Government of Nepal

Ministry of Physical Infrastructure and Transport

Department Of Roads

Development Cooperation Implementation Division

Strategic Road Connectivity & Trade Improvement Project (SRCTIP)

Detailed Design of Upgradation of Kamala- Dhalkebar- Pathlaiya Road Section (130km) of Mahendra Highway and Bridges

Final Design Report

Volume IV

Design Report & Drawing of Bridges

Bridge Name- Kalinjor-1

Volume-2

Detailed Drawing

April, 2023

Joint Venture Of:

EPTISA Servicios De Ingenieria
Madrid, Spain

STUP Consultants Private Limited
India

In Association With

Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited

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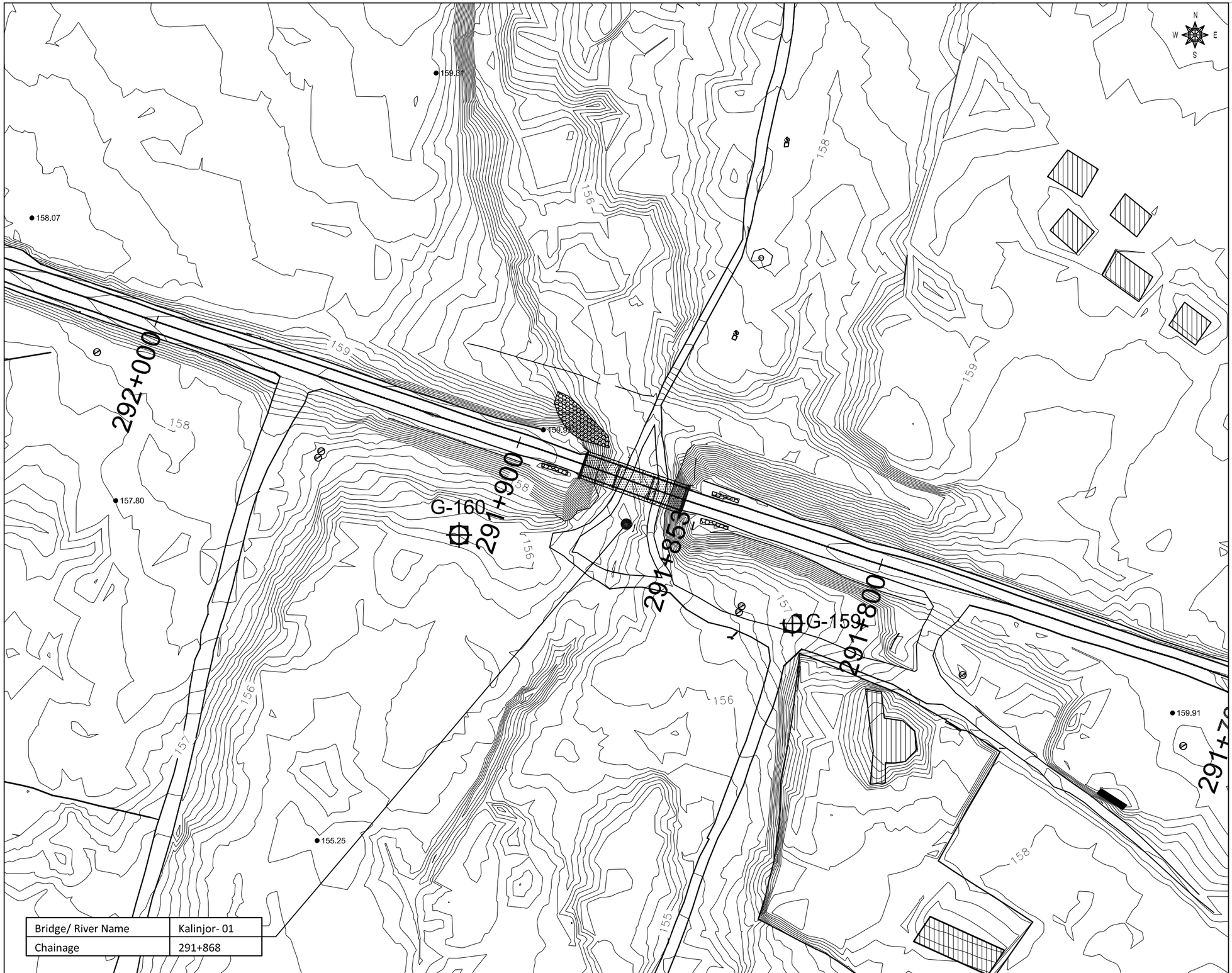


PROJECT KEY MAP

DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
MAIN FOOT TRAIL		ANIMAL FARM	
PLACE NAME		BAMBOO	
POLICE STATION		BIO GAS	
PETROL PUMP		BUS WAITING STATION	BS
Pond/ Water Body		BRIDGE	
POULTRY FARM		CONTOUR	
PROPERTY BOUNDARY		CANAL	
ROAD INFORMATION BOARD		CULVERT	
RIVER		CONTROL POINT (G)	
SPOT HEIGHT		CRUSHER	
SHED		DELINETOR	
SAFTY TANK		ELECTRIC POLE	
SCHOOL		FACTORY	
STREET LIGHT		FEEDAR ROAD	
TAP		FISH FARM	
TEMPORARY HOUSE		FLOW DIRECTION	
TREE		GABION WALL	
TRANSMISSION LINE TOWER		HOSPITAL	
WELL		HAND PUMP	
TEMPLE		HOUSE	
CGI SHEET HOUSE		HOADING BOARD	
TOILET		CARRIAGE WAY	
WOODEN HOUSE		HUT	
WATER TANK		INDEX CONTOUR	100
TRANSFORMER		KILOMETER POST	KP
SHOULDER		MONASTERY	

Bridge/ River Name	Kalinjor- 01
Chainage	291+868

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera, Madrid, Spain STUP Consultants Private Limited, Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited

Designed By	Mr. R.A. Nec.No. 6431 CIVIL"A"	Signature	
Checked By	Mr. S.M.	Signature	
Approved By	Mr. H.B.	Signature	

Drawing Name
DETAILKED SURVEY TOPOGRAPHIC MAP(EXISTING CONDITION) OF BRIDGE OVER RIVER KALINJOR-1

Reference Drawings

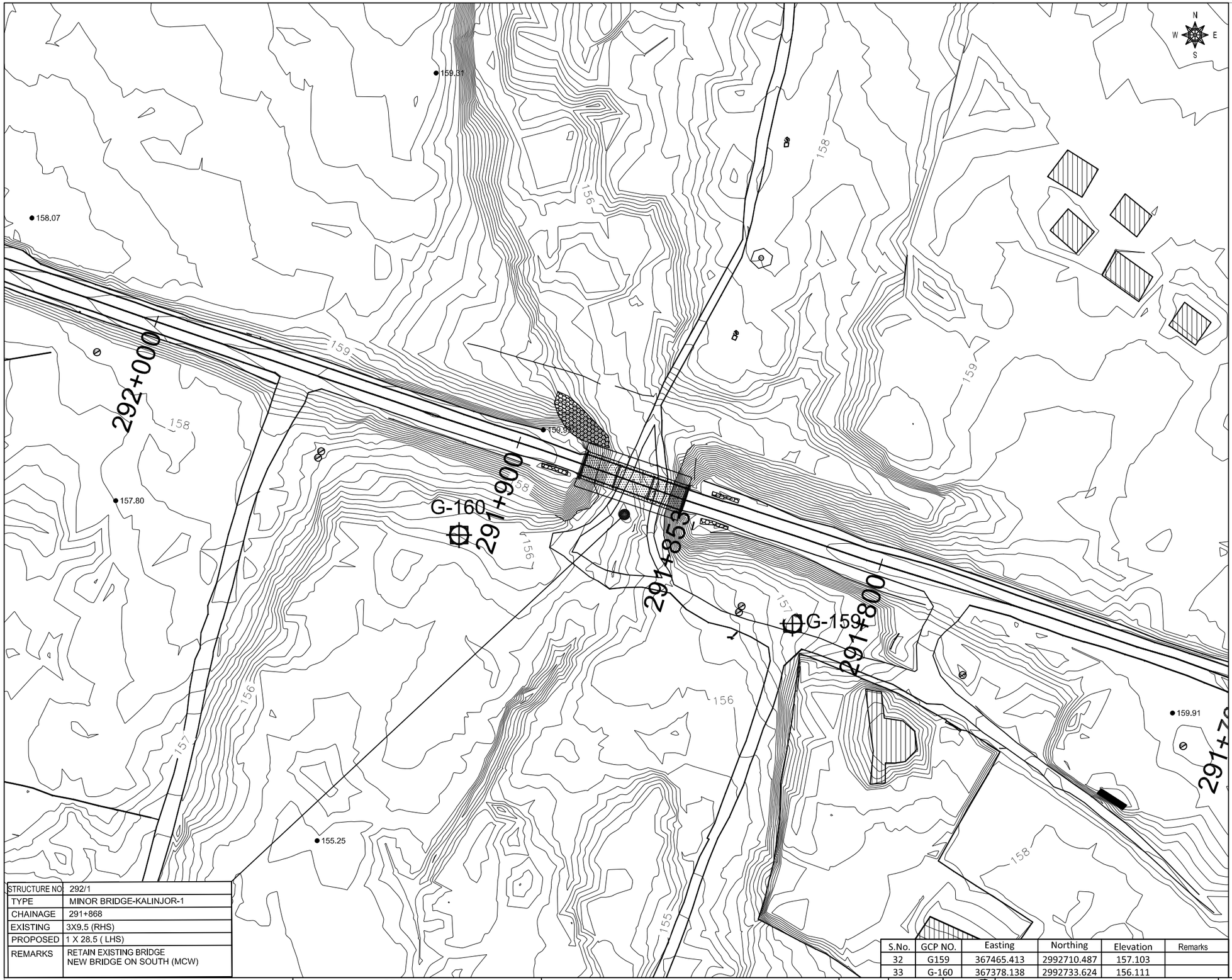
Scale: AS SHOWN

Chainage: 291+868

Date: 30.04.2023

Drawing No.- KDP/DPR/STR/BR/KALINJOR-1/DD- 2

Sheet No. 1 / 1



DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
MAIN FOOT TRAIL		ANIMAL FARM	
PLACE NAME		BAMBOO	
POLICE STATION		BIO GAS	
PETROL PUMP		BUS WAITING STATION	BS
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RIVER		CONTROL POINT (G)	
SPOT HEIGHT		CRUSHER	
SHED		DELINETOR	
SAFTY TANK		ELECTRIC POLE	
SCHOOL		FACTORY	
STREET LIGHT		FEEDAR ROAD	
TAP		FISH FARM	
TEMPORARY HOUSE		FLOW DIRECTION	
TREE		GABION WALL	
TRANSMISSION LINE TOWER		HOSPITAL	
WELL		HAND PUMP	
TEMPLE		HOUSE	
CGI SHEET HOUSE		HOADING BOARD	
TOILET		CARRIAGE WAY	
WOODEN HOUSE		HUT	
WATER TANK		INDEX CONTOUR	100
TRANSFORMER		KILOMETER POST	KP
SHOULDER		MONASTERY	

STRUCTURE NO.	292/1
TYPE	MINOR BRIDGE-KALINJOR-1
CHAINAGE	291+868
EXISTING	3X9.5 (RHS)
PROPOSED	1 X 28.5 (LHS)
REMARKS	RETAIN EXISTING BRIDGE NEW BRIDGE ON SOUTH (MCW)

S.No.	GCP NO.	Easting	Northing	Elevation	Remarks
32	G159	367465.413	2992710.487	157.103	
33	G-160	367378.138	2992733.624	156.111	

EMPLOYER

Government of Nepal
Ministry of Physical Infrastructure and Transport
Department of Roads
Development Cooperation Implementation Division

PROJECT NAME

Strategic Road Connectivity & Trade Improvement Project (SRCTIP)

Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges

DESIGN CONSULTANTS

Joint Venture of

EPTISA Servicios De Ingeniera Madrid, Spain

STUP Consultants Private Limited Kolkatta, India

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Designed By	Mr. R.A. Nec.No. 6431 CIVIL"A"	Signature	
Checked By	Mr. S.M.	Signature	
Approved By	Mr. H.B.	Signature	

Drawing Name
DETAILKED SURVEY TOPOGRAPHIC MAP(WITH PROPOSED BRIDGE) OF BRIDGE OVER RIVER KALINJOR-1

Reference Drawings

Scale: AS SHOWN

Chainage: 291+868

Date: 30.04.2023

Drawing No.- KDP/DPR/STR/BR/KALINJOR-1/DD- 3

Sheet No. 1 / 1

A. GENERAL

1. ALL DIMENSIONS ARE IN MILLIMETER AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. DIMENSIONS ARE NOT TO BE SCALED.
3. THE LAYOUT OF THE BRIDGE/CULVERT SHALL BE SET AS PER RELEVANT HIGHWAY PLAN AND PROFILE DRAWING,
4. THE FORMATION LEVEL GIVEN IN THIS DRAWING SHALL BE VERIFIED FROM THE RELEVANT HIGHWAY DRAWING. IN CASE OF ANY DISCREPANCY THE HIGHWAY DRAWING SHALL BE CONSIDERED CORRECT.

B. DESIGN CRITERIA

1. THE DESIGN HAS BEEN PREPARED BASED ON THE FOLLOWING CODES:
   a) NEPAL ROAD STANDARD 2070
   b) IRC-5 2015
   c) IRC-6 2017
   d) IRC-78 2014
   e) IRC-112 2020
2. TOTAL WIDTH OF THE BRIDGE DECK: 11.85 M (8 M WIDE CARRIAGEWAY + 2.5 M WIDE FOOTPATH) HOWEVER THIS BRIDGE IS DESIGNED FOR THE FOLLOWING CARRIAGEWAY LIVE LOADS AS PER IRC:6-2017
   a) ONE LANE OF IRC CLASS 70R (WHEELED) FOR TWO LANES + ONE LANE OF IRC CLASS A
   b) THREE LANES OF IRC CLASS A
3. SEISMIC ZONE CONSIDERED IN THE DESIGN IS ZONE-V.
4. LAYING, COMPACTION, & EXTENT OF BACKFILL BEHIND ABUTMENT & RETURN/RETAINING WALLS SHALL CONSIST OF SELECTED EARTH CONFORMING TO THE APPENDIX-6 OF IRC:78-2014 HAVING PROPERTIES C=0, =30° & DENSITY=20KN/m3.
5. 100mm DIA WEEP HOLES AT 1000mm C/C BOTH HORIZONTALLY AND VERTICALLY SHALL BE PROVIDED IN STAGGERED MANNER IN VERTICAL WALLS OF THE ABUTMENT AND RETURN WALL ABOVE GL. IN ONE OR TWO LAYERS AT A SLOPE OF 1 VERTICAL TO 20 HORIZONTAL TOWARDS THE DRAINING FACE.

C. HYDRAULIC DATA: -

1. DESIGN DISCHARGE, (Q100) - 27.01 CUMECS
2. HFL - 156.520M
3. FREE BOARD(MINIMUM) - 1M
4. MAXIMUM SCOUR LEVEL:
   ABUTMENT - 154.040M

STRUCTURAL AND OTHER DATA: -

1. SPAN ARRANGEMENT: 1 x 28.5 = 28.5 M
2. SUPERSTRUCTURE:
   PRECAST PSC LONGITUDINAL GIRDERS & CAST-IN-SITU RCC CROSS GIRDERS AND DECK SLAB.
3. SUBSTRUCTURE:
   A) ABUTMENT - RCC WALL TYPE
4. FOUNDATION
   A) ABUTMENT - 1200 DIA BORED CAST-IN-SITU PILE
   DESIGN WORKING LOAD ON PILE - 262 TON
   RCC BORED PILES SHOULD BE CONSTRUCTED AS PER IS: 2911(PART 1/SEC 2)-2010.
5. BEARINGS
   POT-PTFE BEARINGS
6. WEARING COAT:
   65 MM THICK ASPHALTIC CONCRETE WEARING COAT AS PER STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE WORKS (2073) , DEPARTMENT OF ROADS
   .
7. EXPANSION JOINT -
   SLAB SEAL TYPE EXPANSION JOINT OF PROVEN QUALITY SHALL BE PROVIDED IN ACCORDANCE WITH IRC:SP-69-2005 (GUIDELINES AND SPECIFICATIONS OF EXPANSION JOINT)
8. DRAINAGE SPOUTS - AS PER STANDARD SPECIFICATION FOR ROAD & BRIDGE WORKS 2073
9. RAILINGS/CRASH BARRIER:
   RCC CRASH BARRIER AT EDGES OF CARRIAGEWAY AND FOOTPATH
10. FOOTPATH
    2.5m WIDE FOOTPATH AT OUTER EDGE OF DECK
11. CONCRETE: -
    a. PILE..... M35 (CEMENT CONTENT AS PER SPECIFICATION)
    b. PILE CAP.....M35
    c. BEARING PEDESTALS.....M40
    d. ABUTMENT M35
    e. RETURN WALL.....M35
    f. LEVELING COURSE: I) BELOW APPROACH SLAB.....M15
    a. II) BELOW PILE CAP.....M15
    i. APPROACH SLAB M30
    j. CAST-IN-SITU CRASH BARRIER M40
    k. KERB M35
    l. DECK SLAB FOR PSC GIRDERS.....M45
    m.PRECAST PSC GIRDERS M50
    n. CAST-IN-SITU CROSS GIRDER FOR PSC.GIRDERS.....M45
12. REINFORCEMENT STEEL: -
    a. H.Y.S.D. BARS - GRADE 500 CONFORMING TO IS 1786
    b. REINFORCEMENT WHERE EVER NECESSARY SHALL BE LOCALLY BENT OR ADJUSTED TO ENSURE PROPER CONCRETING.
13. PRESTRESSING STRAND -
    ALL PRESTRESSING STRANDS SHALL HAVE 7 PLY UNCOATED STRESS RELIEVED HIGH TENSILE STRAND OF 15.2 MM DIA CONFORMING TO CLASS 2 OF IS 14268-2017
14. CONCRETE COVER

1. DECK SLAB, GIRDER, PEDESTAL, CAP: 40 MM
2. SUBSTRUCTURE AND FOUNDATION : 75 MM

15. LAPS (Ls) ARE TO BE STAGGERED AND MINIMUM LAP LENGTH ARE TO BE AS FOLLOWS (UNLESS NOTED OTHERWISE):

a) FOR M 30 GRADE CONCRETE : 57.2
b) FOR M 35 GRADE CONCRETE : 51.48
c) FOR M 40 GRADE CONCRETE : 48.62
d) FOR M 45 GRADE CONCRETE : 45.76
e) FOR M 50 GRADE CONCRETE : 41.47

(WHERE IS THE DIAMETER OF THE BAR)

16. LAP LENGTH SHALL BE INCREASED BY A FACTOR BASED ON THE PERCENTAGE OF LAPPED BAR RELATIVE TO THE TOTAL CROSS SECTIONAL AREA. LAP LENGTH FOR DIFFERENT GRADE OF CONCRETE AS WELL AS DIFFERENT PERCENTAGE OF LAP LENGTH ARE AS FOLLOWS:

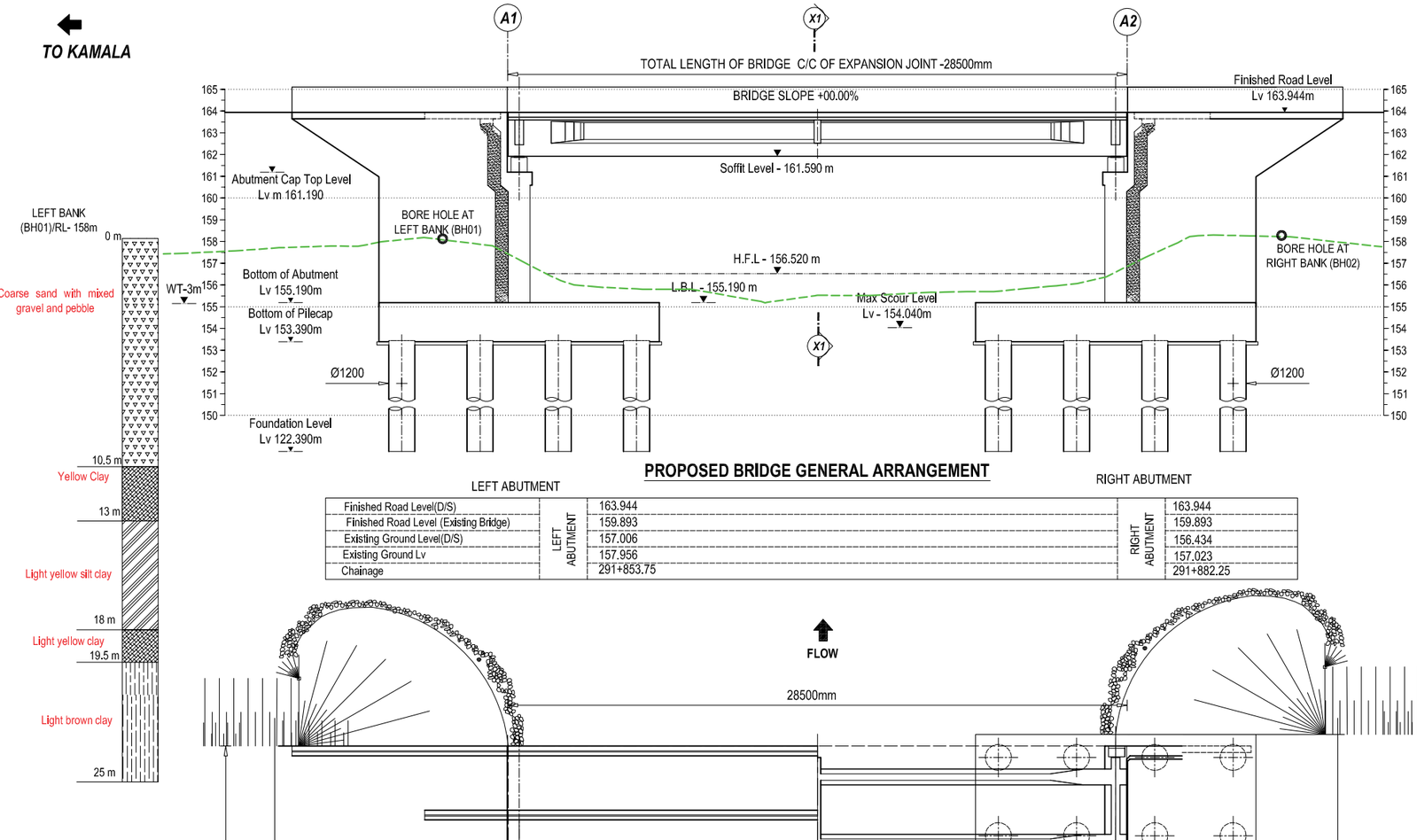
GRADE OF CONCRETE	M30	M35	M40	M45	M50
LAPPED BAR ≤25%	57.2ϕ	51.48ϕ	48.62ϕ	45.76ϕ	41.47ϕ
25%<LAPPED BAR ≤33%	65.78ϕ	62.65ϕ	55.91ϕ	52.62ϕ	47.69ϕ
33%<LAPPED BAR ≤50%	80.08ϕ	72.07ϕ	68.07ϕ	64.06ϕ	58.06ϕ
50%<LAPPED BAR	85.8ϕ	77.22ϕ	72.93ϕ	68.64ϕ	62.21ϕ

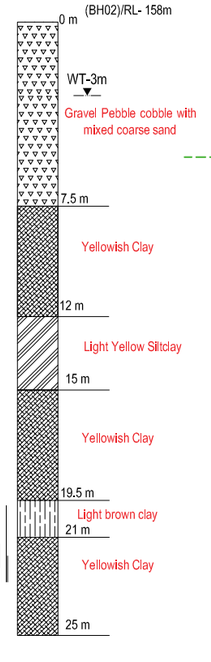
17. THE LAP LENGTH SHALL BE STAGGERED BY MINIMUM DISTANCE OF 1.3 TIMES THE LAP LENGTH.
18. HELICAL REINFORCEMENT SHALL BE LAPPED BY 1.5 TURNS.
19. INSTEAD OF LAPPING SPLICING OF REINFORCEMENT CAN BE DONE WITH WELDED JOINT AS PER CL. 15.2.5.2 OF IRC 112-2020. WELD LENGTH SHALL NOT BE LESS THAN 18D.
20. SHARP EDGES OF CONCRETE TO BE CHAMFERED MINIMUM 50 X 50

