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- Tuteshwor-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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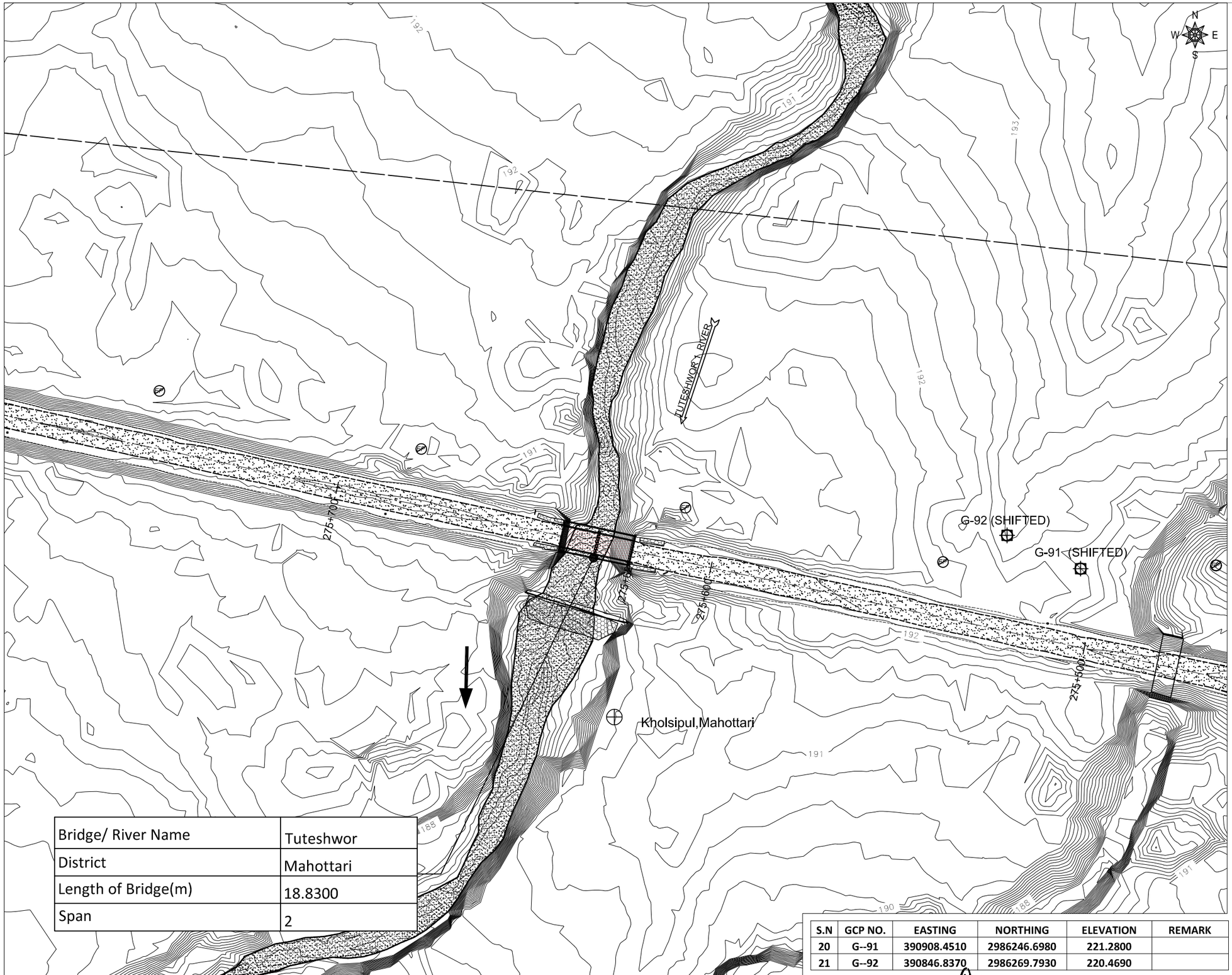


PROJECT KEY MAP

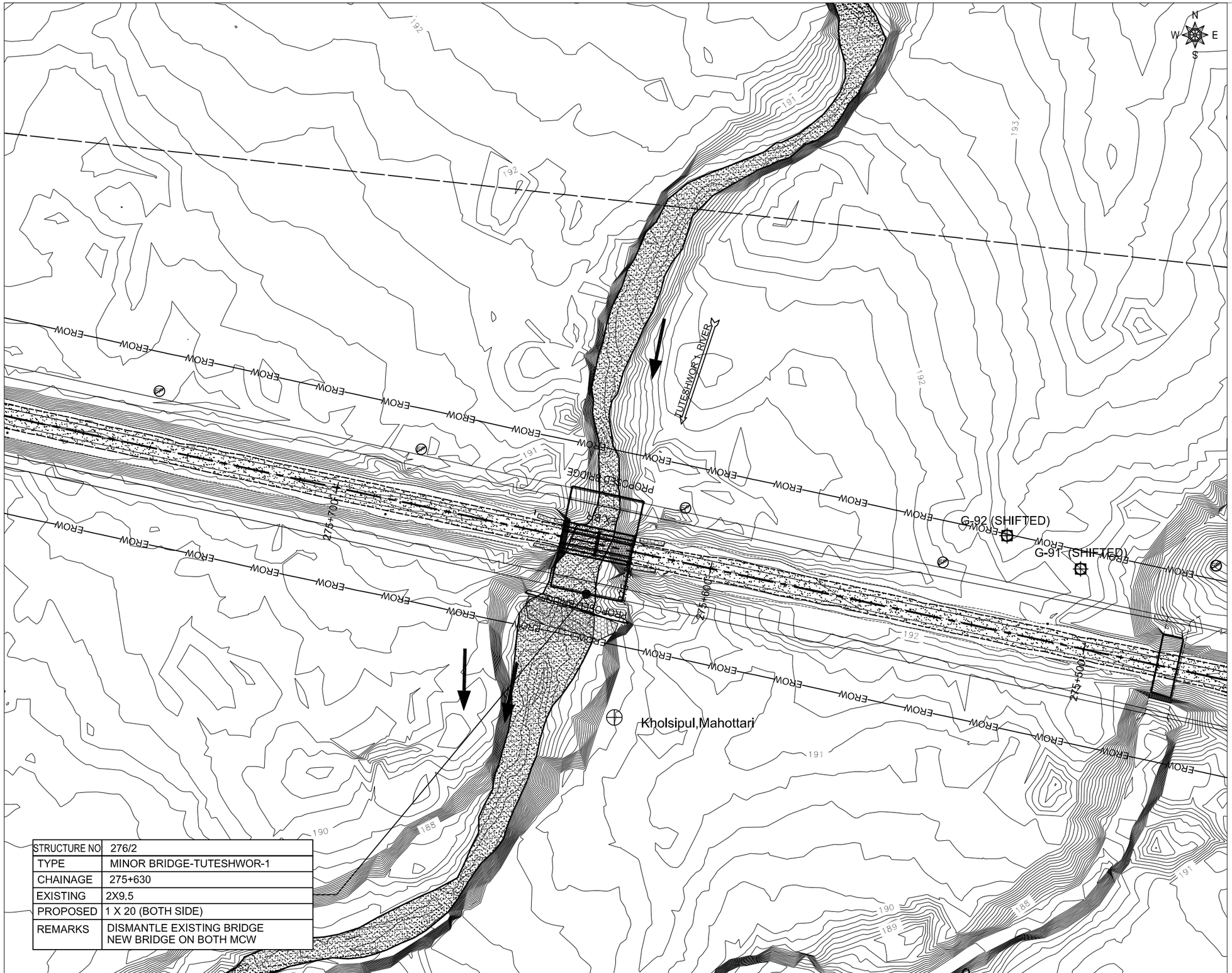
DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
MAIN FOOT TRAIL		ANIMAL FARM	
PLACE NAME		BAMBOO	
POLICE STATION		BIO GAS	
PETROL PUMP		BUS WAITING STATION	BS
Pond/ Water Body		BRIDGE	
POULTRY FARM		CONTOUR	
PROPERTY BOUNDARY		CANAL	
ROAD INFORMATION BOARD		CULVERT	
RIVER		CONTROL POINT (G)	
SPOT HEIGHT		CRUSHER	
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	Tuteshwor
District	Mahottari
Length of Bridge(m)	18.8300
Span	2

S.N	GCP NO.	EASTING	NORTHING	ELEVATION	REMARK
20	G--91	390908.4510	2986246.6980	221.2800	
21	G--92	390846.8370	2986269.7930	220.4690	

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 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.D. Nec.No.6489 CIVIL'A'	Signature	Drawing Name DETAILED SURVEY TOPOGRAPHIC MAP (EXISTING CONDITION) OF BRIDGE OVER RIVER TUTESHWOR-1	Scale: 1:1000	Date: 26.04.2023
Checked By	Mr. S.M.	Signature			Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD- 2
Approved By	Mr. H.B.	Signature	Reference Drawings -	Chainage: 275+630	Sheet No. 1/1



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RIVER		CONTROL POINT (G)	
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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	276/2
TYPE	MINOR BRIDGE-TUTESHWOR-1
CHAINAGE	275+630
EXISTING	2X9.5
PROPOSED	1 X 20 (BOTH SIDE)
REMARKS	DISMANTLE EXISTING BRIDGE NEW BRIDGE ON BOTH MCW

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Designed By	Mr. R.D. Nec.No.6489 CIVIL'A'	Signature
Checked By	Mr. S.M.	Signature
Approved By	Mr. H.B.	Signature

Drawing Name
DETAILED SURVEY TOPOGRAPHIC MAP (WITH PROPOSED BRIDGE)OD BRIDGE OVER RIVER TUTESHWOR-1

Reference Drawings
-

Scale: 1:1000

Chainage: 275+630

Date: 26.04.2023

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

Sheet No. 1/1

A. GENERAL

1. ALL DIMENSIONS ARE IN MILLIMETERS 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
   f) IRC SP-13 2022
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) - 42.33 CUMECS
2. HFL - 190.410 M
3. FREE BOARD (MINIMUM) - 1 M
4. MAXIMUM SCOUR LEVEL:
   ABUTMENT - 186.080m

SCOUR LEVELS WERE CALCULATED AS PER IRC 78:2014 CL 703 WITH APPROPRIATELY INCREASED DESIGN DISCHARGE

D. STRUCTURAL AND OTHER DATA: -

1. SPAN ARRANGEMENT: 1 X 20 = 20 m
2. SUPERSTRUCTURE:
   PRECAST RCC LONGITUDINAL GIRDERS & CAST-IN-SITU RCC CROSS GIRDERS AND DECK SLAB.
3. SUBSTRUCTURE
   A) ABUTMENTS - RCC WALL TYPE
4. FOUNDATIONS
   A) ABUTMENT - OPEN FOUNDATION
5. BEARINGS
   ELASTOMERIC 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. FOUNDATION PAD.....M35
    b. BEARING PEDESTALS.....M40
    c. ABUTMENT M35
    d. RETURN WALL.....M35
    e. LEVELING COURSE: I) BELOW APPROACH SLAB.....M15
       II) BELOW PILE CAP.....M15
    g. APPROACH SLAB M30
    h. CAST-IN-SITU CRASH BARRIER M40
    i. KERB M35
    j. DECK SLAB FOR RCC GIRDERS.....M35
    k. PRECAST RCC GIRDERS M35
    l. CAST-IN-SITU CROSS GIRDER FOR RCC GIRDERS.....M35

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. CONCRETE COVER
    a. DECK SLAB, GIRDER, PEDESTAL, CAP : 40 MM
    b. SUBSTRUCTURE AND FOUNDATION : 75 MM
14. LAPS (Ls) ARE TO BE STAGGERED AND MINIMUM LAP LENGTH ARE TO BE AS FOLLOWS:
    a) FOR M 30 GRADE CONCRETE : 57.2Ø
    b) FOR M 35 GRADE CONCRETE : 51.48Ø
    c) FOR M 40 GRADE CONCRETE : 48.62Ø

(WHERE Ø IS THE DIAMETER OF THE BAR)

15. 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
LAPPED BAR <25%	57.2ϕ	51.48ϕ	48.62ϕ	45.76ϕ
25%≤LAPPED BAR <33%	65.78ϕ	62.65ϕ	55.91ϕ	52.62ϕ
33%≤LAPPED BAR <50%	80.08ϕ	72.07ϕ	68.07ϕ	64.06ϕ
50%≤LAPPED BAR	85.8ϕ	77.22ϕ	72.93ϕ	68.64ϕ

16. THE LAP LENGTH SHALL BE STAGGERED BY MINIMUM DISTANCE OF 1.3 TIMES THE LAP LENGTH.
17. HELICAL REINFORCEMENT SHALL BE LAPPED BY 1.5 TURNS.
18. 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.
19. SHARP EDGES OF CONCRETE TO BE CHAMFERED MINIMUM 50 X 50

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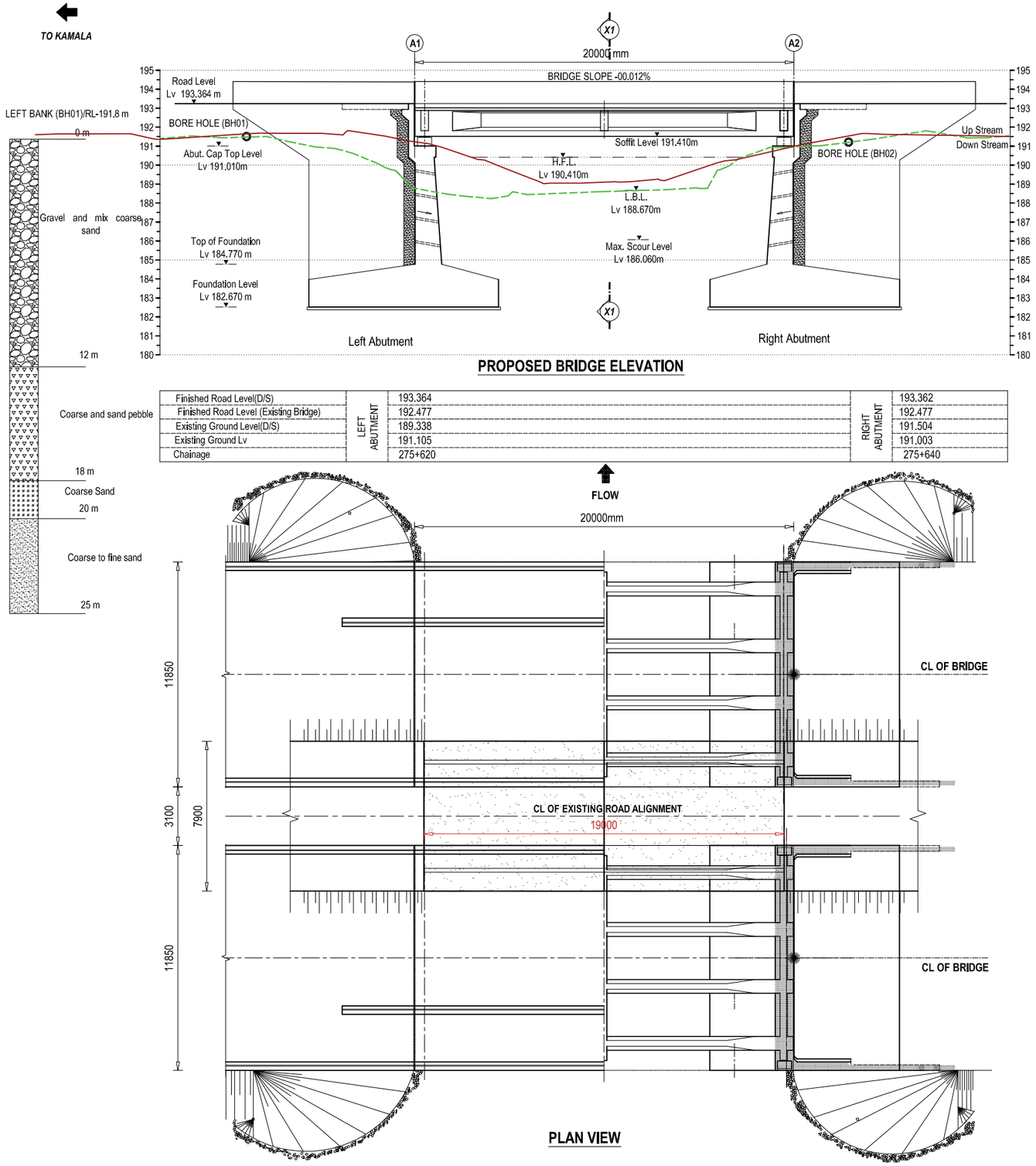
			Checked By	Mr. S.M.	Signature			
			Approved By	Mr. H.B.	Signature			

TO KAMALA

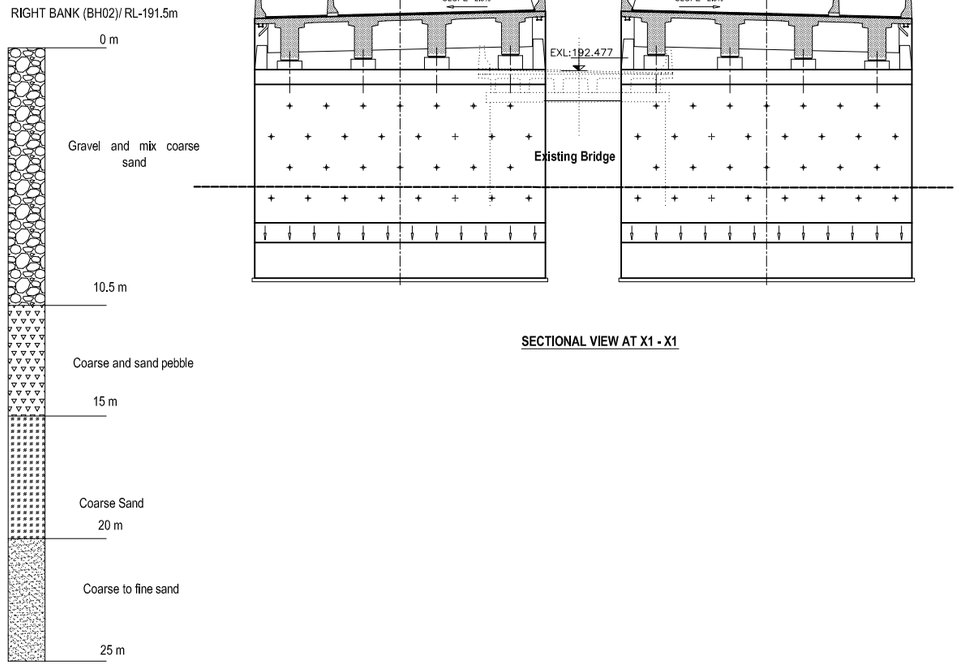


PROPOSED BRIDGE ELEVATION

Finished Road Level(D/S)	LEFT ABUTMENT	193.364	RIGHT ABUTMENT	193.362
Finished Road Level (Existing Bridge)		192.477		192.477
Existing Ground Level(D/S)		189.338		191.504
Existing Ground Lv		191.105		191.003
Chainage		275+620		275+640

