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- Kamala Canal

Volume-2

Detailed Drawing

June, 2023

Joint Venture of:

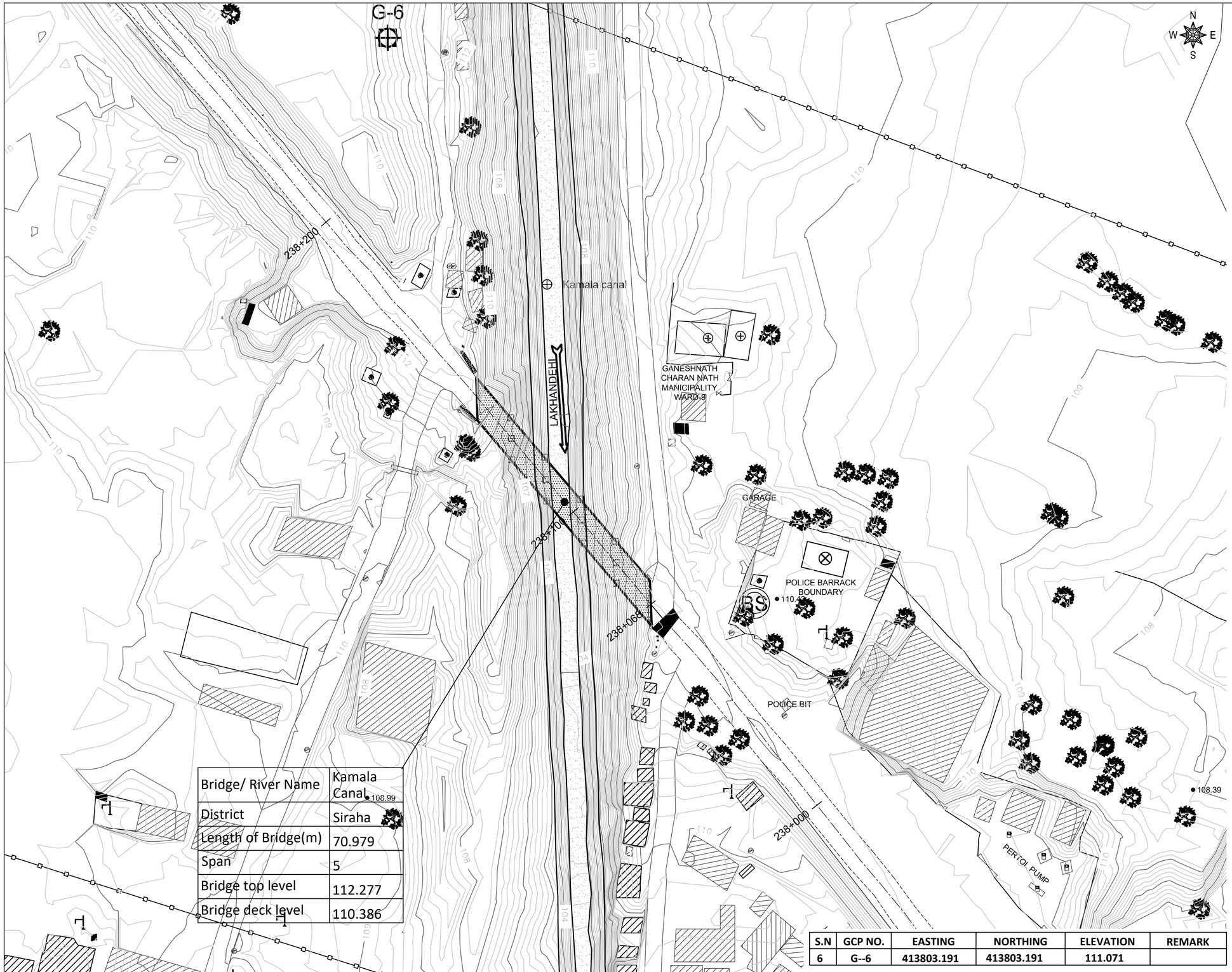
EPTISA Servicios De Ingenieria
Madrid, Spain

STUP Consultants Private Limited
India

In Association With

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

TABLE OF CONTENTS:



Bridge/ River Name	Kamala Canal
District	Siraha
Length of Bridge(m)	70.979
Span	5
Bridge top level	112.277
Bridge deck level	110.386

S.N	GCP NO.	EASTING	NORTHING	ELEVATION	REMARK
6	G--6	413803.191	413803.191	111.071	

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	W	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	

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. S.N.R.B Nec.No. 265 CIVIL "A"	Signature	
Checked By	Mr. S.M.	Signature	
Approved By	Mr. H.B.	Signature	