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of epyseptisa Servicios De Ingeniera Madrid, Spain STUP Consultants Private Limited Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Krtil Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL"A"	Signature	Drawing Name GENERAL NOTES OF BRIDGE OVER RIVER KALINJOR-1 Reference Drawings -	Scale: AS SHOWN Chainage: 291+868	Date: 05.05.2023 Drawing No.- KDP/DPR/STR/BR/KALINJOR-1/DD-4 Sheet No. 1 / 1
			Checked By	Mr. S.M.	Signature			
			Approved By	Mr. H.B.	Signature			

TO KAMALA

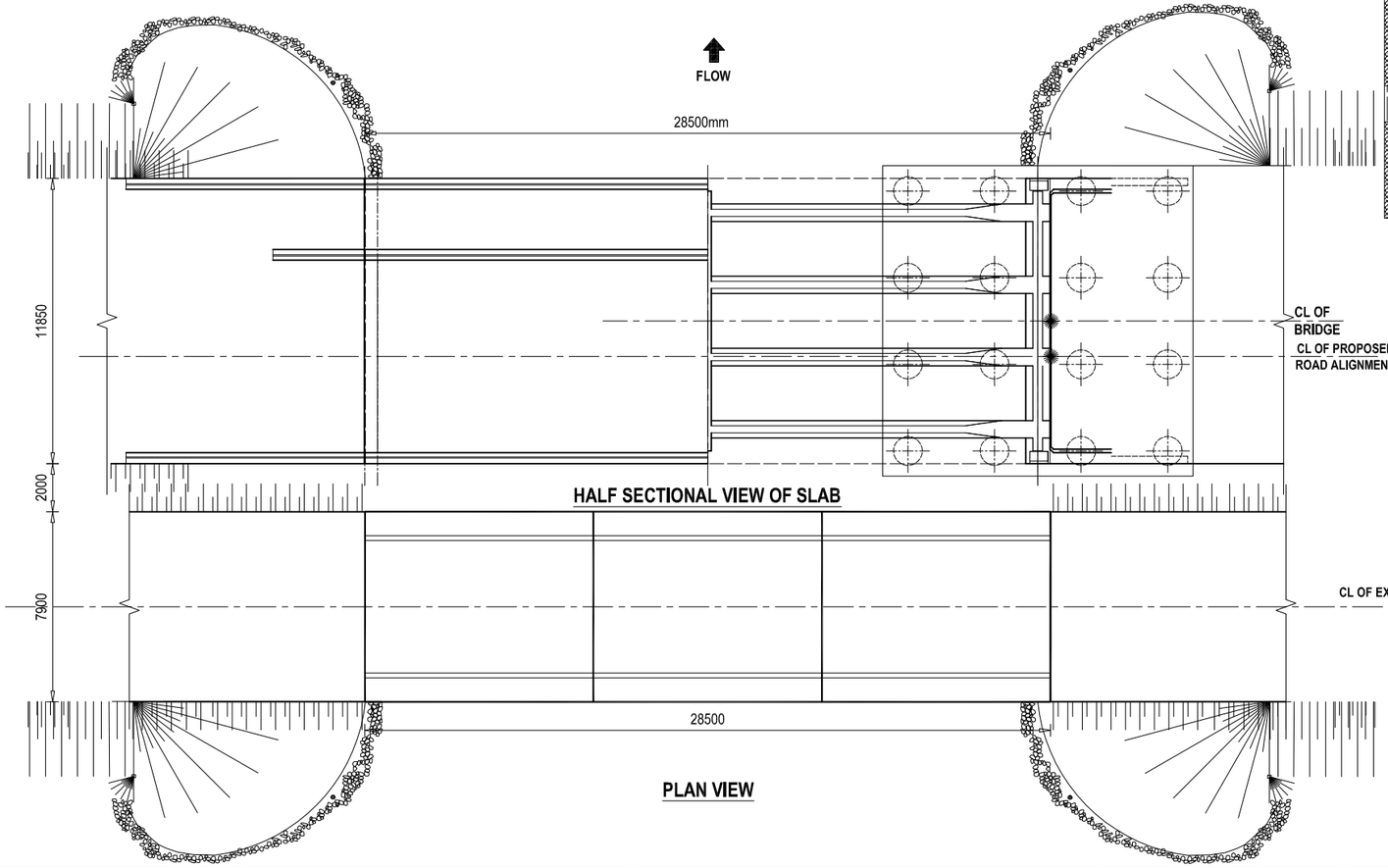
TO PATHALAIYA





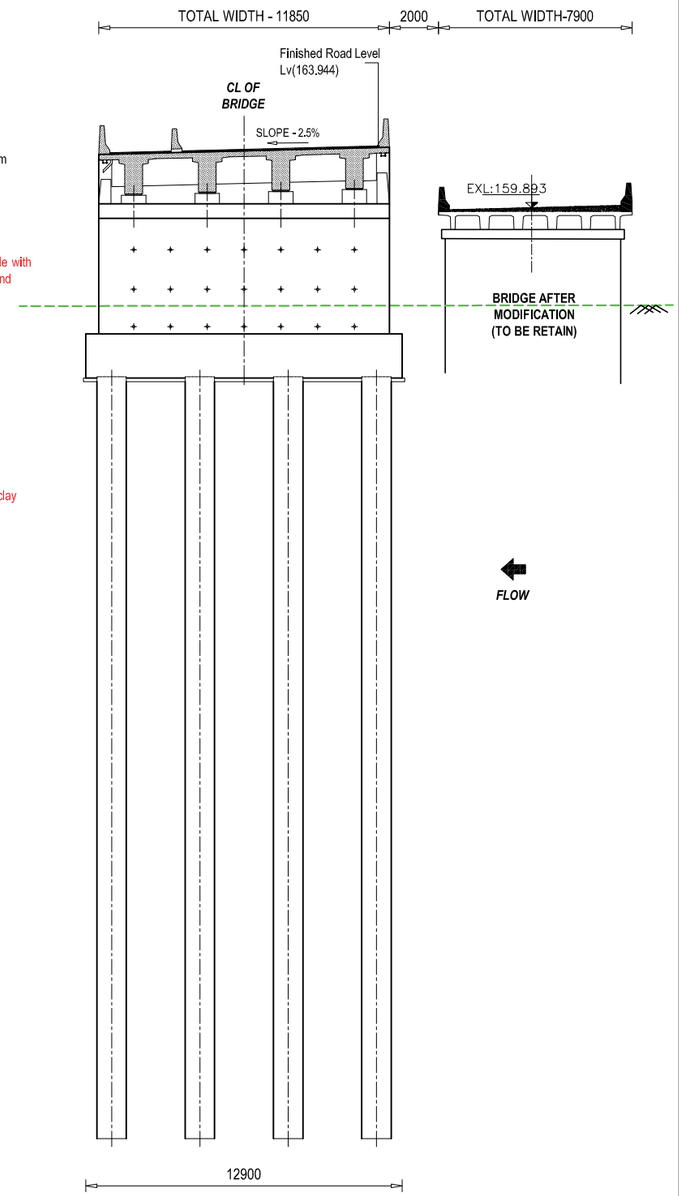
PROPOSED BRIDGE GENERAL ARRANGEMENT

LEFT ABUTMENT			RIGHT ABUTMENT	
Finished Road Level(D/S)	LEFT ABUTMENT	163.944	RIGHT ABUTMENT	163.944
Finished Road Level (Existing Bridge)		159.893		159.893
Existing Ground Level(D/S)		157.006		156.434
Existing Ground Lv		157.956		157.023
Chainage		291+853.75		291+882.25



HALF SECTIONAL VIEW OF SLAB

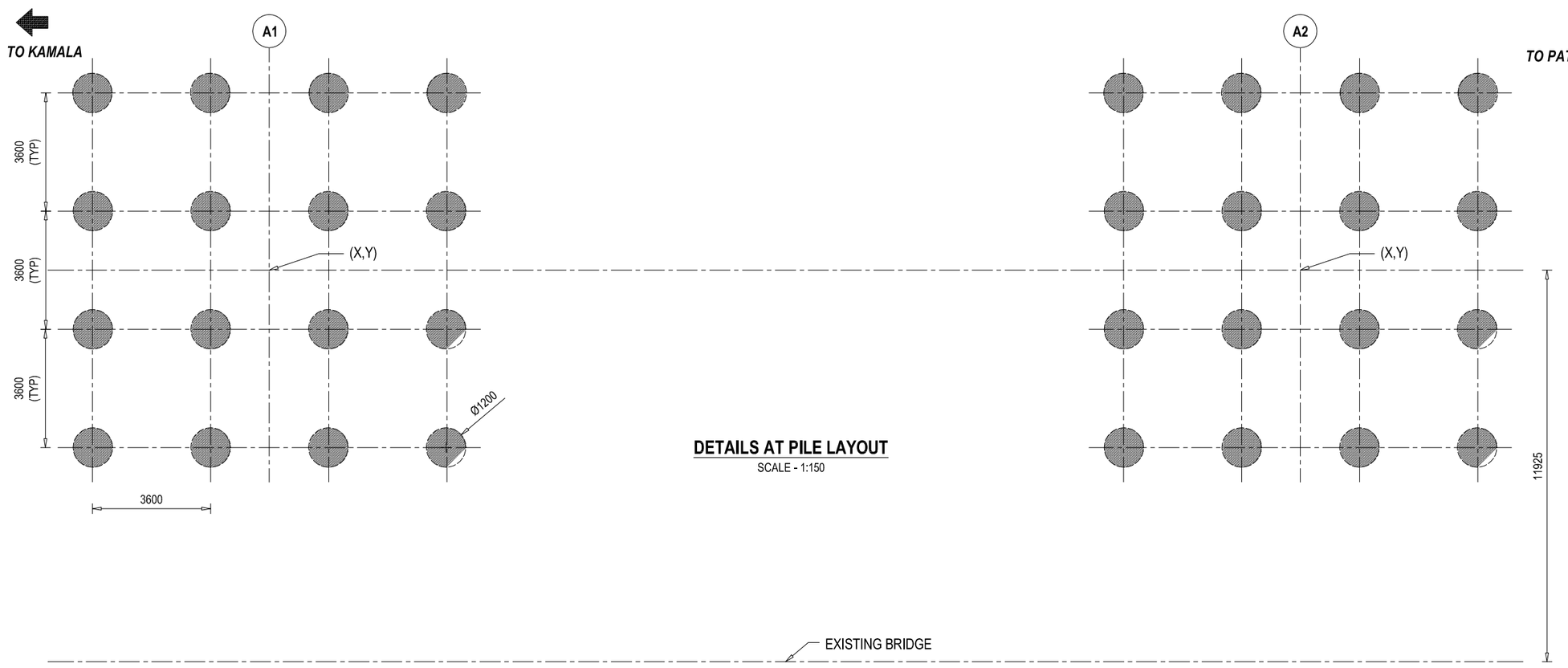
PLAN VIEW



SECTIONAL VIEW AT X1-X1

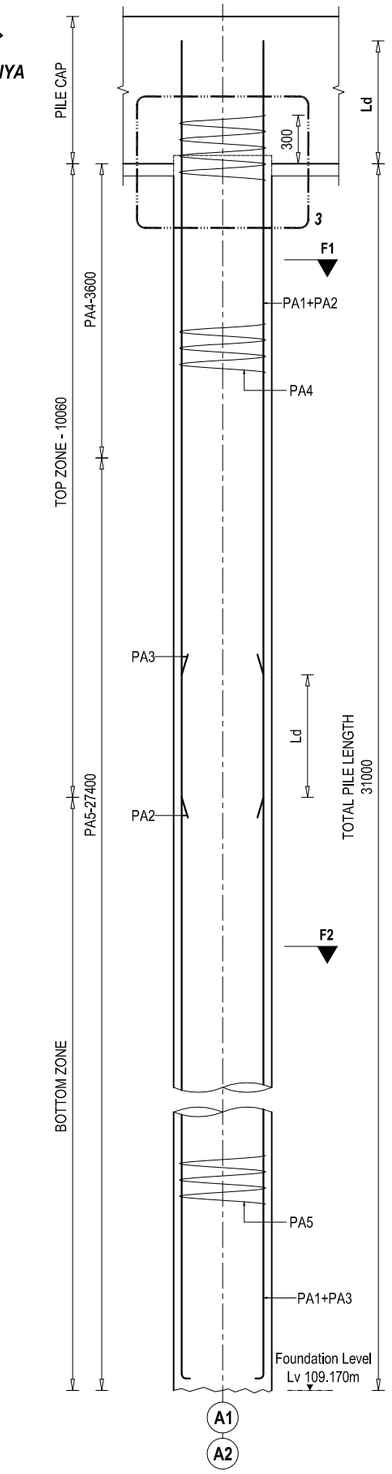
(SCALE 1 :250 @ A3)

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera Madrid, Spain STUP Consultants Private Limited Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Krill Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431	Signature	Drawing Name GENERAL ARRANGEMENT OF BRIDGE OVER RIVER KALINJOR-1	Scale: AS SHOWN Date: 16.04.2023
			Checked By	Mr. S.M.	Signature		
			Approved By	Mr. H.B.	Signature	Reference Drawings -	Chainage: 291+868 Drawing No.: KDP/DPR/STR/BR/KALINJOR-1/DD-5 Sheet No. 1 / 1



DETAILS AT PILE LAYOUT

SCALE - 1:150



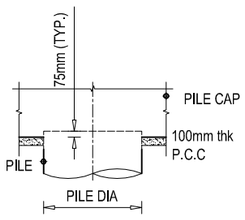
ELEVATION VIEW

BAR DETAIL AT PILE

SCALE - 1:75

BAR BENDING SCHEDULE OF ABUTMENT PILE

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	PA1	300 L 32650	25		32.950	10	3.858	1271.22
2	PA2	11782	25		11.782	10	3.858	454.552
3	PA3	300 L 22368	12		22.668	10	0.889	201.49
4	PA4	Dia. 1034 ⌀ 100	16	115	3.448	45	1.580	245.21
5	PA5	Dia. 1034 ⌀ 100	12	115	3.448	226	0.889	692.73
							TOTAL (KG) :	2865.21
							No. of Pile	16.00
							TOTAL WEIGHT (KG) :	45843.29

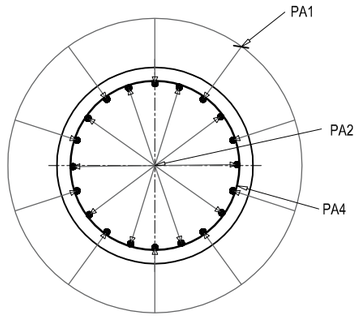


PILE CAPACITY (INDIVIDUAL)

SN.	DIA (mm)	CAPACITY (Ton)
1	1200	262

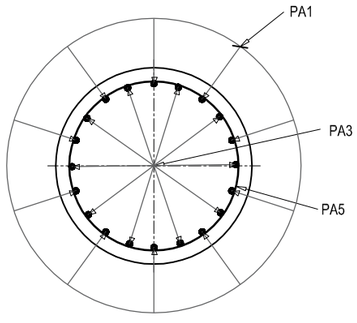
DETAIL AT 3

SCALE - 1:75



SECTIONAL VIEW AT F1 - F1

SCALE - 1:75



SECTIONAL VIEW AT F2 - F2

SCALE - 1:75

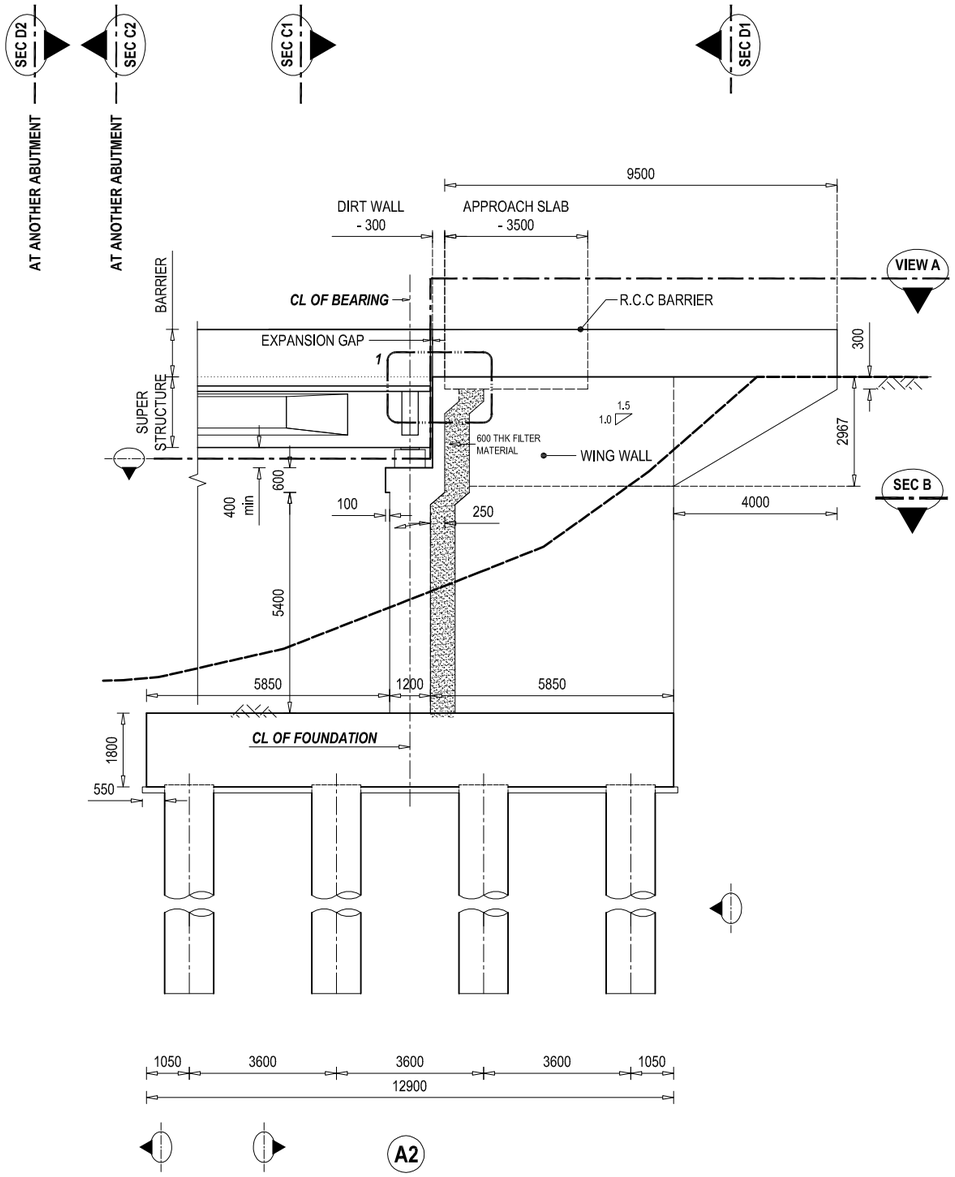
CO ORDINATES OF PILE LOCATION OF PROPOSED BRIDGE

SN.	ABUTMENT/PIER	EASTING (X)	NORTHING (Y)
1	ABUTMENT (A1)	367433.609	2992731.583
2	ABUTMENT (A2)	367406.583	2992740.632

NOTE
READ THIS DRAWING IN CONJUNCTION WITH
DRG NO. KDP/DPR/STR/BR/KALINJOR-1/DD-4

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS				
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera, Madrid, Spain STUP Consultants Private Limited, Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited				

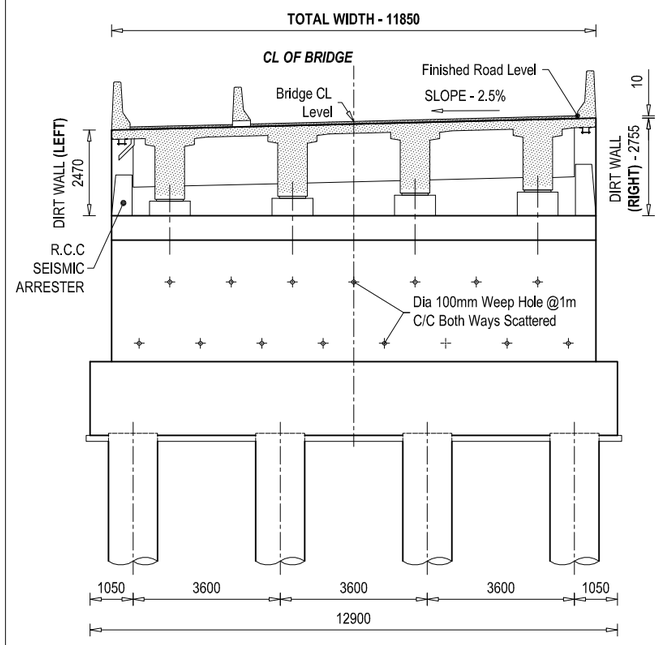
			Drawing Name	Scale:	Date:
Designed By	Mr. R.A. Nec.No. 6431 CIVIL 'A'	Signature	**LAYOUT AND DETAIL OF PILE FOUNDATION OF BRIDGE OVER RIVER KALINJOR-1**	AS SHOWN	05.05.2023
Checked By	Mr. S.M.	Signature	Reference Drawings **KDP/DPR/STR/BR/KALINJOR-1/DD-9**	Chainage: 291+868	Drawing No.- KDP/DPR/STR/BR/KALINJOR-1/DD-6
Approved By	Mr. H.B.	Signature			Sheet No. 1 / 1