PLAN VIEW

TO PATHALAIYA



SECTIONAL VIEW AT X1 - X1

(SCALE 1 :250 @ A3)

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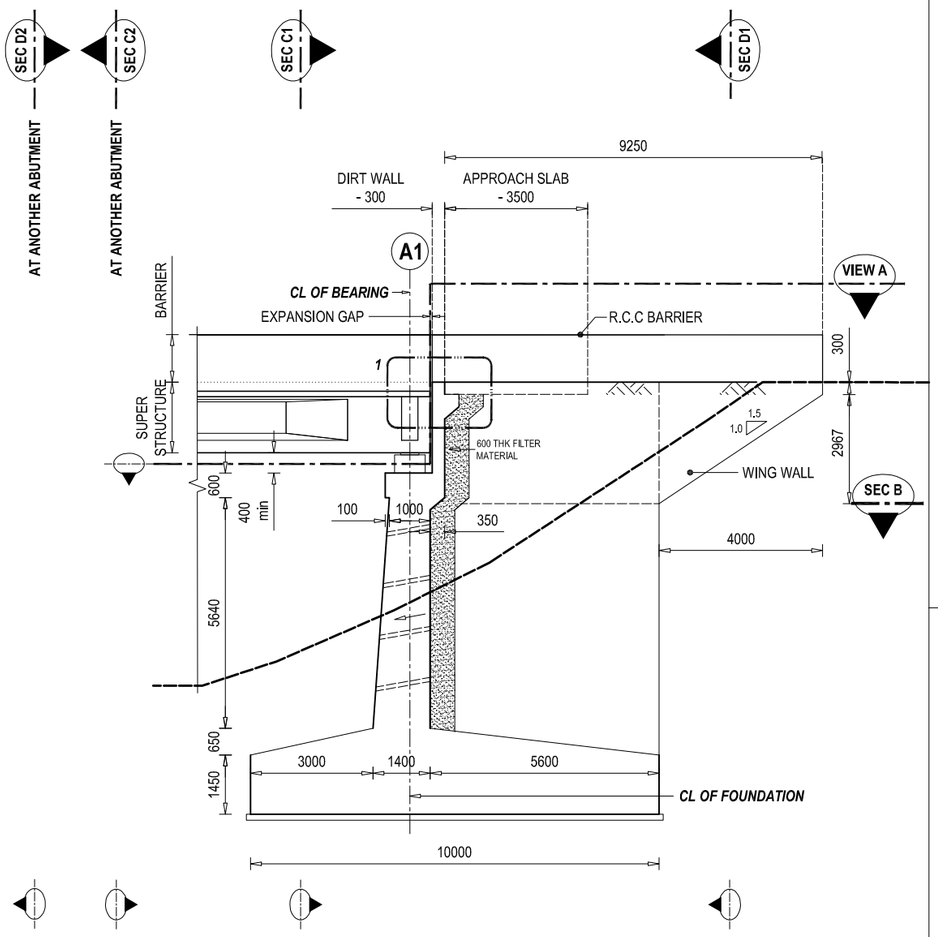
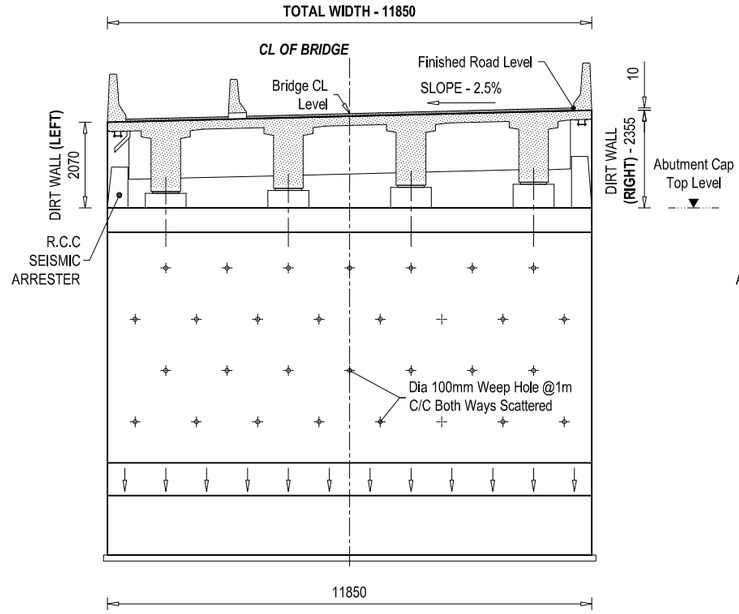
			Checked By	Mr. S.M.	Signature			
			Approved By	Mr. H.B.	Signature			



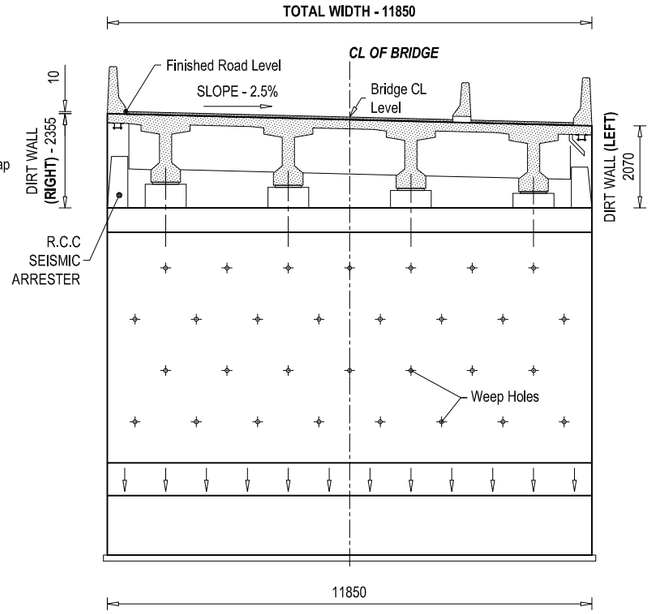
OUTLINE DETAILS OF ABUTMENT

SCALE - 1: 150



SECTIONAL VIEW AT C1 - C1

SCALE - 1: 150



SECTIONAL VIEW AT C2 - C2

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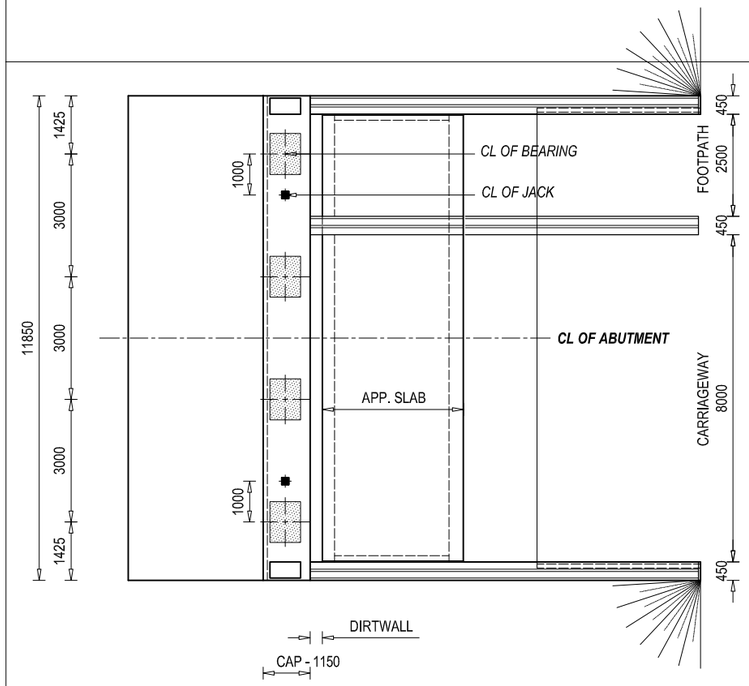

VIEW AT A

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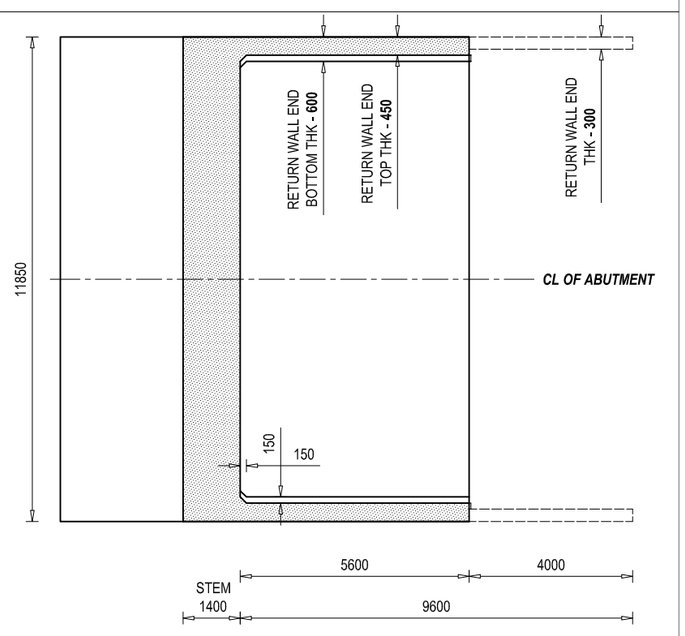

SECTIONAL VIEW AT B - B

SCALE - 1: 150

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

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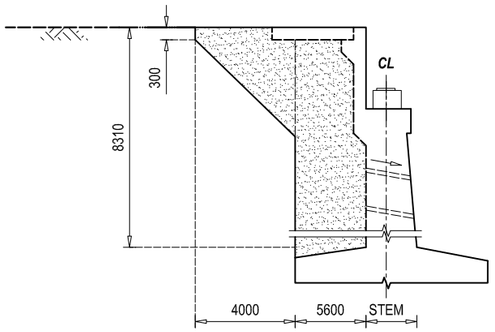
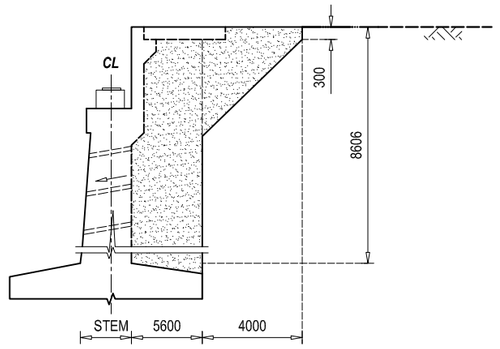
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra 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.D. Nec.No. 6489 CIVIL'A'	Signature	Drawing Name: ABUTMENT DETAILS OF BRIDGE OVER RIVER TUTESHWOR-1 Reference Drawings: KDP/DPR/STR/BR/TUTESHWOR-1/DD-8	Scale: AS SHOWN Chainage: 275+630	Date: 06.08.2023 Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-6 Sheet No. 1 / 2
			Checked By	Mr. S.M.	Signature			
			Approved By	Mr. H.B.	Signature			

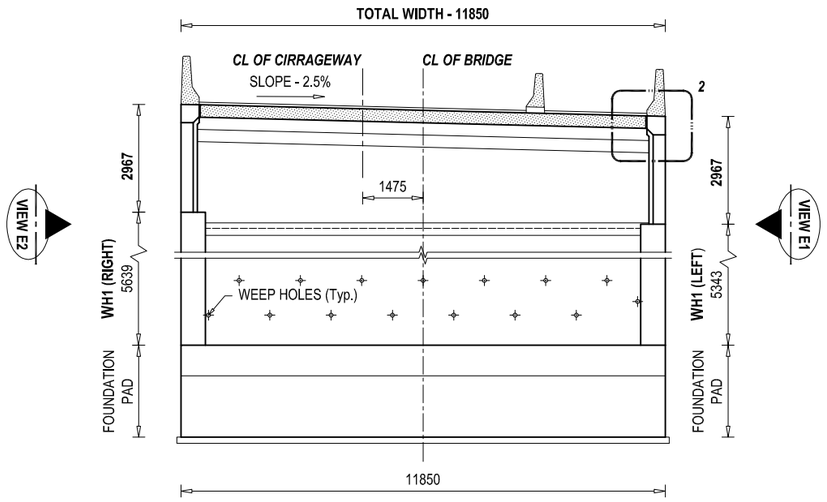


VIEW AT E1
SCALE - 1: 150

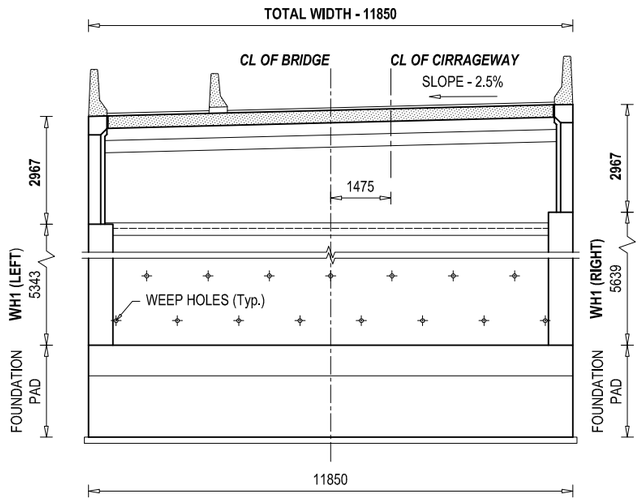


VIEW AT E2
SCALE - 1: 150

DETAIL AT RETURN WALL

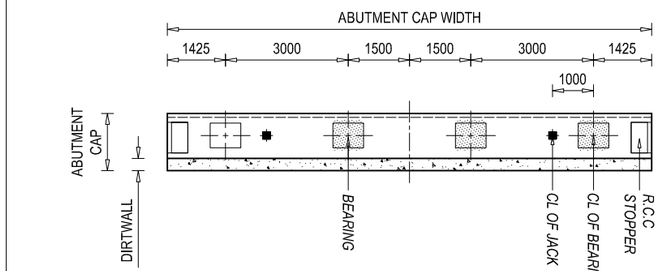


SECTIONAL VIEW AT D1 - D1
SCALE - 1: 150

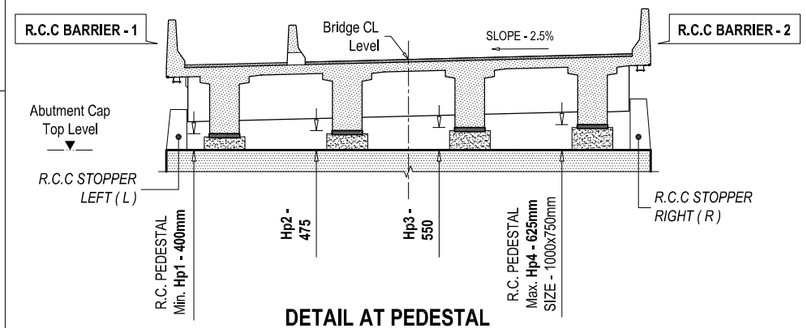


SECTIONAL VIEW AT D2 - D2
SCALE - 1: 150

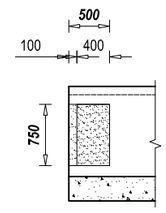
DETAIL AT DIRT WALL



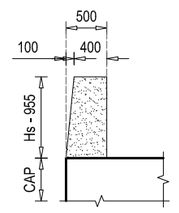
PLAN VIEW AT ABUTMENT CAP
SCALE - 1: 150



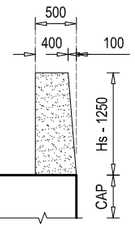
DETAIL AT PEDESTAL
SCALE - 1 : 150



R.C.C SEISMIC ARRESTER PLAN VIEW

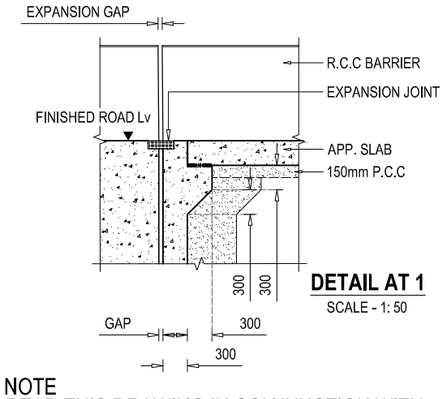


R.C.C SEISMIC ARRESTER - LEFT ELEVATION VIEW



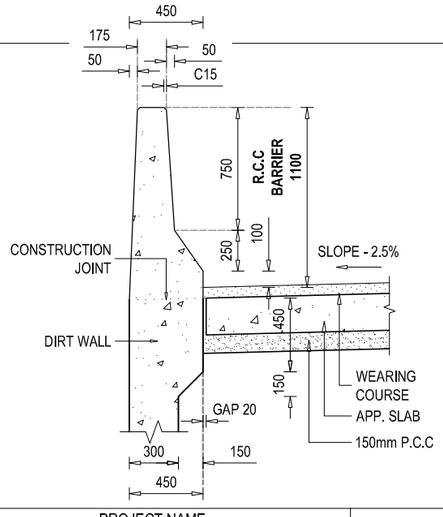
R.C.C SEISMIC ARRESTER - RIGHT ELEVATION VIEW