Drawing Name
DETAILED SURVEY TOPOGRAPHIC MAP(EXISTING CONDITION) OF BRIDGE OVER RIVER KAMALA CANAL

Reference Drawings
-

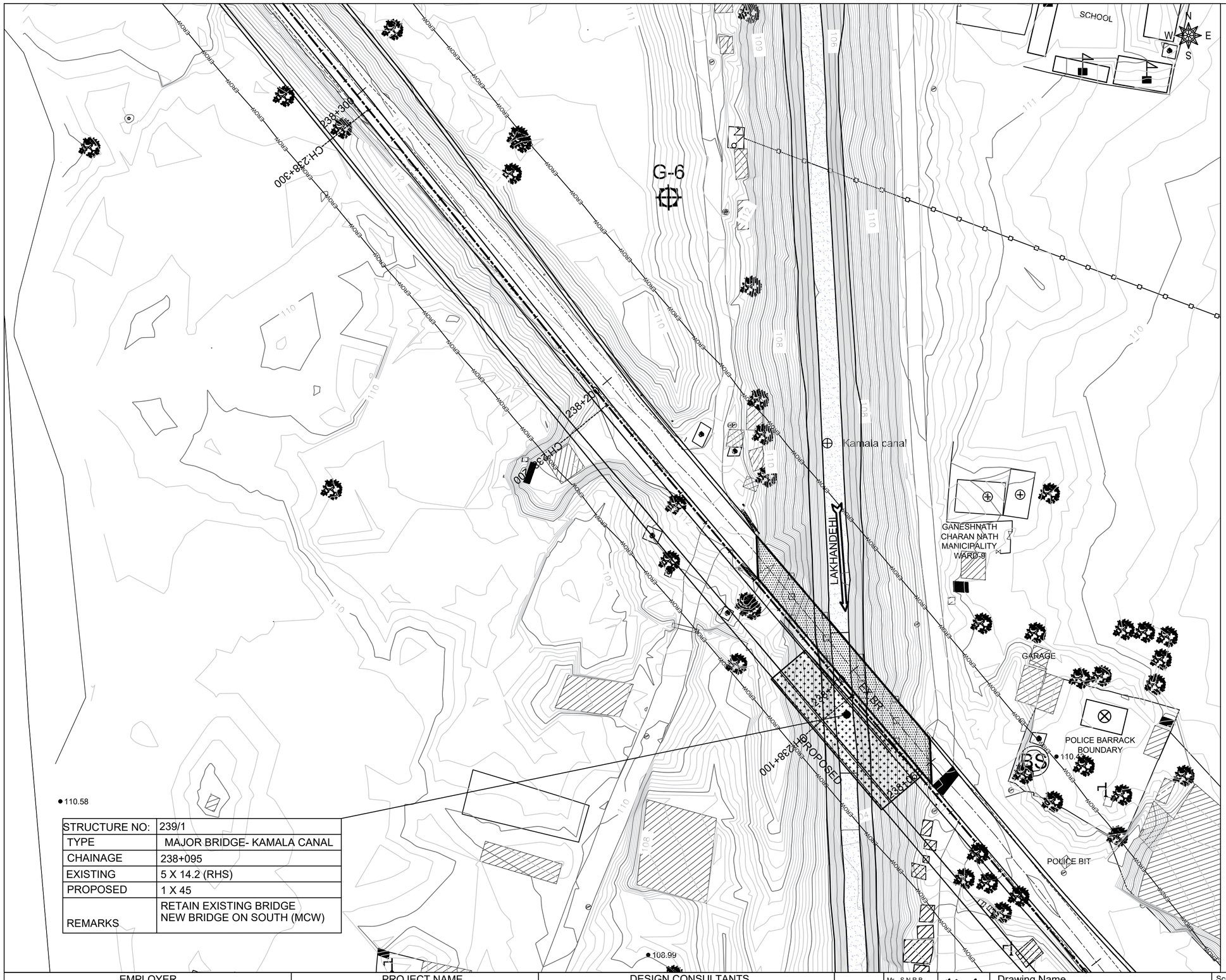
Scale: 1:1000

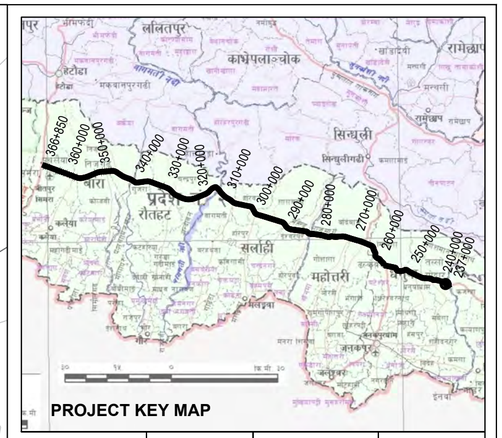
Chainage: 238+095

Date: JUNE, 2023

Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/DD- 2

Sheet No. 1/1





DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
MAIN FOOT TRAIL		ANIMAL FARM	
PLACE NAME		BAMBOO	
POLICE STATION		BIO GAS	
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POULTRY FARM		CONTOUR	
PROPERTY BOUNDARY		CANAL	
ROAD INFORMATION BOARD		CULVERT	
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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:	239/1
TYPE	MAJOR BRIDGE- KAMALA CANAL
CHAINAGE	238+095
EXISTING	5 X 14.2 (RHS)
PROPOSED	1 X 45
REMARKS	RETAIN EXISTING BRIDGE NEW BRIDGE ON SOUTH (MCW)

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

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

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DETAILED SURVEY TOPOGRAPHIC MAP(WITH PROPOSED BRIDGE) OF BRIDGE OVER RIVER KAMALA CANAL

Reference Drawings
-

Scale: 1:1000

Chainage: 238+095

Date: JUNE, 2023

Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/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, Ø=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) - - CUMECS
2. HFL - 108.00 m
3. FREE BOARD (MINIMUM) - 1.000 m
4. MAXIMUM SCOUR LEVEL:
   ABUTMENT - N/A

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 45 = 45 m
2. SUPERSTRUCTURE:
   PRECAST PSC LONGITUDINAL GIRDERS & CAST-IN-SITU RCC CROSS GIRDERS AND DECK SLAB.
3. SUBSTRUCTURE
   A) ABUTMENTS - RCC WALL TYPE
4. FOUNDATIONS
   A) ABUTMENT - 1200 DIA BORED CAST-IN-SITU PILE
   DESIGN WORKING LOAD ON PILE - 2654 KN (NON SEISMIC), 3927 KN (SEISMIC)

   RCC BORED PILES SHOULD BE CONSTRUCTED AS PER IS: 2911(PART 1/SEC 2)-2010.
5. BEARINGS
   POT 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
       II) BELOW PILE CAP.....M15
    g. APPROACH SLAB M30
    h. CAST-IN-SITU CRASH BARRIER M40
    i. KERB M35
    j. DECK SLAB FOR PSC GIRDERS.....M45
    k. PRECAST PSC GIRDERS M50
    l. 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. 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
    d) FOR M 45 GRADE CONCRETE : 45.70Ø
    e) FOR M 50 GRADE CONCRETE : 42.00Ø

    (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:

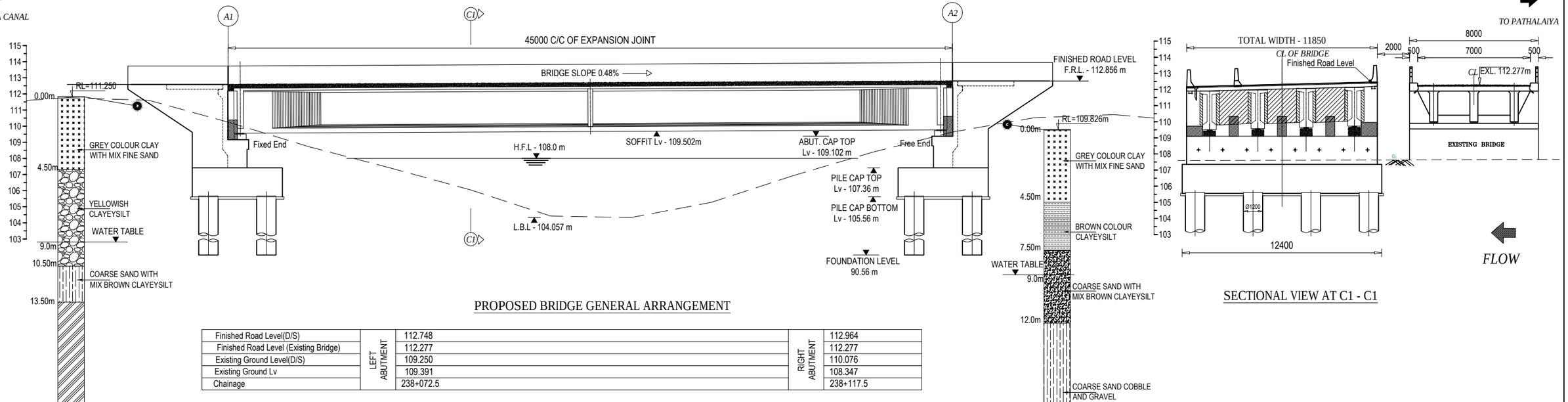
GRADE OF CONCRETE	M30	M35	M40	M45	M50
LAPPED BAR <25%	57.20Ø	51.48Ø	48.62Ø	45.70Ø	42.00Ø
25%≤ LAPPED BAR <33%	65.78Ø	59.50Ø	55.91Ø	52.60Ø	48.00Ø
33%≤ LAPPED BAR <50%	80.08Ø	72.07Ø	68.07Ø	64.00Ø	59.00Ø
50%≤ LAPPED BAR	85.80Ø	77.22Ø	72.93Ø	68.60Ø	63.00Ø

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
20. LONGITUDINAL AND TRANSVERSE STOPPER SHOULD BE KEPT AT +10MM FROM EXPANSION.

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 CANAL-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. S.N.R.B Nec.No. 265 Civil"A"	Signature	Drawing Name GENERAL NOTES OF BRIDGE OVER RIVER KAMALA CANAL Reference Drawings	Scale: AS SHOWN Chainage: 238+095	Date: JUNE 2023 Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/DD -4 Sheet No. 1 / 1
			Checked By	Mr. S.M.	Signature			
			Approved By	Mr. H.B.	Signature			