OUTLINE DETAILS OF ABUTMENT

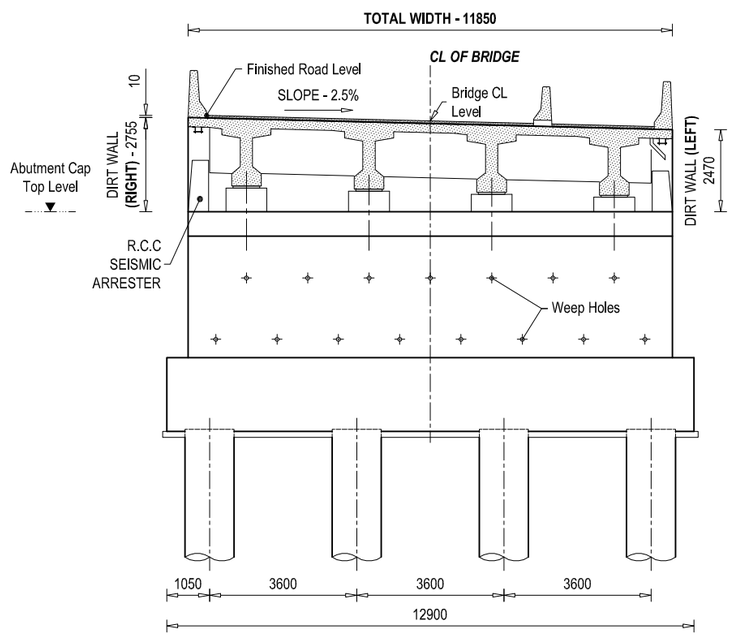
SCALE - 1: 150

NOTE
READ THIS DRAWING IN CONJUNCTION WITH
DRG NO. KDP/DPR/STR/BR/KALINJOR-1/DD-4



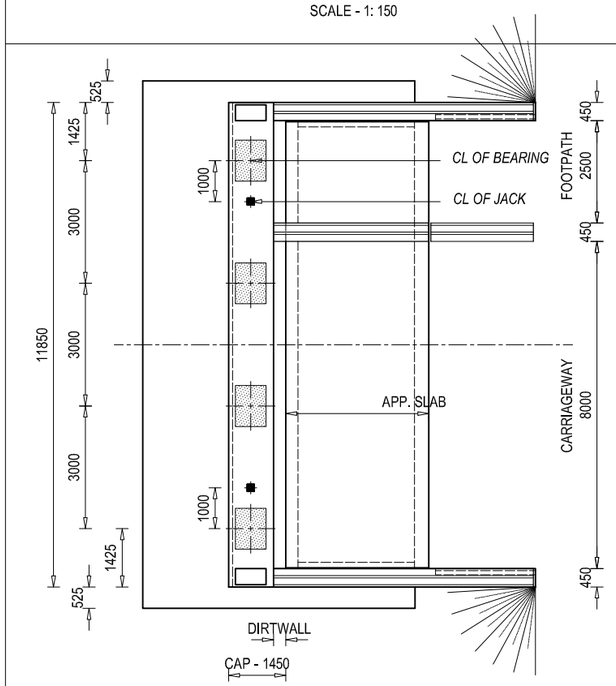
SECTIONAL VIEW AT C1 - C1

SCALE - 1: 150



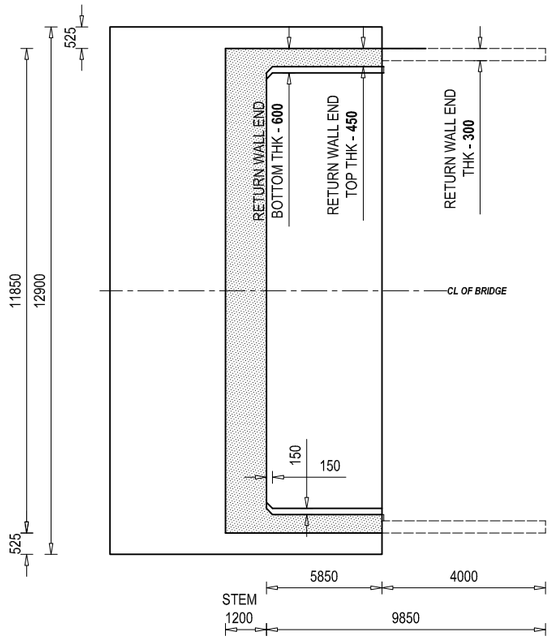
SECTIONAL VIEW AT C2 - C2

SCALE - 1: 150



VIEW AT A

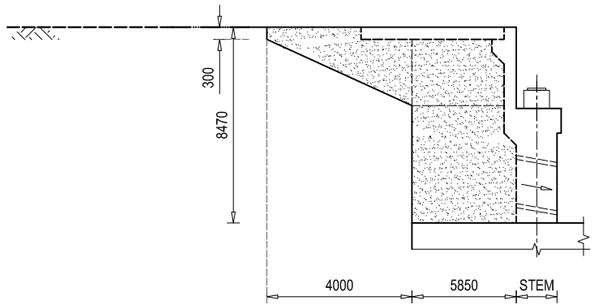
SCALE - 1: 150



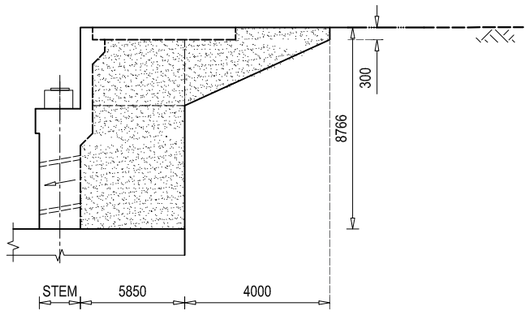
SECTIONAL VIEW AT B - B

SCALE - 1: 150

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera, Madrid, Spain STUP Consultants Private Limited, Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Krill Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL'A'	Signature	Drawing Name: ABUTMENT DETAILS OF BRIDGE OVER RIVER KALINJOR-1 Reference Drawings: KDP/DPR/STR/BR/KALINJOR-1/DD-9	Scale: AS SHOWN Chainage: 291+868
			Checked By	Mr. S.M.	Signature		Date: 01.05.2023
			Approved By	Mr. H.B.	Signature		Drawing No.- KDP/DPR/STR/BR/KALINJOR-1/DD-7 Sheet No. 1 / 2

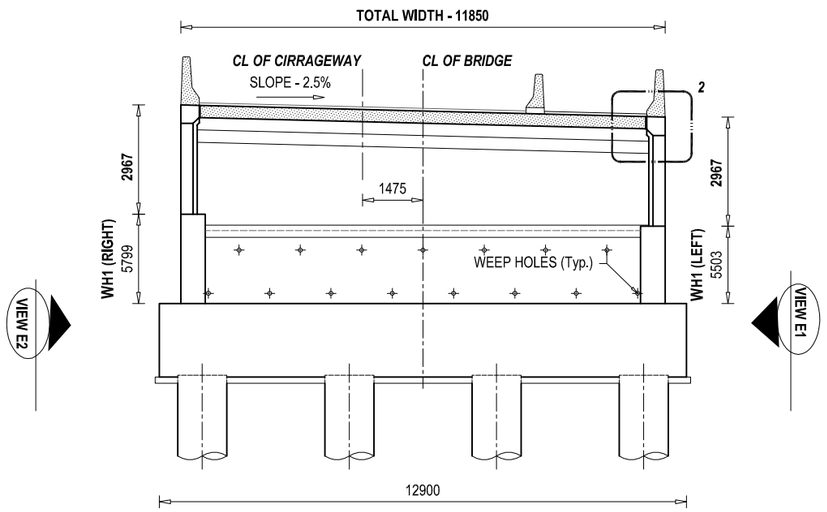


VIEW AT E1
SCALE - 1: 150

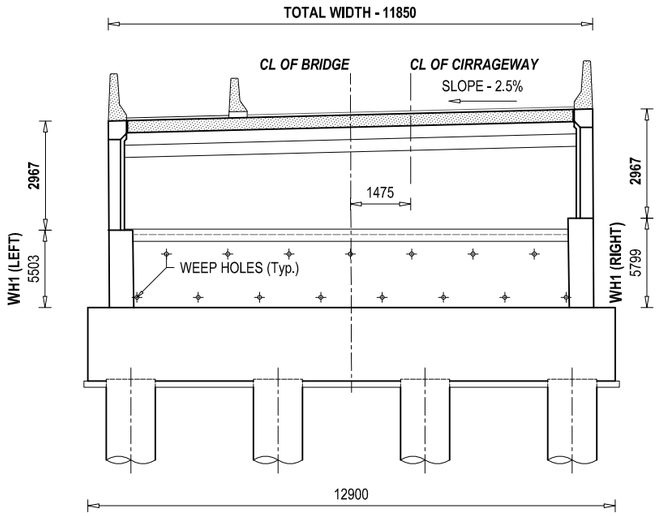


VIEW AT E2
SCALE - 1: 150

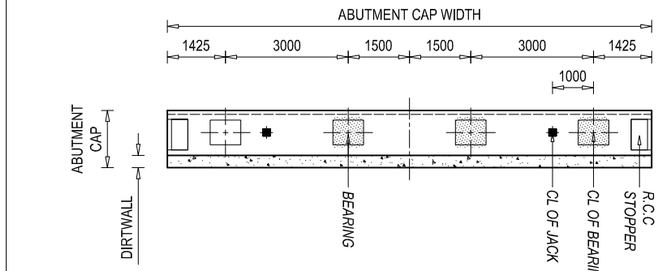
DETAIL AT RETURN WALL



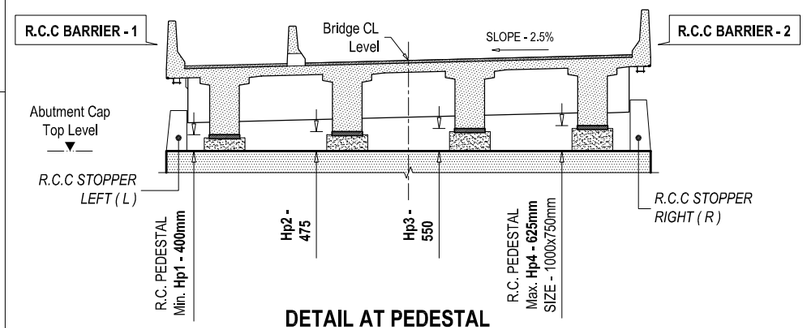
SECTIONAL VIEW AT D1 - D1
SCALE - 1: 150



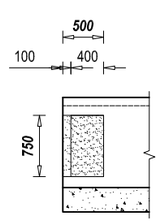
SECTIONAL VIEW AT D2 - D2
SCALE - 1: 150



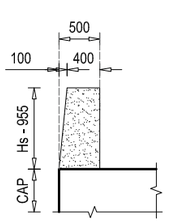
PLAN VIEW AT ABUTMENT CAP
SCALE - 1: 150



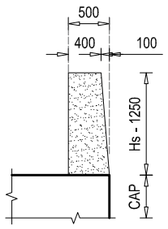
DETAIL AT PEDESTAL
SCALE - 1 : 150



R.C.C SEISMIC ARRESTER PLAN VIEW

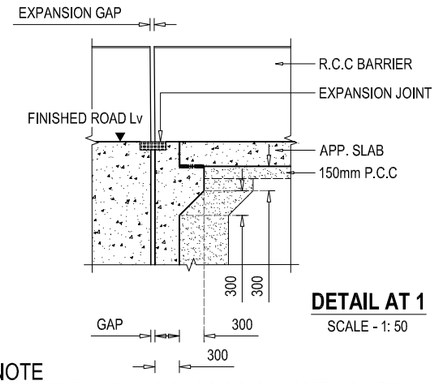


R.C.C SEISMIC ARRESTER - LEFT ELEVATION VIEW



R.C.C SEISMIC ARRESTER - RIGHT ELEVATION VIEW

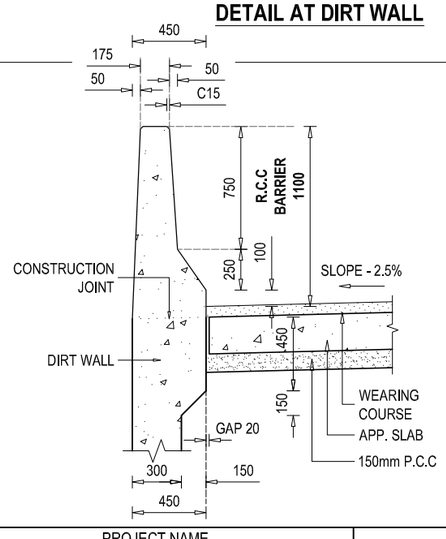
DETAIL AT PEDESTAL
SCALE - 1 : 75



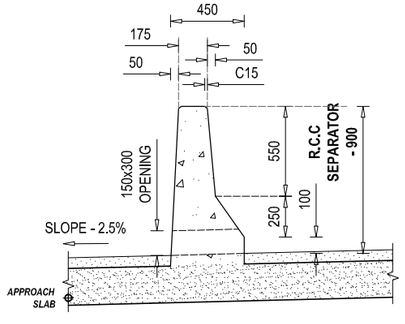
DETAIL AT 1
SCALE - 1: 50

NOTE
READ THIS DRAWING IN CONJUNCTION WITH
DRG NO. KDP/DPR/STR/BR/KALINJOR-1/DD-4

DETAIL AT DIRT WALL

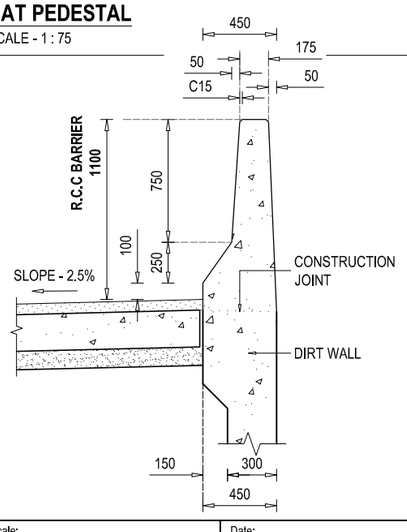


DETAIL SECTIONAL VIEW AT R.C.C BARRIER - 1 DETAIL AT 2
SCALE - 1: 25



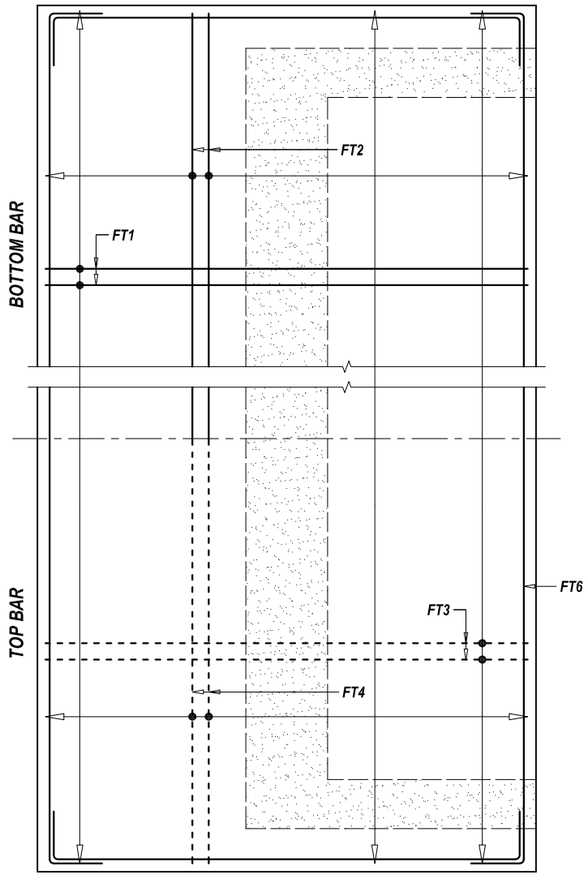
DETAIL SECTIONAL VIEW AT R.C.C SEPARATOR
SCALE - 1: 25

DETAIL SECTIONAL VIEW AT R.C.C BARRIER - 2
SCALE - 1: 25

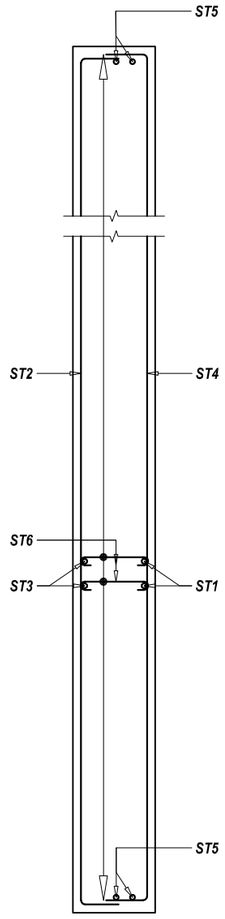


EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS			
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera, Madrid, Spain STUP Consultants Private Limited, Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431	Signature
			Checked By	Mr. S.M.	Signature
			Approved By	Mr. H.B.	Signature

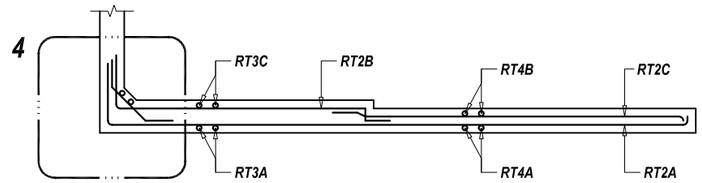
Drawing Name	Scale:	Date:
ABUTMENT DETAILS OF BRIDGE OVER RIVER KALINJOR-1	AS SHOWN	01.05.2023
Reference Drawings: KDP/DPR/STR/BR/KALINJOR-1/DD-9	Chainage: 291+868	Drawing No.- KDP/DPR/STR/BR/KALINJOR-1/DD-7
		Sheet No. 2 / 2



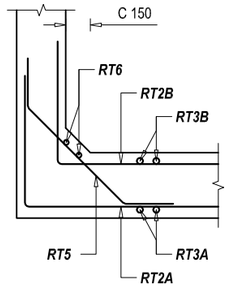
PLAN VIEW



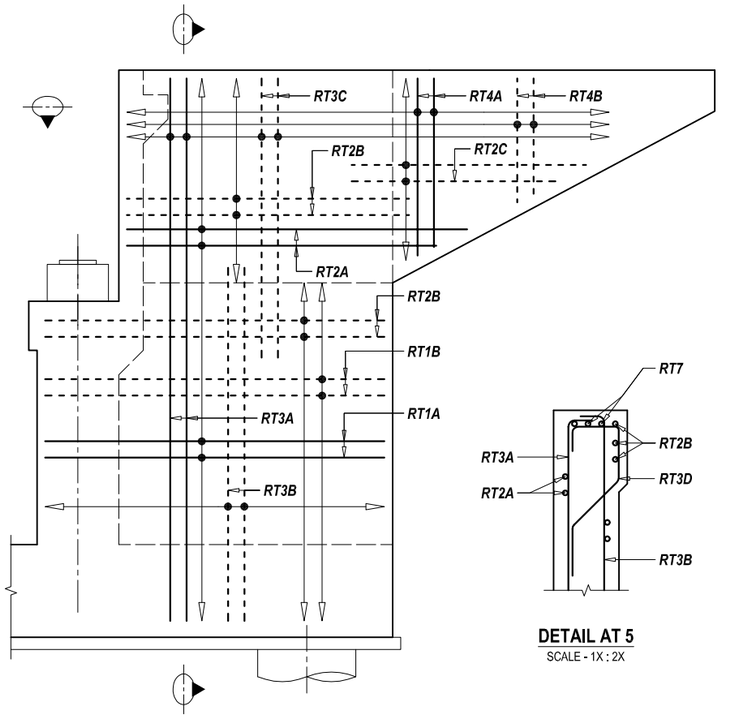
SECTIONAL PLAN VIEW



SECTIONAL PLAN VIEW

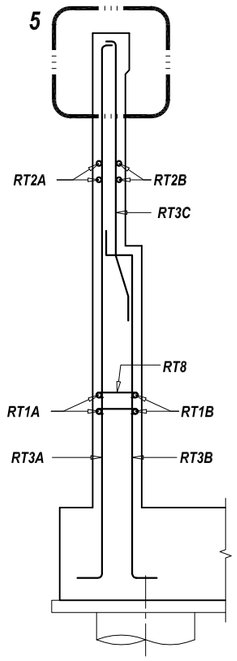


DETAILS AT 4



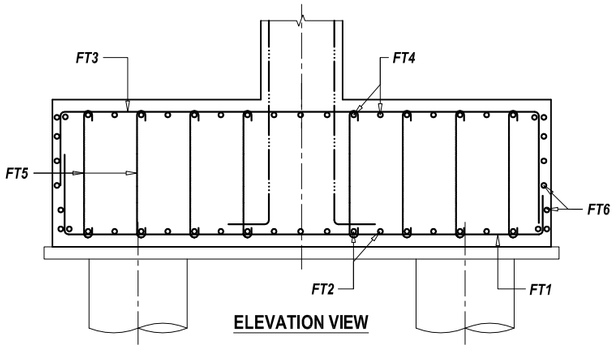
ELEVATION VIEW

DETAIL AT 5
SCALE - 1X : 2X



SECTIONAL SIDE VIEW

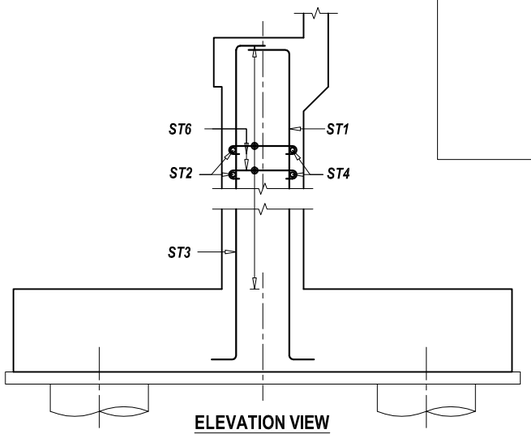
BAR DETAIL AT RETURN WALL
SCALE - 1 : 75



ELEVATION VIEW

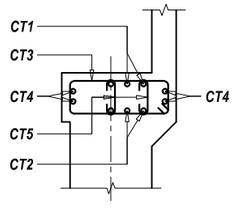
BAR DETAIL OF PILE CAP
SCALE - 1 : 75

NOTE
READ THIS DRAWING IN CONJUNCTION WITH
DRG NO. KDP/DPR/STR/BR/KALINJOR-1/DD-4

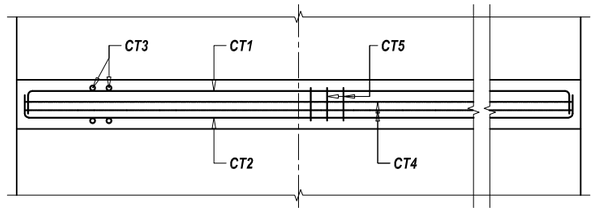


ELEVATION VIEW

BAR DETAIL AT ABUTMENT STEM
SCALE - 1 : 75



ELEVATION VIEW



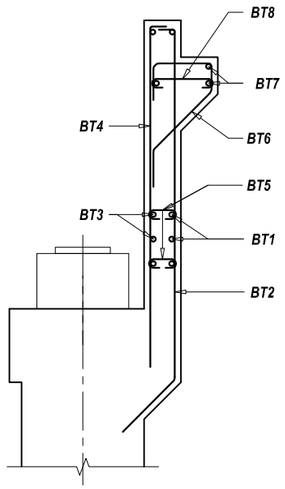
FRONT VIEW

BAR DETAIL AT ABUTMENT CAP
SCALE - 1 : 75

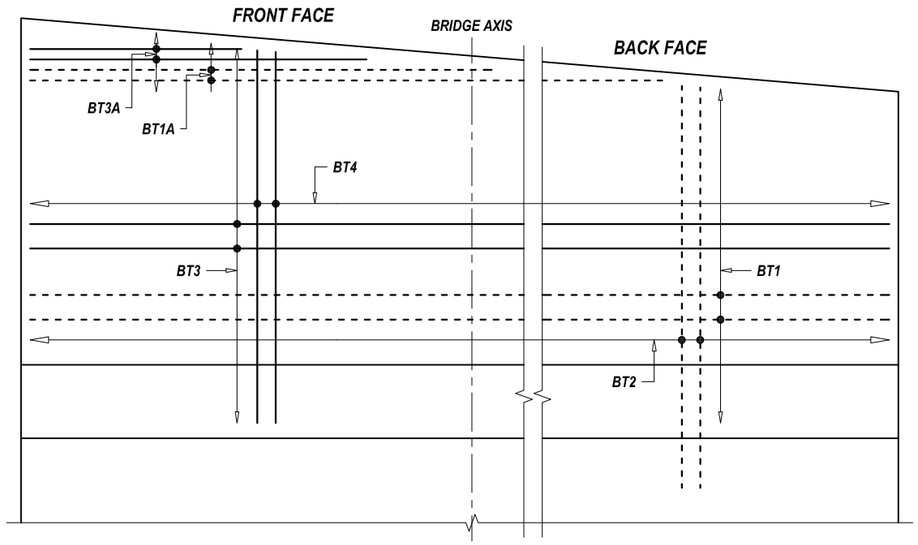
TOP BAR OR
NEAR FACE REINFORCEMENT

BOTTOM BAR OR
FAR FACE REINFORCEMENT

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera Madrid, Spain STUP Consultants Private Limited Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited					
		Designed By	Mr. R.A. Nec.No. 6431 CIVIL'A'	Signature	Drawing Name: ABUTMENT REINGORCEMENT DETAILS OF BRIDGE OVER RIVER KALINJOR-1	Scale: AS SHOWN	Date: 01.05.2023
		Checked By	Mr. S.M.	Signature			Drawing No.- KDP/DPR/STR/BR/KALINJOR-1/DD-8
		Approved By	Mr. H.B.	Signature	Reference Drawings: KDP/DPR/STR/BR/KALINJOR-1/DD-9	Chainage: 291+868	Sheet No. 1 / 2