DETAIL AT PEDESTAL
SCALE - 1 : 75

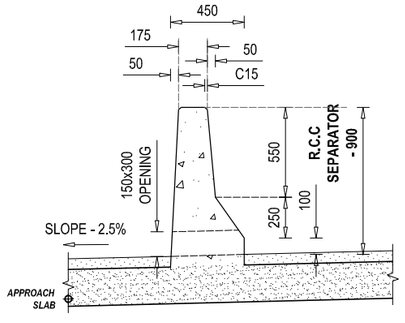


DETAIL AT 1
SCALE - 1: 50

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

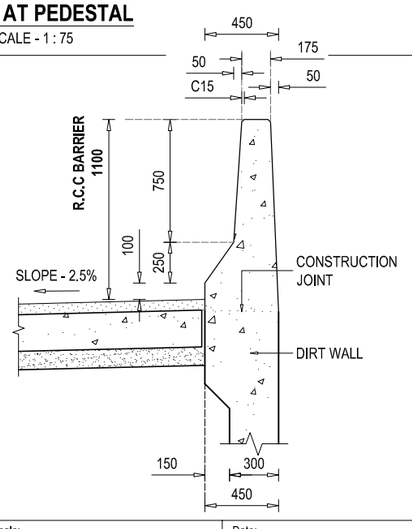


DETAIL SECTIONAL VIEW AT R.C.C BARRIER - 1
DETAIL AT 2
SCALE - 1: 25



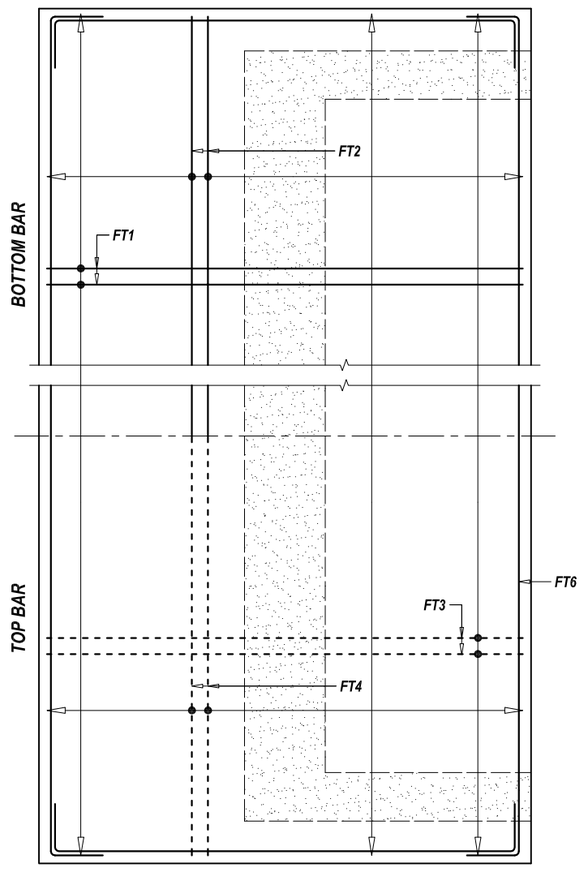
DETAIL SECTIONAL VIEW AT R.C.C SEPARATOR
SCALE - 1: 25

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

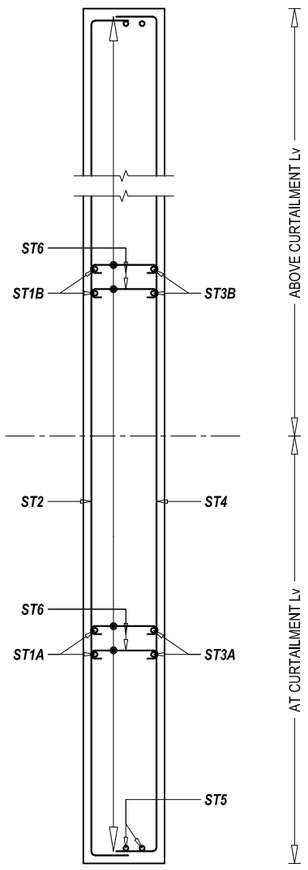


EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS			
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya 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.D. Nec.No. 6489 CIVIL"A"	Signature
			Checked By	Mr. S.M.	Signature
			Approved By	Mr. H.B.	Signature

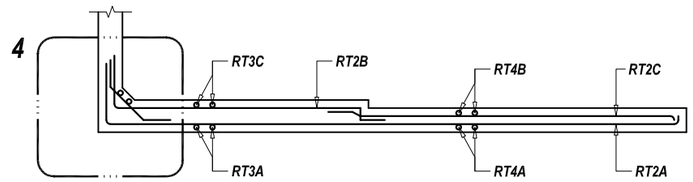
Drawing Name	Scale:	Date:
ABUTMENT DETAILS OF BRIDGE OVER RIVER TUTESHWOR-1	AS SHOWN	06.08.2023
Reference Drawings	**Chainage:**	**Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-6**
KDP/DPR/STR/BR/TUTESHWOR-1/DD-8	275+630	Sheet No. 2 / 2



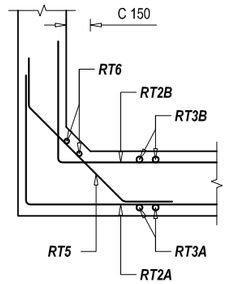
PLAN VIEW



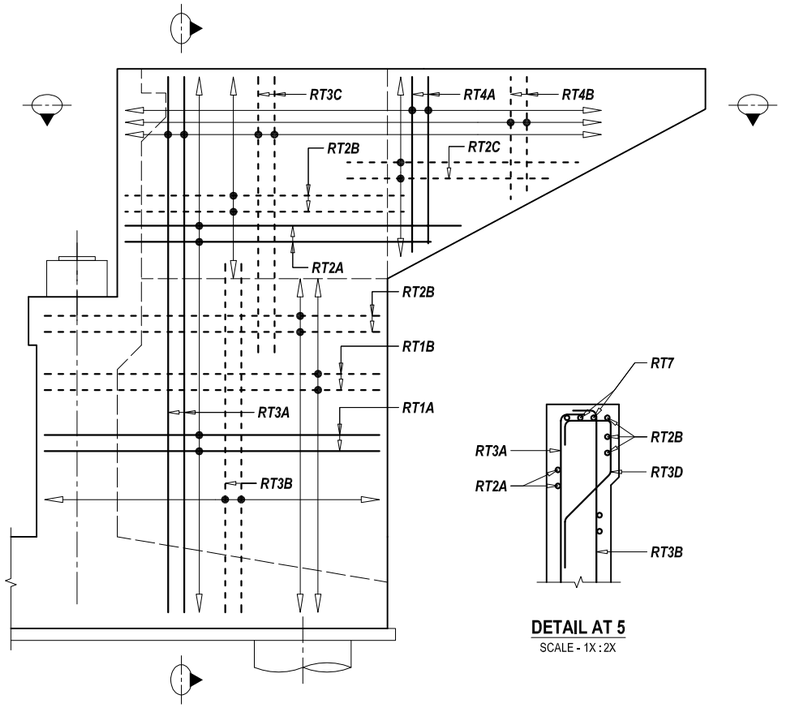
PLAN VIEW



SECTIONAL PLAN VIEW



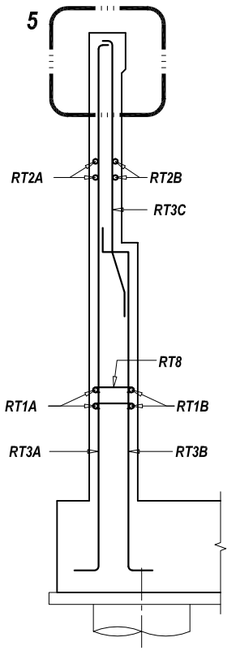
DETAILS AT 4



ELEVATION VIEW

DETAIL AT 5

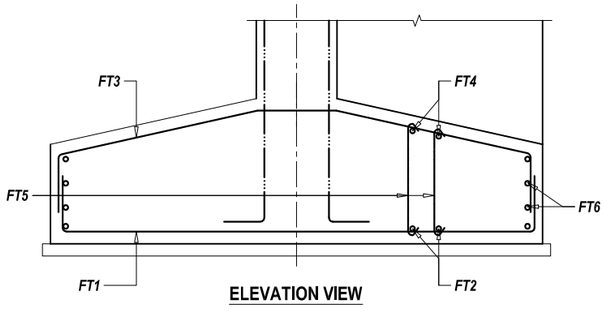
SCALE - 1X : 2X



SECTIONAL SIDE VIEW

BAR DETAIL AT RETURN WALL

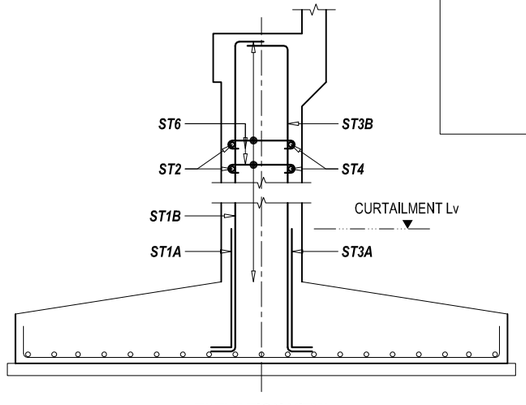
SCALE - 1 : 75



ELEVATION VIEW

BAR DETAIL OF PILE CAP

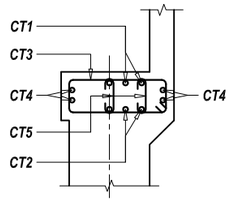
SCALE - 1 : 75



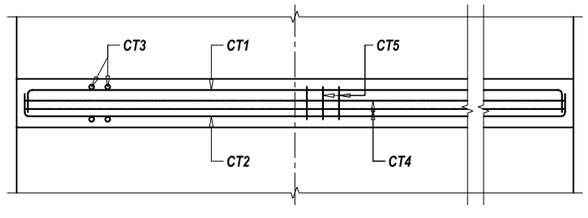
ELEVATION VIEW

BAR DETAIL AT ABUTMENT STEM

SCALE - 1 : 75



ELEVATION VIEW



FRONT VIEW

BAR DETAIL AT ABUTMENT CAP

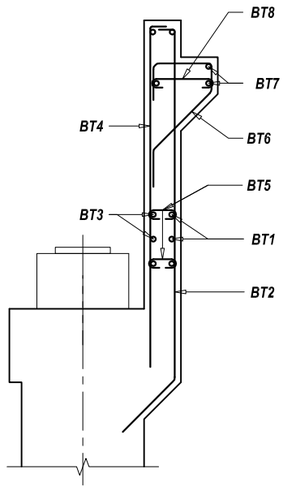
SCALE - 1 : 75

TOP BAR OR
NEAR FACE REINFORCEMENT

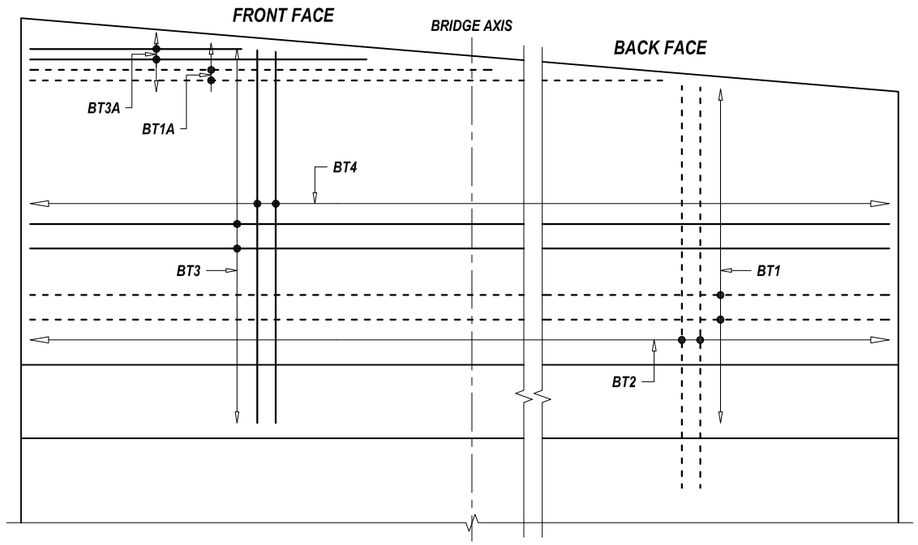
BOTTOM BAR OR
FAR FACE REINFORCEMENT

NOTE
READ THIS DRAWING IN CONJUNCTION WITH
DRG NO. KDP/DPR/STR/BR/TUTESHWOR-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.D. Nec.No. 6489 CIVIL'A'	Signature	Drawing Name: ABUTMENT REINGORCEMENT DETAILS OF BRIDGE OVER RIVER TUTESHWOR-1 Reference Drawings: KDP/DPR/STR/BR/TUTESHWOR-1/DD-8	Scale: AS SHOWN Chainage: 275+630	Date: 06.08.2023 Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-7 Sheet No. 1 / 2
			Checked By	Mr. S.M.	Signature			
			Approved By	Mr. H.B.	Signature			



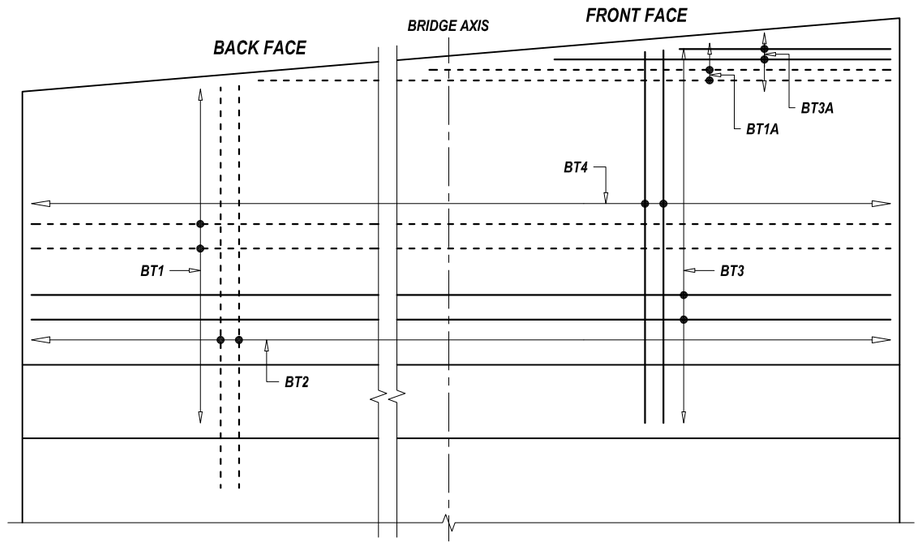
SECTIONAL SIDE VIEW



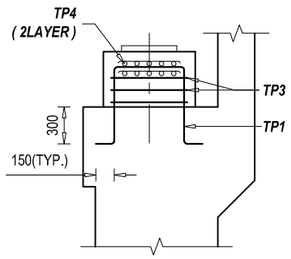
ELEVATION VIEW / VIEW AT D1

BAR DETAIL AT DIRT WALL

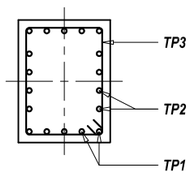
SCALE - 1 : 50



ELEVATION VIEW / VIEW AT D2



SECTIONAL SIDE VIEW

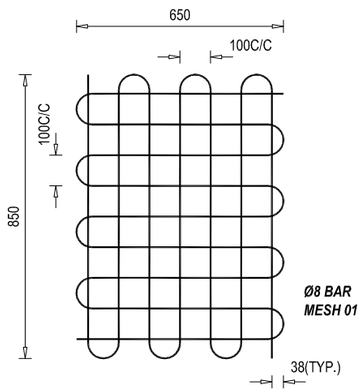


SECTIONAL PLAN VIEW

BAR DETAIL AT PEDESTAL

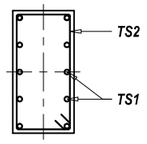
SCALE - 1 : 50

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

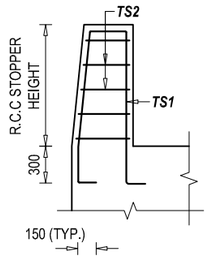


REINFORCEMENT DETAILS OF BEARING MESH

SCALE - 1 : 50

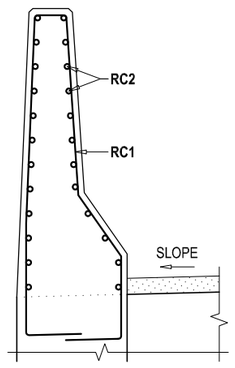


SECTIONAL PLAN VIEW



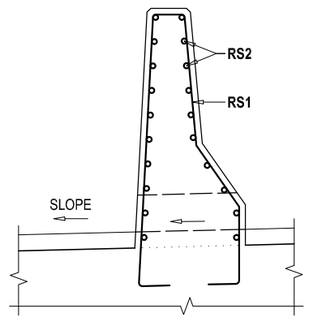
R.C.C STOPPER LEFT ELEVATION VIEW

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					

			Drawing Name	Scale:	Date:
Designed By	Mr. R.D. Nec.No. 6489 CIVIL"A"	Signature	ABUTMENT REINGORCEMENT DETAILS OF BRIDGE OVER RIVER TUTESHWOR-1	AS SHOWN	06.08.2023
Checked By	Mr. S.M.	Signature	Reference Drawings KDP/DPR/STR/BR/TUTESHWOR-1/DD-8	Chainage: 275+630	Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-7
Approved By	Mr. H.B.	Signature			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	12	150	12.000	20	0.889	213.33
2	BT1A	Avg. 5850 — 150	12	150	6.000	3	0.889	16.00
3	BT2	150 / 450 — 2703 Avg.	16		3.303	90	1.580	469.76
4	BT3	150 — 11700 — 150	12	150	12.000	16	0.889	170.67
5	BT3A	Avg. 5850 — 150	12	150	6.000	3	0.889	16.00
6	BT4	150 / 2778 Avg.	12		2.928	90	0.889	234.24
7	BT5	100 — 150 — 100	12	500	0.350	96	0.889	29.87
8	BT6	200 — 450 — 220 / 200 — 756	12	150	1.826	80	0.889	129.85
9	BT7	11700	12		11.700	5	0.889	52.00
10	BT8	100 — 450 — 100	12	150	0.650	158	0.889	91.29
							TOTAL (KG) :	1423.00

