		DOR, DCID		ROAD NAME:		Pedestrian Crossing Detail		As Shown		DESIGNED BY:	REV NO.	DESCRIPTION	
			East West Highway (H01)								CHECKED BY:	REV NO.	DESCRIPTION	
			Butwal - Gorusinghe Section								APPROVED BY:	REV NO.	DESCRIPTION	



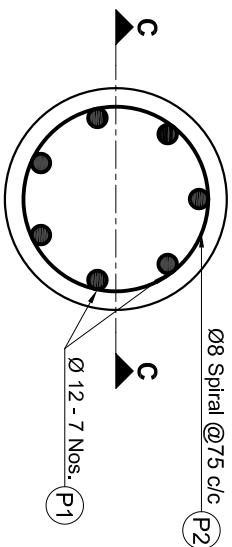
Plan of Column (C2)

Scale:-1:10



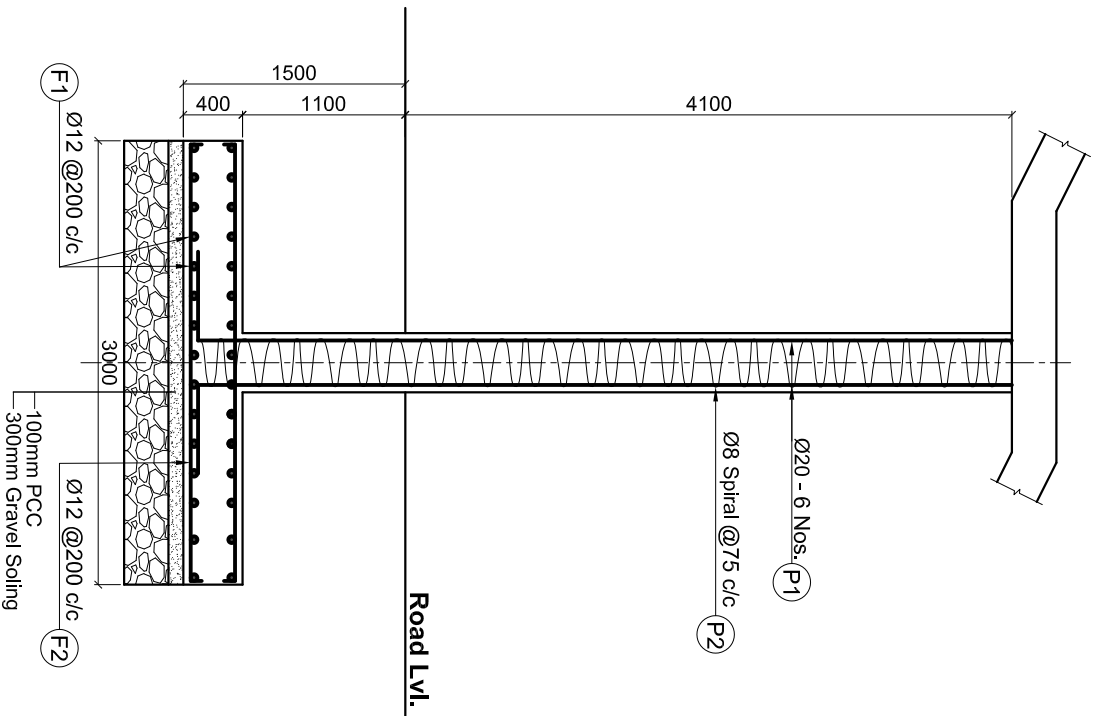
Bottom Plan (C2)

Scale:-1:50



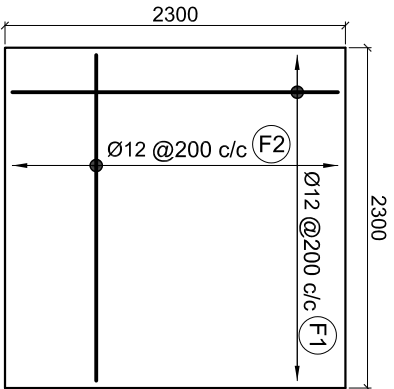
Plan of Column (C3)