TO KAMALA CANAL

TO PATHALAIYA



SECTIONAL VIEW AT C1 - C1

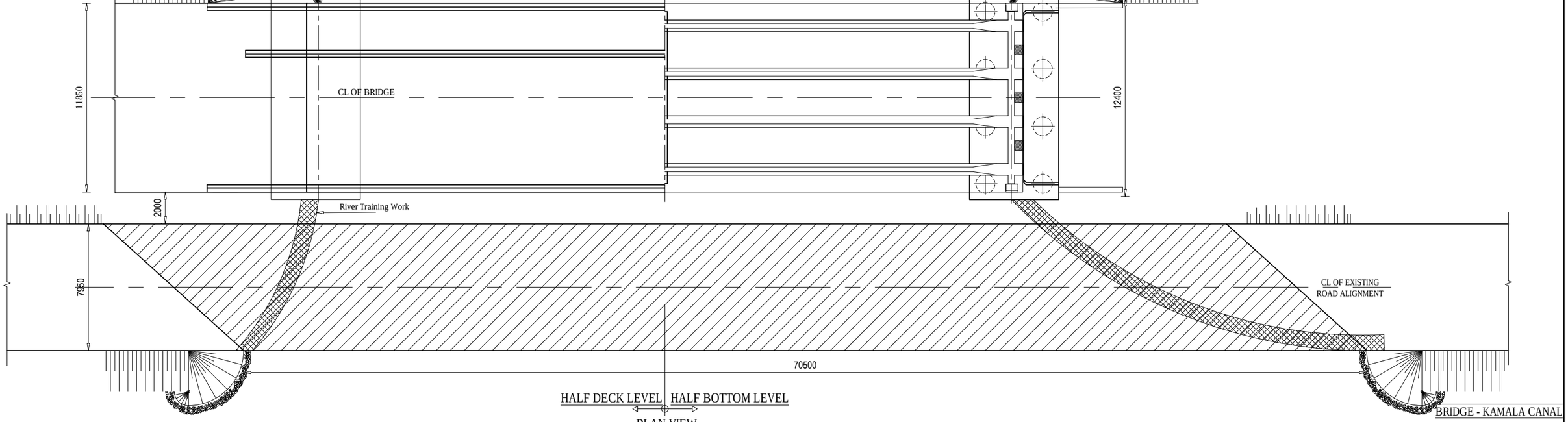
PROPOSED BRIDGE GENERAL ARRANGEMENT

Finished Road Level(D/S)	LEFT ABUTMENT	112.748	RIGHT ABUTMENT	112.964
Finished Road Level (Existing Bridge)		112.277		112.277
Existing Ground Level(D/S)		109.250		110.076
Existing Ground Lv		109.391		108.347
Chainage		238+072.5		238+117.5

FLOW

BH-2(L/B)
BORE HOLE PROFILE
EASTING: 413840.1170
NORTHING: 2973972.4850

BH-1(R/B)
BORE HOLE PROFILE
EASTING: 413861.0450
NORTHING: 2973932.2270



HALF DECK LEVEL | HALF BOTTOM LEVEL

PLAN VIEW

BRIDGE - KAMALA CANAL
(SCALE 1 :250 @ A3)

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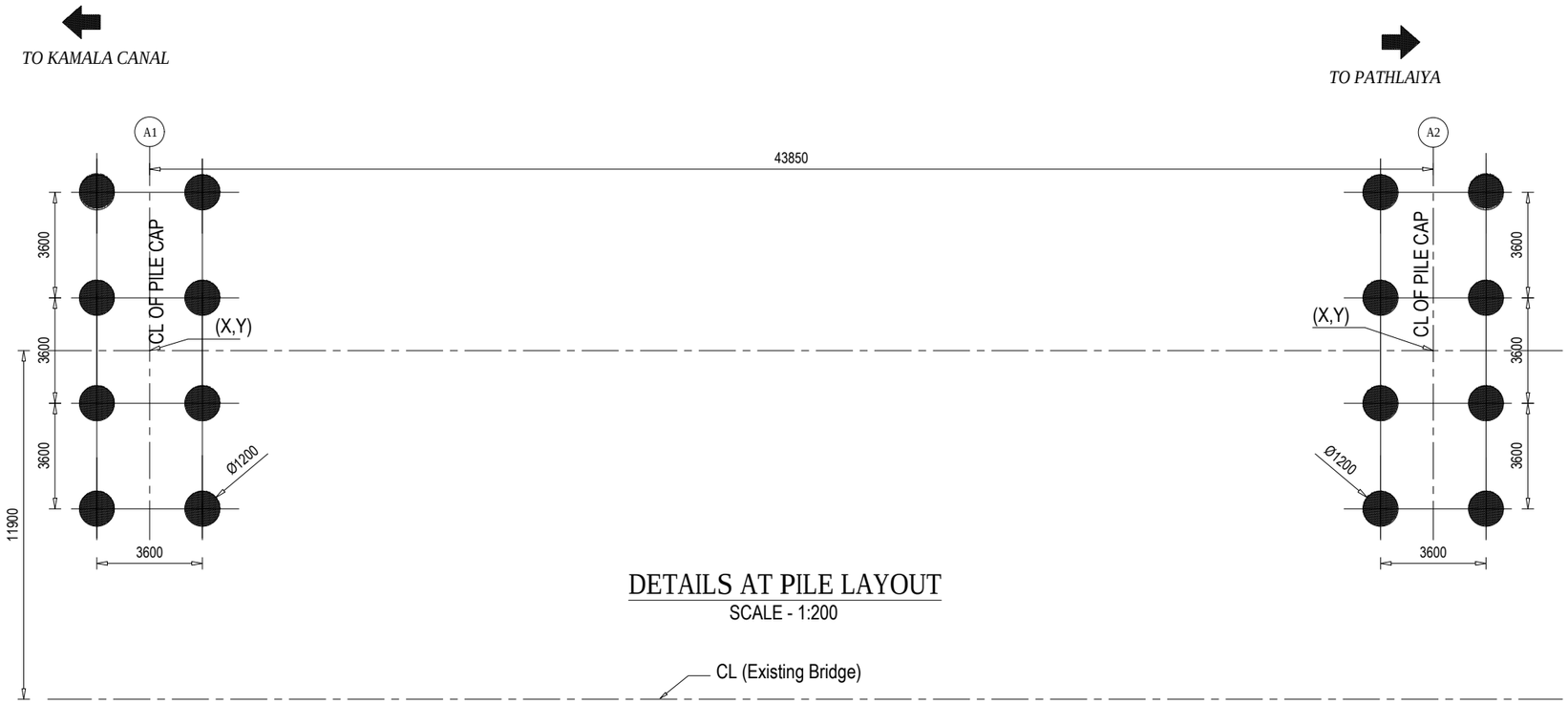
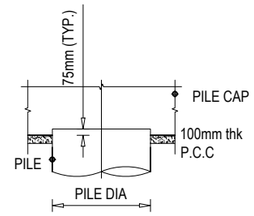
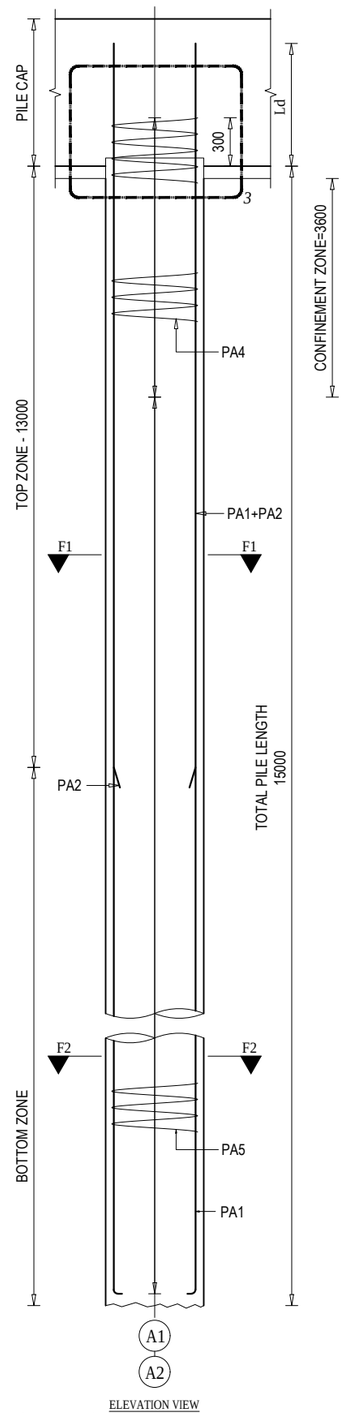
			Checked By	Mr. S.M.	Signature		Date: JUNE 2023 Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/DD -5 Sheet No. 1 / 1
			Approved By	Mr. H.B.	Signature		