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	20	140	12.300	12	2.469	364.44
2	CT2	300 — 11700 — 300	20	140	12.300	12	2.469	364.44
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) :	1504.82

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	ST1A	4845 / 1050	20	200	5.895	59	2.469	858.78
	ST1B	300 — 8190 / 1050	20	100	9.540	59	2.469	1389.78
2	ST2	700 — 11700 — 700	16	150	13.100	38	1.580	786.65
3	ST3A	4845 / 1050	25	200	5.895	59	3.858	1341.84
	ST3B	300 — 8190 / 1050	25	100	9.54	59	3.858	2171.53
4	ST4	700 — 11700 — 700	16	150	13.100	38	1.580	786.65
5	ST5	300 / 1050 — 4845	12	110	6.195	12	0.889	66.08
6	ST6	100 — 1250 — 100	12	Ver. 130 / Hor.200	1.450	2640	0.889	3402.67
							TOTAL (KG) :	10803.96

BAR BENDING SCHEDULE OF FOUNDATION

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	725 — 9850 — 725	25	150	11.300	78	3.858	3400.46
2	FT2	725 — 11700 — 725	16	200	13.150	50	1.580	1039.01
3	FT3	3070 — 1400 — 5638 / 725 — 725	25	150	11.408	78	3.858	3432.96
4	FT4	725 — 11700 — 725	16	200	13.150	50	1.580	1039.01
5	FT5	100 — 1625 (Avg) — 100	10	Long. 180 / Trans.180	1.825	3557	0.617	4007.11
6	FT6	9800 — 11668 — 150	16	200	43.236	10	1.580	683.24
							TOTAL (KG) :	13601.80

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	650 / 850 — @ 100	8		13.400	2	0.395	10.59
							TOTAL (KG) :	83.91

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

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

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.D. Nec.No. 6489 CIVIL'A'	Signature	Drawing Name: ABUTMENT BAR BENDING SCHEDULE OF BRIDGE OVER RIVER TUTESHWOR-1 Reference Drawings: -
			Checked By	Mr. S.M.	Signature	Scale: AS SHOWN Chainage: 275+630
			Approved By	Mr. H.B.	Signature	Date: 06.08.2023 Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-8 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 — 6850 — 150	12	150	7.450	58	0.889	384.09
2	RT1B	450 — 6850 — 150	20	150	7.450	58	2.469	1066.91
3	RT2A	450 — 9100 — 150	12	150	9.700	21	0.889	181.07
4	RT2B	150 — 6850 — 150 — 1000	20	150	8.150	21	2.469	422.59
5	RT2C	1000 — 150 — 3575 — 150	20	150	4.875	21	2.469	252.78
6	RT3A	10556 — 150 — 450	12	150	11.156	39	0.889	386.74
7	RT3B	1250 — 7589 — 150 — 450	25	150	9.439	39	3.858	1420.22
8	RT3C	150 — 2892 — 150 — 1250	25	150	4.442	39	3.858	668.36
9	RT3D	200 — 300 — 300 — 200 — 210	25	150	1.210	63	3.858	294.10
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	79	0.889	103.23
13	RT6	8606	12		8.606	2	0.889	15.30
14	RT7	225 — 5375	20		5.6	4	2.469	55.31
15	RT8	100 — 450 — 100	12	200	0.650	791	0.889	457.02
							TOTAL (KG) :	6131.02

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 — 6850 — 150	12	150	7.450	56	0.889	370.84
2	RT1B	450 — 6850 — 150	20	150	7.450	56	2.469	1030.12
3	RT2A	450 — 9100 — 150	12	150	9.700	21	0.889	181.07
4	RT2B	150 — 6850 — 150 — 1000	20	150	8.150	21	2.469	422.59
5	RT2C	1000 — 150 — 3575 — 150	20	150	4.875	21	2.469	252.78
6	RT3A	10260 — 150 — 450	12	150	10.860	39	0.889	376.48
7	RT3B	1250 — 7293 — 150 — 450	25	150	9.143	39	3.858	1375.68
8	RT3C	150 — 2892 — 150 — 1250	25	150	4.442	39	3.858	668.36
9	RT3D	200 — 300 — 300 — 200 — 210	25	150	1.210	63	3.858	294.10
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	79	0.889	103.23
13	RT6	8310	12		8.310	2	0.889	14.77
14	RT7	225 — 5375	20		5.6	4	2.469	55.31
15	RT8	100 — 450 — 100	12	200	0.650	750	0.889	433.33
							TOTAL (KG) :	6001.97

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	62	1.580	310.58
2	RC2	150 — 9150 — 150	10	150	9.450	20	0.617	116.67
							TOTAL (KG) :	427.25

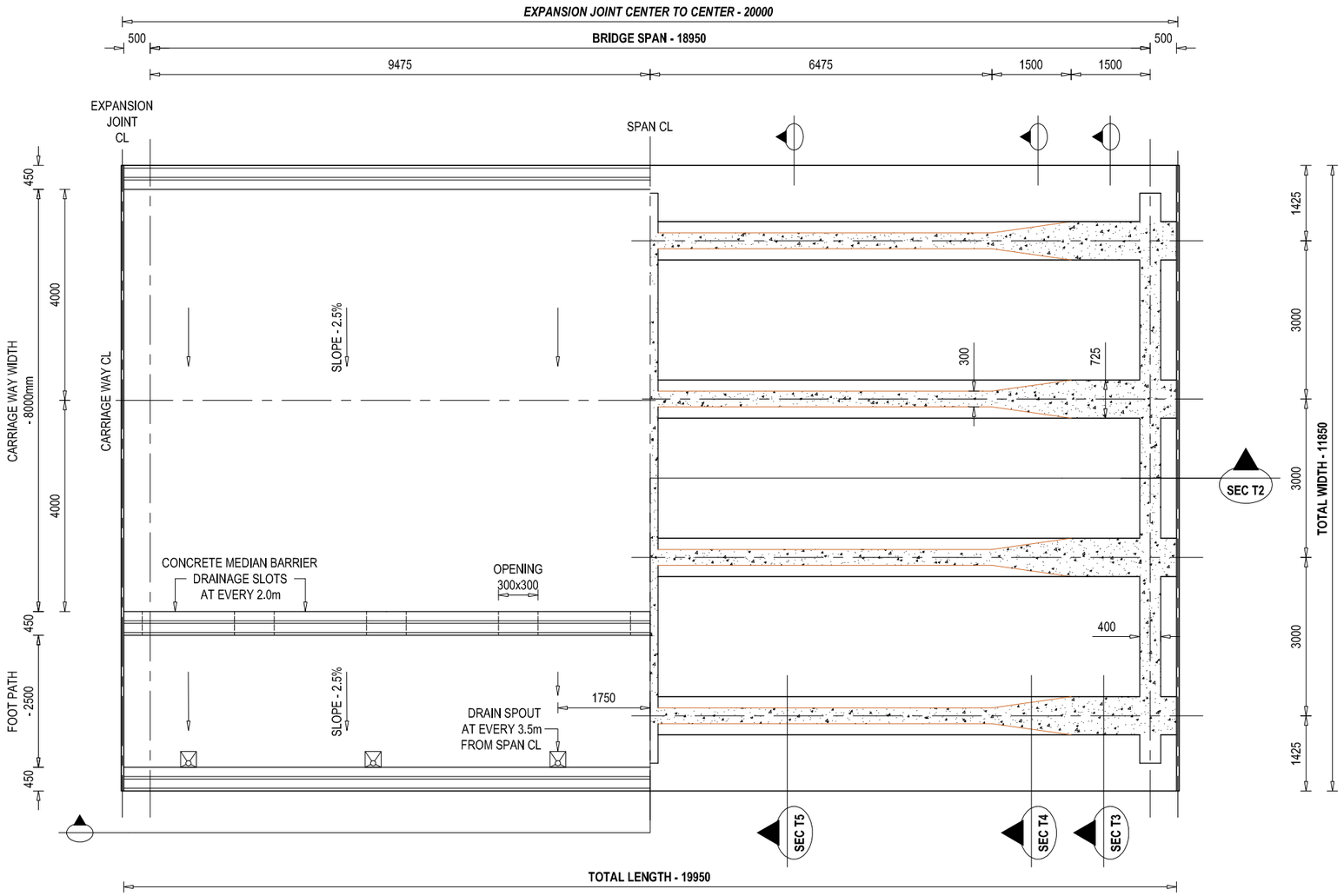
BAR BENDING SCHEDULE OF R.C.C SEPARATOR

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

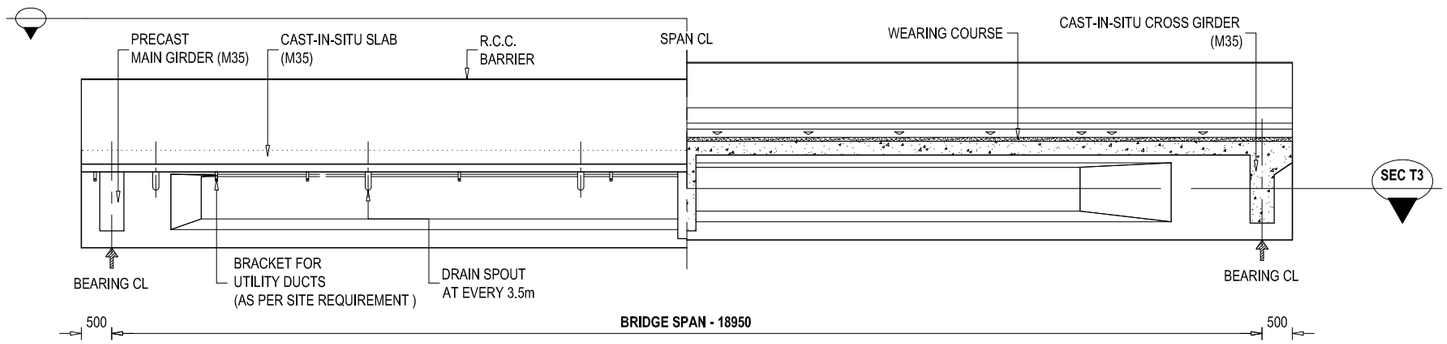
S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	1601	100 — 10970 — 100	16	150	11.170	48	1.580	847.27
2	1202	100 — 3420 — 100	12	150	3.620	150	0.889	482.67
							TOTAL (KG) :	1329.93

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 Kriti Consultant and Rays Consultant Private Limited	Designed By	Mr. R.D. Nec.No. 6489 CIVIL'A'	Signature	Drawing Name: ABUTMENT BAR BENDING SCHEDULE OF BRIDGE OVER RIVER TUTESHWOR-1 Reference Drawings: -
			Checked By	Mr. S.M.	Signature	Scale: AS SHOWN Chainage: 275+630
			Approved By	Mr. H.B.	Signature	Date: 06.08.2023 Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-8 Sheet No. 2 / 2



HALF SECTIONAL PLAN VIEW OF SUPERSTRUCTURE AT SEC T1

SCALE - 1 : 100 @ A3 PAPER



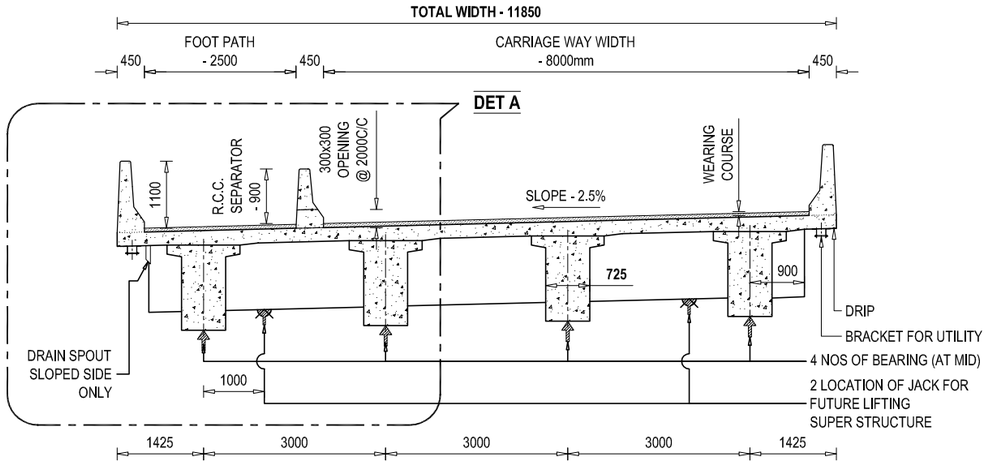
HALF ELEVATION SECTIONAL VIEW OF SUPERSTRUCTURE AT SEC T2

SCALE - 1 : 100 @ A3 PAPER

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

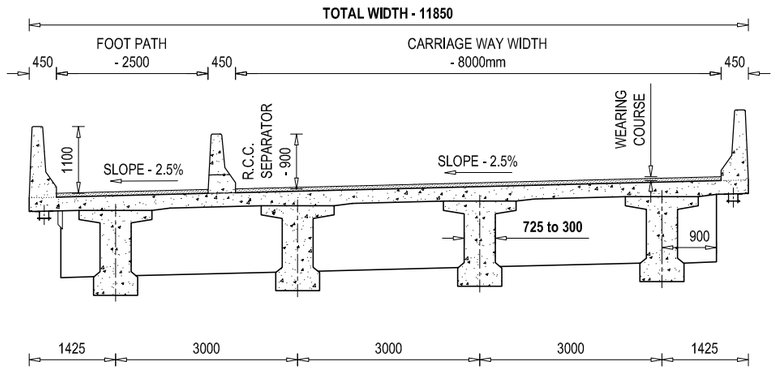
EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya 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.D. Nec.No. 6489 CIVIL'A'	Signature	Drawing Name SUPER STRUCTURE DETAILS OF BRIDGE OVER RIVER TUTESHWOR-1 Reference Drawings KDP/DPR/STR/BR/TUTESHWOR-1/DD-13	Scale: AS SHOWN Chainage: 275+630
			Checked By	Mr. S.M.	Signature		
			Approved By	Mr. H.B.	Signature		

Date: 05.05.2023
Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-9
Sheet No. 1 / 2



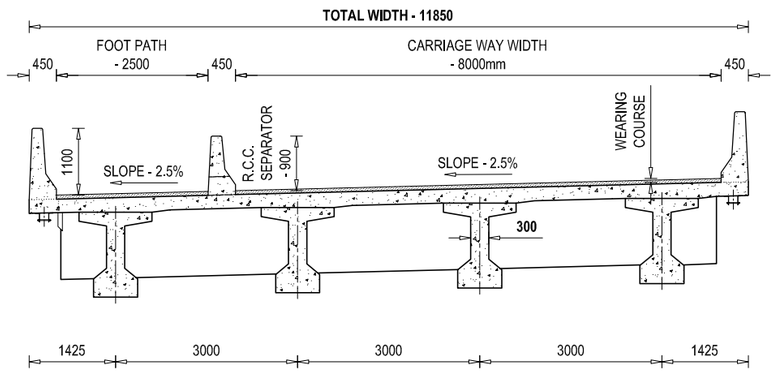
SECTIONAL VIEW AT T3

SCALE - 1 : 100 @ A3 PAPER



SECTIONAL VIEW AT T4

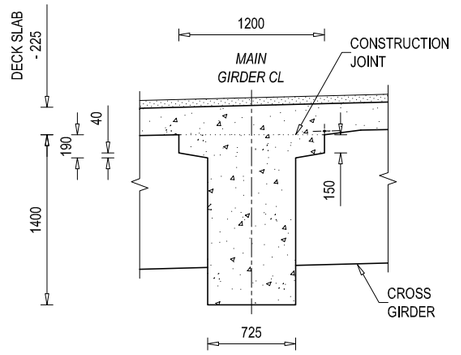
SCALE - 1 : 100 @ A3 PAPER



SECTIONAL VIEW AT T5

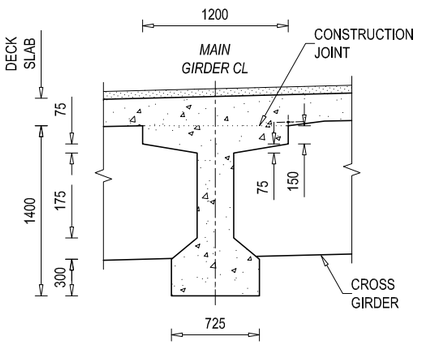
SCALE - 1 : 100 @ A3 PAPER

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



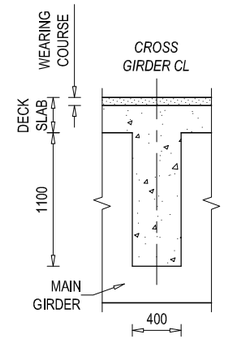
LONGITUDINAL GIRDER - SECTIONAL DETAIL AT END

SCALE - 1 : 50 @ A3 PAPER



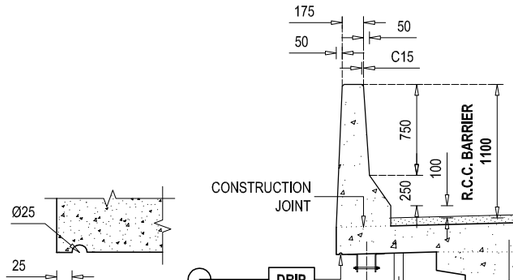
LONGITUDINAL GIRDER - SECTIONAL DETAIL AT MID