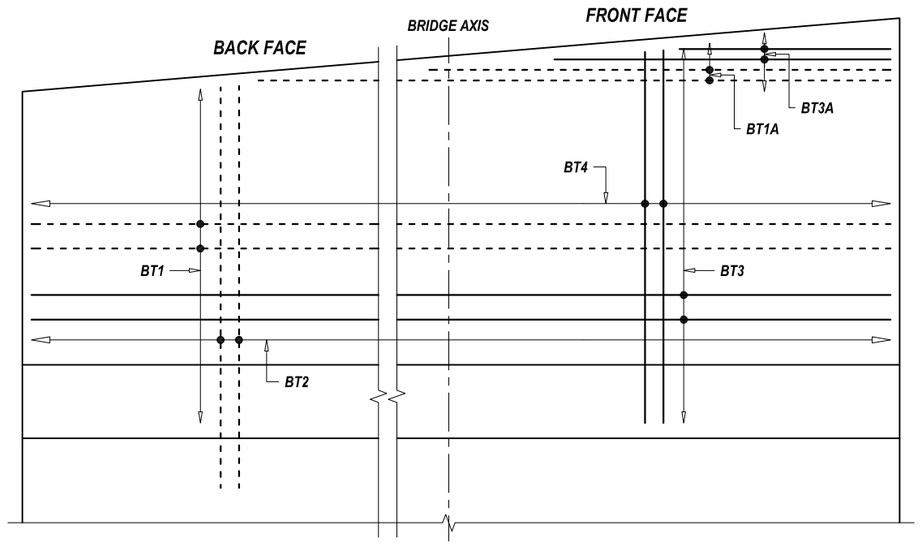
SECTIONAL SIDE VIEW



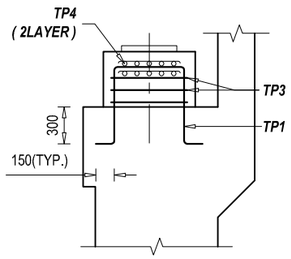
ELEVATION VIEW / VIEW AT D1

BAR DETAIL AT DIRT WALL

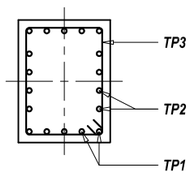
SCALE - 1 : 50



ELEVATION VIEW / VIEW AT D2



SECTIONAL SIDE VIEW

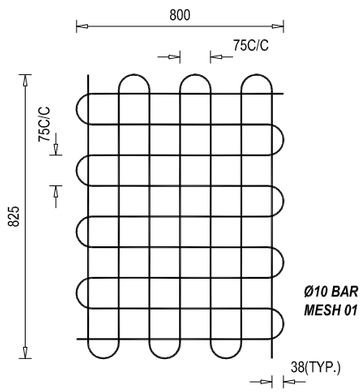


SECTIONAL PLAN VIEW

BAR DETAIL AT PEDESTAL

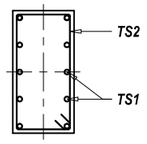
SCALE - 1 : 50

NOTE
READ THIS DRAWING IN CONJUNCTION WITH
DRG NO. KDP/DPR/STR/BR/KALINJOR-1/DD-4

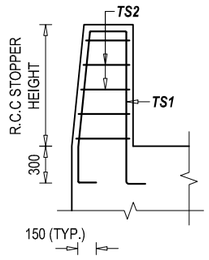


REINFORCEMENT DETAILS OF BEARING MESH

SCALE - 1 : 50

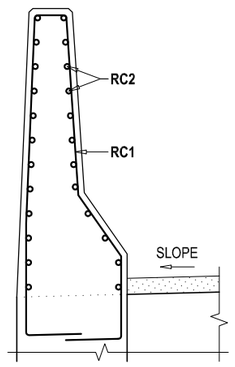


SECTIONAL PLAN VIEW



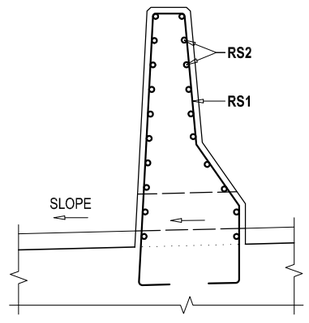
R.C.C STOPPER LEFT ELEVATION VIEW

SCALE - 1 : 50



REINFORCEMENT DETAILS OF R.C.C BARRIER (B)- SECTIONAL VIEW

SCALE - 1 : 25



REINFORCEMENT DETAILS OF R.C.C SEPARATOR - SECTIONAL VIEW

SCALE - 1 : 25

TOP BAR OR
NEAR FACE REINFORCEMENT

BOTTOM BAR OR
FAR FACE REINFORCEMENT

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera Madrid, Spain STUP Consultants Private Limited Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited					
			Designed By	Mr. R.A. Nec.No. 6431 CIVIL"A"	Signature	Drawing Name ABUTMENT REINGORCEMENT DETAILS OF BRIDGE OVER RIVER KALINJOR-1	Scale: AS SHOWN
			Checked By	Mr. S.M.	Signature	Reference Drawings KDP/DPR/STR/BR/KALINJOR-1/DD-9	Chainage: 291+868
			Approved By	Mr. H.B.	Signature		

Date: 01.05.2023

Drawing No.- KDP/DPR/STR/BR/KALINJOR-1/DD-8

Sheet No. 2 / 2

BAR BENDING SCHEDULE OF DIRT WALL

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	BT1	150 — 11700 — 150	16	200	12.000	18	1.580	341.33
2	BT1A	Avg. 5850 — 150	16	200	6.000	3	1.580	28.44
3	BT2	150 / 450 — 3103 Avg.	16	125	3.703	96	1.580	561.76
4	BT3	150 — 11700 — 150	16	200	12.000	14	1.580	265.48
5	BT3A	Avg. 5850 — 150	16	200	6.000	3	1.580	28.44
6	BT4	150 / 3178 — Avg.	12	125	3.328	96	0.889	283.99
7	BT5	100 — 150 — 100	12	500	0.350	120	0.889	37.33
8	BT6	200 — 450 — 220 / 200 — 756	12	200	1.826	61	0.889	99.01
9	BT7	11700	16		11.700	5	1.580	92.44
10	BT8	100 — 450 — 100	12	200	0.650	120	0.889	69.33
							TOTAL (KG) :	1807.57

BAR BENDING SCHEDULE OF ABUTMENT CAP

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	CT1	300 — 11700 — 300	16	150	12.300	11	1.580	213.81
2	CT2	300 — 11700 — 300	16	150	12.300	11	1.580	213.81
3	CT3	450 — 1300 — 100	16	150	3.700	80	1.580	467.75
4	CT4	300 — 11700 — 300	12	150	12.300	8	0.889	87.47
5	CT5	450 — 100 / 100	12	Long. 150 / Trans.300	0.650	382	0.889	220.71
							TOTAL (KG) :	1203.55

BAR BENDING SCHEDULE OF ABUTMENT STEM

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	ST1	300 — 7650 — 900	32		8.850	116	6.321	6489.13
2	ST2	600 — 11700 — 600	20	150	12.900	36	2.469	1146.67
3	ST3	300 — 7650 — 900	32		8.850	116	6.321	6489.13
4	ST4	600 — 11700 — 600	20	150	12.900	36	2.469	1146.67
5	ST5	300 — 7650 / 900	20		8.850	16	2.469	349.63
6	ST6	100 — 1050 — 100	12	Ver. 200 / Hor. 210	1.250	1539	0.889	1710.00
							TOTAL (KG) :	17331.21

BAR BENDING SCHEDULE OF PILE CAP

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	FT1	900 — 12750 — 900	32		14.550	130	6.321	11956.15
2	FT2	900 — 12750 — 900	20		14.550	110	2.469	3951.85
3	FT3	900 — 12750 — 900	16		14.550	130	1.580	2989.04
4	FT4	900 — 12750 — 900	16		14.550	110	1.580	2529.19
5	FT5	100 — 1650 — 100	10	Long. 240 / Trans.480	1.850	1412	0.617	1612.47
6	FT6	12686 — 12710 — 150	16	200	51.092	8	1.580	645.90
							TOTAL (KG) :	23684.60

BAR BENDING SCHEDULE OF PEDESTAL

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	TP1	150 — 950 — Avg. 650	16	150	2.850	6	1.580	27.02
1	TP2	150 — 700 — Avg. 650	16	150	2.350	8	1.580	29.71
2	TP3	950 — 700 — 100	16	150	3.500	3	1.580	16.59
1	TP4	850 — 650 — @ 100	8		13.400	2	0.395	10.59
							TOTAL (KG) :	83.91
							TOTAL NOS OF PEDESTAL :	4.00
							TOTAL WEIGHT (KG) :	335.64

BAR BENDING SCHEDULE OF RCC SEISMIC ARRESTER - LEFT

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	TS1-L	1010 / 300 — 400 — 1270 / 150 — 150	16	150	3.280	6	1.580	31.10
2	TS2-L	400 — 700 — 100	12	150	2.400	7	0.889	14.93
							TOTAL (KG) :	46.03

BAR BENDING SCHEDULE OF RCC SEISMIC ARRESTER - RIGHT

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	TS1-R	1260 / 300 — 400 — 1525 / 150 — 150	16	150	3.785	6	1.580	35.89
2	TS2-R	400 — 700 — 100	12	150	3.400	9	0.889	27.20
							TOTAL (KG) :	63.09

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS			
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera Madrid, Spain STUP Consultants Private Limited Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431	Signature
			Checked By	Mr. S.M.	Signature
			Approved By	Mr. H.B.	Signature

Drawing Name	Scale:	Date:
ABUTMENT BAR BENDING SCHEDULE OF BRIDGE OVER RIVER KALINJOR-1	AS SHOWN	01.05.2023
Reference Drawings -	Chainage: 291+868	Drawing No.-KDP/DPR/STR/BR/KALINJOR-1/DD-9
		Sheet No. 1 / 2

BAR BENDING SCHEDULE OF RETURN WALL - LEFT

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	RT1A	450 — 6900 — 150	12	150	7.500	59	0.889	393.33
2	RT1B	450 — 6900 — 150	20	150	7.500	59	2.469	1092.59
3	RT2A	450 — 9350 — 150	12	150	9.950	21	0.889	185.73
4	RT2B	150 — 6900 — 150 — 100 — 0	20	150	8.200	21	2.469	425.19
5	RT2C	1000 — 150 — 3575 — 150	20	150	4.875	21	2.469	252.78
6	RT3A	10416 — 150 — 450	12	150	11.016	40	0.889	391.68
7	RT3B	1250 — 7449 — 150 — 450	25	150	9.299	40	3.858	1435.03
8	RT3C	150 — 2892 — 150 — 1250	25	150	4.442	40	3.858	685.49
9	RT3D	200 — 300 — 300 — 200 — 210	25	150	1.210	65	3.858	303.43
10	RT4A	1483.5 — 150 — 150	12	150	1.784	50	0.889	79.27
11	RT4B	1483.5 — 150 — 150	25	150	1.784	50	3.858	344.04
12	RT5	300 — 870 — 300	12	150	1.470	80	0.889	104.53
13	RT6	8766	12		8.766	2	0.889	15.58
14	RT7	225 — 5375	20		5.6	4	2.469	55.31
15	RT8	100 — 450 — 100	12	150	0.650	80	0.889	46.22
							TOTAL (KG) :	5810.21

BAR BENDING SCHEDULE OF RETURN WALL - RIGHT

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	RT1A	450 — 6900 — 150	12	150	7.500	57	0.889	380.00
2	RT1B	450 — 6900 — 150	20	150	7.500	57	2.469	1055.56
3	RT2A	450 — 9350 — 150	12	150	9.950	21	0.889	185.73
4	RT2B	150 — 6900 — 150 — 100 — 0	20	150	8.200	21	2.469	425.19
5	RT2C	100 — 0 — 150 — 3575 — 150	20	150	4.875	21	2.469	252.78
6	RT3A	10120 — 150 — 450	12	150	10.720	40	0.889	381.16
7	RT3B	1250 — 7153 — 150 — 450	25	150	9.003	40	3.858	1389.35
8	RT3C	150 — 2892 — 150 — 1250	25	150	4.442	40	3.858	685.49
9	RT3D	200 — 300 — 300 — 200 — 210	25	150	1.210	65	3.858	303.43
10	RT4A	1483.5 — 150 — 150	12	150	1.784	50	0.889	79.27
11	RT4B	1483.5 — 150 — 150	25	150	1.784	50	3.858	344.04
12	RT5	300 — 870 — 300	12	150	1.470	80	0.889	104.53
13	RT6	8470	12		8.470	2	0.889	15.06
14	RT7	225 — 5375	20		5.6	4	2.469	55.31
15	RT8	100 — 450 — 100	12	150	0.650	76	0.889	43.91
							TOTAL (KG) :	5700.80

BAR BENDING SCHEDULE OF R.C.C BARRIER

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	RC1	130 — 735 — 850 — 305 — 445 — 200 — 305 — 200	16	150	3.170	64	1.580	320.60
2	RC2	150 — 9400 — 150	10	150	9.700	20	0.617	119.75
							TOTAL (KG) :	440.35

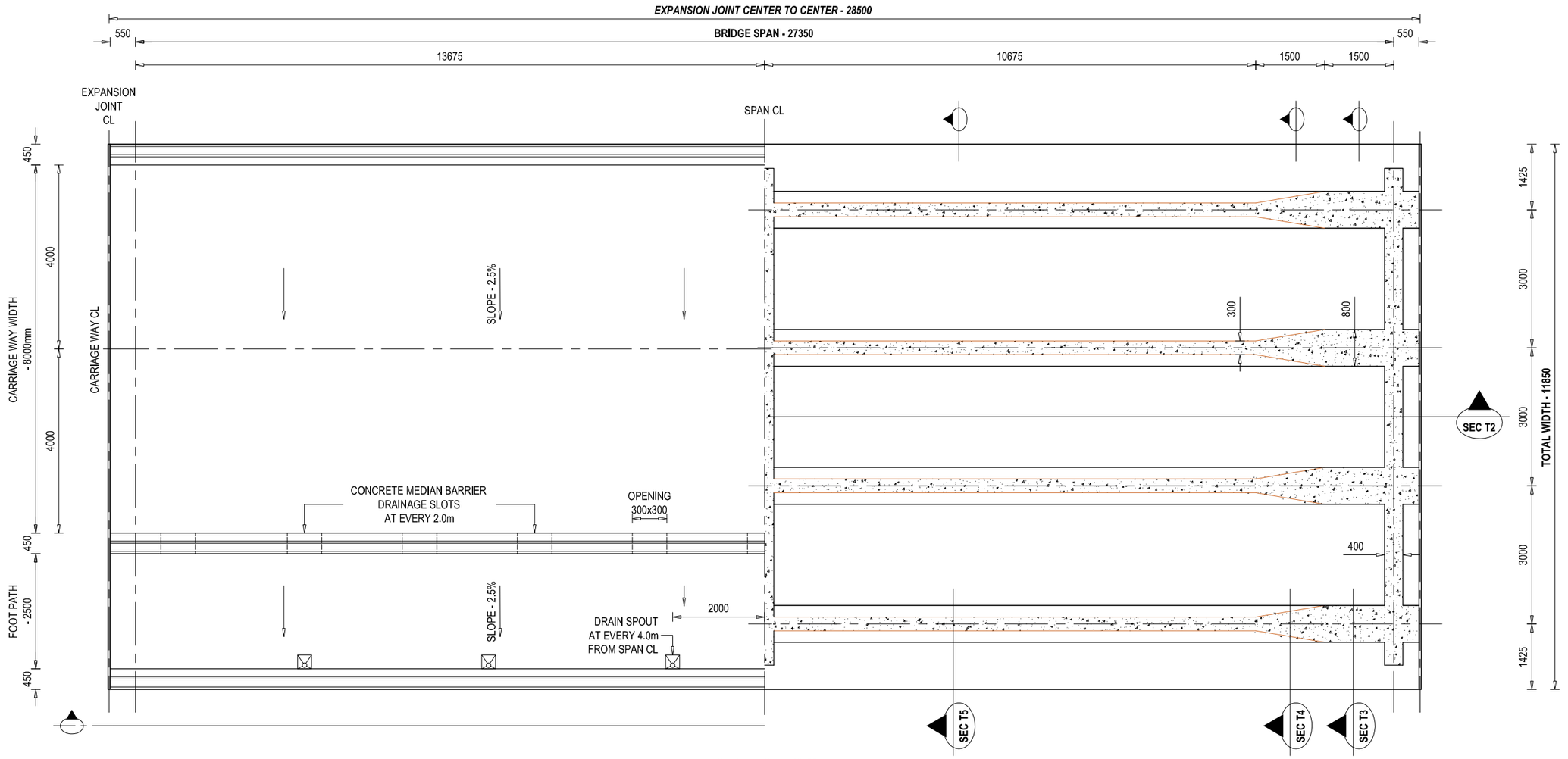
BAR BENDING SCHEDULE OF R.C.C SEPARATOR

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	RS1	130 — 535 — 1110 — 305 — 150 — 315	16	150	2.695	25	1.580	106.47
2	RS2	150 — 3500 — 150	10	150	3.800	17	0.617	39.88
							TOTAL (KG) :	146.35

BAR BENDING SCHEDULE OF APPROACH SLAB

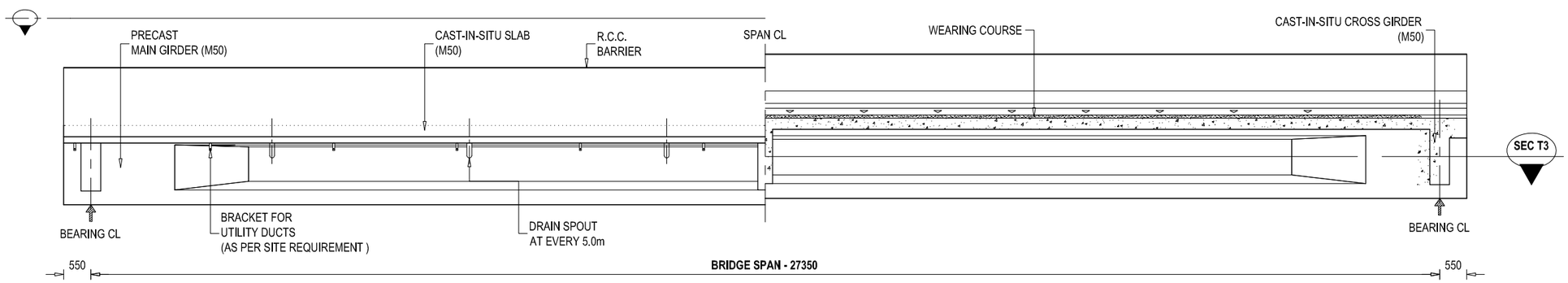
S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	1601	100 — 10970 — 100	16	150	11.170	48	1.580	847.27
2	1202	100 — 3420 — 100	12	150	3.620	150	0.889	482.67
							TOTAL (KG) :	1329.93

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS				
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera, Madrid, Spain STUP Consultants Private Limited, Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Krill Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL'A'	Signature	Drawing Name: ABUTMENT BAR BENDING SCHEDULE OF BRIDGE OVER RIVER KALINJOR-1 Reference Drawings: -
			Checked By	Mr. S.M.	Signature	Scale: AS SHOWN Chainage: 291+868
			Approved By	Mr. H.B.	Signature	Date: 01.05.2023 Drawing No.-KDP/DPR/STR/BR/KALINJOR-1/DD-9 Sheet No. 2 / 2



HALF SECTIONAL PLAN VIEW OF SUPERSTRUCTURE AT SEC T1

SCALE - 1 : 100 @ A3 PAPER

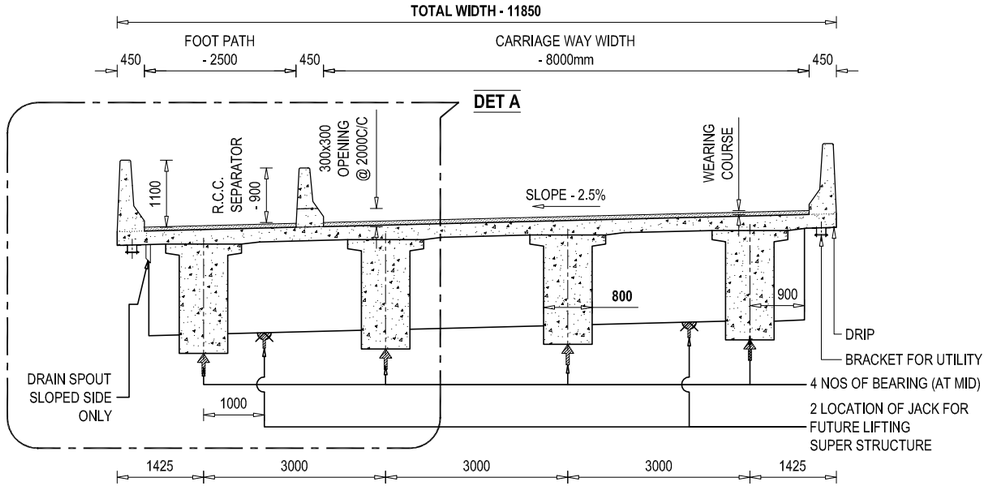


NOTE
READ THIS DRAWING IN CONJUNCTION WITH
DRG NO. KDP/DPR/STR/BR/KALINJOR-1/DD-4

HALF ELEVATION SECTIONAL VIEW OF SUPERSTRUCTURE AT SEC T2

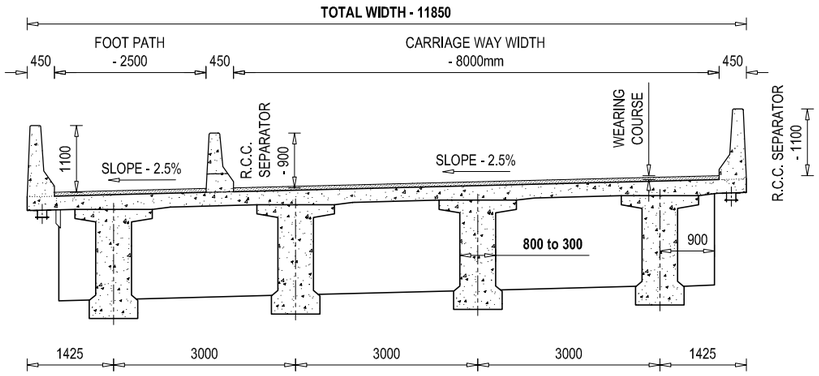
SCALE - 1 : 100 @ A3 PAPER

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera, Madrid, Spain STUP Consultants Private Limited, Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL"A"	Signature	Drawing Name: SUPER STRUCTURE DETAILS OF BRIDGE OVER RIVER KALINJOR-1 Reference Drawings: KDP/DPR/STR/BR/KALINJOR-1/DD-14	Scale: SCALE: AS SHOWN Chainage: 291+868	Date: 16.04.2023 Drawing No. KDP/DPR/STR/BR/KALINJOR-1/DD-10 Sheet No. 1 / 2
			Checked By	Mr. S.M.	Signature			
			Approved By	Mr. H.B.	Signature			



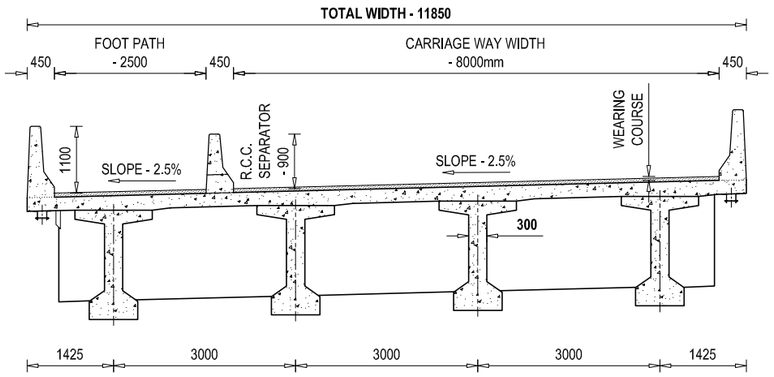
SECTIONAL VIEW AT T3

SCALE - 1 : 100 @ A3 PAPER



SECTIONAL VIEW AT T4

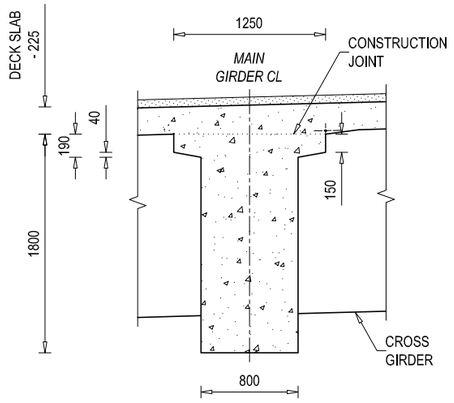
SCALE - 1 : 100 @ A3 PAPER



SECTIONAL VIEW AT T5

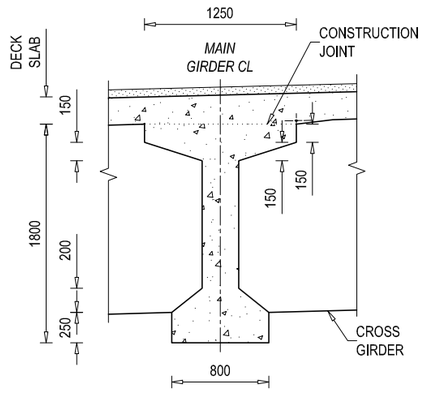
SCALE - 1 : 100 @ A3 PAPER

NOTE
READ THIS DRAWING IN CONJUNCTION WITH
DRG NO. KDP/DPR/STR/BR/KALINJOR-1/DD-4



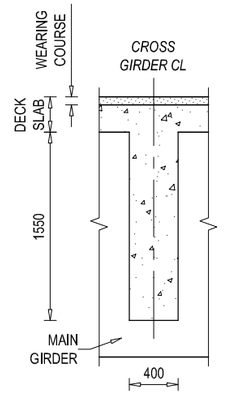
LONGITUDINAL GIRDER - SECTIONAL DETAIL AT END