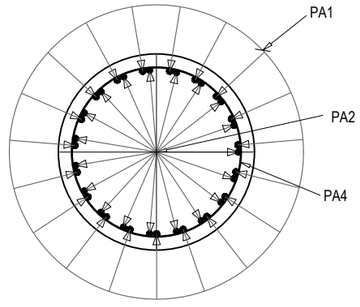
DETAILS AT PILE LAYOUT
SCALE - 1:200



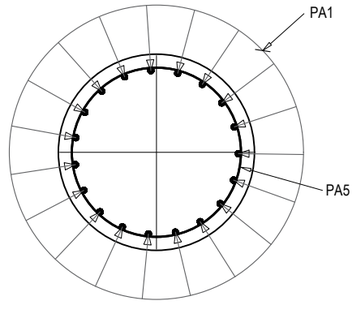
DETAIL AT 3
SCALE - 1:75



ELEVATION VIEW
BAR DETAIL AT ABUTMENT PILE
SCALE - 1:75



SECTIONAL VIEW AT F1 - F1
SCALE - 1:40



SECTIONAL VIEW AT F2 - F2
SCALE - 1:40

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 ⌊ 16650	32		16.950	19	6.321	2035.67
2	PA2	14725	25		14.725	19	3.858	1079.379
4	PA4	75	16	75	155.965	1	1.580	246.46
5	PA5	150	16	150	247.142	1	1.580	390.55
							TOTAL (KG) :	3752.06
							No. of Pile	8.00
							TOTAL WEIGHT (KG) :	30016.49

PILE CAPACITY (INDIVIDUAL)			
S.N.	DIA (mm)	DEMAND (kN)	
		SEISMIC	NON SEISMIC
1	1200	3927	2654

CO ORDINATES OF PILE LOCATION OF PROPOSED BRIDGE

S.N.	ABUTMENT/PIER	EASTING(X)	NORTHING(Y)
		UTM-45R	
1	ABUTMENT(A1)	413861.4007	2973921.1759
2	ABUTMENT(A2)	413833.5315	2973954.1231

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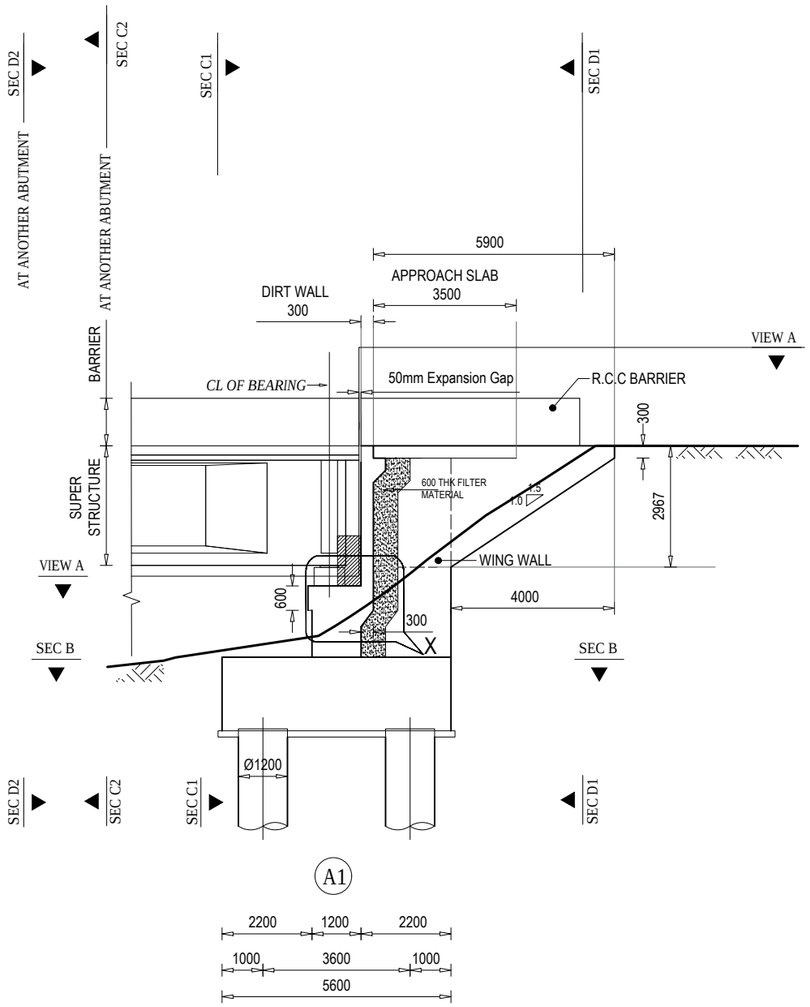
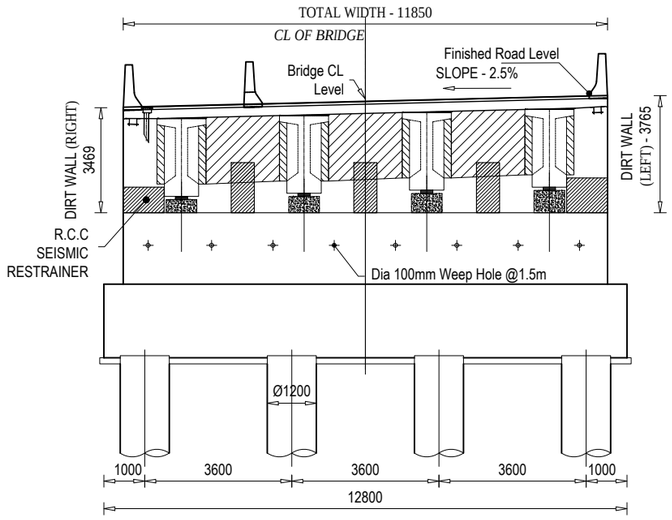
			Checked By	Mr. S.M.	Signature	Reference Drawings -	Chainage: 238+095 Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/DD-6
			Approved By	Mr. H.B.	Signature		Sheet No. 1 / 1