SCALE - 1 : 50 @ A3 PAPER



END CROSS GIRDER - SECTIONAL DETAIL

SCALE - 1 : 50

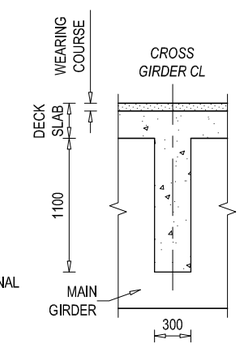


DETAIL AT DET A

SCALE - 1 : 50

DETAIL AT DRIP

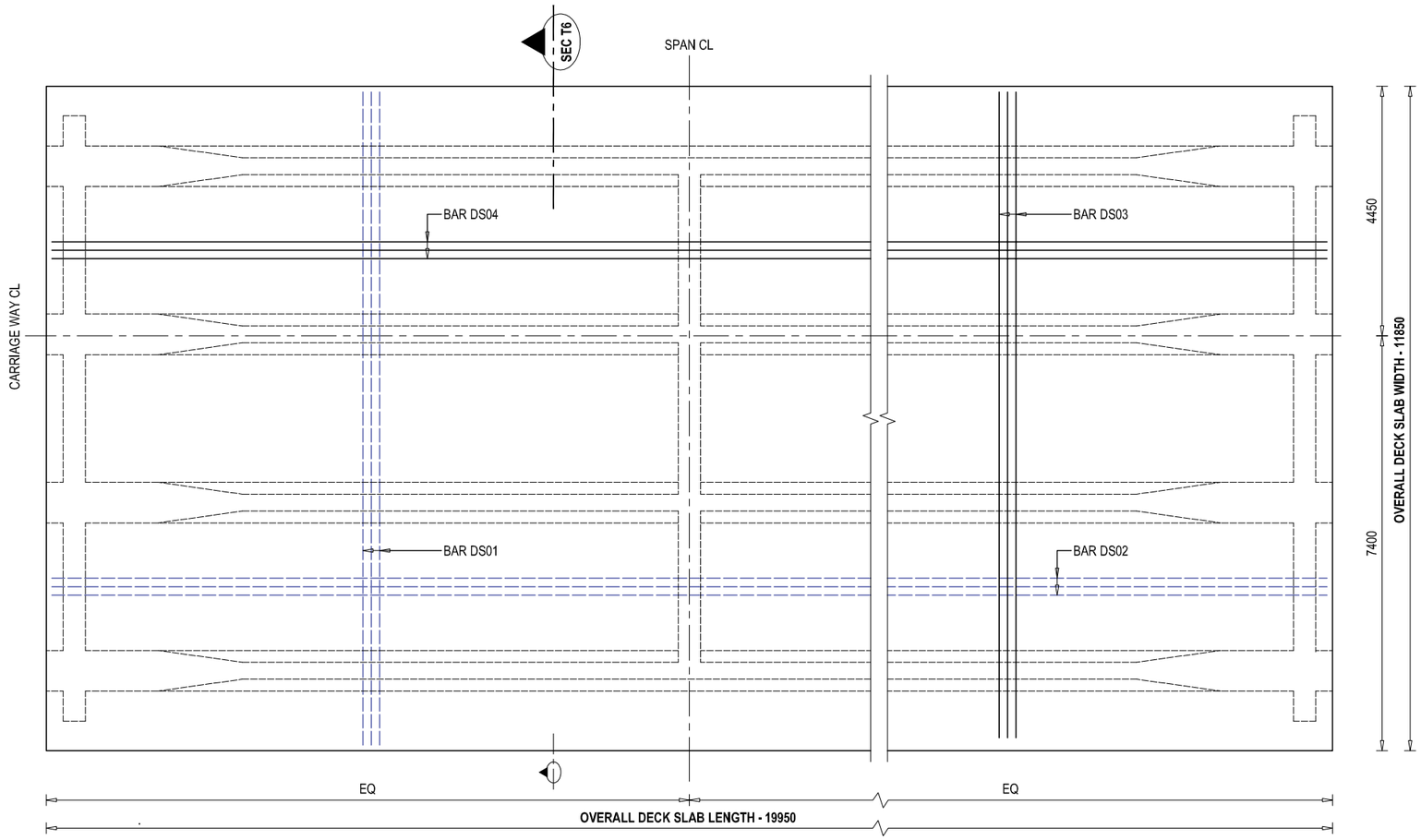
SCALE - 1 : 10



MID CROSS GIRDER - SECTIONAL DETAIL

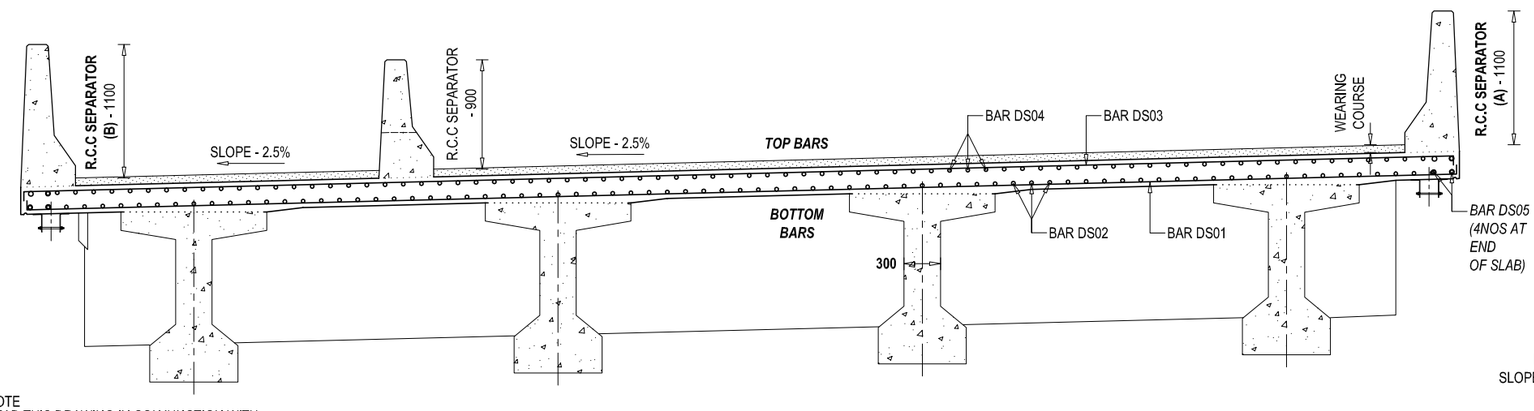
SCALE - 1 : 50

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 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.D. Nec.No. 6469 CIVIL'A'	Signature	SUPER STRUCTURE DETAILS OF BRIDGE OVER RIVER TUTESHWOR-1	AS SHOWN	05.05.2023
			Checked By	Mr. S.M.	Signature	Reference Drawings KDP/DPR/STR/BR/TUTESHWOR-1/DD-13	Chainage: 275+630	Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-9
			Approved By	Mr. H.B.	Signature			Sheet No. 2 / 2



REINFORCEMENT DETAILS OF DECK SLAB - PLAN VIEW

SCALE - 1 : 100



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

REINFORCEMENT DETAILS OF DECK SLAB - SECTIONAL VIEW AT T6

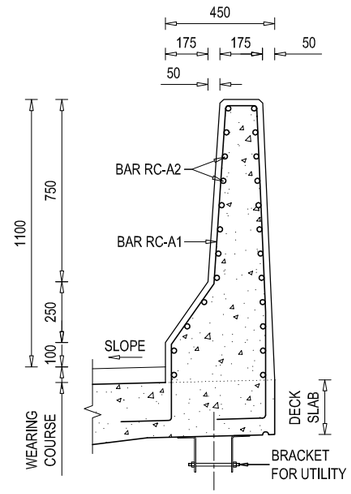
SCALE - 1 : 50

LEGEND FOR REINFORCEMENT BAR

CODE	FULL FORM		
DS	- DECK SLAB	CG	- CROSS GIRDER
RB	- R.C.C BARRIER	AS	- APPROACH SLAB
RS	- R.C.C SEPARATOR	ST	- STOPPER
MG	- MAIN GIRDER	**	- ***

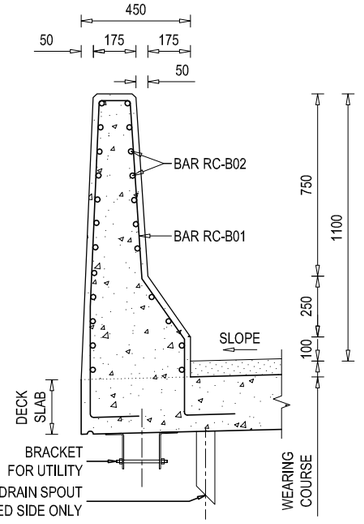
TOP BAR OR NEAR FACE REINFORCEMENT

BOTTOM BAR OR FAR FACE REINFORCEMENT



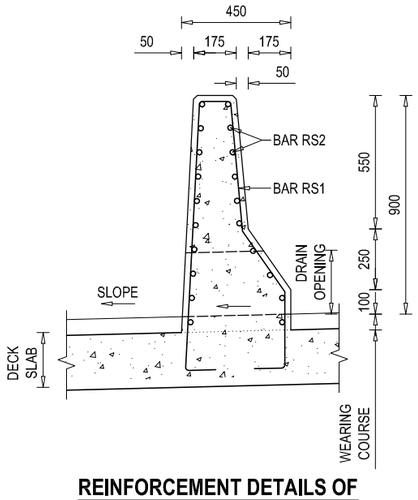
REINFORCEMENT DETAILS OF R.C.C BARRIER (A)- SECTIONAL VIEW

SCALE - 1 : 25



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

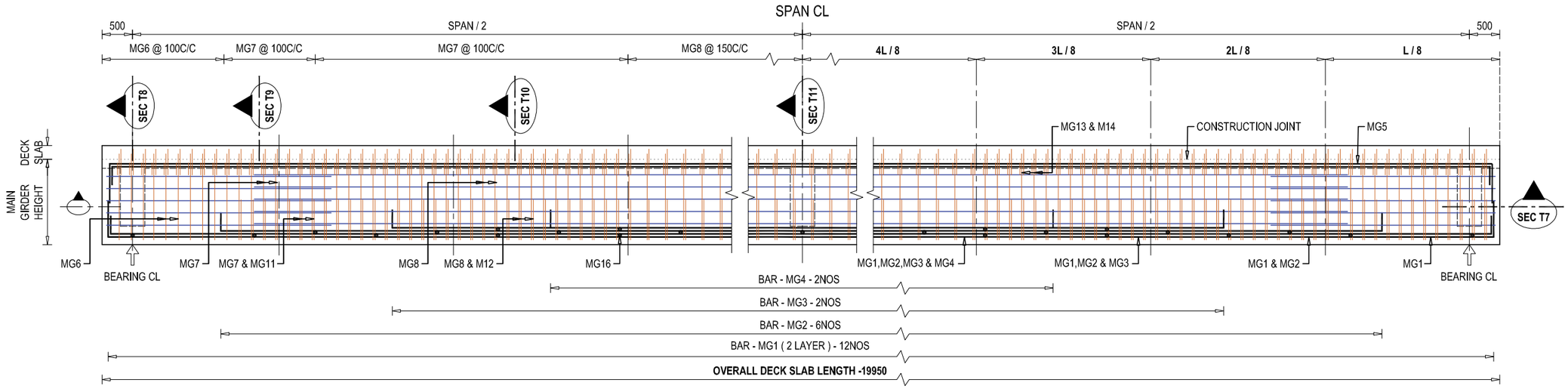
SCALE - 1 : 25



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

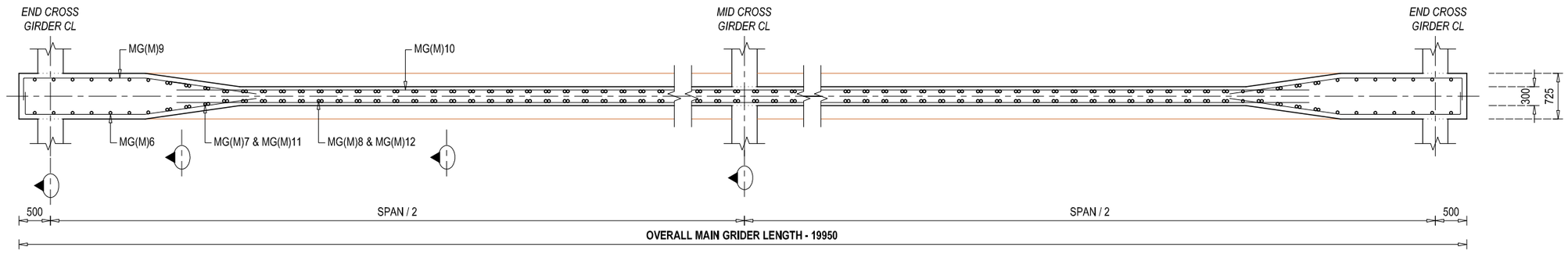
SCALE - 1 : 25

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.D. Nec.No. 6489 CIVIL'A'	Signature	Drawing Name: DECK SLAB DETAILS OF BRIDGE OVER RIVER TUTESHWOR-1	Scale: AS SHOWN
			Checked By	Mr. S.M.	Signature	Reference Drawings: KDP/DPR/STR/BR/TUTESHWOR-1/DD-13	Chainage: 275+630
			Approved By	Mr. H.B.	Signature		Date: 05.05.2023 Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-10 Sheet No. 1 / 1



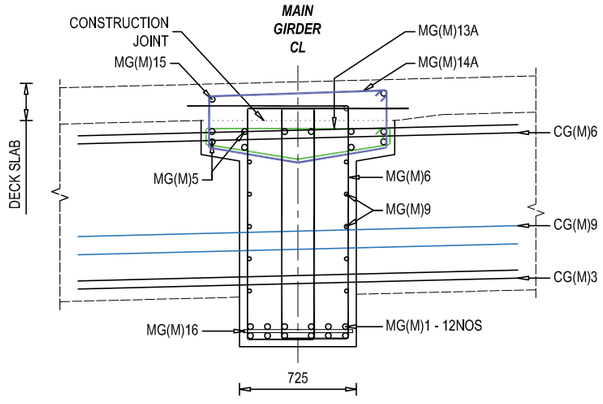
REINFORCEMENT DETAILS OF MAIN GIRDER - SECTIONAL ELEVATION VIEW

SCALE - 1 : 75



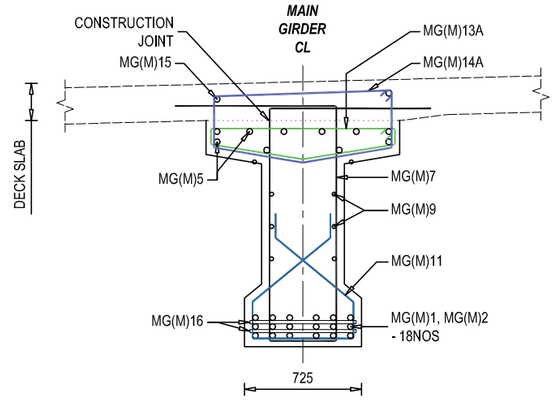
REINFORCEMENT DETAILS OF MAIN GIRDER (MID) - SECTIONAL PLAN VIEW AT T7(M)

SCALE - 1 : 75



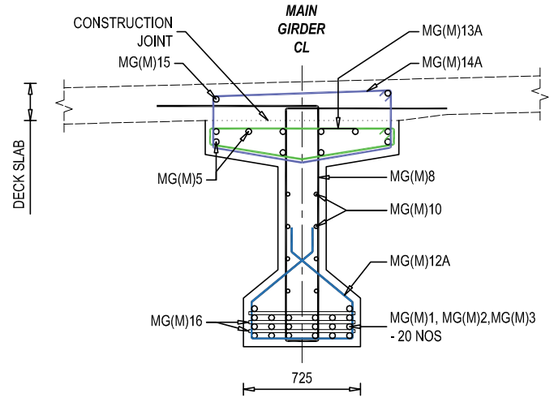
REINFORCEMENT DETAILS OF MAIN GIRDER SECTIONAL VIEW AT T8

SCALE - 1 : 50



REINFORCEMENT DETAILS OF MAIN GIRDER SECTIONAL VIEW AT T9

SCALE - 1 : 50

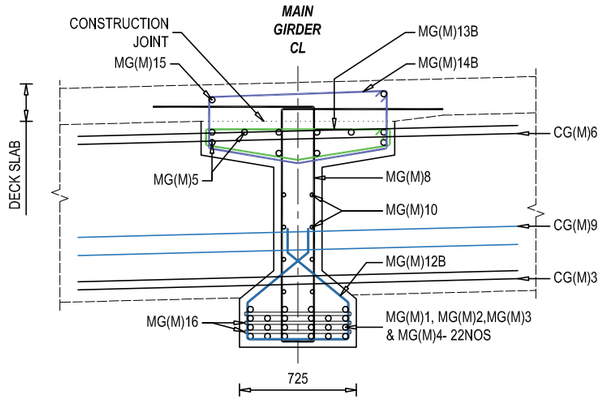


REINFORCEMENT DETAILS OF MAIN GIRDER SECTIONAL VIEW AT T10

SCALE - 1 : 50

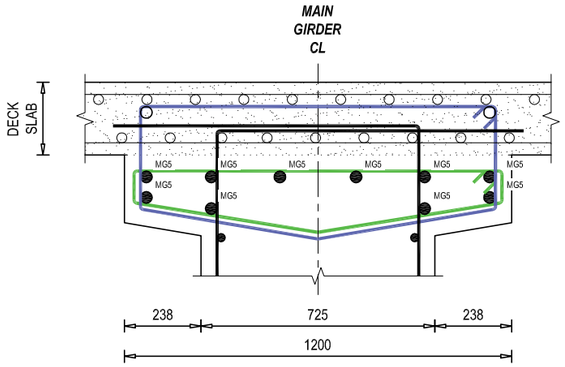
NOTE
READ THIS DRAWING IN CONJUNCTION WITH
DRG NO. KDP/DPR/STR/BR/TUTESHWOR-1/DD-4