SCALE - 1 : 50 @ A3 PAPER



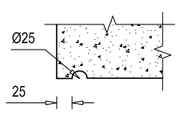
LONGITUDINAL GIRDER - SECTIONAL DETAIL AT MID

SCALE - 1 : 50 @ A3 PAPER



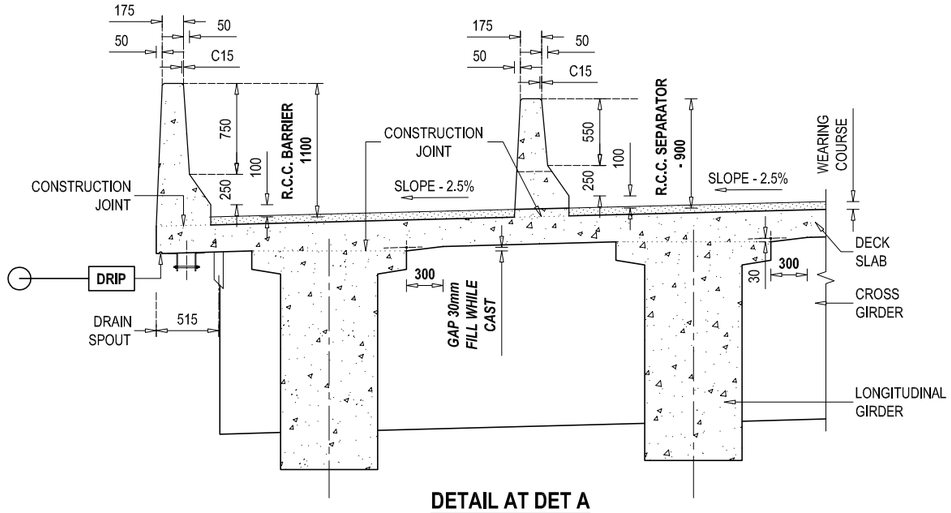
END CROSS GIRDER - SECTIONAL DETAIL

SCALE - 1 : 50



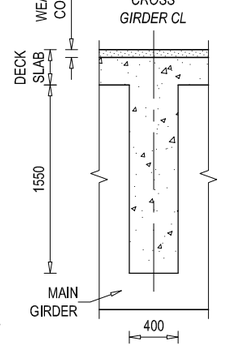
DETAIL AT DRIP

SCALE - 1 : 10



DETAIL AT DET A

SCALE - 1 : 50



MID CROSS GIRDER - SECTIONAL DETAIL

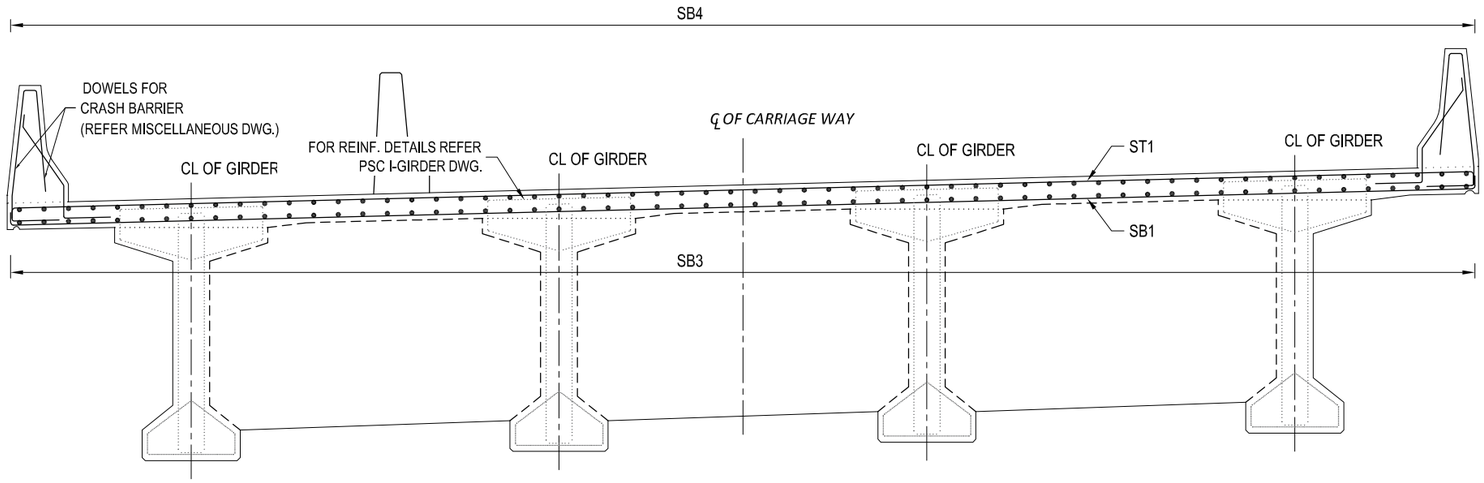
SCALE - 1 : 50

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera Madrid, Spain STUP Consultants Private Limited Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL"A"	Signature	Drawing Name SUPER STRUCTURE DETAILS OF BRIDGE OVER RIVER KALINJOR-1 Reference Drawings KDP/DPR/STR/BR/KALINJOR-1/DD-14	Scale: SCALE: AS SHOWN Chainage: 291+868
			Checked By	Mr. S.M.	Signature		
			Approved By	Mr. H.B.	Signature		

Date: 16.04.2023

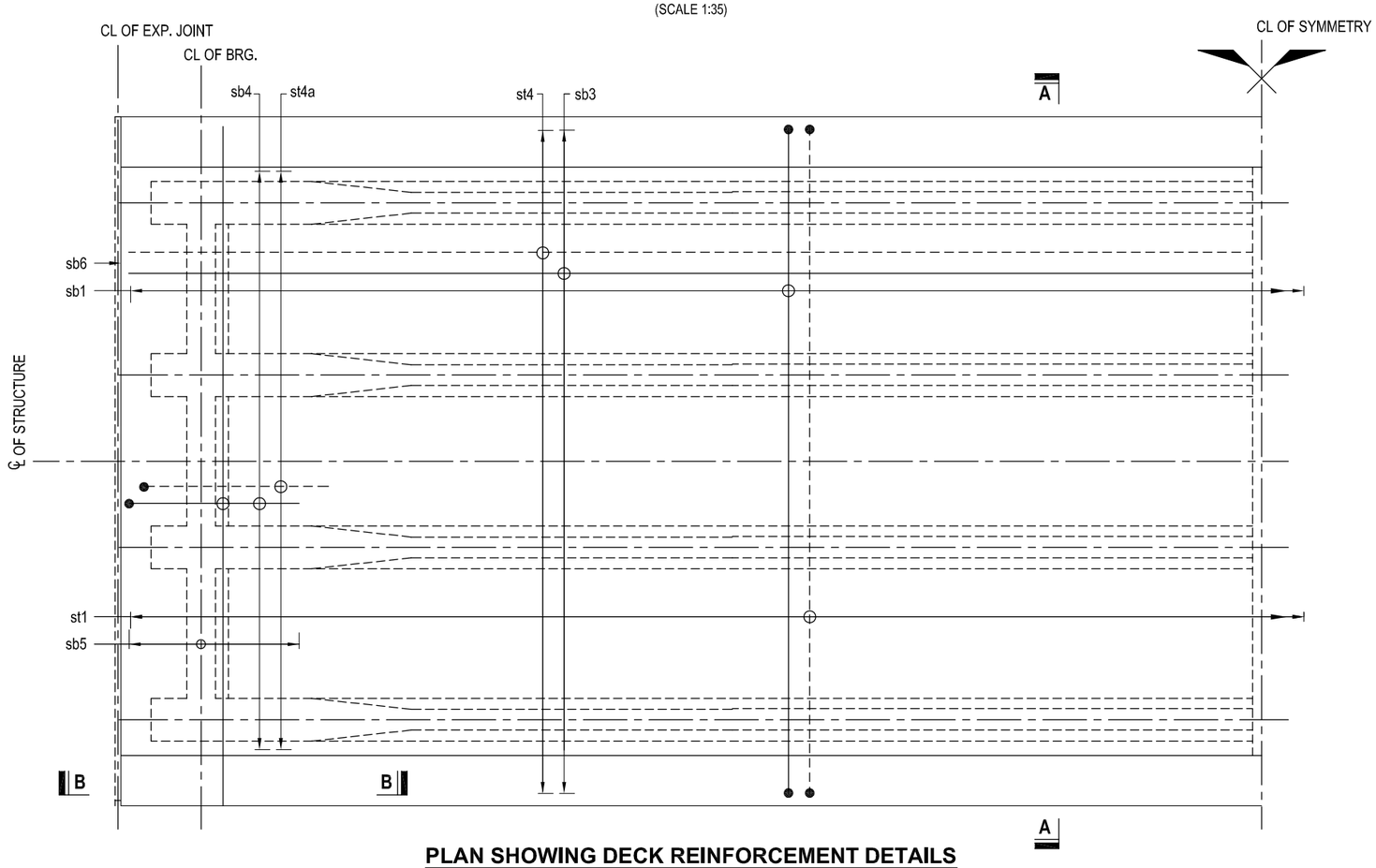
Drawing No. KDP/DPR/STR/BR/KALINJOR-1/DD-10

Sheet No. 2 / 2



REINFORCEMENT DETAILS OF INTERMEDIATE CROSS GIRDER

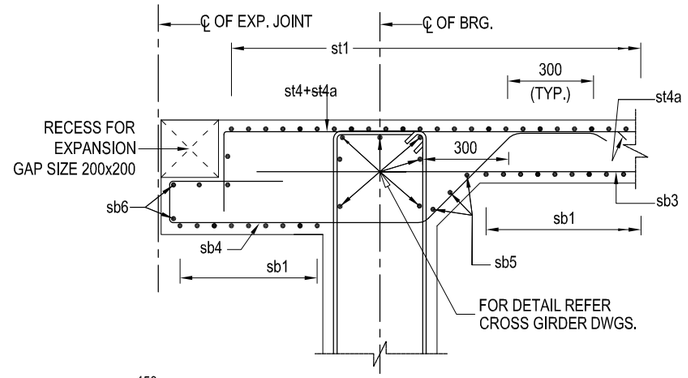
(SCALE 1:35)



PLAN SHOWING DECK REINFORCEMENT DETAILS
(PLAN AT DECK TOP ONLY SHOWN)

(SCALE - 1:75)

NOTE
READ THIS DRAWING IN CONJUNCTION WITH
DRG NO. KDP/DPR/STR/BR/KALINJOR-1/DD-4



SECTION B-B

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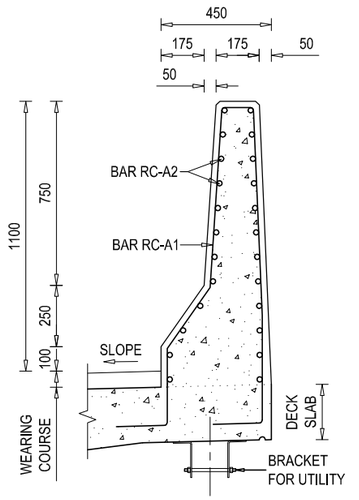


LEGEND :

TOP BARS SHOWN THUS - - - - -

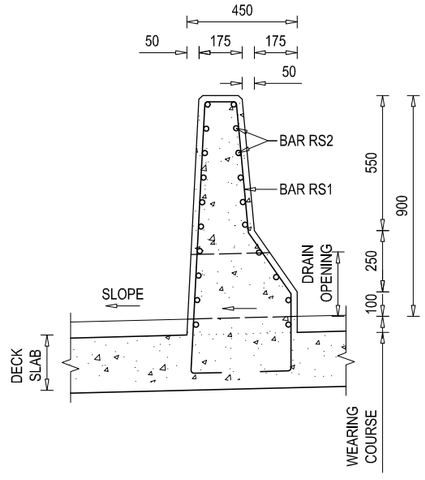
BOTTOM BARS SHOWN THUS ———

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS IN METERS, UNLESS NOTED OTHERWISE.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. CLEAR COVER FOR ALL REINFORCEMENT SHALL BE 40mm. UNLESS NOTED OTHERWISE.
4. FOR ALL OTHER NOTES REFER GENERAL ARRANGEMENT DRAWING.

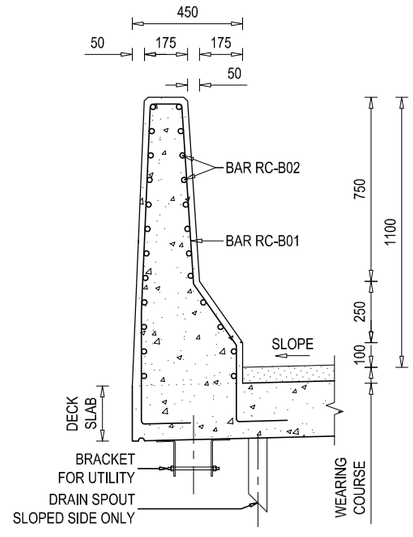
REINFORCEMENT DETAILS OF R.C.C BARRIER (A)- SECTIONAL VIEW

SCALE - 1 : 25



REINFORCEMENT DETAILS OF R.C.C SEPARATOR - SECTIONAL VIEW

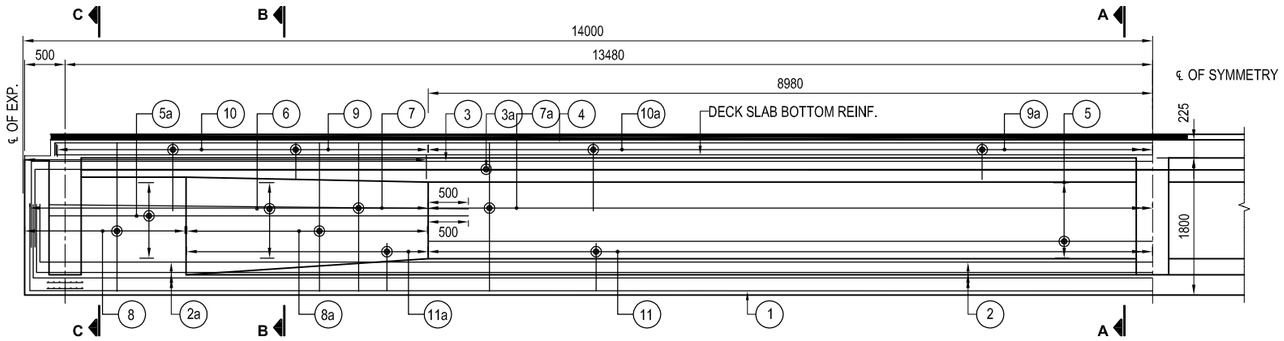
SCALE - 1 : 25



REINFORCEMENT DETAILS OF R.C.C BARRIER (B)- SECTIONAL VIEW

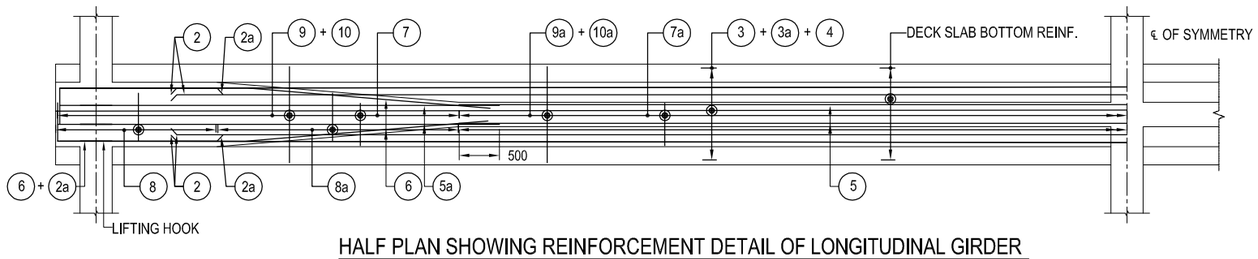
SCALE - 1 : 25

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera, Madrid, Spain STUP Consultants Private Limited, Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL"A"	Signature	Drawing Name: DECK SLAB DETAILS OF BRIDGE OVER RIVER KALINJOR-1 Reference Drawings: KDP/DPR/STR/BR/KALINJOR-1/DD-14	Scale: SCALE: AS SHOWN Chainage: 291+868
			Checked By	Mr. S.M.	Signature		Date: 16.04.2023 Drawing No. KDP/DPR/STR/BR/KALINJOR-1/DD-11 Sheet No. 1 / 1
			Approved By	Mr. H.B.	Signature		



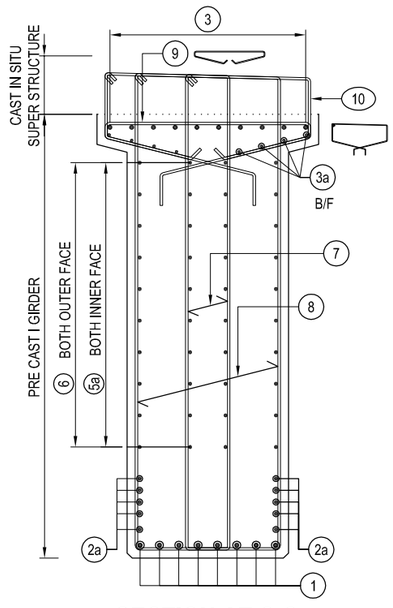
ELEVATION SHOWN REINFORCEMENT DETAIL OF LONGITUDINAL GIRDER

(SCALE 1:75)



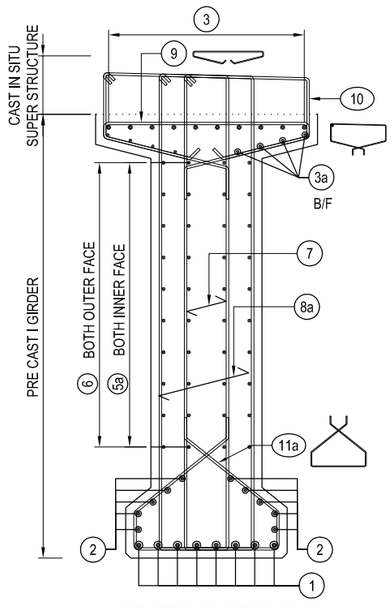
HALF PLAN SHOWING REINFORCEMENT DETAIL OF LONGITUDINAL GIRDER

(SCALE 1:75)



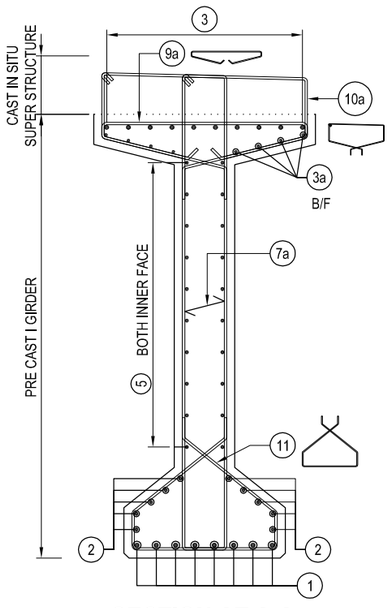
SECTION AT C-C

(SCALE 1:30)



SECTION AT B-B

(SCALE 1:30)



SECTION AT A-A

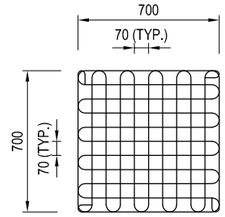
(SCALE 1:30)

NOTE :

READ THIS DRAWING IN CONJUNCTION WITH
DRG NO. KDP/DPR/STR/BR/KALINJOR-1/DD-4

NOTES :-

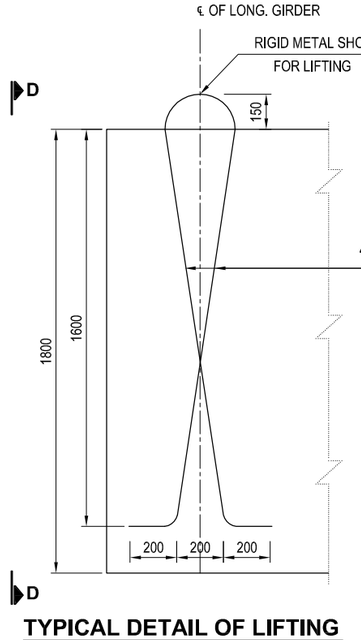
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS.
2. DO NOT SCALE THIS DRAWING. ONLY WRITTEN DIMENSION SHALL BE FOLLOWED.
3. MATERIALS:-
   CONCRETE : CONFORMING TO IS :456.
   PSC GIRDER M-45
   DECK SLAB & CROSS GIRDER M-40
4. REINFORCEMENT: Fe 500D CONFORMING TO IS 1786
5. CLEAR COVER TO ANY REINFORCEMENT: 40mm.
6. LAP LENGTH OF THE BARS SHALL BE AS PER IRC 112:2011 NOT MORE THEN 50% OF BARS SHALL BE LAPPED AT ONE LOCATION.
7. MESH 'A' SHALL BE PROVIDED IN GIRDER AT BEARING LOCATION IN TWO LAYERS AT 20MM & 100MM FORM SOFFIT OF GIRDER. ALL MESH REINFORCEMENT SHALL BE CENTRALLY PLACED W.R.T. BEARING.
8. STRANDS SHALL BE OF SAME SPECIFICATION AS PROVIDED FOR STRESSING FOR GIRDER.
9. BAR/STRANDS FOR LIFTING OF GIRDER SHALL BE PROVIDED IN SUCH A WAY SO AS TO ENSURE THAT LOAD IS TRANSFERRED ON ALL BAR/STRANDS SIMULTANEOUSLY.
10. WHERE ANCHORAGE AND LAPS ARE USED THE MINIMMUM ANCHORAGE AND LAP LENGTHS SHALL BE PROVIDED AS BELOW.



MESH TYPE "A"

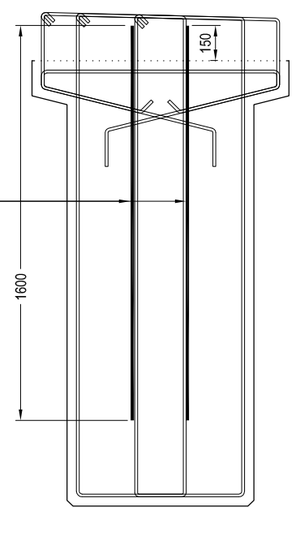
8Ø MESH TO BE PLACED UNDER BEARING

(SCALE 1:30)



TYPICAL DETAIL OF LIFTING OF GIRDER AT EACH END OF THE GIRDER

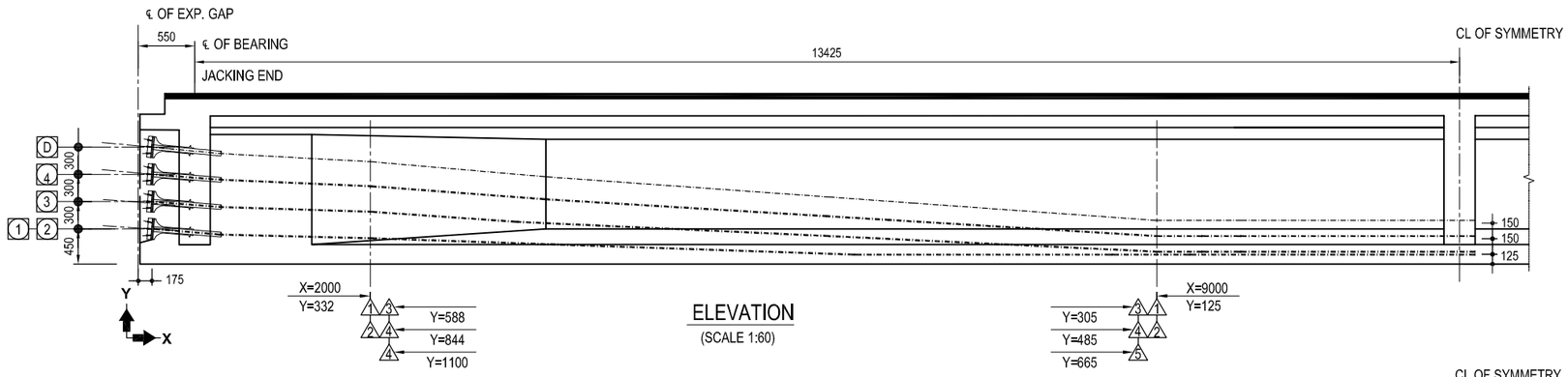
(SCALE 1:30)



SECTION D-D

(SCALE 1:30)

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera Madrid, Spain STUP Consultants Private Limited Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL'A'	Signature	Drawing Name: MAIN GIRDER REINFORCEMENT DETAILS OF BRIDGE OVER RIVER KALINJOR-1 Reference Drawings: KDP/DPR/STR/BR/KALINJOR-1/DD-14	Scale: SCALE: AS SHOWN Chainage: 291+868
			Checked By	Mr. S.M.	Signature		Date: 16.04.2023
			Approved By	Mr. H.B.	Signature		Drawing No. KDP/DPR/STR/BR/KALINJOR-1/DD-12 Sheet No. 1 / 3



ELEVATION
(SCALE 1:60)

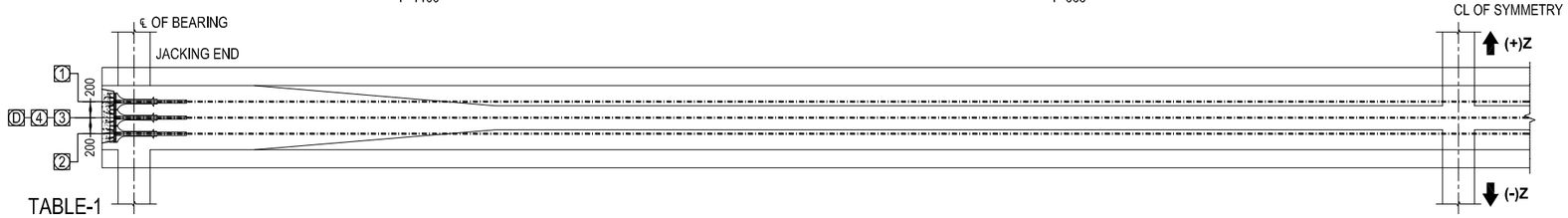


TABLE-1

`Y' & `Z' COORDINATES AT DISTANCE `X' FROM END OF CABLE/DUCT IN mm.