OUTLINE DETAILS OF ABUTMENT

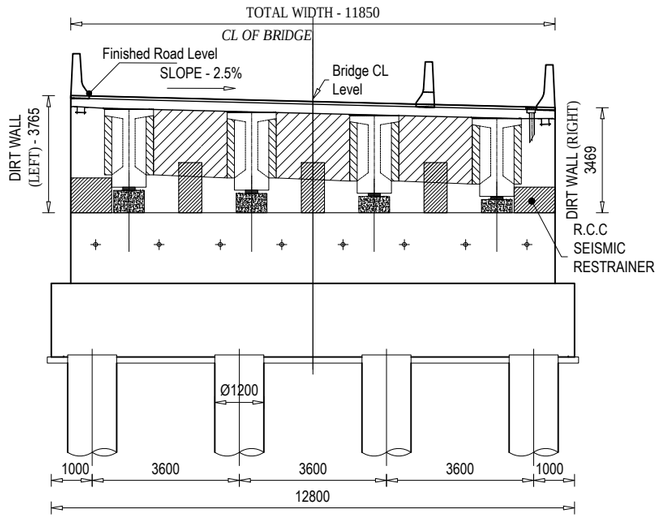
SCALE - 1: 150



SECTIONAL VIEW AT C1 - C1

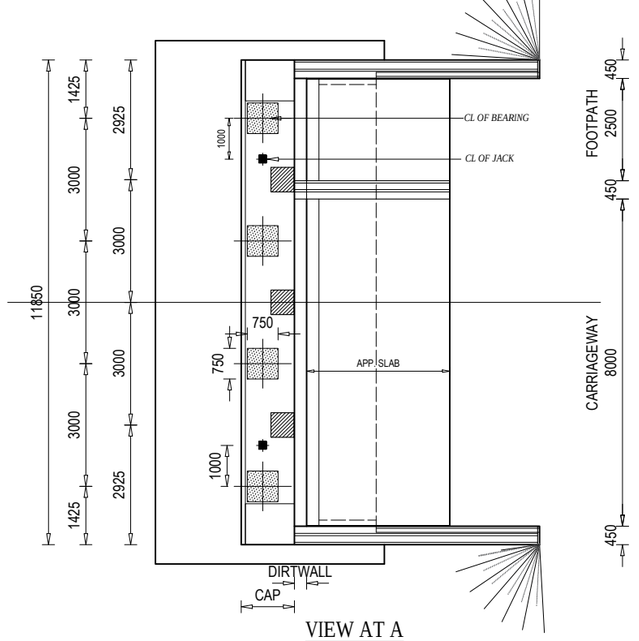
SCALE - 1: 150

Abutment Cap Top Level



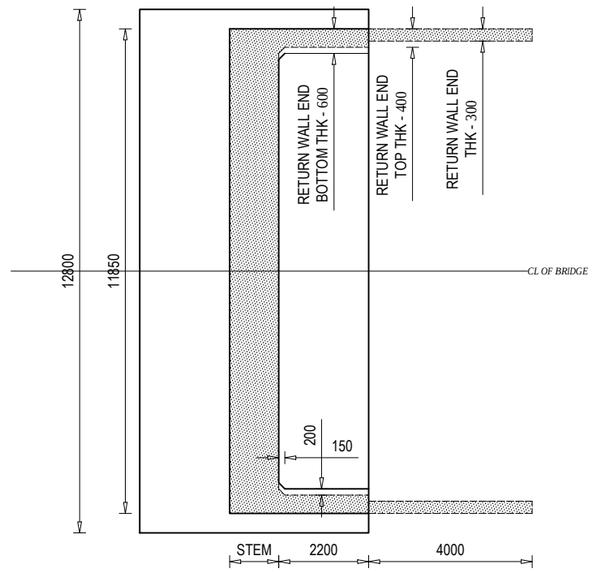
SECTIONAL VIEW AT C2 - C2

SCALE - 1: 150



VIEW AT A

SCALE - 1: 150



SECTIONAL VIEW AT B - B

SCALE - 1: 150

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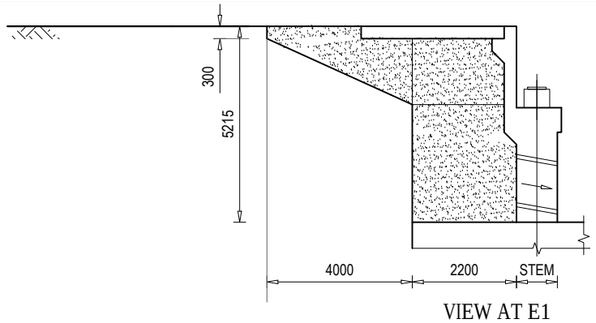
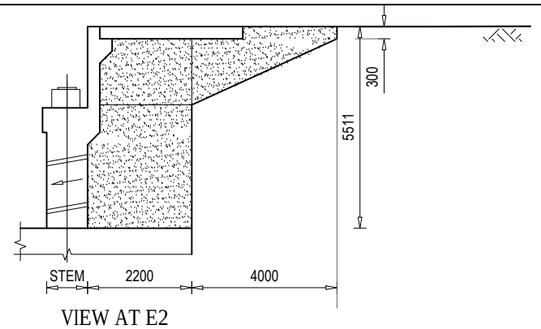
			Checked By	Mr. S.M.	Signature	
			Approved By	Mr. H.B.	Signature	

Scale:	Date:
AS SHOWN	JUNE 2023
Chainage: 238+095	Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/DD -7
	Sheet No. 1 / 2