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.D. Nec.No. 6489 CIVIL'A'	Signature	Drawing Name MAIN GIRDER REINFORCEMENT DETAILS OF BRIDGE OVER RIVER TUTESHWOR-1 Reference Drawings KDP/DPR/STR/BR/TUTESHWOR-1/DD-13	Scale: AS SHOWN Chainage: 275+630
			Checked By	Mr. S.M.	Signature		Date: 05.05.2023 Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-11
			Approved By	Mr. H.B.	Signature		Sheet No. 1 / 2



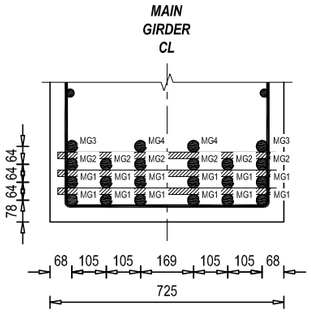
REINFORCEMENT DETAILS OF MAIN GIRDER SECTIONAL VIEW AT T11

SCALE - 1 : 50



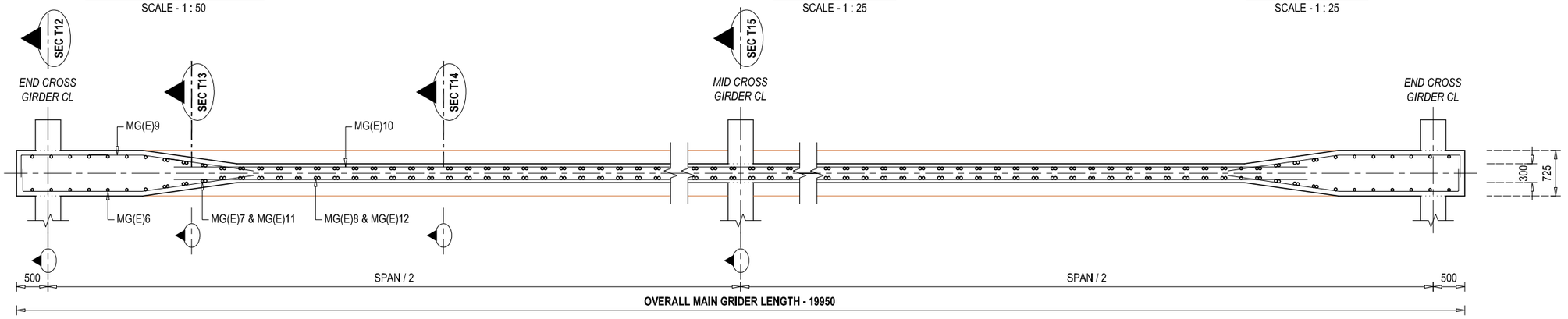
TOP BAR WEB REINFORCEMENT DETAILS OF MAIN GIRDER

SCALE - 1 : 25



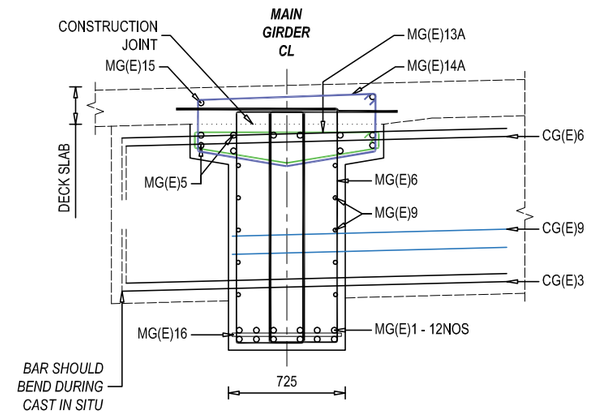
BOTTOM BAR WEB REINFORCEMENT DETAILS OF MAIN GIRDER

SCALE - 1 : 25



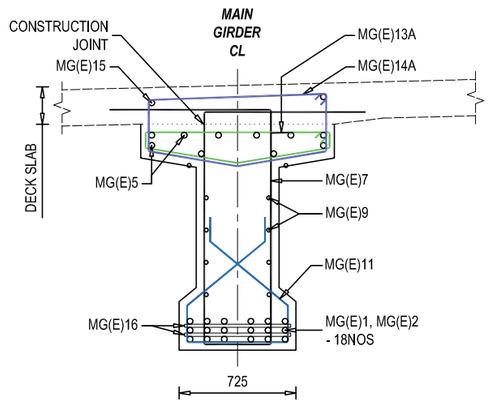
REINFORCEMENT DETAILS OF MAIN GIRDER (END) - SECTIONAL PLAN VIEW AT T7(E)

SCALE - 1 : 75



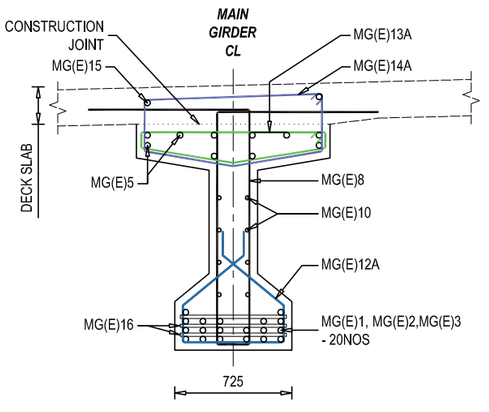
REINFORCEMENT DETAILS OF MAIN GIRDER SECTIONAL VIEW AT T12

SCALE - 1 : 50



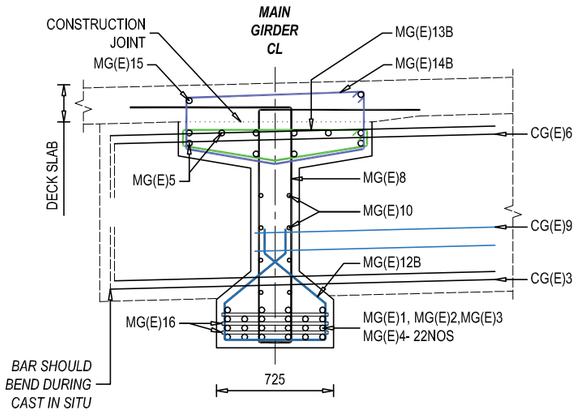
REINFORCEMENT DETAILS OF MAIN GIRDER SECTIONAL VIEW AT T13

SCALE - 1 : 50



REINFORCEMENT DETAILS OF MAIN GIRDER SECTIONAL VIEW AT T14

SCALE - 1 : 50

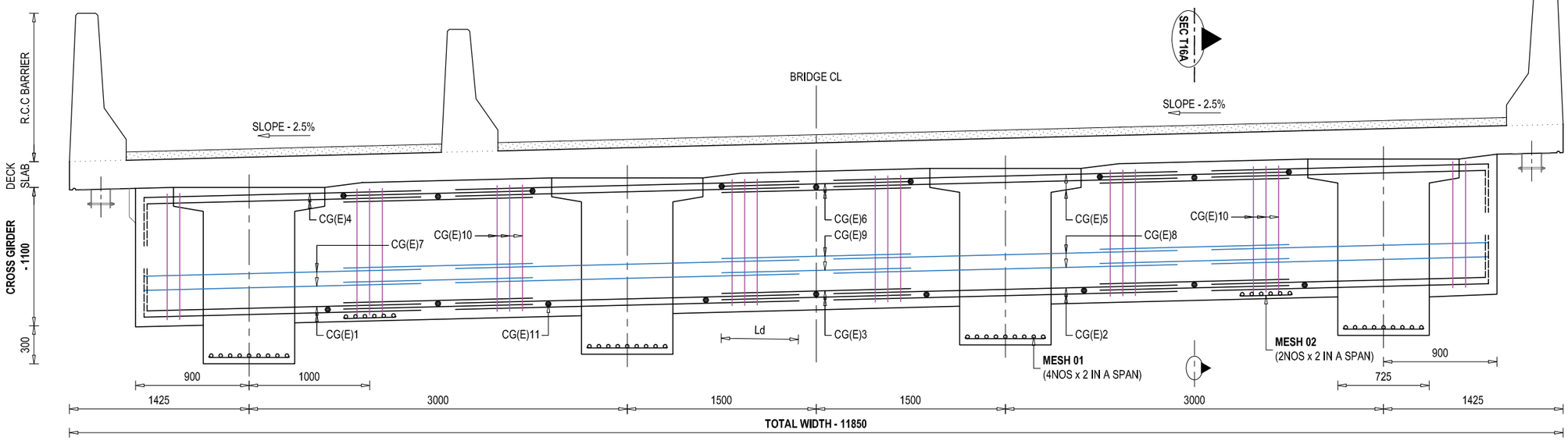


REINFORCEMENT DETAILS OF MAIN GIRDER SECTIONAL VIEW AT T15

SCALE - 1 : 50

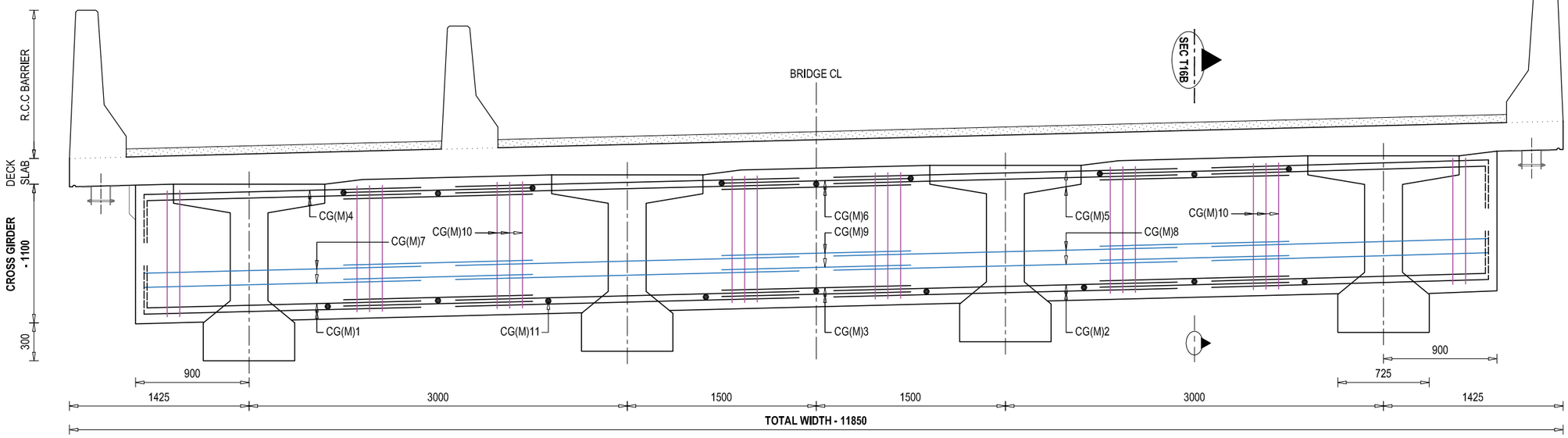
NOTE
READ THIS DRAWING IN CONJUNCTION WITH
DRG NO. KDP/DPR/STR/BR/TUTESHWOR-1/DD-4

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.D. Nec.No. 6489 CIVIL"A"	Signature	Drawing Name: MAIN GIRDER REINFORCEMENT DETAILS OF BRIDGE OVER RIVER TUTESHWOR-1 Reference Drawings: KDP/DPR/STR/BR/TUTESHWOR-1/DD-13
			Checked By	Mr. S.M.	Signature	Scale: AS SHOWN Chainage: 275+630
			Approved By	Mr. H.B.	Signature	Date: 05.05.2023 Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-11 Sheet No. 2 / 2



REINFORCEMENT DETAILS OF END CROSS GIRDER

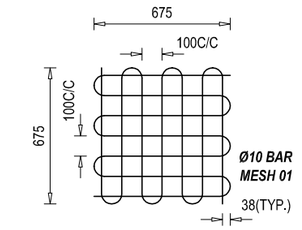
SCALE - 1 : 50



REINFORCEMENT DETAILS OF MID CROSS GIRDER

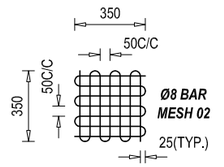
SCALE - 1 : 50

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



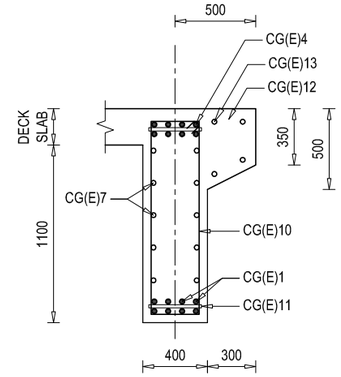
REINFORCEMENT DETAILS OF BEARING MESH

SCALE - 1 : 50



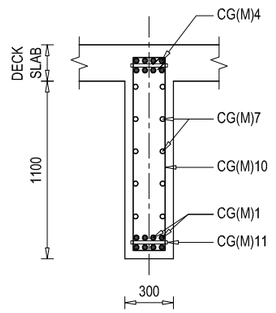
REINFORCEMENT DETAILS OF LIFTING MESH

SCALE - 1 : 50



SECTIONAL REINFORCEMENT DETAILS OF END CROSS GIRDER - SEC T16A

SCALE - 1 : 50



SECTIONAL REINFORCEMENT DETAILS OF MID CROSS GIRDER - SEC T16B

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.D. Nec.No. 6489 CIVIL"A"	Signature	Drawing Name CROSS GIRDER REINFORCEMENT DETAILS OF BRIDGE OVER RIVER TUTESHWOR-1 Reference Drawings KDP/DPR/STR/BR/TUTESHWOR-1/DD-13	Scale: AS SHOWN Chainage: 275+630
			Checked By	Mr. S.M.	Signature		Date: 05.05.2023 Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-12 Sheet No. 1 / 1
			Approved By	Mr. H.B.	Signature		

BAR BENDING SCHEDULE OF DECK SLAB (1SPAN)

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	DS01	150 — 11770 — 150	16	150	12.070	134	1.580	2555.86
2	DS02	150 — 19870 — 150	10	150	20.170	76	0.617	946.25
3	DS03	150 — 11770 — 150	16	150	12.070	134	1.580	2555.86
5	DS04	150 — 19870 — 150	10	150	20.170	76	0.617	946.25
6	DS05	19870	16		19.870	8	1.580	251.20
							TOTAL (KG) :	7255.41

BAR BENDING SCHEDULE OF R.C.C BARRIER (A) (1SPAN)

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	RC-A1	735, 130, 305, 850, 200, 305, 200, 445	16	150	3.170	134	1.580	671.26
2	RC-A2	150 — 19870 — 150	10	150	20.170	20	0.617	249.01
							TOTAL (KG) :	920.27

BAR BENDING SCHEDULE OF R.C.C BARRIER (B) (1SPAN)

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	RC-B1	130, 735, 850, 305, 445, 200, 305, 200	16	150	3.170	134	1.580	671.26
2	RC-B2	150 — 19870 — 150	10	150	20.170	20	0.617	249.01
							TOTAL (KG) :	920.27

BAR BENDING SCHEDULE OF END MAIN GIRDER (1SPAN)

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	MG(E)1	300 — 19870 — 300	32		20.470	12	6.321	1552.69
2	MG(E)2	300 — 17523 — 300	32		18.123	6	6.321	687.33
3	MG(E)3	300 — 12535 — 300	32		13.135	2	6.321	166.05
4	MG(E)4	300 — 7548 — 300	32		8.148	2	6.321	103.01
5	MG(E)5	300 — 19870 — 300	12		20.470	10	0.889	181.96
6	MG(E)6	480, 645, 1430 — 4 LEGGED	12	100	9.260	42	0.889	345.71
7	MG(E)7	AVG. 480, 435, 1430	12	100	5.125	32	0.889	145.78
8	MG(E)8A	480, 220, 1430	12	100	4.480	81	0.889	322.56
9	MG(E)8B	480, 220, 1430	12	150	4.480	35	0.889	139.38
10	MG(E)9	370, 1920, 2000	12	200	4.290	28	0.889	106.77
11	MG(E)10	16950	12	200	16.950	14	0.889	210.93
12	MG(E)11	AVG. 550, 300, 645, 220	12	100	2.785	32	0.889	79.22
13	MG(E)12A	700, 300, 645, 220	12	150	3.085	81	0.889	222.12
14	MG(E)12B	700, 300, 645, 220	12	150	3.085	35	0.889	95.98
15	MG(E)13A	1120, 70, 840, 50 x 2	12	100	3.040	151	0.889	408.04
16	MG(E)13B	1120, 70, 840, 50 x 2	12	150	3.040	35	0.889	94.58
17	MG(E)14A	1120, 50 x 2, 270, 840	12	100	3.440	151	0.889	461.72
18	MG14B	1120, 50 x 2, 270, 840	12	150	3.440	35	0.889	107.02
19	MG(E)15	19870	12		19.870	2	0.889	35.32
19	MG(E)16	645	32	1500	0.645	42	6.321	171.24
							TOTAL (KG) :	5637.40

BAR BENDING SCHEDULE OF MID MAIN GIRDER (1SPAN)

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	MG(M)1	300 — 19870 — 300	32		20.470	12	6.321	1552.69
2	MG(M)2	300 — 17523 — 300	32		18.123	6	6.321	687.33
3	MG(M)3	300 — 12535 — 300	32		13.135	2	6.321	166.05
4	MG(M)4	300 — 7548 — 300	32		8.148	2	6.321	103.01
5	MG(M)5	300 — 19870 — 300	12		20.470	10	0.889	181.96
6	MG(M)6	480, 645, 1430 — 4 LEGGED	12	100	9.260	42	0.889	345.71
7	MG(M)7	AVG. 480, 435, 1430	12	100	5.125	32	0.889	145.78
8	MG(M)8A	480, 220, 1430	12	100	4.480	81	0.889	322.56
9	MG(M)8B	480, 220, 1430	12	150	4.480	35	0.889	139.38
10	MG(M)9	370, 1920, 2000	12	200	4.290	28	0.889	106.77
11	MG(M)10	16950	12	200	16.950	14	0.889	210.93
12	MG(M)11	AVG. 550, 300, 645, 220	12	100	2.785	32	0.889	79.22
13	MG(M)12A	700, 300, 645, 220	12	150	3.085	81	0.889	222.12
14	MG(M)12B	700, 300, 645, 220	12	150	3.085	35	0.889	95.98
15	MG(M)13A	1120, 70, 840, 50 x 2	12	100	3.040	151	0.889	408.04
16	MG(M)13B	1120, 70, 840, 50 x 2	12	150	3.040	35	0.889	94.58
17	MG(M)14A	1120, 50 x 2, 270, 840	12	100	3.440	151	0.889	461.72
18	MG14B	1120, 50 x 2, 270, 840	12	150	3.440	35	0.889	107.02
19	MG(M)15	19870	12		19.870	2	0.889	35.32
19	MG(M)16	645	32	1500	0.645	42	6.321	171.24
							TOTAL (KG) :	5637.40