Scale:-1:10



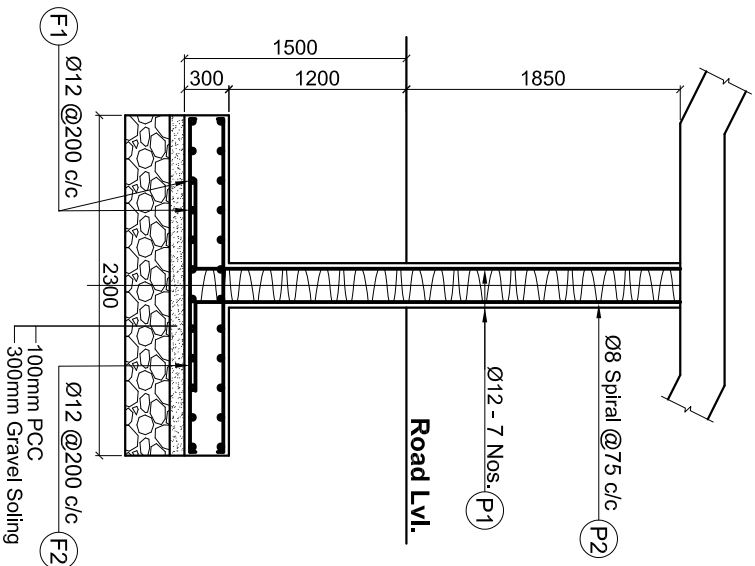
Section at B-B

Scale:-1:50



Bottom Plan (C3)