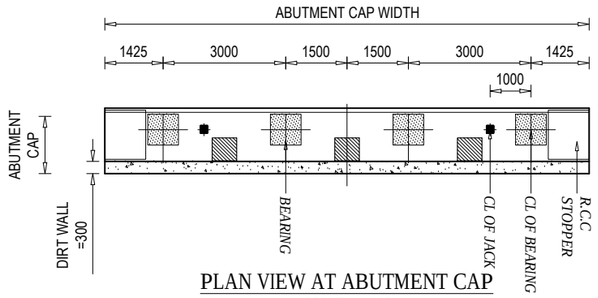


VIEW AT E1

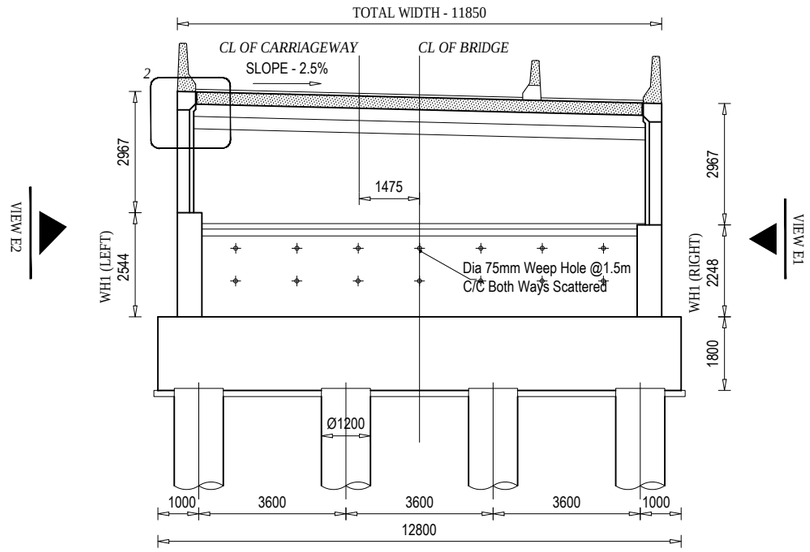


VIEW AT E2

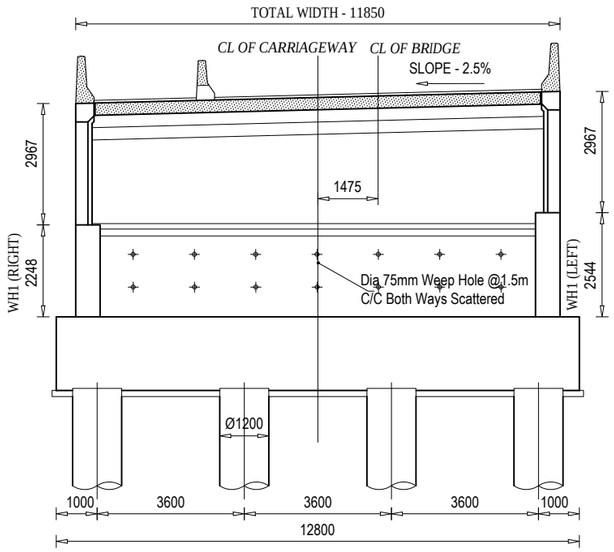
DETAIL AT RETURN WALL



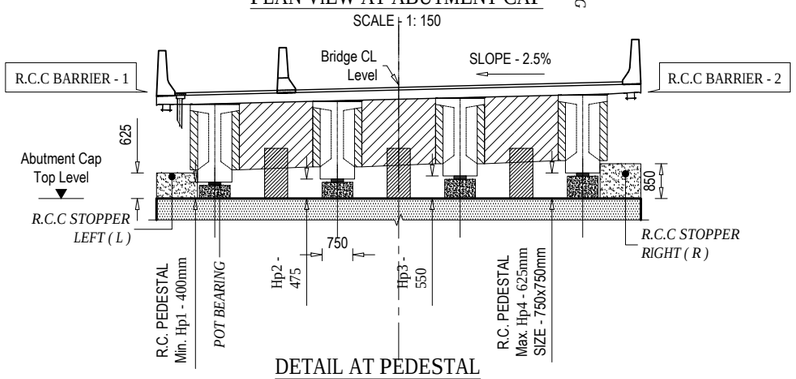
PLAN VIEW AT ABUTMENT CAP



SECTIONAL VIEW AT D1 - D1



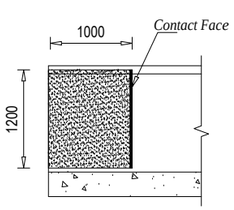
SECTIONAL VIEW AT D2 - D2



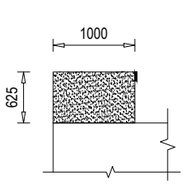
DETAIL AT PEDESTAL

SCALE - 1 : 150

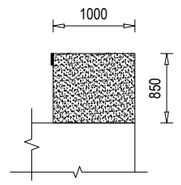
DETAIL AT DIRT WALL



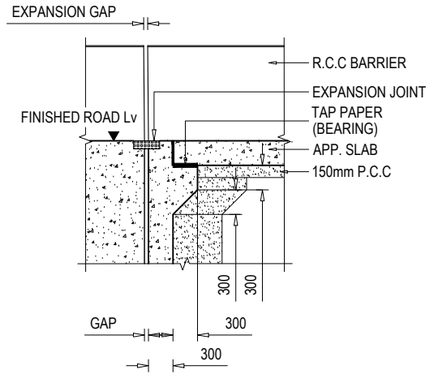
R.C.C SEISMIC RESTRAINER PLAN VIEW



R.C.C SEISMIC RESTRAINER - LEFT ELEVATION VIEW

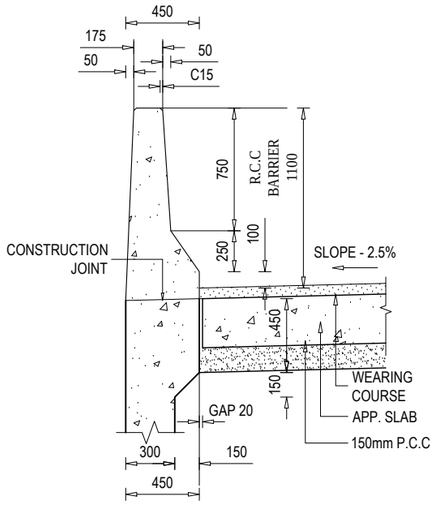


R.C.C SEISMIC RESTRAINER - RIGHT ELEVATION VIEW



DETAIL AT 1

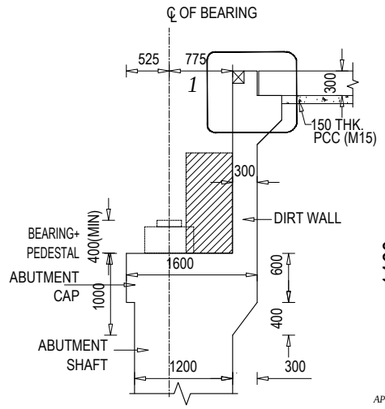
SCALE - 1: 50



DETAIL SECTIONAL VIEW AT R.C.C BARRIER

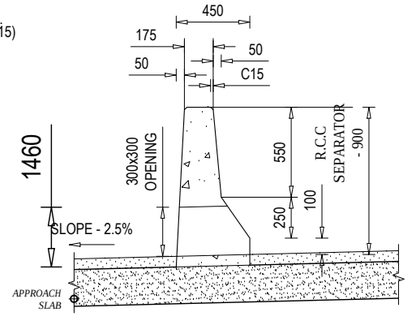
DETAIL AT 2

SCALE - 1: 25



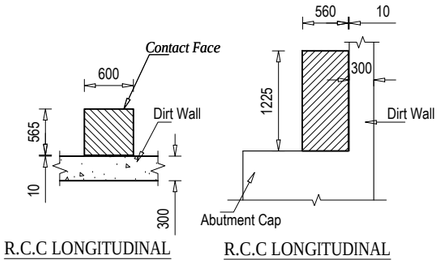
DETAIL-X

SCALE - 1: 75



DETAIL SECTIONAL VIEW AT R.C.C SEPARATOR

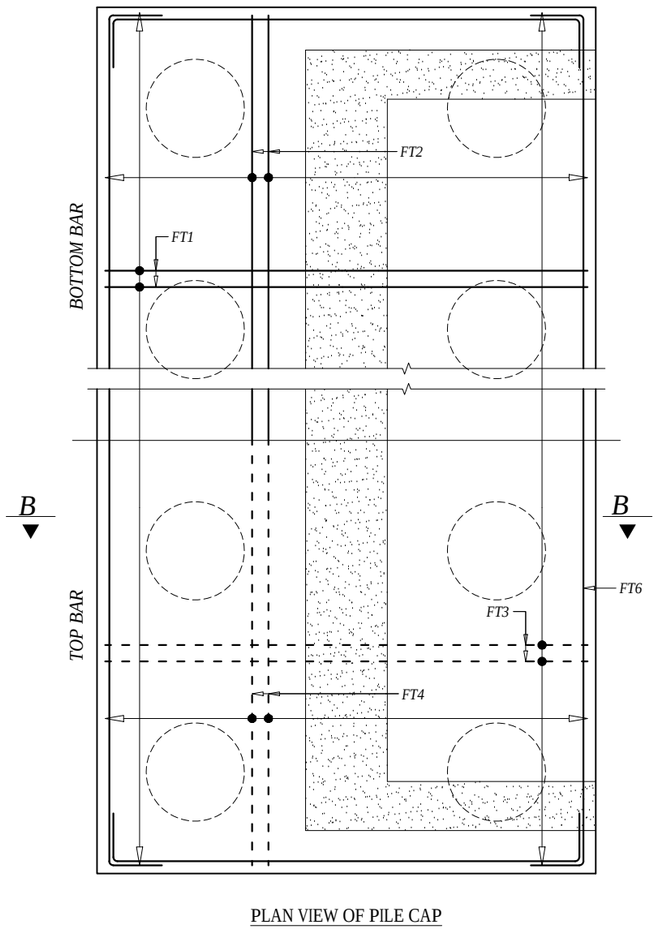
SCALE - 1: 25



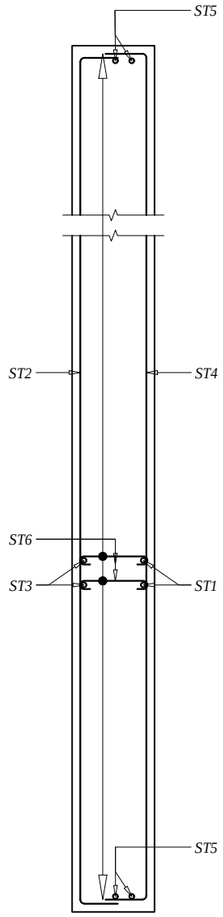
R.C.C LONGITUDINAL RESTRAINER PLAN VIEW

R.C.C LONGITUDINAL RESTRAINER ELEVATION VIEW

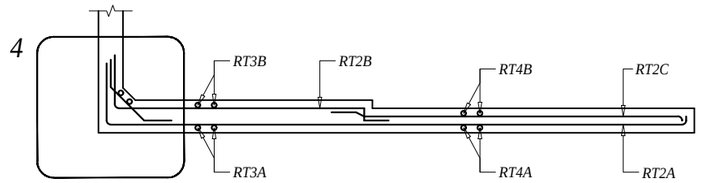
EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of KAMALA CANAL-Dhalkebar-Pathlaiya 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. S.N.R.B Nec.No. 265 Civil"A"	Signature	Drawing Name: ABUTMENT DETAILS	Scale: AS SHOWN Date: JUNE 2023
			Checked By	Mr. S.M.	Signature	Reference Drawings	Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/DD -7
			Approved By	Mr. H.B.	Signature		Chainage: 238+095 Sheet No. 2 / 2