Cable No.	X	150	500	1500	2000	3000	3500	5000	6500	7500	9000	10500	11000	11500	12000	12500	13000	13500	14075
1	Y	450	420	361	332	277	252	192	151	134	125	125	125	125	125	125	125	125	125
	Z	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
2	Y	450	420	361	332	277	252	192	151	134	125	125	125	125	125	125	125	125	125
	Z	-200	-200	-200	-200	-200	-200	-200	-200	-200	-200	-200	-200	-200	-200	-200	-200	-200	-200
3	Y	750	710	629	588	513	480	397	341	318	305	305	305	305	305	305	305	305	305
	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Y	1050	999	896	844	749	707	602	531	501	485	485	485	485	485	485	485	485	485
	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Y	1350	1288	1163	1100	984	933	807	720	685	665	665	665	665	665	665	665	665	665
	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LEGEND:

- △ — INDICATES END OF CURVE IN ELEVATION
- ⬡ — INDICATES START OF CURVE IN ELEVATION
- ▢ — INDICATES END OF CABLE
- ○ — INDICATES CABLE NUMBER

NOTE :
READ THIS DRAWING IN CONJUNCTION WITH DRG NO. KDP/DPR/STR/BR/KALINJOR-1/DD-4

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE MENTIONED, ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS ARE NOT TO BE FOLLOWED.

3. PRESTRESSING SYSTEM

a) ALL PRESTRESSING STRANDS SHALL HAVE 7 PLY UNCOATED STRESS RELIEVED HIGH TENSILE STRANDS (LOW RELAXATION) OF CONFIRMING TO CLASS 2 OF IS 14268-1983.
b) CORRUGATED HDPE SHEATHING SHALL BE USED FOR ALL CABLES
c) THE PARAMETERS ADOPTED FOR DESIGN ARE AS FOLLOWS-
i) SLIP AT EACH END----------6mm
ii) MINIMUM SHEATH DIAMETER-----90mm (I.D)-FOR 19T13
iii) CO-EFFICIENT OF FRICTION-----μ=0.17 RADIANS
iv) WOBBLE CO-EFFICIENT --------k=0.002/m
v) NOMINAL AREA OF EACH STRANDS –A=98.8mm2
vi) NOMINAL ULTIMATE BREKING LOAD OF EACH STRANDS ----=183.71KN
vii) MODULUS OF ELASTICITY OF HIGH TENSILE STEEL ----E=1.95X105/mpa
d) ALL THE DESIGN PARAMETERS SHALL BE VERIFIED AT SITE BEFORE USE.
e.) SYSTEM OF PRESTRESSING -19T13/12T13 (ISMAL)

4. PRESTRESSING OPERATION

(ALL OPERATIONS TO BE SATISFY IRC AND MOST SPECIFICATION)
a) ALL CABLES SHALL BE LAID IN SMOOTH CURVES PASSING THROUGH THE GIVEN ORDINATES AND SHALL BE SUPPORTED AT A SPACING NOT EXCEEDING 1000mm BY A 16mm DIA CROSS BAR / TACK WELDED SECURELY HELD IN POSITION WITH VERTICAL WEB REINFORCEMENT.
b) CABLE LENGTHS MENTIONED IN THE TABLE-2 OF DRAWING ARE INCLUSIVE OF 1000mm EXTRA AT EACH ANCHORAGE.TOTAL LENGTH SHALL BE VERIFIED AT SITE.
c) STRANDS OF CABLE NO. 1 & 2 SHALL BE STRESSED FROM ONE END SIMULTANEOUSLY FROM OPPOSITE ENDS TO EACH OTHER, STRANDS OF CABLE NO. 3 & 4 SHALL BE TENSIONED FROM BOTH ENDS SIMULTANEOUSLY. JACK USED FOR TENSIONING SHALL BE ISMAL 3000 RG / 4000 MG OR EQUIVALENT FOR 19T13 & J20/1000MG FOR 7T13. JACKING FORCES GIVEN IN TABLE-2 SHALL BE INCREASED BY RELEVANT PERCENTAGE TO ACCOUNT FOR ANCHORAGE AND JACK FRICTION & EFFICIENCY AS PER MANUFACTURE'S INSTRUCTIONS.
d) GROUTING OF CABLES SHALL BE DONE IN SAME SEQUENCE AS STRESSING AND SHALL CONFORM WITH IRC:112-2011 AND ALSO TO MOST SPECIFICATION.
e) ANCHORAGE POCKET SHALL BE FILLED ITH EPOXY MORTAR OR NON SHRINK CONCRETE AFTER STRESSING & GROUTING.
f) EXTENSIONS SHALL BE RECHECKED AFTER 24 HOURS AFTER ANCHORING TO OBSERVE SLOW SLIPPAGE THE MATTER SHALL BE REPORTED FOR EXCESSIVE SLIPPAGE IF ANY.
g) EXTENSIONS GIVEN IN TABLE-2 ARE FOR HALF CABLE LENGTHS (BOTH ENDS STRESSING) FULL CABLE LENGTH (ONE ENDS STRESSING) INCLUSIVE OF 750mm GRIP LENGTH AT EACH END LOSS UPTO 6mm DUE TO SLIP OF ANCHORAGES ARE NOT TO BE COMPENSATED DURING SITE OPERATIONS. JACK PRESSURE & EXTENSION OF CABLES AT EACH END GIVEN IN THE DRAWING SHALL BE VERIFIED AT SITE.
h) INITIAL SLACKNESS IN THE PRESTRESSING SHALL BE REMOVED BY APPLYING SMALL TENSION. THE INITIAL TENSION REQUIRED TO REMOVE THE INITIAL SLACKNESS SHALL BE TAKEN AS THE STARTING POINT FOR MEASURING ELONGATION AND CORRECTION SHALL BE APPLIED AS PER CLAUSE 12.2.1.3 OF IS:1343-1980.
i) IN CASE THE CALCULATED ELONGATION AND THE JACK PRESSURE ARE NOT ACHIEVED SIMULTANEOUSLY DURING PRESTRESSING OPERATION, STRESSING SHALL BE CONTINUED/DISCONTINUED AS PER NOTE NO. 8 GIVEN BELOW.

5) THE EXTENSION GIVEN IN TABLE-2 SHALL BE MODIFIED AT SITE IN CASE ACTUAL VALUE OF AREA OF STRAND "A" AND MODULUS OF ELASTICITY "E"VARIES FROM THOSE ASSUME IN DESIGN REVISED EXTENSION SHALL BE CALCULATED AS UNDER:

$$\text{ELONGATION} = \frac{98.7 \times 195000}{\text{NEW AREA} \times \text{NEW MODULUS}} \times \text{X ELONGATION GIVEN IN TABLE-2}$$

6) THE EXTENSION OF CABLES SHALL BE VERIFIED FOR A FEW CABLES AT SITE. IN CASE THE VALUE OF AND ARE DIFFERENT THAN THOSE CONSIDERED, EXTENSION SHALL BE SUITABLY MODIFIED AFTER APPROVAL OF ENGINEER-IN-CHARGE.
7) THE GRIP LENGTH FROM ANCHORAGE FACE TO GRIPPING POINT IN JACK ASSUMED IN TENSION CALCULATION IS 750mm AND THE ADDITIONAL LENGTH TAKEN FOR CUTTING IS 200mm. IF GRIP LENGTH VARIES THAN THOSE CONSIDERED, EXTENSIONS SHALL BE MODIFIED.

8. SPECIAL NOTES FOR PRESTRESSING:-

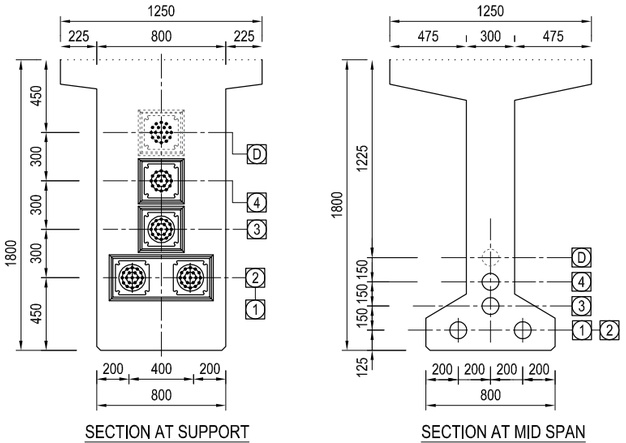
a. IF THE CALCULATED ELONGATION IS REACHED BEFORE THE CALCULATED GAUGE PRESSURE IS OBTAINED CONTINUE TENSIONING TILL ATAINING THE CALCULATED GAUGE PRESSURE PROVIDED BY ELONGATION DOESNOT EXCEED 1.05 TIMES THE CALCULATED ELONGATION . IF THIS ELONGATION IS ACHIEVED BEFORE THE CALCULATED GAUGE PRESSURE IS ATTAINED STOP STRESSING & INFORM THE ENGINEER-IN-CHRGE.
b. IF THE CALCULATED ELONGATION HAS NOT BEEN REACHED CONTINUE TENSIONING BY INTERVALS OF 5KG/sq cm UNTILL THE CALCULATED ELONGATION IS REACHED PROVIDED THE GAUGE PRESSURE DOES NOT EXCEED 1.05 TIMES THE CALCULATED GUAGE PRESSURE.
C. IF THE ELONGATION AT 1.05 TIMES THE CALCULATED GUAGE PRESSURE IS LESS THEN 0,95 TIMES THE CALCULATED ELONGATION, THE FOLLOWING MEASURES MUST BE TAKEN IN SUCCESSION TO DEFINE THE CAUSE OF THIS LACK OF ELONGATION
i) RECALIBRATE THE PRESSURE GUAGE.
ii) CHECK THE CORRECT FUNCTIONING OF THE JACK PUMP AND LEADS.
iii) DE-TENSION CABLE, SLIDE IT IN ITS DUCT TO CHECK THAT IT IS NOT BLOCKED BY MORTAR WHICH HAS INTERED THROUGH HOLES IN THE SHEATH, DETENSION THE CABLE IF FOUND FREE.
d. IF THE ELONGATION IS NOT OBTAINED FURTHER FINISHING OPERATIONS SUCH AS CUTTING OR SEALING SHOULD NOT BE UNDERTAKEN WITHOUT THE APPROVAL OF ENGINEER-IN-CHARGE.

9) FOR CO-ORDINATES REFER TABLE 1 OF THIS DRAWING.
10) FORCE IN CABLE 1 & 2 IS TO BE KEPT SAME AND UNIFORM ALWAYS, THROUGHOUT THE WHOLE PRESTRESSING OPERATION.
11) DO NOT MAKE GROUTING TILL THE LOAD VS ELONGATION VALUE IS FOUND IN CONFERMITY WITH THE FORCE VS ELONGATION TABLE. OTHERWISE, SHARE LOAD VS ELONGATION VALUE TO THE DESIGNER FOR FURTHER ACTION.

TABLE-2

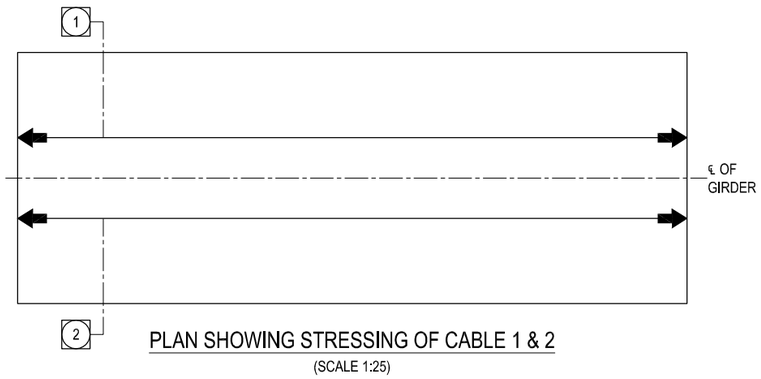
SCHEDULE OF TENDON FORCE AND EXTENSION:-

Cable No.	Total Length of Cable (mm)	Theoretical Elongation at Each End (mm)	Emergence Angle of Cable	No. of Strands	No. of Strands Left for Emergency	Jacking Force (T)	Stressing Type
1	30463	106.26	3.38	19	-	272.2	Both End
2	30463	107.09	3.38	19	-	272.2	Both End
3	30475	105.96	4.63	18	1	257.9	Both End
4	30490	105.79	5.88	18	1	257.9	Both End
5	Dummy		7.12				



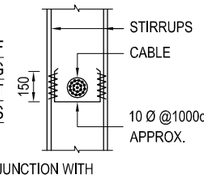
SECTION AT SUPPORT
(SCALE 1:25)

SECTION AT MID SPAN
(SCALE 1:25)



PLAN SHOWING STRESSING OF CABLE 1 & 2
(SCALE 1:25)

TYPICAL DETAIL OF SUPPORTING ARRANGEMENT FOR CABLES
(SCALE 1:20)



NOTE :
READ THIS DRAWING IN CONJUNCTION WITH DRG NO. KDP/DPR/STR/BR/KALINJOR-1/DD-4

SEQUENCE OF STRESSING :-

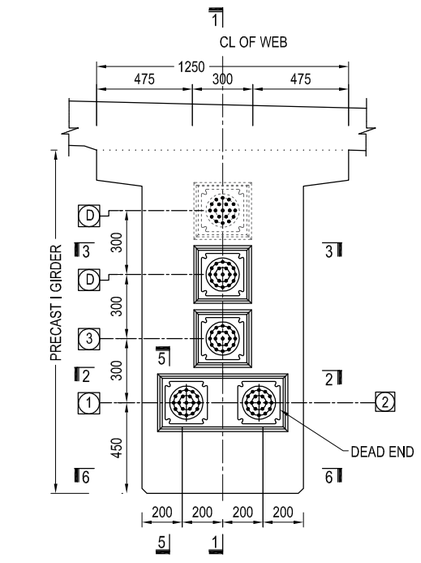
* CABLES SHALL BE STRESSES IN THE FOLLOWING SEQUENCE

SL.NO.	CABLE NO.	SEQUENCE OF STRESSING
1.	③	AFTER 7 DAYS OF CASTING OR AFTER CONCRETE ATTAINS 37MPa CUBIC STRENGTH, WHICHEVER IS LATER (BOTH ENDS PRESTRESSING)
2.	① & ②	AFTER 21 DAYS OF CASTINGGIRDER OR CONCRETE ATTAINS 48MPa CUBIC STRENGTH. CABLE 1 & 2 SHALL BE STRESSED FROM ONE END AS SHOWN IN PLAN SIMULTANEOUSLY FROM OPPOSITE ENDS TO EACH OTHER.
3.	④	STRESS CABLE 4 (BOTH ENDS PRESTRESSING)

SEQUENCE OF CONSTRUCTION :-

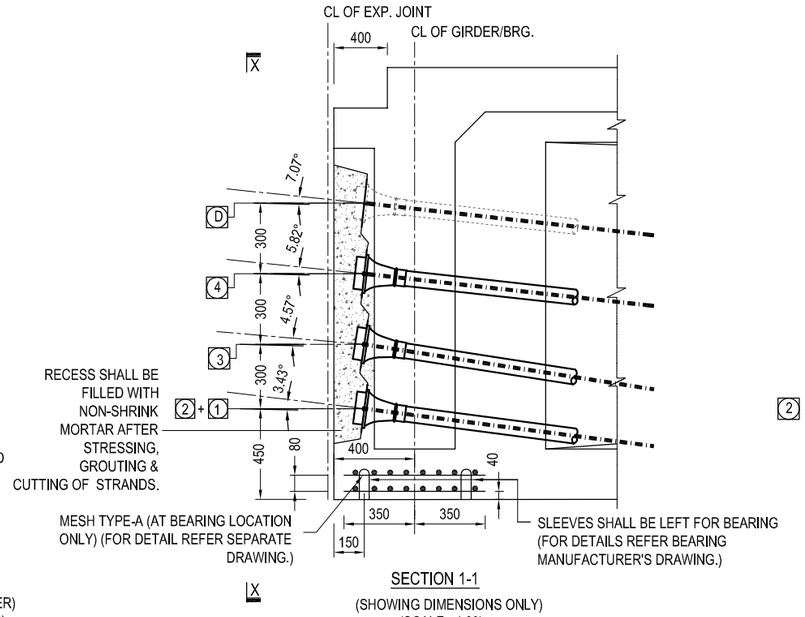
SL.NO.	LOADING CASES	TIME (DAYS)
1.	CASTING OF GIRDER	0 DAYS
2.	1st STAGE PRESTRESSING	7 DAYS OR AFTER CONCRETE ATTAINS 37mpa WHICHEVER IS LATER.
3.	2nd STAGE PRESTRESSING	21 DAYS OR AFTER CONCRETE ATTAINS 48mpa WHICHEVER IS LATER.
4.	CASTING OF DECK SLAB	28 DAYS
5.	REMOVAL OF DECK SHUTTERING	56 DAYS
6.	CASTING OF CRASH BARRIER	56 DAYS
7.	LAYING OF ASPHALT CONCRETE & ALLOWING LIVE LOAD	63 DAYS

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS				
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera Madrid, Spain STUP Consultants Private Limited Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL"A"	Signature	Drawing Name: MAIN GIRDER REINFORCEMENT DETAILS OF BRIDGE OVER RIVER KALINJOR-1 Reference Drawings: KDP/DPR/STR/BR/KALINJOR-1/DD-14
			Checked By	Mr. S.M.	Signature	Scale: SCALE: AS SHOWN Chainage: 291+868
			Approved By	Mr. H.B.	Signature	Date: 16.04.2023 Drawing No. KDP/DPR/STR/BR/KALINJOR-1/DD-12 Sheet No. 2 / 3



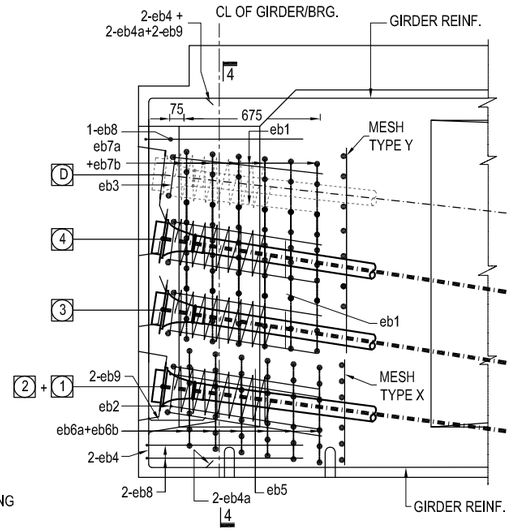
VIEW X-X

(CABLE 1 HAS A DEAD END ANCHOR AT THE OTHER END OF GIRDER)
(CABLE 2 HAS A JACKING ANCHOR AT THE OTHER END OF GIRDER)
(SCALE - 1:30)



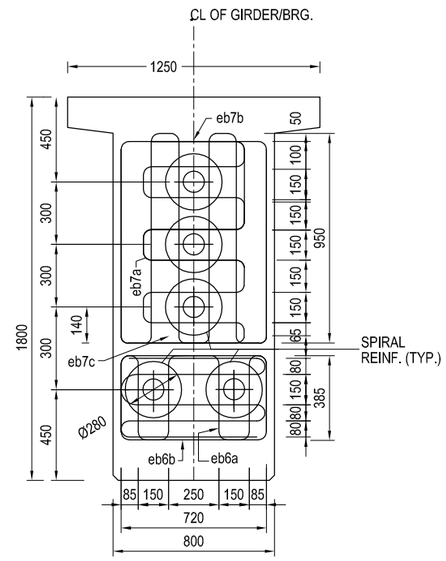
SECTION 1-1

(SHOWING DIMENSIONS ONLY)
(SCALE - 1:30)



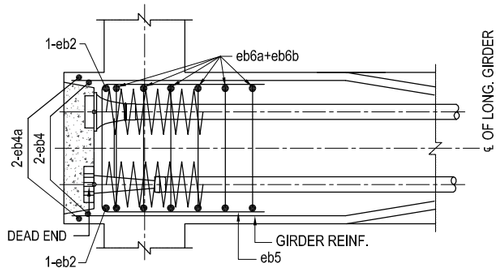
SECTION 1-1

(SHOWING REINFORCEMENT ONLY)
(SCALE - 1:30)



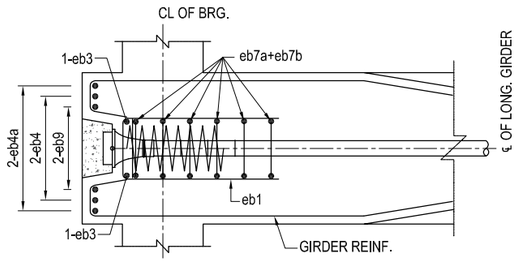
SECTION 4-4

(SCALE - 1:30)



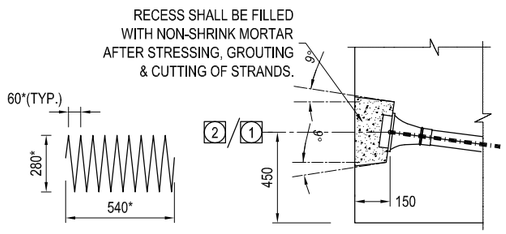
SECTION 2-2

(SCALE - 1:30)



SECTION 3-3

(SCALE - 1:30)

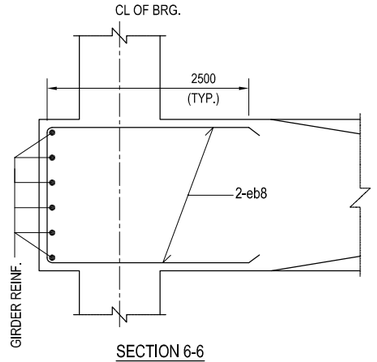


16 Ø SPIRAL

(FOR 19 T 13 CABLE)
* THE DETAIL TO BE VERIFIED AS PER THE PRESTRESSING SYSTEM (SCALE - 1:30)

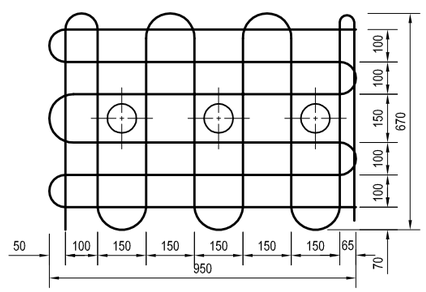
SECTION 5-5

(SHOWING DIMENSIONS ONLY)
(SCALE - 1:30)