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.D. Nec.No. 6489 CIVIL'A'	Signature	Drawing Name: SUPER STRUCTURE BAR BENDING SCHEDULE OF BRIDGE OVER RIVER TUTESHWOR-1 Reference Drawings: -
			Checked By	Mr. S.M.	Signature	Scale: AS SHOWN Chainage: 275+630
			Approved By	Mr. H.B.	Signature	Date: 05.05.2023 Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-13 Sheet No. 1 / 2

BAR BENDING SCHEDULE OF MESH (1SPAN)

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	MESH 01	675 / 675 @ 100	10		9.450	8	0.617	46.67
2	MESH 02	350 / 350 @ 50	8		4.900	4	0.395	7.74
						TOTAL (KG) :		54.41

BAR BENDING SCHEDULE OF R.C.C SEPARATOR (1SPAN)

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	134	1.580	570.67
2	RS2	150 — 19870 — 150	10	150	20.170	17	0.617	211.66
						TOTAL (KG) :		782.34

BAR BENDING SCHEDULE OF END CROSS GIRDER (1SPAN)

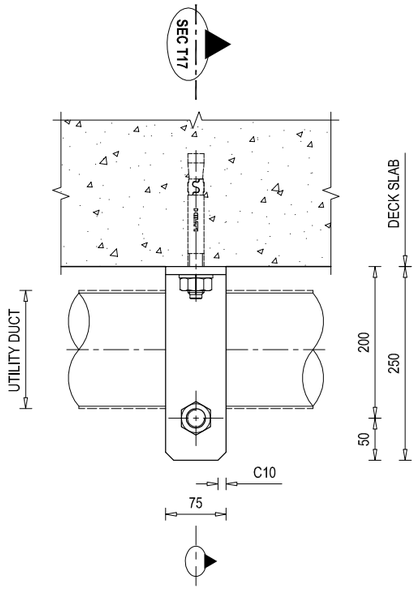
S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	CG(E)1	300 | 1825	20		2.125	8	2.469	41.98
2	CG(E)2	2625	20		2.625	8	2.469	51.85
3	CG(E)3	1675	20		1.675	8	2.469	33.09
4	CG(E)4	1825 / 300 |	20		2.125	8	2.469	41.98
5	CG(E)5	2625	20		2.625	8	2.469	51.85
6	CG(E)6	1675	20		1.675	8	2.469	33.09
7	CG(E)7	1825	12	150	1.825	8	0.889	12.98
8	CG(E)8	2625	12	150	2.625	8	0.889	18.67
9	CG(E)9	1675	12	150	1.675	8	0.889	11.91
10	CG(E)10	50 x 2 / 320 / 1220	12	200	1.640	39	0.889	56.85
11	CG(E)11	320	20	1000	0.320	18	2.469	14.22
12	CG(E)12	800 / 260 / 300 / 390	16	150	1.750	79	1.580	218.47
13	CG(E)13	11770	12		11.770	6	0.889	62.77
						TOTAL (KG) :		649.70
						TOTAL NOS OF CROSS GIRDER :		2.00
						TOTAL WEIGHT (KG) :		1299.40

BAR BENDING SCHEDULE OF MID CROSS GIRDER (1SPAN)

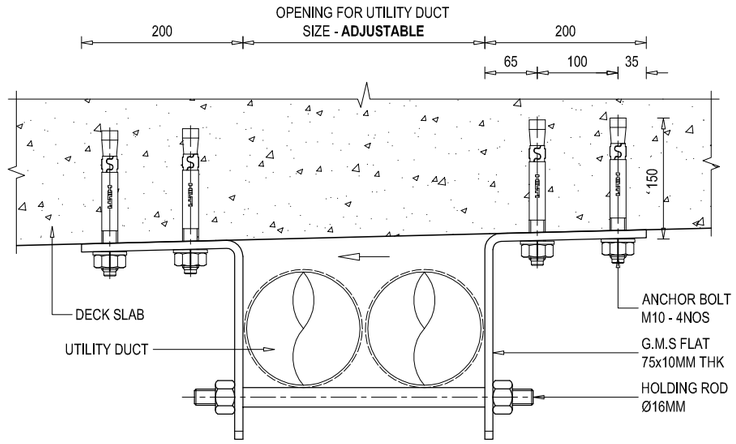
S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	CG(M)1	300 | 1825	20		1.920	8	2.469	37.93
2	CG(M)2	2625	20		2.945	8	2.469	58.17
3	CG(M)3	1675	20		1.995	8	2.469	39.41
4	CG(M)4	1825 / 300 |	20		1.920	8	2.469	37.93
5	CG(M)5	2625	20		2.625	8	2.469	51.85
6	CG(M)6	1675	20		1.675	8	2.469	33.09
7	CG(M)7	1825	12	150	1.620	8	0.889	11.52
8	CG(M)8	2625	12	150	2.625	8	0.889	18.67
9	CG(M)9	1675	12	150	1.675	8	0.889	11.91
10	CG(M)10	50 x 2 / 320 / 1220	12	200	1.640	39	0.889	56.85
11	CG(M)11	320	20	1000	0.320	18	2.469	14.22
							TOTAL (KG) :	371.54

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.D. Nec.No. 6489 CIVIL'A'	Signature	
			Checked By	Mr. S.M.	Signature	
			Approved By	Mr. H.B.	Signature	

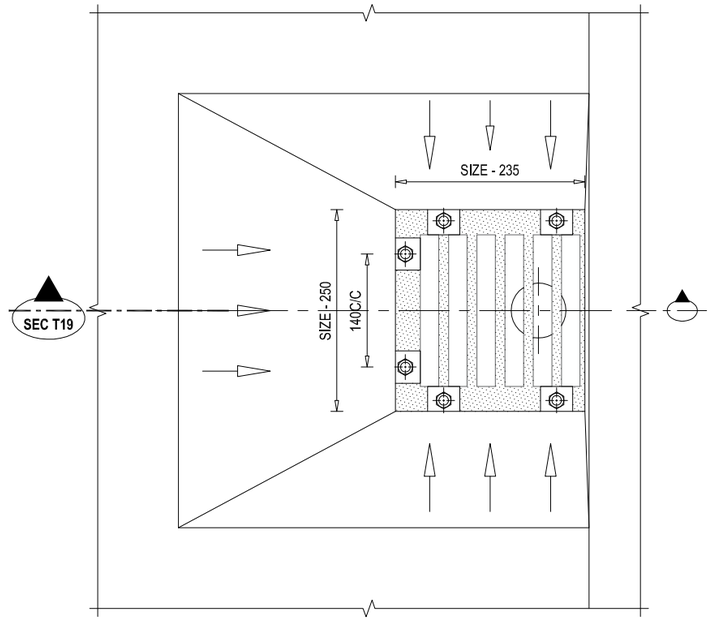
Drawing Name	Scale:	Date:
SUPER STRUCTURE BAR BENDING SCHEDULE OF BRIDGE OVER RIVER TUTESHWOR-1	AS SHOWN	05.05.2023
Reference Drawings -	Chainage: 275+630	Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-13
		Sheet No. 2 / 2



FRONT VIEW



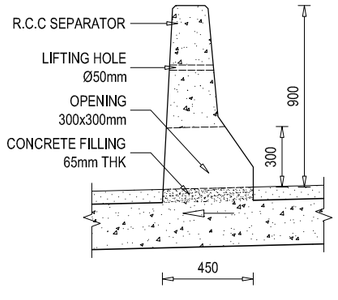
SECTIONAL ELEVATION VIEW AT SEC T17



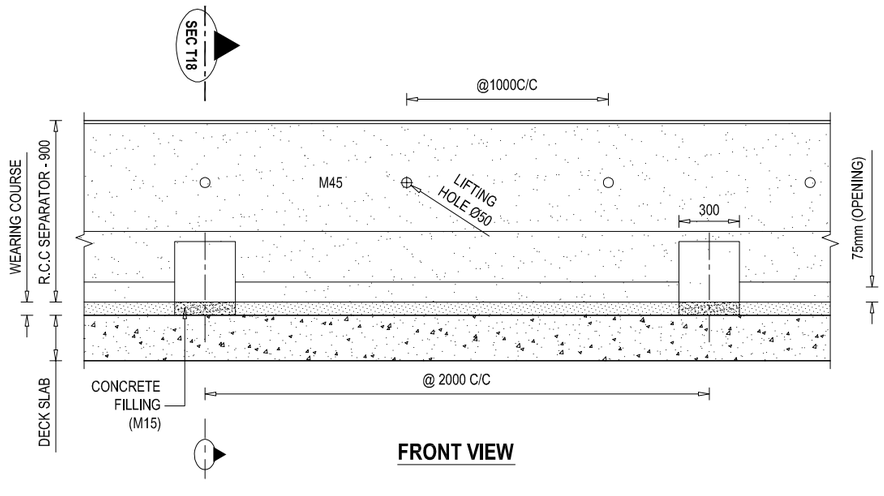
PLAN VIEW

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

SCALE - 1 : 10



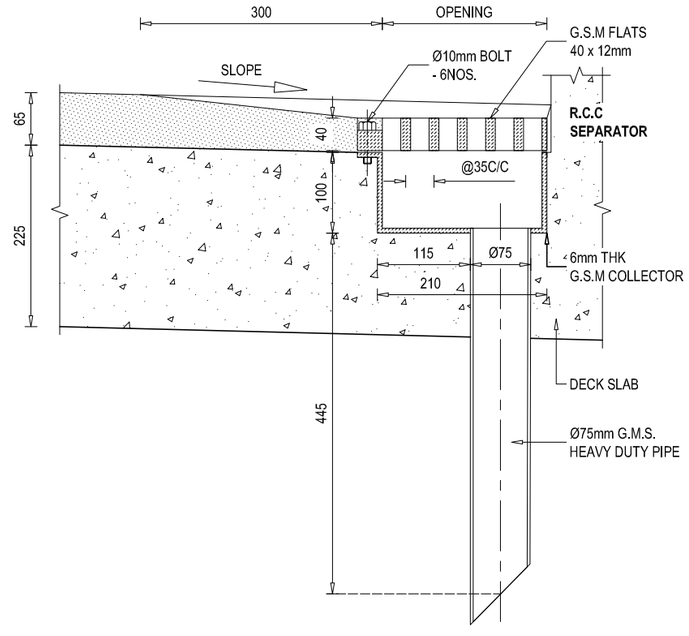
SECTIONAL ELEVATION VIEW AT SEC T18



FRONT VIEW

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

SCALE - 1 : 40

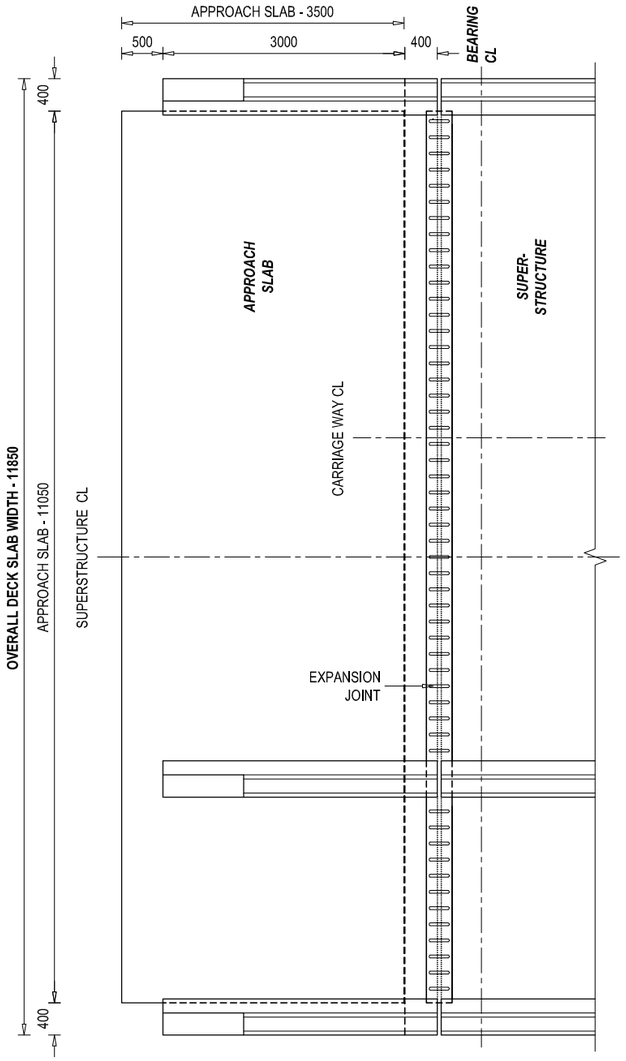


SECTIONAL ELEVATION VIEW AT SEC T19

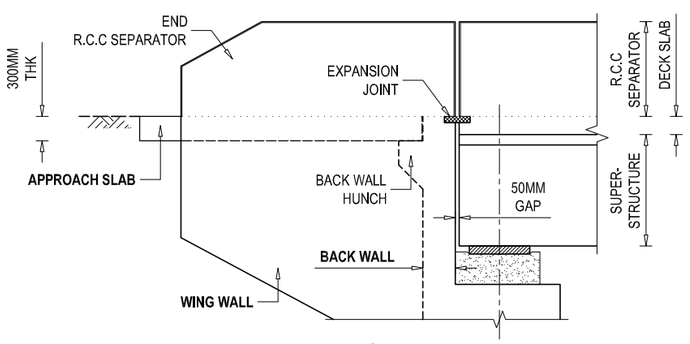
DETAILS OF GALVANIZED MILD STEEL (G.M.S)
DRAINAGE SPOUT

SCALE - 1 : 10

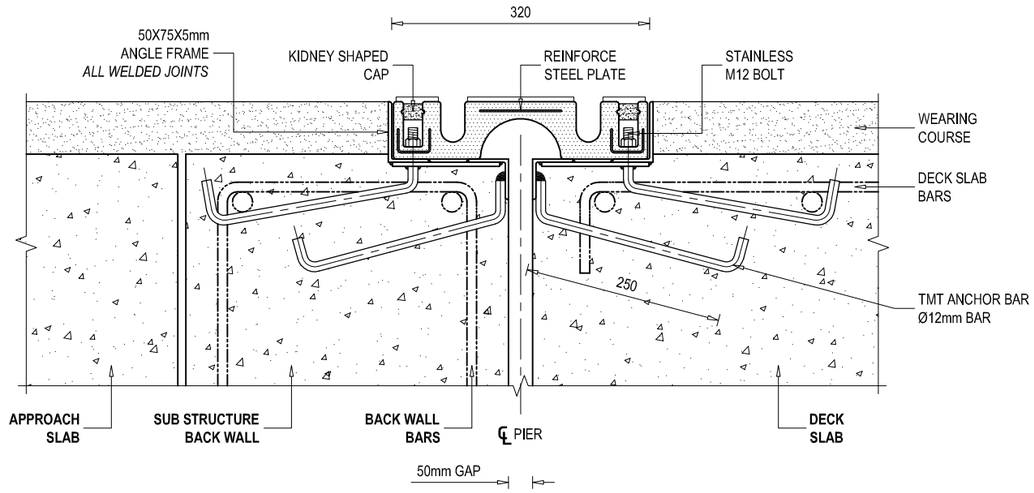
EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya 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.D. Nec.No. 6489 CIVIL"A"	Signature	Drawing Name MISCELLANEOUS DETAILS OF BRIDGE OVER RIVER TUTESHWOR-1	Scale: AS SHOWN	Date: 26.04.2023
			Checked By	Mr. S.M.	Signature			Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-14
			Approved By	Mr. H.B.	Signature	Reference Drawings -	Chainage: 275+630	Sheet No.1 /2



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

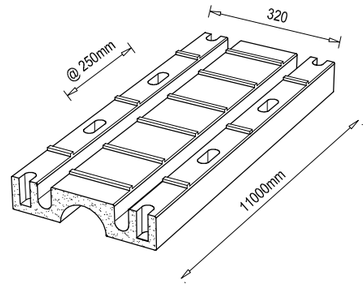


ELEVATION VIEW



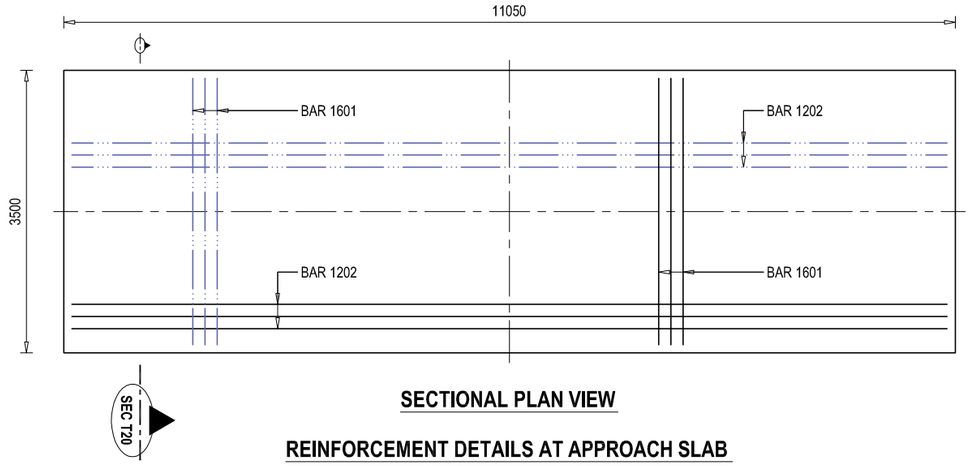
SEAL TYPE EXPANSION JOINTS ARRANGEMENT IN A CARRIAGEWAY