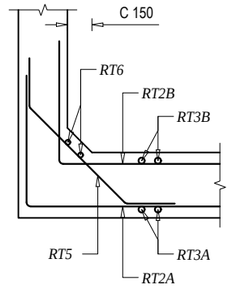
PLAN VIEW OF PILE CAP



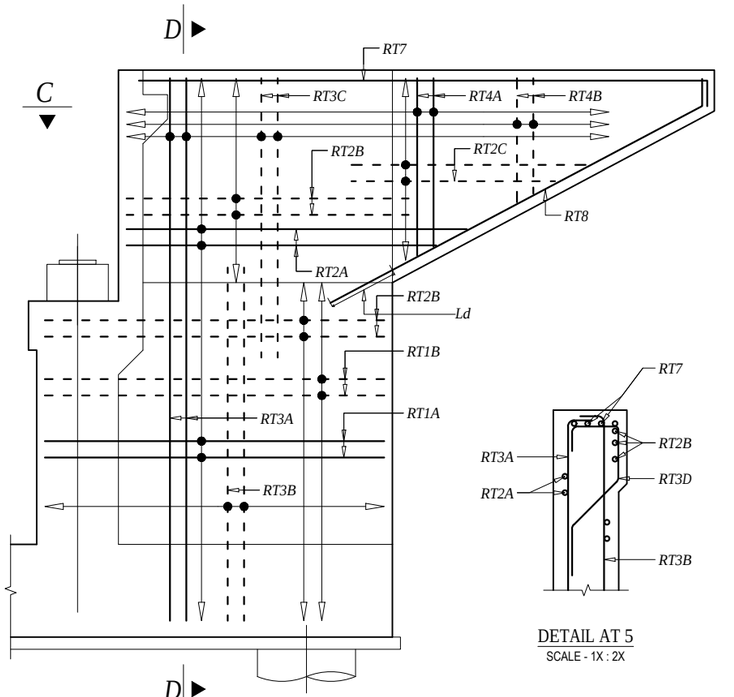
SECTIONAL AT A-A



SECTIONAL PLAN VIEW AT C-C

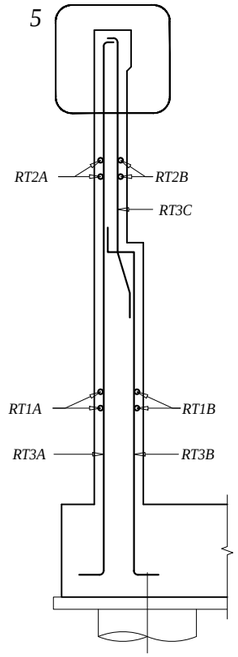


DETAILS AT 4



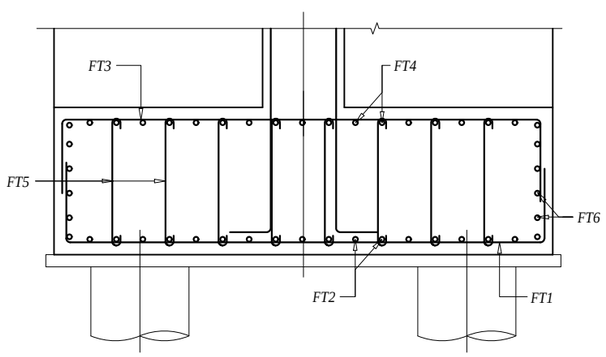
ELEVATION VIEW

DETAIL AT 5
SCALE - 1X : 2X



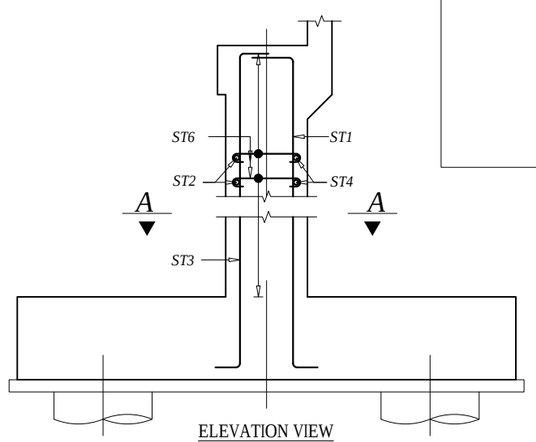
SECTIONAL SIDE VIEW AT D-D

BAR DETAIL AT RETURN WALL
SCALE - 1 : 75



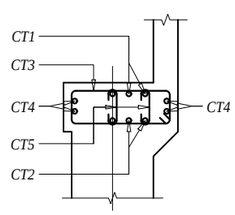
SECTIONAL AT B-B

BAR DETAIL OF PILE CAP
SCALE - 1 : 75

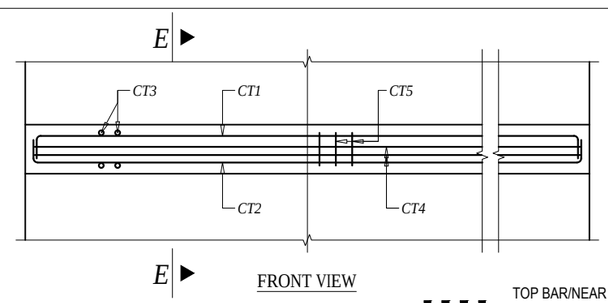


ELEVATION VIEW

BAR DETAIL AT ABUTMENT STEM
SCALE - 1 : 75



SECTION VIEW AT E-E



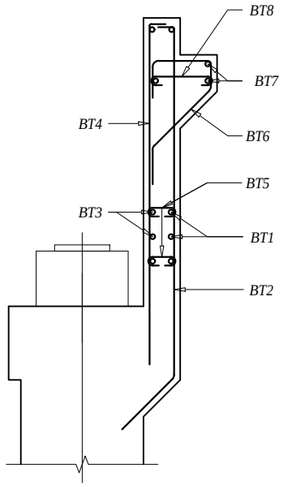
FRONT VIEW

BAR DETAIL AT ABUTMENT CAP
SCALE - 1 : 75

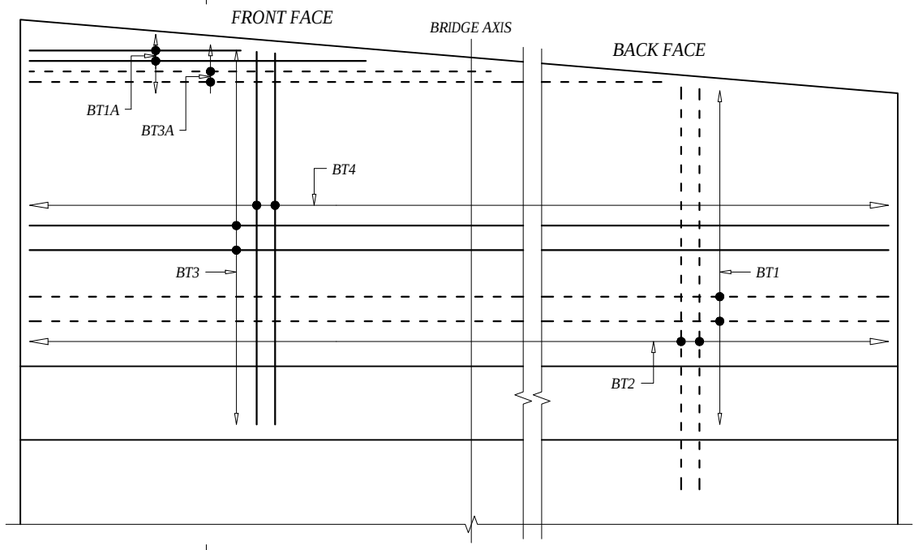
TOP BAR/NEAR FACE/ EARTH FACE REINFORCEMENT