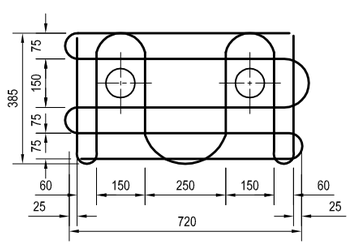
SECTION 6-6

(SCALE - 1:30)



DETAIL OF 8 ϕ MESH TYPE 'Y'

(SCALE 1:15)



DETAIL OF 8 ϕ MESH TYPE 'X'

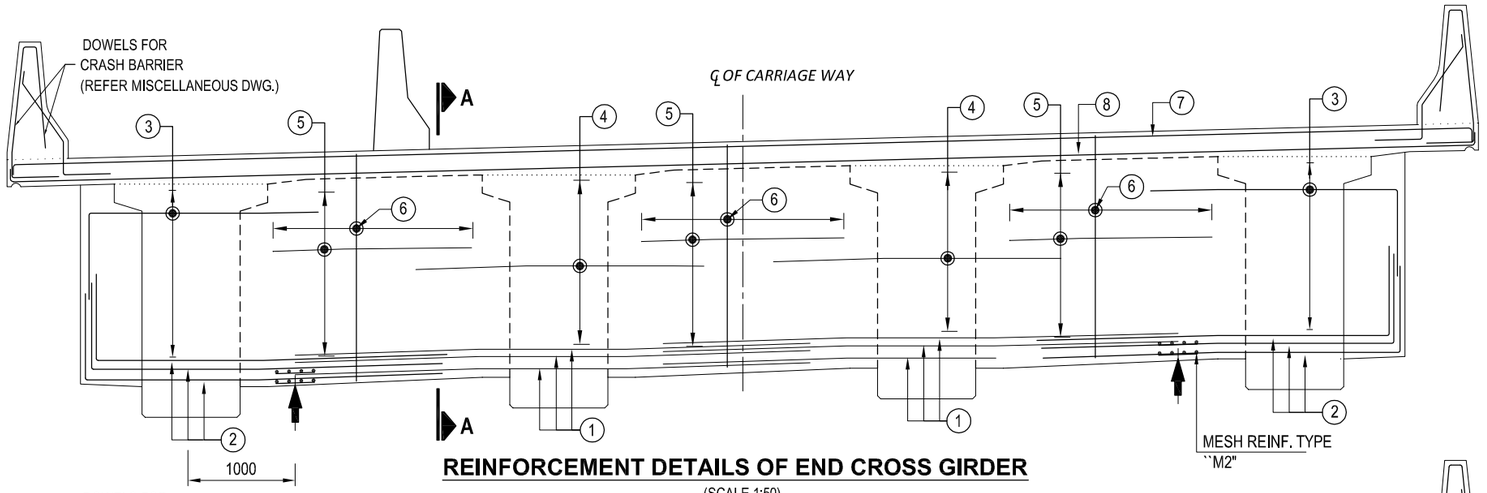
(SCALE 1:15)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED
2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. CLEAR COVER TO ANY REINFORCEMENT SHALL BE 40mm.
4. ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (GRADE DESIGNATION Fe500D) CONFORMING TO IS : 1786.
5. PORTION SHOWN THUS SHALL BE FILLED UP WITH PRE PACKED NON-SHRINK MORTAR AS PER SPECIFICATIONS. AFTER STRESSING & GROUTING IS COMPLETED.
6. SLEEVES SHALL BE GROUTED WITH NON SHRINK FREE FLOW MORTAR AFTER PLACING OF LUGS FOR BEARING.

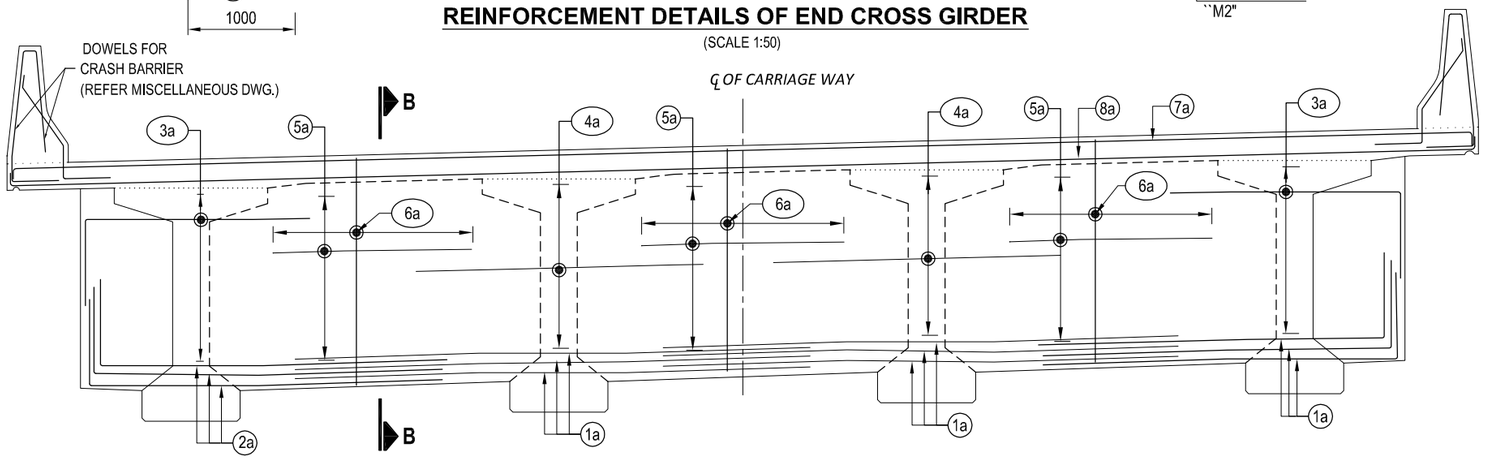
NOTE :
READ THIS DRAWING IN CONJUNCTION WITH
DRG NO. KDP/DPR/STR/BR/KALINJOR-1/DD-4

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera, Madrid, Spain STUP Consultants Private Limited, Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL'A'	Signature	Drawing Name: MAIN GIRDER REINFORCEMENT DETAILS OF BRIDGE OVER RIVER KALINJOR-1 Reference Drawings: KDP/DPR/STR/BR/KALINJOR-1/DD-14	Scale: SCALE: AS SHOWN Chainage: 291+868	Date: 16.04.2023 Drawing No. KDP/DPR/STR/BR/KALINJOR-1/DD-12 Sheet No. 3 / 3
			Checked By	Mr. S.M.	Signature			
			Approved By	Mr. H.B.	Signature			



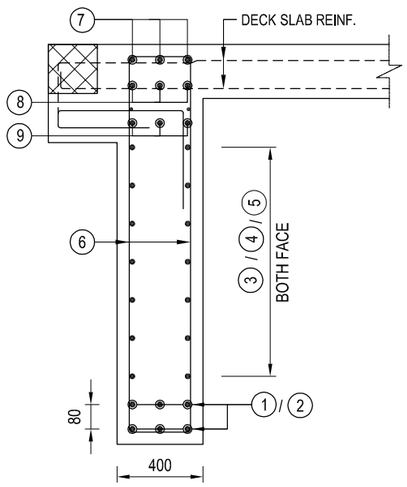
REINFORCEMENT DETAILS OF END CROSS GIRDER

(SCALE 1:50)



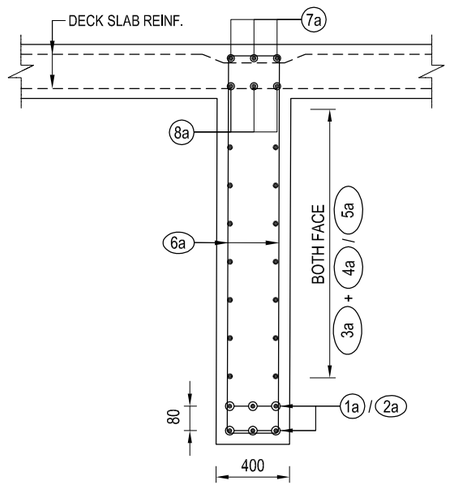
REINFORCEMENT DETAILS OF INTERMEDIATE CROSS GIRDER

(SCALE 1:50)



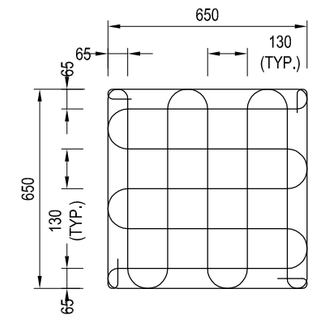
SECTION AT A-A

(SCALE 1:25)



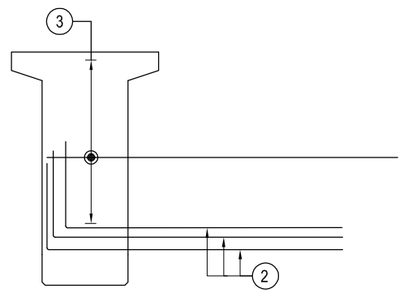
SECTION AT B-B

(SCALE 1:25)

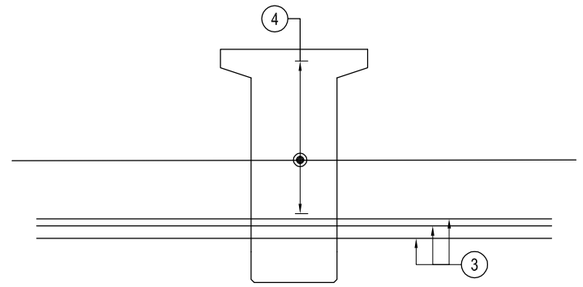


DETAIL OF 8 ϕ MESH TYPE "M2"

(IN TWO LAYERS AT JACK LOCATION)
(SCALE 1:20)



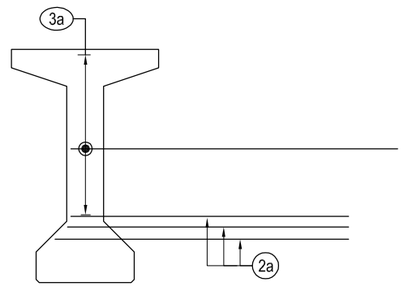
(OUTER GIRDER)



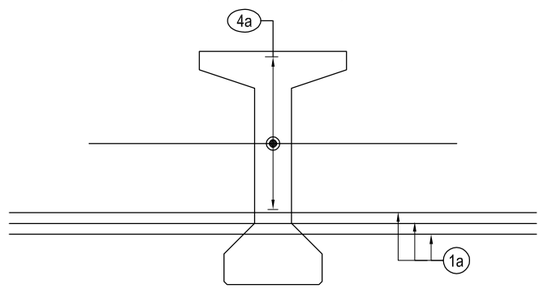
(INNER GIRDER)

DETAILS OF DOWELS BAR FOR END CROSS GIRDER

(SCALE 1:50)



(OUTER GIRDER)



(INNER GIRDER)

DETAILS OF DOWELS BAR FOR INTERMEDIATE CROSS GIRDER

(SCALE 1:50)

NOTE :
READ THIS DRAWING IN CONJUNCTION WITH DRG NO. KDP/DPR/STR/BR/KALINJOR-1/DD-4

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS				Drawing Name	Scale:	Date:
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingenieria Madrid, Spain STUP Consultants Private Limited Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL"A"	Signature	CROSS GIRDER REINFORCEMENT DETAILS OF BRIDGE OVER RIVER KALINJOR-1	SCALE: AS SHOWN	16.04.2023
			Checked By	Mr. S.M.	Signature	Reference Drawings KDP/DPR/STR/BR/KALINJOR-1/DD-14	Chainage: 291+868	Drawing No. KDP/DPR/STR/BR/KALINJOR-1/DD-13
			Approved By	Mr. H.B.	Signature			Sheet No. 1 / 1

BAR BENDING SCHEDULE OF GIRDER (1 NO)

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	1	150 | 28420 | 150	16		28.720	6	1.580	272.31
2	2	28420	16		28.420	10	1.580	449.11
3	2a	1900, 3010, 500, 5°	16		5.410	20	1.580	170.98
4	3	150 | 28420 | 150	16		28.720	10	1.580	453.85
5	3a	28420	16		28.420	8	1.580	359.28
6	4	SEE DECK REINFORCEMENT						
7	5	28420	12		28.420	10	0.889	252.62
8	5a	1900, 3010, 500, 5°	12		5.410	20	0.889	96.18
9	6	1900, 3010, 500, 5°	12		5.410	20	0.889	96.18
10	7	2 Legged: 100, 1945, 220	12	150	4.530	68	0.889	273.81
11	7a	2 Legged: 100, 1945, 220	12	150	4.530	166	0.889	668.43
12	8	2 Legged: 100, 1945, 720	12	150	5.530	28	0.889	137.64
13	8a	2 Legged: 100, 1945, Avg. 470	12	150	5.030	42	0.889	187.79
14	9	1170, 75, 85, 475	12	150	2.440	68	0.889	147.48
15	9a	1170, 75, 85, 475	12	150	2.440	166	0.889	360.04

BAR BENDING SCHEDULE OF GIRDER (1 NO)

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
16	10	1170, 290, 935, 150, 51°	12	150	3.920	68	0.889	236.94
17	10a	1170, 290, 935, 150, 51°	12	150	3.920	166	0.889	578.42
18	11	150, 51°, 170, 585, 720	12	150	2.530	68	0.889	152.92
19	11a	150, 51°, 170, 585, 720	12	150	2.530	166	0.889	373.32
20	12	R150, 1650, 200	16		4.000	4	1.580	25.28
							TOTAL :	5292.57
							GRAND TOTAL (4 NO.S)	21170.29

BAR BENDING SCHEDULE OF CROSS GIRDER (PER SPAN)

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	1	4200	20		4.200	60	2.469	622.22
2	2	700 | 2610	20		3.310	24	2.469	196.15
3	3	700 | 2000	12		2.700	24	0.889	57.60
4	4	2400	12		2.400	60	0.889	128.00
5	5	2000	12		2.000	72	0.889	128.00
6	6	100, 2 Legged, 1800, 320	12	150	4.440	10	0.889	39.47
7	7	150 | 11850 | 150	20		12.150	6	2.469	180.00
8	8	150 | 11850 | 150	20		12.150	6	2.469	180.00
9	9	150 | 11850 | 150	20		12.150	6	2.469	180.00
10	10	650, 650	12		5.130	8	0.889	36.48
							TOTAL :	1747.92
							GRAND TOTAL (3 NO.)	5243.75

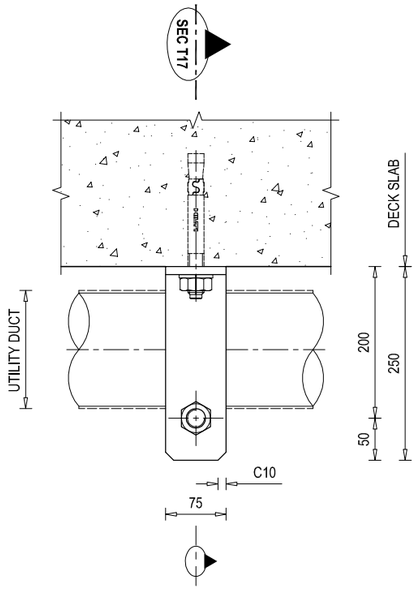
BAR BENDING SCHEDULE OF GRIDER END (1 NO)

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	eb1	800, 380, 800	16		1.980	2	1.580	6.26
2	eb2	1600	12		1.600	2	0.889	2.84
3	eb3	1600	12		1.600	2	0.889	2.84
4	eb4 + eb4a	800, 550 Avg., 800	12		2.150	2	0.889	3.82
5	eb5	800, 720, 800	16		2.320	2	1.580	7.33
6	eb6	385, 720	16		10.310	6	1.580	97.75
7	eb7	670, 950	16		12.200	6	1.580	115.67
8	eb8	800, 720, 800	16		2.320	2	1.580	7.33
9	eb9	200, 1800, 3000, 200	12		5.200	2	0.889	9.24
10	eb10	280, 540	16		8.790	4	1.580	55.56
							TOTAL :	308.67
							GRAND TOTAL (2 x 4 NO.S)	1234.67

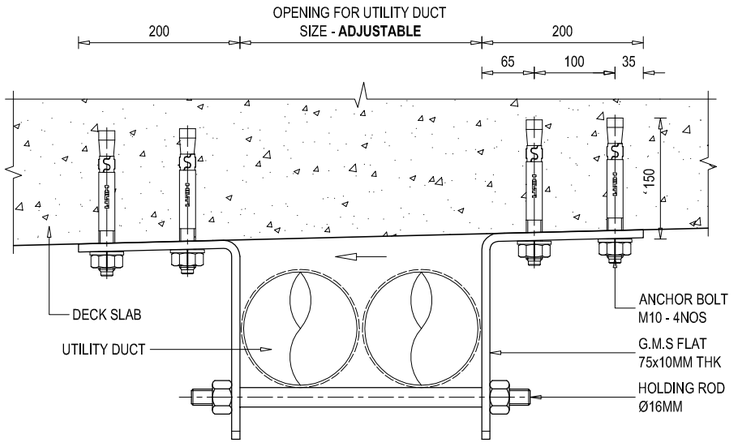
BAR BENDING SCHEDULE OF DECK (1 NO)

S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	st1	350 | 11770 | 350	16	100	12.470	285	1.580	5616.12
2	st4	100 | 28420 | 100	10	150	28.620	79	0.617	1395.67
3	st4a	350 | 650	12	150	1.000	110	0.889	97.78
4	sb1	100 | 11770 | 100	16	100	11.970	350	1.580	6620.44
5	sb3	100 | 28420 | 100	12	150	28.620	110	0.889	2798.40
6	sb4	350, 800, 300, 500	12	150	1.950	110	0.889	190.67
7	sb5	11770	10		11.770	3	0.617	21.80
8	sb6	11770	16		11.770	4	1.580	74.40
							TOTAL :	16815.27
							GRAND TOTAL (1 NO.)	16815.27

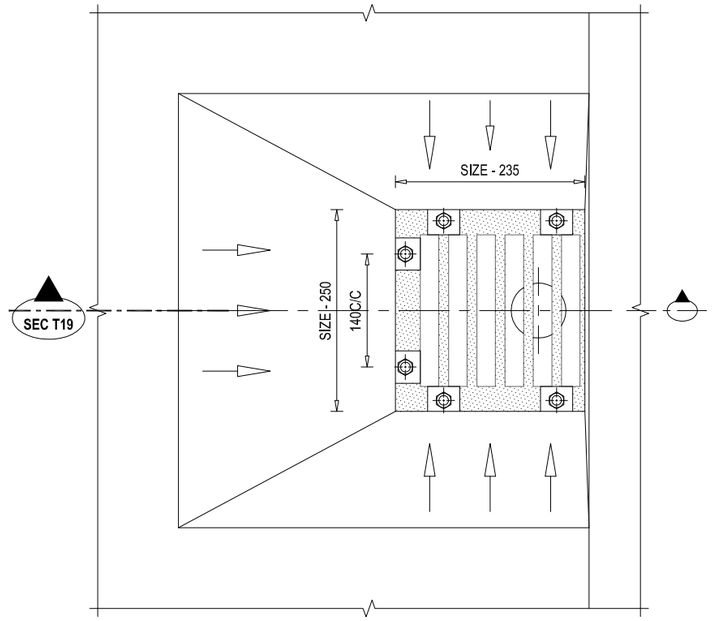
EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS				
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera, Madrid, Spain STUP Consultants Private Limited, Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL'A'	Signature	Drawing Name: SUPER STRUCTURE BAR BENDING SCHEDULE OF BRIDGE OVER RIVER KALINJOR-1 Reference Drawings: -
			Checked By	Mr. S.M.	Signature	Scale: SCALE: AS SHOWN Chainage: 291+868
			Approved By	Mr. H.B.	Signature	Date: 16.04.2023 Drawing No. KDP/DPR/STR/BR/KALINJOR-1/DD-14 Sheet No. 1 /1



FRONT VIEW



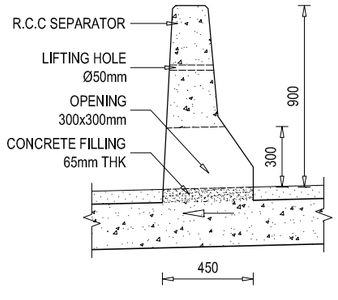
SECTIONAL ELEVATION VIEW AT SEC T17



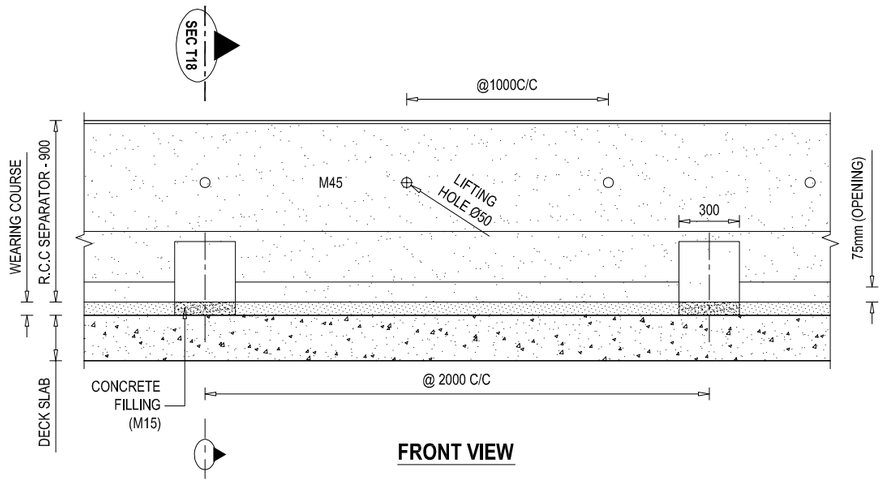
PLAN VIEW

DETAILS OF GALVANIZED MILD STEEL (G.M.S)
UTILITY DUCT CLAMP

SCALE - 1 : 10



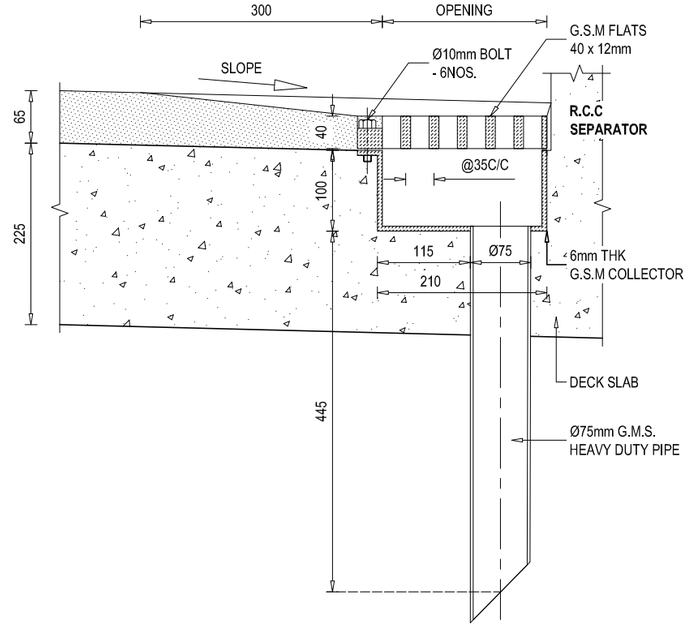
SECTIONAL ELEVATION VIEW AT SEC T18



FRONT VIEW

DETAIL ELEVATION VIEW AT R.C.C SEPARATOR & IT'S DRAIN OPENING

SCALE - 1 : 40

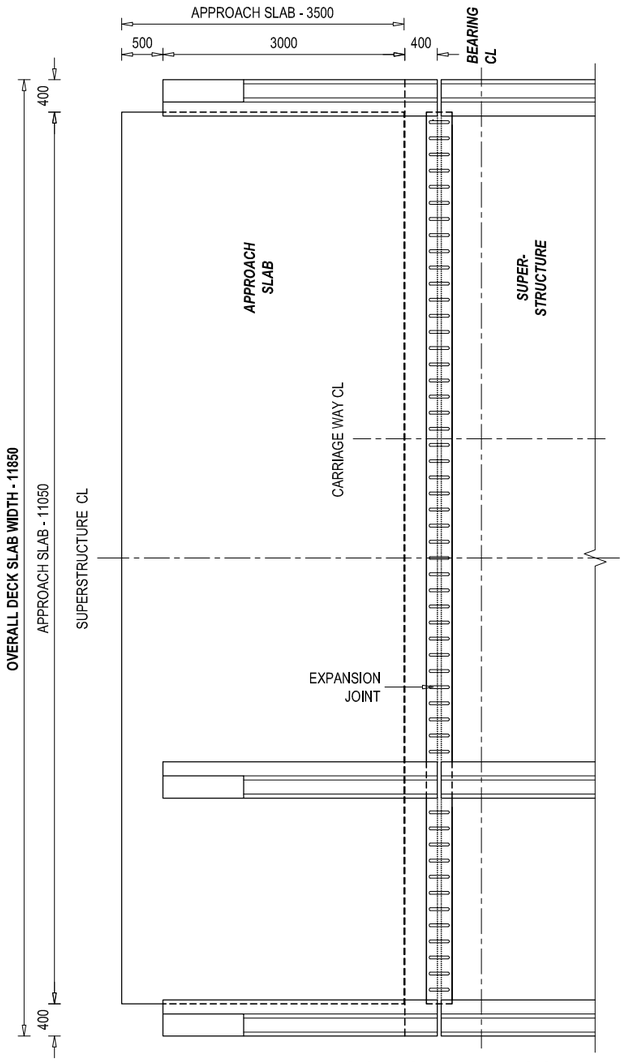


SECTIONAL ELEVATION VIEW AT SEC T19

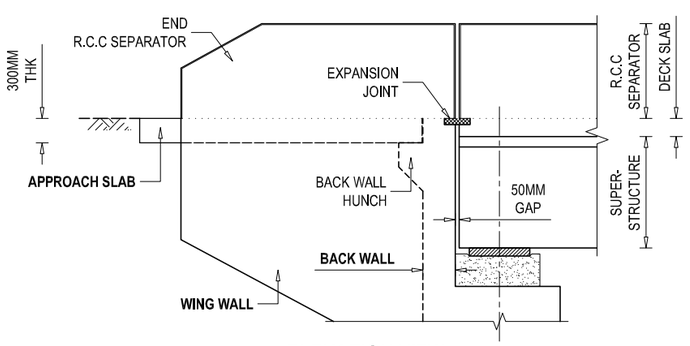
DETAILS OF GALVANIZED MILD STEEL (G.M.S)
DRAINAGE SPOUT