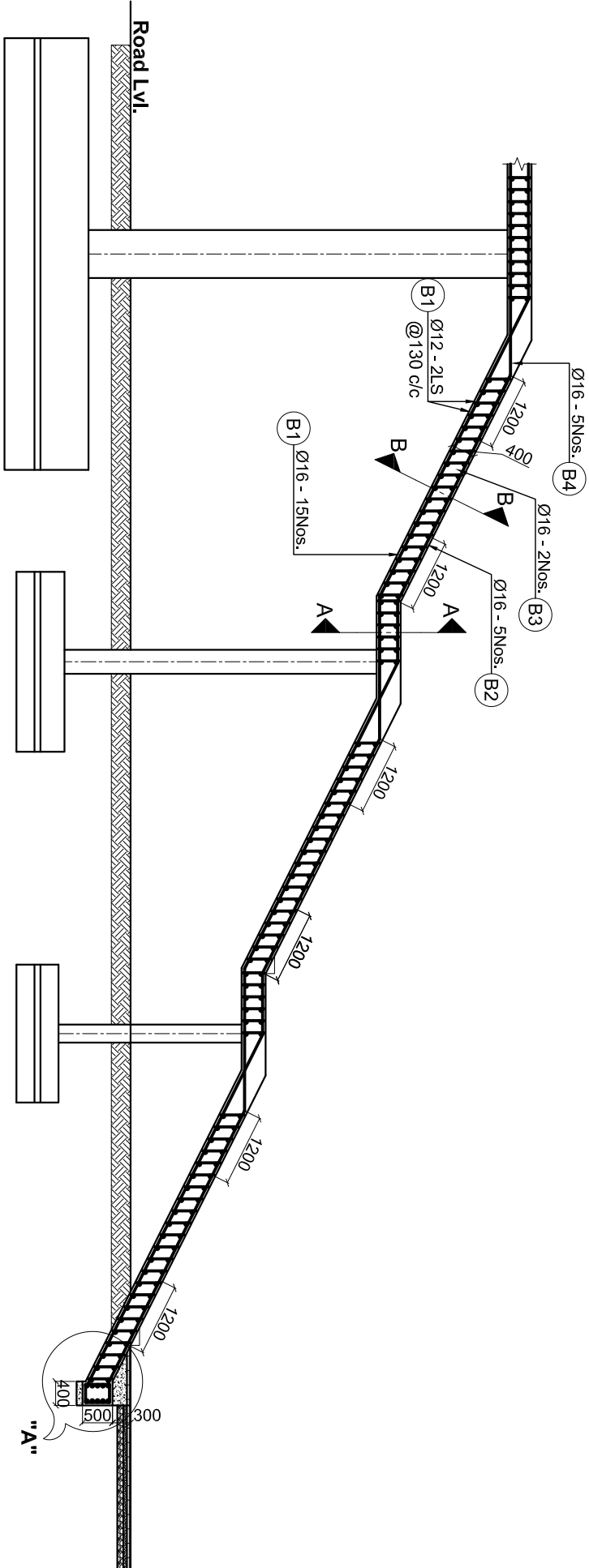
Scale:-1:50



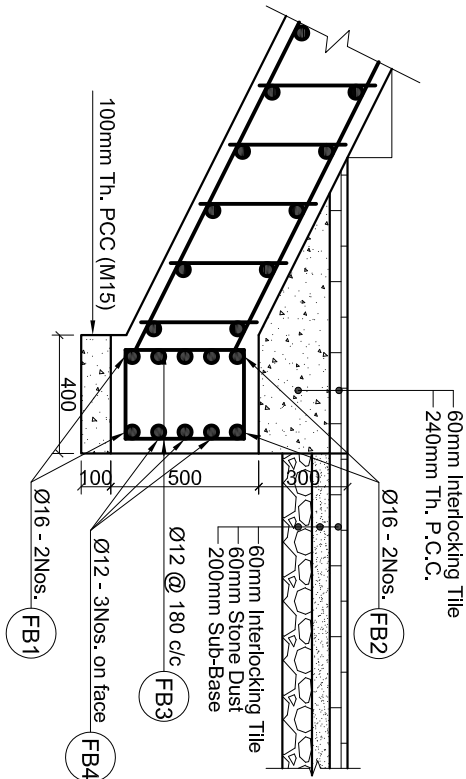
Section at C-C

Scale:-1:50

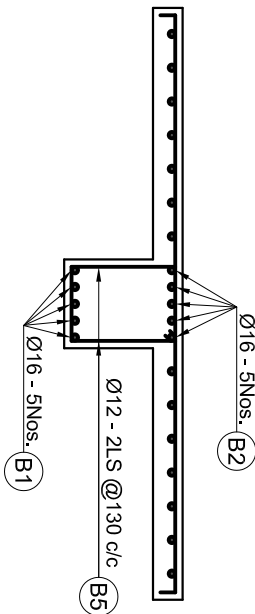
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Project Directorate Office (ADB) SASEC Highway Improvement Project- Project Preparatory Consultant (SHIP-PPC) ADB Loan No: 3722-NP	CONSULTANT:		IMPLEMENTING AGENCY:		SHEET TITLE:		SCALE:		NAME		SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022 DWG.NO.: 11 SHEET NO.: 4
	Soosung Soosung Engineering Co. Ltd, Korea in association with		DOR, DCID		Pedestrian Crossing Detail		As Shown		S.B. Shrestha		<i>S.B. Shrestha</i>			
	ERMIC P (Ltd), Nepal and JTK-Tech Studio of Engineering		ROAD NAME: East West Highway (H01)						P. Upadhyaya		<i>P. Upadhyaya</i>			
			Butwal - Goringhne Section						Dr. T.H.Choi		<i>T.H.Choi</i>			