SCALE - 1 : 10 @ A3 PAPER



EXPANSION JOINT ISOMETRIC VIEW - SEAL TYPE

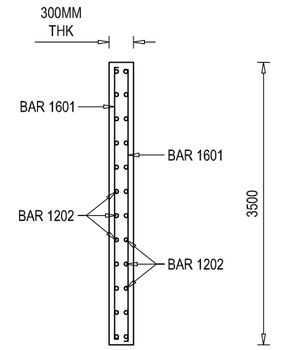
SCALE - NON



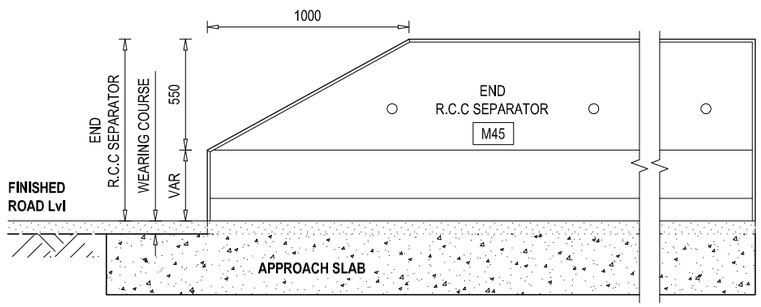
SECTIONAL PLAN VIEW

REINFORCEMENT DETAILS AT APPROACH SLAB

SCALE - 1 : 100 @ A3 PAPER

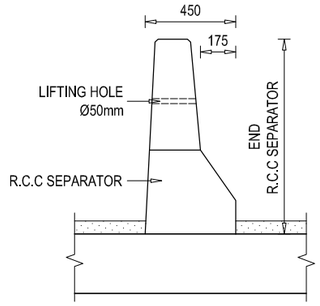


SECTIONAL ELEVATION VIEW AT SEC T20



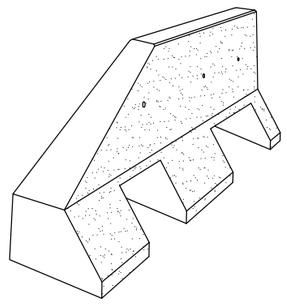
ELEVATION VIEW OF END R.C.C SEPARATOR

SCALE - 1 : 40 @ A3 PAPER



SIDE VIEW

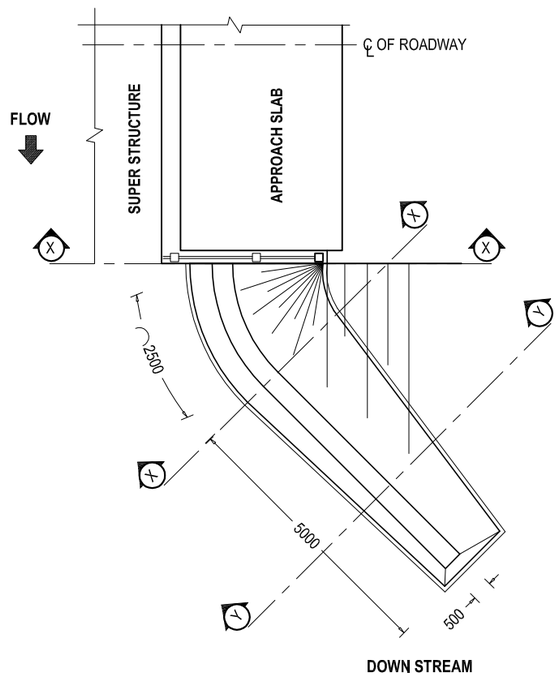
SCALE - 1 : 40 @ A3 PAPER



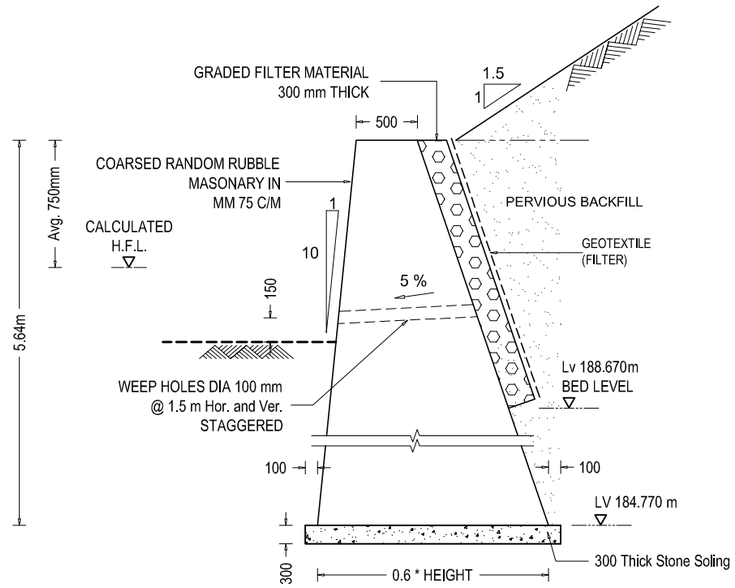
END R.C.C SEPARATOR ISOMETRIC VIEW

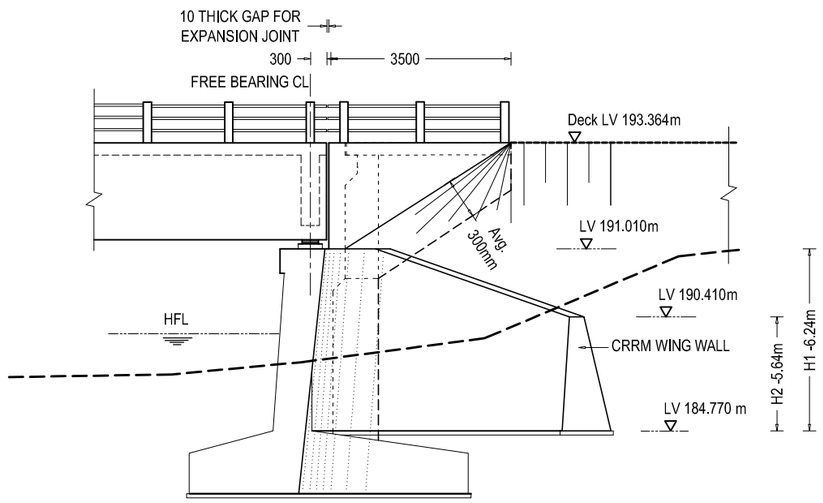
SCALE - NON

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.D. Nec.No. 6489 CIVIL"A"	Signature	Drawing Name: MISCELLANEOUS DETAILS OF BRIDGE OVER RIVER TUTESHWOR-1
			Checked By	Mr. S.M.	Signature	Reference Drawings: -
			Approved By	Mr. H.B.	Signature	Scale: AS SHOWN Chainage: 275+630
						Date: 26.04.2023 Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-14 Sheet No.2 /2

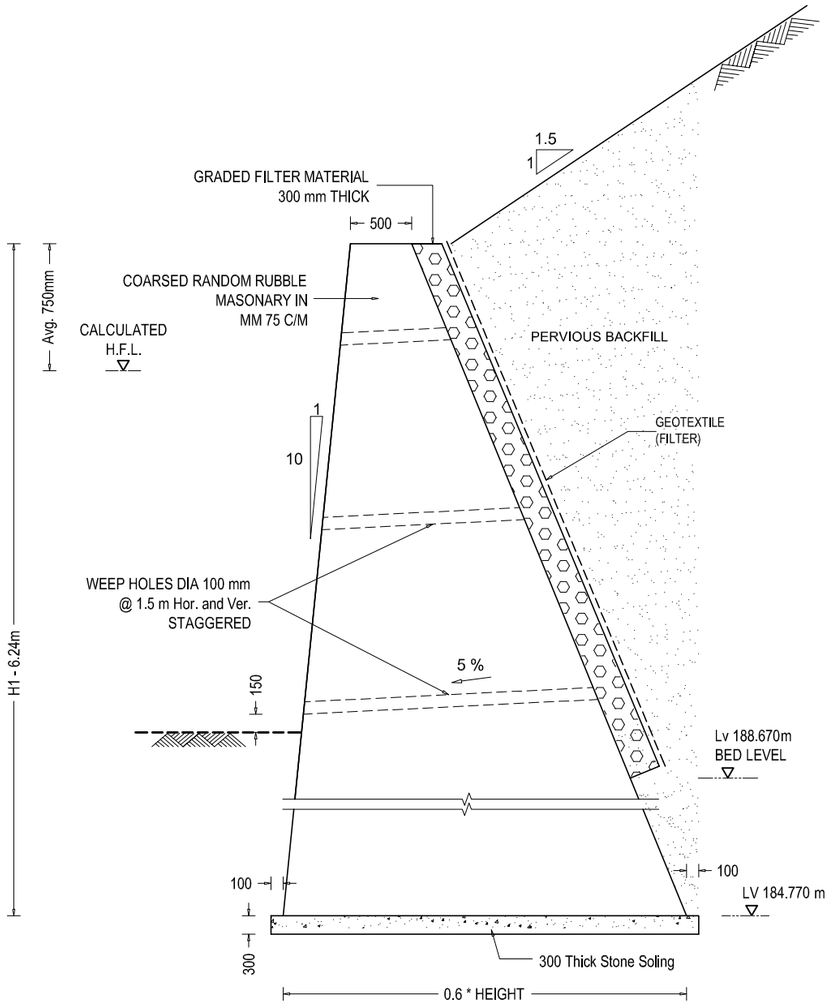


NOTE : AT DOWN STREAM ONLY





WING WALL ELEVATION

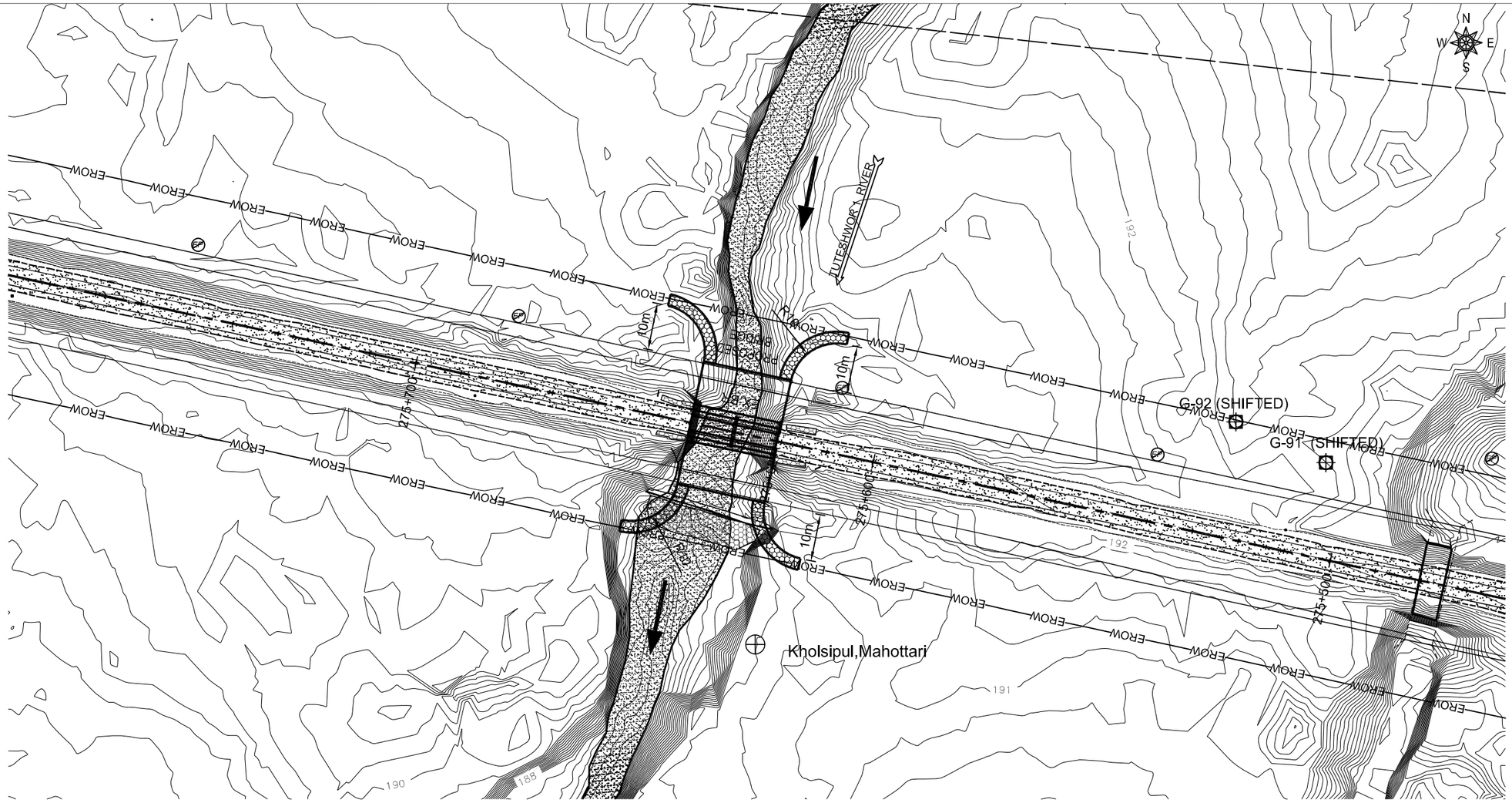


STONE MASONRY WING WALL SECTION X - X

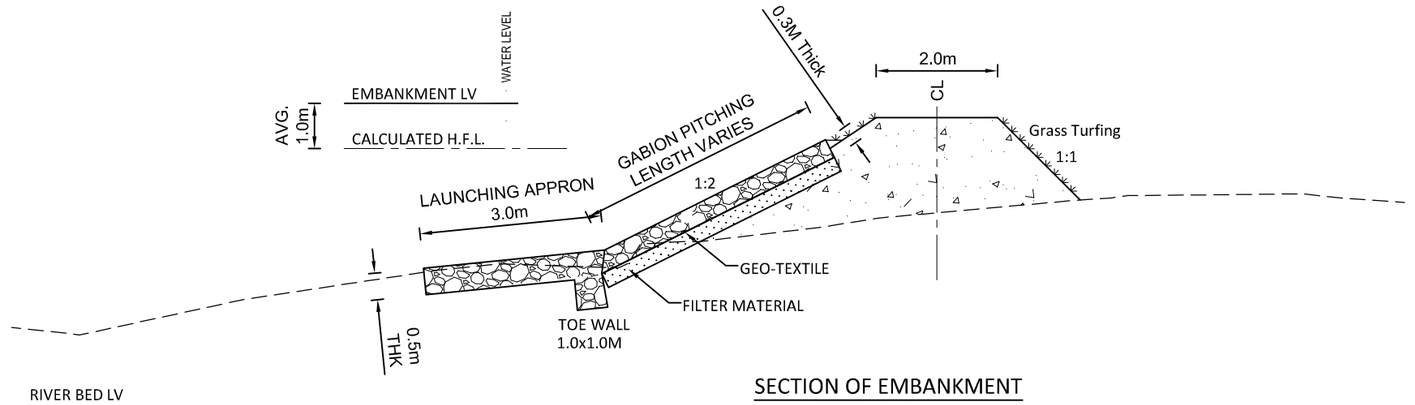
0 1.5m 3m 4.5m 6m

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 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.D. Nec.No. 6489 CIVIL 'A'	Signature	Drawing Name WING WALL DETAILS OF BRIDGE OVER RIVER TUTESHWOR-1	Scale: AS SHOWN	Date: 26.04.2023
			Checked By	Mr. S.M.	Signature			Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-15
			Approved By	Mr. H.B.	Signature	Reference Drawings -	Chainage: 275+630	Sheet No. 1 / 1



TOPOGRAPHIC MAP



SECTION OF EMBANKMENT

SCALE - 1x : 5x

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 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.D. Nec.No.6489 CIVIL'A'	Signature	RIVER TRAINING WORKS OF BRIDGE OVER RIVER TUTESHWOR-1	1:1000	26.04.2023
			Checked By	Mr. S.M.	Signature	Reference Drawings -	Chainage: 275+630	Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD- 16
			Approved By	Mr. H.B.	Signature			Sheet No. 1/1

Bearing Design Data for 20m Span and 11.85m width

Load Condition	Items	Under	On each Neoprene Bearing	Unit
Under No Live Load	V	NO EQ.	46.28	Ton
		EQ.	53.22	Ton
	H_L	NO EQ.	-	Ton
		EQ.	10.41	Ton
	H_T	NO EQ.	-	Ton
		EQ.	10.41	Ton
	θ	NO EQ.	0.00266	radian
		EQ.	0.00306	radian
	Δ		12.4	mm
Under Maximum Live Load	V	NO EQ.	84.85	Ton
		EQ.	92.95	Ton
	H_L	NO EQ.	-	Ton
		EQ.	0.00	Ton
	H_T	NO EQ.	-	Ton
		EQ.	0.00	Ton
	θ	NO EQ.	0.0040425	radian
		EQ.	0.00465	radian
	Δ		20.80	mm

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 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.D. Nec.No.6489 CIVIL"A"	Signature	Drawing Name BEARING DESIGN DATA OF BRIDGE OVER RIVER TUTESHWOR-1 Reference Drawings -	Scale: 1:1000 Chainage: 275+630
			Checked By	Mr. S.M.	Signature		
			Approved By	Mr. H.B.	Signature		

Date: 26.04.2023

Drawing No.- KDP/DPR/STR/BR/TUTESHWOR-1/DD-17

Sheet No. 1/1