SCALE - 1 : 10

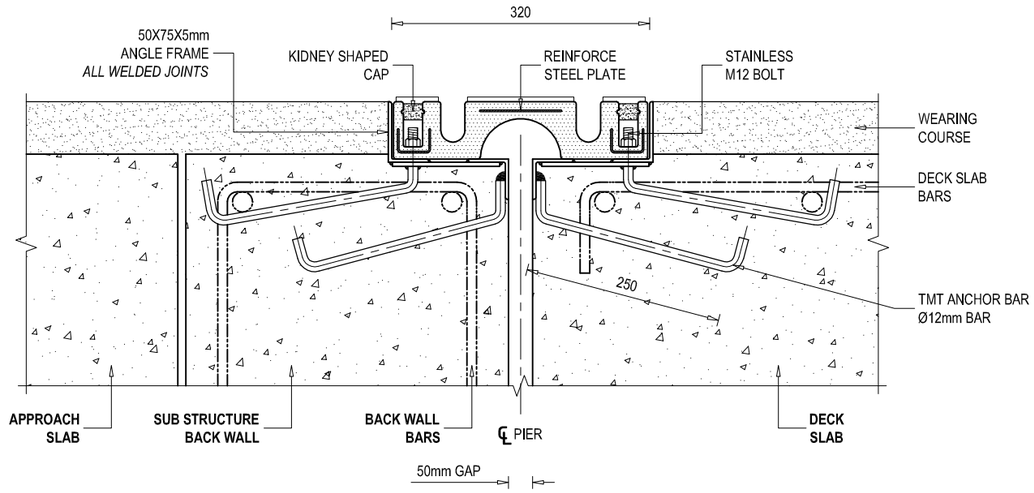
EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera Madrid, Spain STUP Consultants Private Limited Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL 'A'	Signature	Drawing Name MISCELLANEOUS DETAILS OF BRIDGE OVER RIVER KALINJOR-1	Scale: AS SHOWN Date: 16.04.2023
			Checked By	Mr. S.M.	Signature		Drawing No.- KDP/DPR/STR/BR/KALINJOR-1/DD-15
			Approved By	Mr. H.B.	Signature	Reference Drawings -	Chainage: 291+868 Sheet No.1 /2



PLAN VIEW AT EXPANSION JOINT, END R.C.C SEPARATOR & APPROACH SLAB

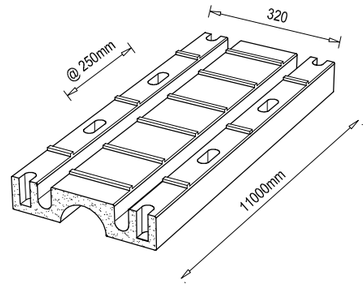


ELEVATION VIEW



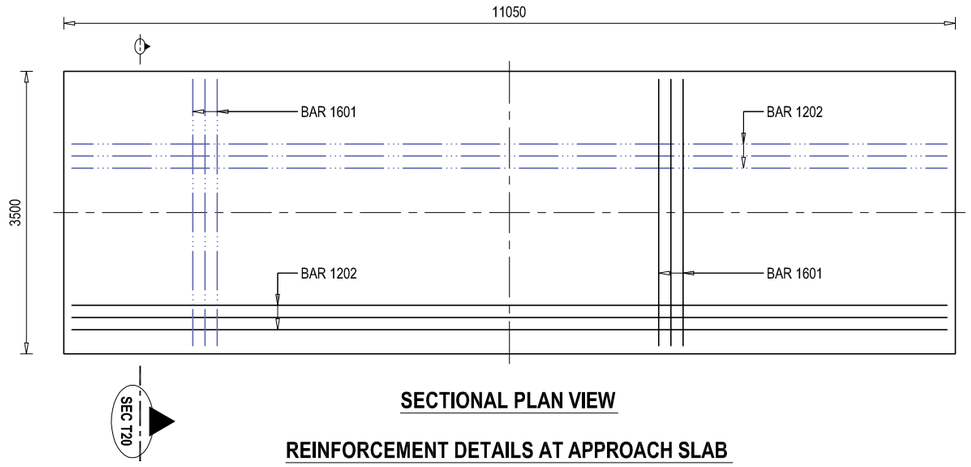
SEAL TYPE EXPANSION JOINTS ARRANGEMENT IN A CARRIAGEWAY

SCALE - 1 : 10 @ A3 PAPER



EXPANSION JOINT ISOMETRIC VIEW - SEAL TYPE

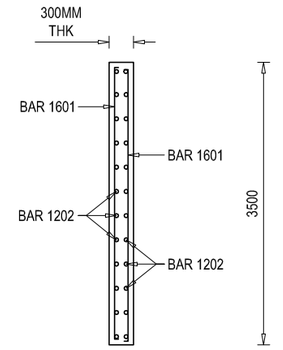
SCALE - NONE



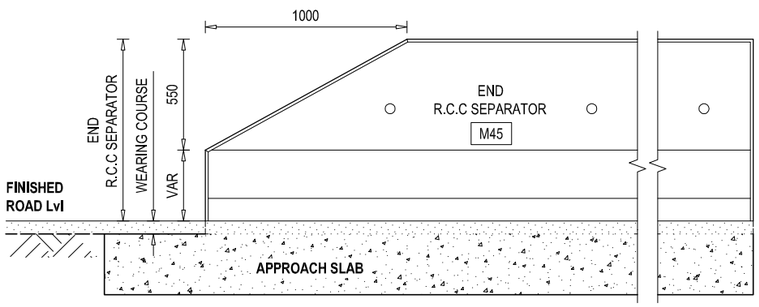
SECTIONAL PLAN VIEW

REINFORCEMENT DETAILS AT APPROACH SLAB

SCALE - 1 : 100 @ A3 PAPER

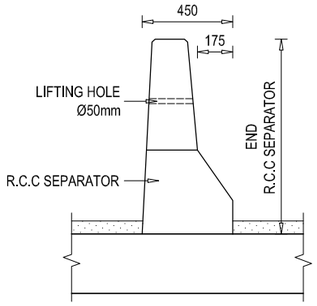


SECTIONAL ELEVATION VIEW AT SEC T20



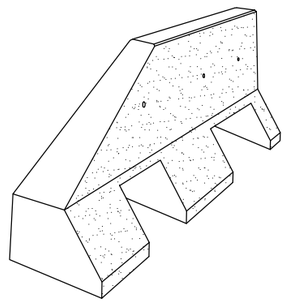
ELEVATION VIEW OF END R.C.C SEPARATOR

SCALE - 1 : 40 @ A3 PAPER



SIDE VIEW

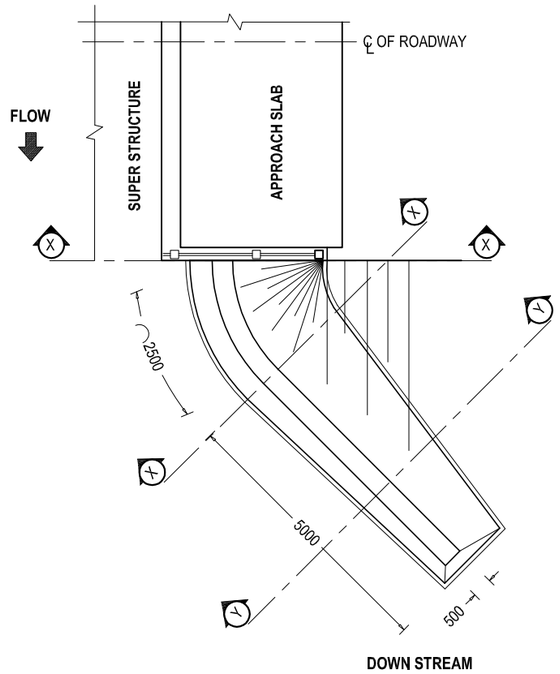
SCALE - 1 : 40 @ A3 PAPER



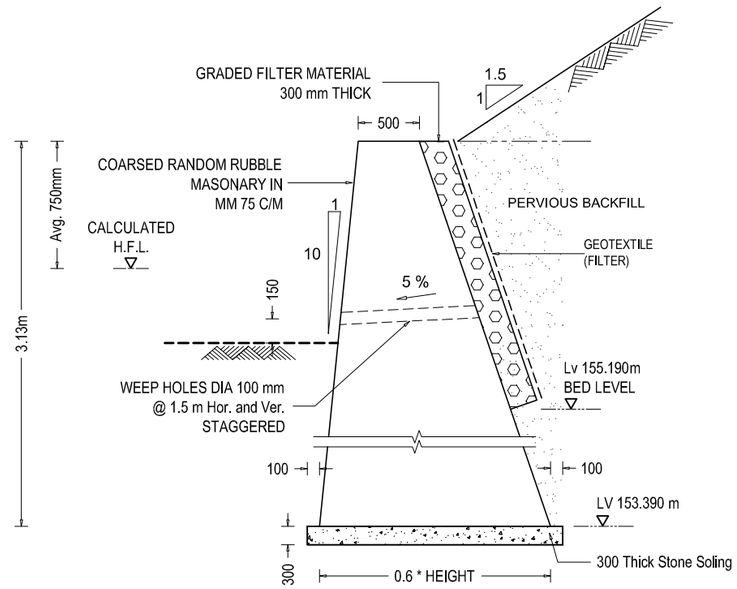
END R.C.C SEPARATOR ISOMETRIC VIEW

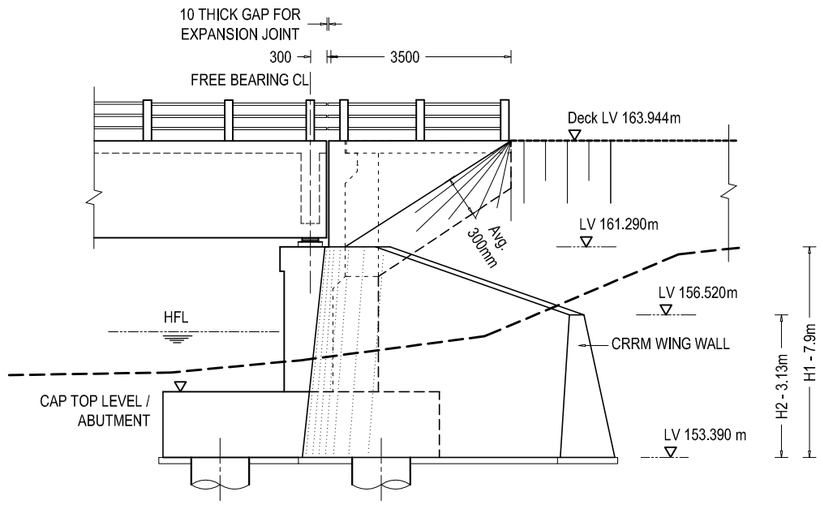
SCALE - NONE

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS				
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera, Madrid, Spain STUP Consultants Private Limited, Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL'A'	Signature	Drawing Name: MISCELLANEOUS DETAILS OF BRIDGE OVER RIVER KALINJOR-1 Reference Drawings: KDP/DPR/STR/BR/KALINJOR-1/DD-9
			Checked By	Mr. S.M.	Signature	Scale: AS SHOWN Chainage: 291+868
			Approved By	Mr. H.B.	Signature	Date: 16.04.2023 Drawing No.- KDP/DPR/STR/BR/KALINJOR-1/DD-15 Sheet No.2 /2

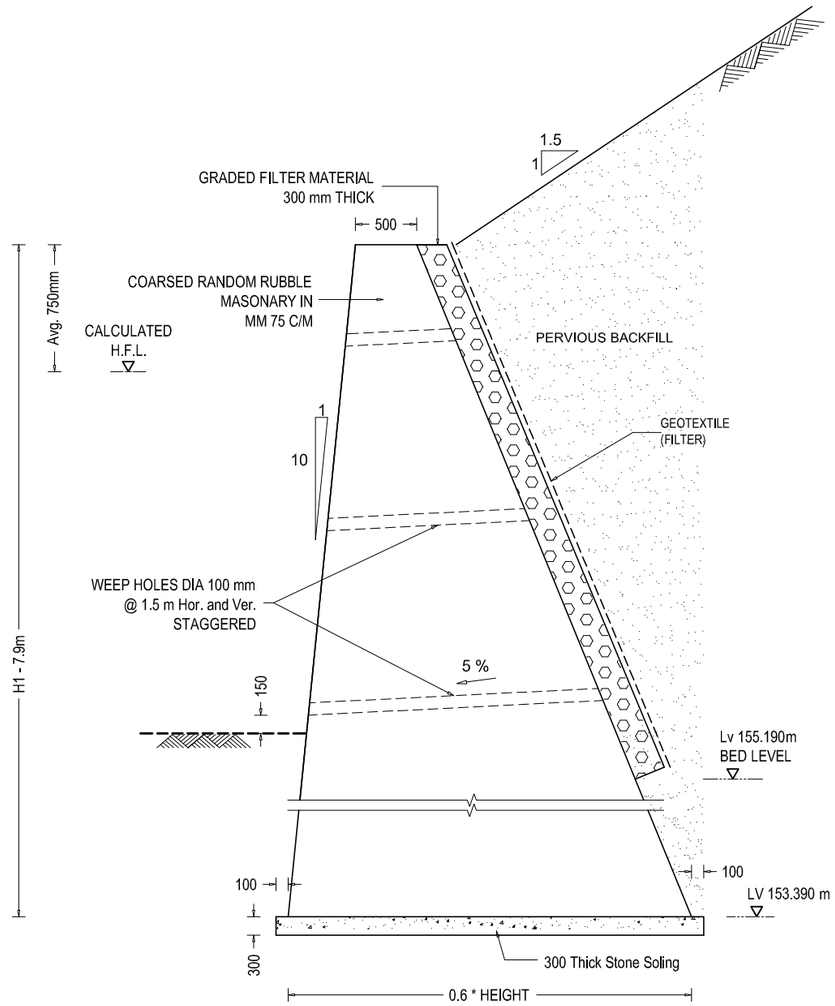


NOTE : AT DOWN STREAM ONLY





WING WALL ELEVATION

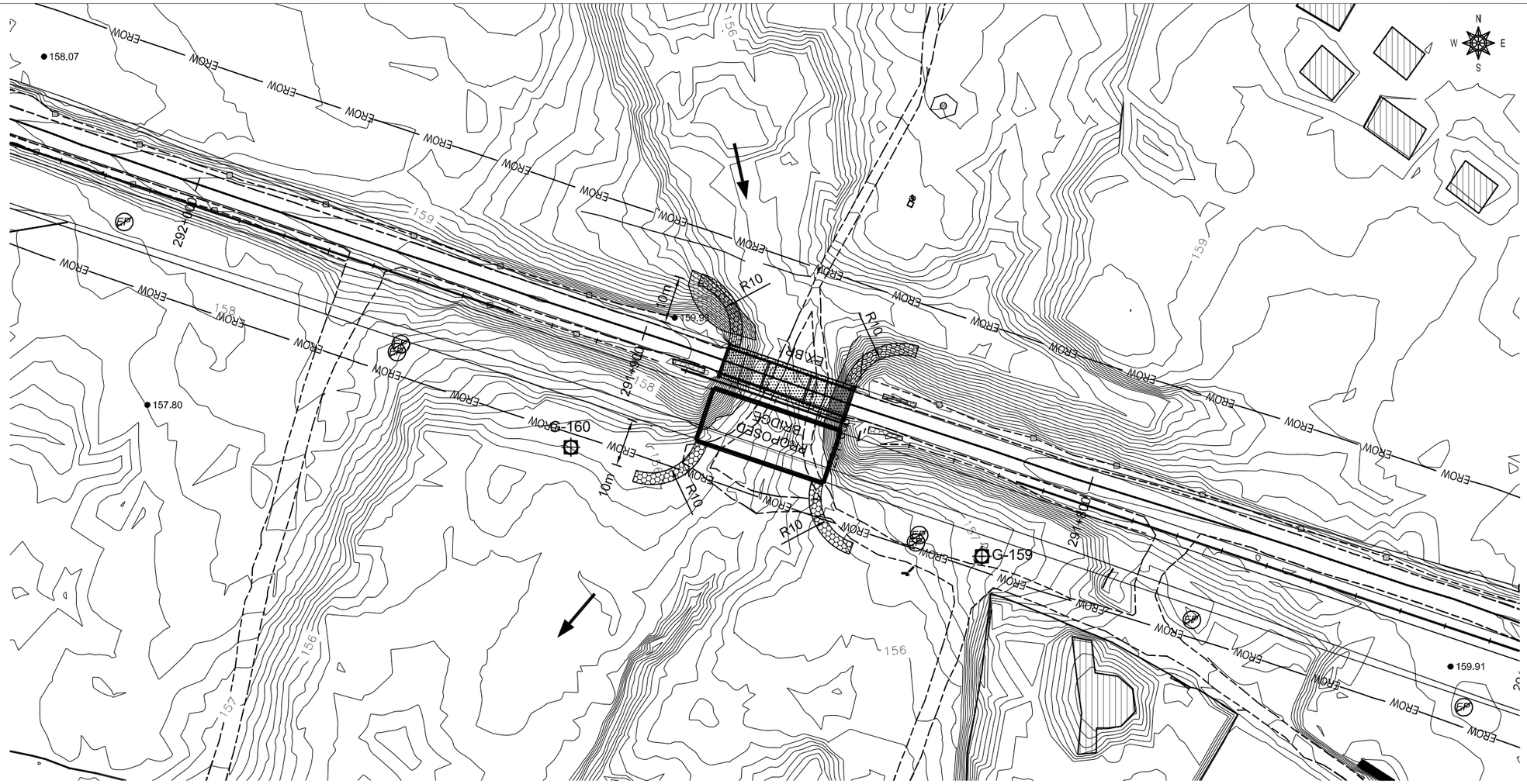


STONE MASONRY WING WALL SECTION X - X

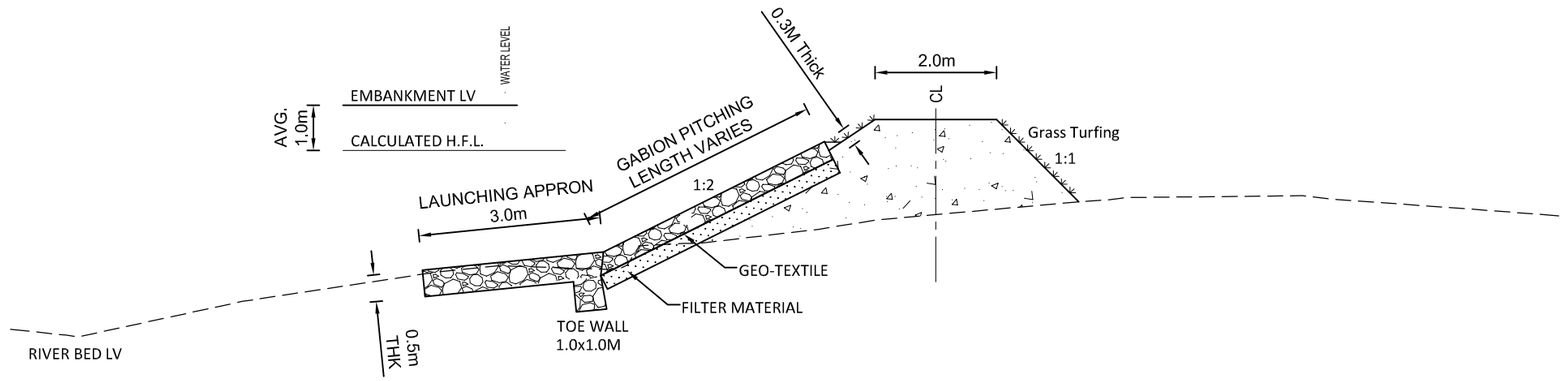
0 1.5m 3m 4.5m 6m

0 0.5m 1m 1.5m 2m

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS						
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of eptisa EPTISA Servicios De Ingeniera Madrid, Spain STUP Consultants Private Limited Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL"A"	Signature	Drawing Name WING WALL DETAILS OF BRIDGE OVER RIVER KALINJOR-1	Scale: AS SHOWN	Date: 01.05.2023
			Checked By	Mr. S.M.	Signature	Reference Drawings -	Chainage: 291+868	Drawing No.- KDP/DPR/STR/BR/KALINJOR-1/DD-16
			Approved By	Mr. H.B.	Signature			Sheet No. 1 / 1



TOPOGRAPHIC MAP



SECTION OF EMBANKMENT

SCALE - 1x : 5x

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of EPTISA Servicios De Ingeniera Madrid, Spain STUP Consultants Private Limited Kolkatta, India In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.A. Nec.No. 6431 CIVIL"A"	Signature	Drawing Name RIVER TRAINING WORKS OF BRIDGE OVER RIVER KALINJOR-1 Reference Drawings	Scale: AS SHOWN Chainage: 291+868
			Checked By	Mr. S.M.	Signature		Date: 30.04.2023 Drawing No.- KDP/DPR/STR/BR/KALINJOR-1/DD-17 Sheet No. 1/1
			Approved By	Mr. H.B.	Signature		

Bearing Design Data for 28.5m Span and 11.85m width

Load Condition	Items	Under	On each Neoprene Bearing	Unit
Under No Live Load	V	NO EQ.	74.33	Ton
		EQ.	85.48	Ton
	H_L	NO EQ.	-	Ton
		EQ.	16.72	Ton
	H_T	NO EQ.	-	Ton
		EQ.	16.72	Ton
	θ	NO EQ.	0.00285	radian
		EQ.	0.00327	radian
	Δ		17.67	mm
Under Maximum Live Load	V	NO EQ.	117.24	Ton
		EQ.	129.68	Ton
	H_L	NO EQ.	-	Ton
		EQ.	0.00	Ton
	H_T	NO EQ.	-	Ton
		EQ.	0.00	Ton
	θ	NO EQ.	0.0042	radian
		EQ.	0.00486	radian
	Δ		29.13	mm

EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS						
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			Checked By	Mr. S.M.	Signature			
			Approved By	Mr. H.B.	Signature			