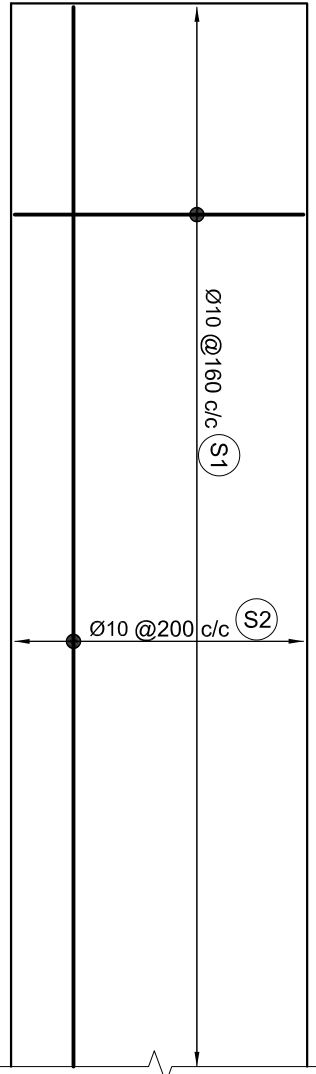
L-Section
Scale:-1:100



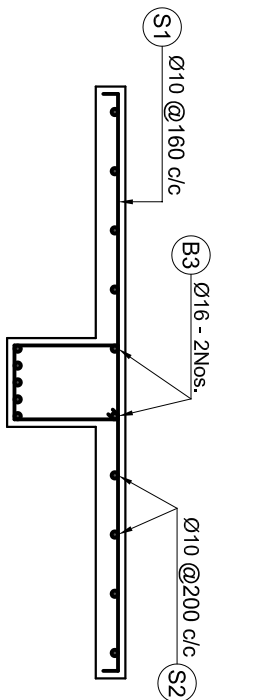
Detail at "A"
Scale:-1:25



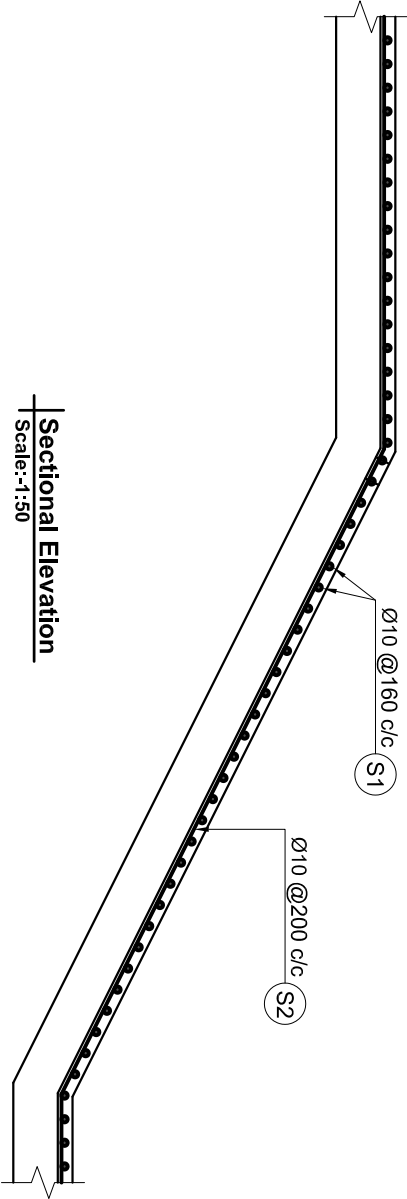
Section at A-A (Support)
Scale:-1:25



Reinforcement Arrangement in Waist Slab (Plan)
Scale:-1:50

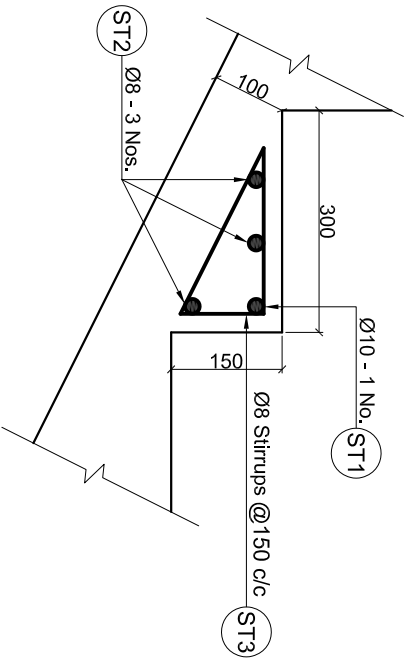
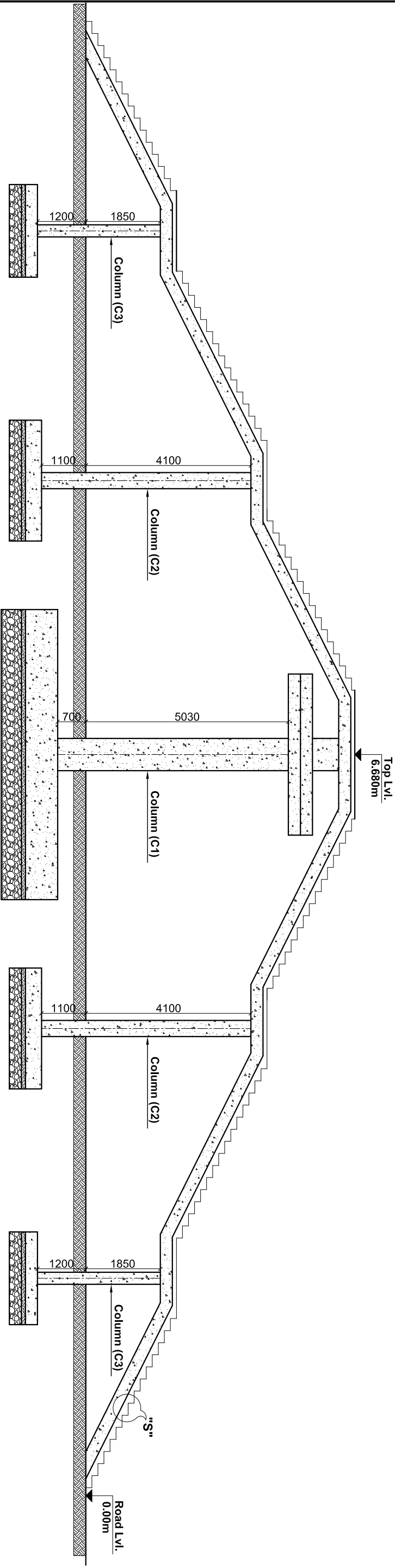


Section at B-B (Mid-Span)
Scale:-1:25



Sectional 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-NEP	CONSULTANT:  Soosung Soosung Engineering Co. Ltd, Korea in association with ERM P (Ltd), Nepal and <i>JYK</i> -Tech Studio of Engineering 	IMPLEMENTING AGENCY:	SHEET TITLE:	SCALE:		NAME	SIGNATURE	REV NO.	DESCRIPTION	DATE: November, 2022					
											DOR, DCID	DWG.NO.: 11			
													ROAD NAME:	SHEET NO.: 5	
															East West Highway (H01)



Detail at "S"

Scale:-1:10

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-NP		CONSULTANT:  Soosung Engineering Co. Ltd, Korea in association with  ERM C P (Ltd), Nepal and  JTC - Tech Studio of Engineering		IMPLEMENTING AGENCY: DOR, DCID		SHEET TITLE:		SCALE:		NAME		SIGNATURE		REV NO.		DESCRIPTION		DATE: November, 2022	
ROAD NAME: East West Highway (H01)		Pedestrian Crossing Detail		As Shown		DESIGNED BY:		S.B. Shrestha										DWG.NO.: 11	
Butwal - Gorusinghe Section						CHECKED BY:		P. Upadhyaya										SHEET NO.: 6	
						APPROVED BY:		Dr. T.H.Choi											