BOTTOM BAR/ FAR FACE/ OTHER FACE REINFORCEMENT

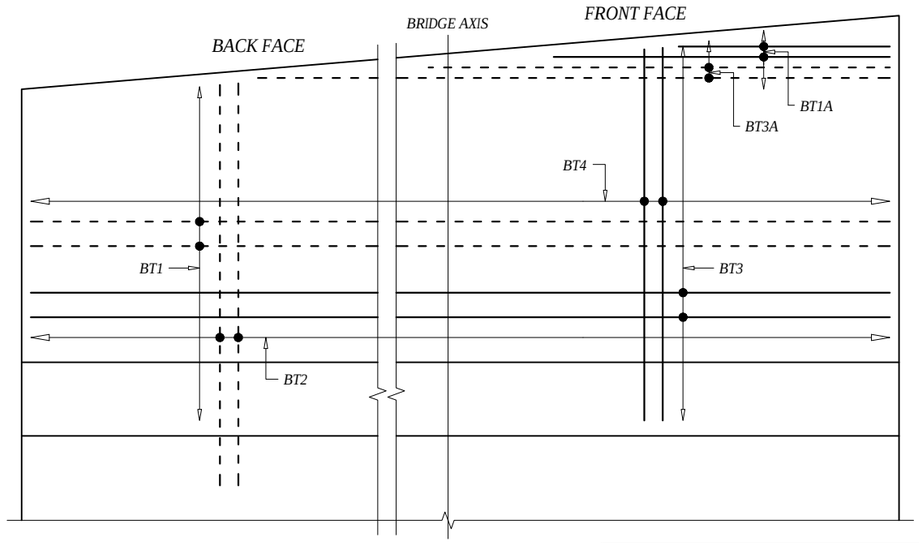
EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of KAMALA CANAL-Dhalkebar-Pathlaiya 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. S.N.R.B Nec.No. 265 Civil"A"	Signature	Drawing Name ABUTMENT REINFORCEMENT DETAILS OF BRIDGE OVER RIVER KAMALA CANAL	Scale: AS SHOWN	Date: JUNE 2023
		Checked By	Mr. S.M.	Signature	Reference Drawings KDP/DPR/STR/BR/KAMALA CANAL/DD -9	Chainage: 238+095	Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/DD -8
		Approved By	Mr. H.B.	Signature			Sheet No. 1/2



SECTIONAL VIEW AT F-F

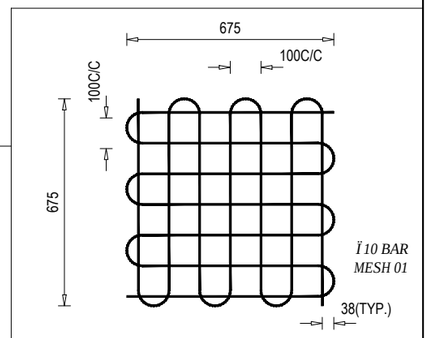


ELEVATION VIEW / VIEW AT D1

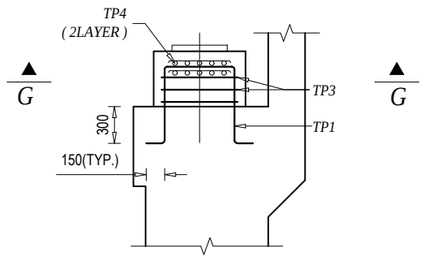


ELEVATION VIEW / VIEW AT D2

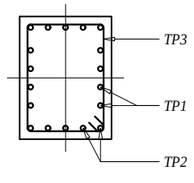
BAR DETAIL AT DIRT WALL
SCALE - 1 : 50



REINFORCEMENT DETAILS OF BEARING MESH
SCALE - 1 : 50

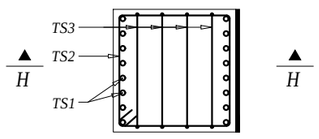


SECTIONAL SIDE VIEW

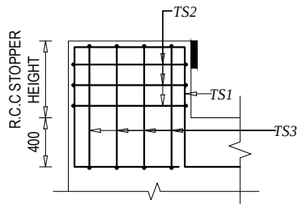


SECTIONAL PLAN VIEW AT G-G

BAR DETAIL AT PEDESTAL
SCALE - 1 : 50

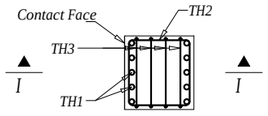


SECTIONAL PLAN VIEW

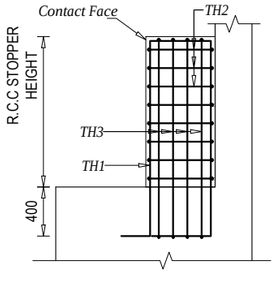


SECTIONAL VIEW AT H-H

R.C.C STOPPER LEFT ELEVATION VIEW
SCALE - 1 : 50

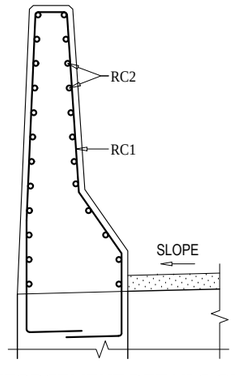


SECTIONAL PLAN VIEW

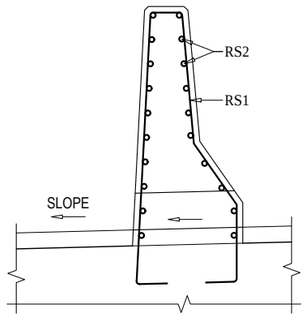


SECTIONAL VIEW AT I - I

R.C.C LONGITUDINAL STOPPER SECTION
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 CANAL-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. S.N.R.B Nec.No. 265 Civil"A"	Signature	Drawing Name ABUTMENT REINFORCEMENT DETAILS OF BRIDGE OVER RIVER KAMALA CANAL Reference Drawings KDP/DPR/STR/BR/KAMALA CANAL/DD -9	Scale: AS SHOWN Chainage: 238+095
			Checked By	Mr. S.M.	Signature		Date: JUNE 2023 Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/DD-8
			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	30	0.889	320.00
2	BT1A	Avg. 5850 — 150	12	150	6.000	3	0.889	16.00
3	BT2	150 / 450 / 4142 Avg.	20	130	4.742	93	2.469	1088.90
4	BT3	150 — 11700 — 150	12	150	12.000	26	0.889	277.33
5	BT3A	Avg. 5850 — 150	12	150	6.000	3	0.889	16.00
6	BT4	150 / 4142 Avg	12	130	4.292	93	0.889	354.81
7	BT5	100 — 200 — 100	12	450	0.400	216	0.889	76.80
8	BT6	200 / 450 / 220 / 200 / 756	20	130	1.826	93	2.469	419.30
9	BT7	11700	12	5 Nos.	11.700	5	0.889	52.00
10	BT8	100 — 450 — 100	12	150	0.650	158	0.889	91.29
							TOTAL (KG) :	2712.43

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	12	1.580	233.24
2	CT2	300 — 11700 — 300	16	150	12.300	12	1.580	233.24
3	CT3	450 / 1450 / 100	16	150	4.000	80	1.580	505.60
4	CT4	300 — 11700 — 300	12	150	12.000	8	0.889	85.33
5	CT5	100 / 450 / 100	12	Long. 150 / Trans. 300	0.550	422	0.889	243.82
							TOTAL (KG) :	1301.32

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 / 3396 / 900	25	120	4.596	100	3.858	1773.15
2	ST2	600 — 11700 — 600	16	150	12.900	8	1.580	163.08
3	ST3	300 / 3396 / 900	20	120	4.596	100	2.469	1134.81
4	ST4	600 — 11700 — 600	16	150	12.900	8	1.580	163.08
5	ST5	300 / 900 / 3396	16	200	4.596	14	1.580	101.68
6	ST6	100 — 1050 — 100	16	Ver. 450 / Hor. 450	1.250	81	1.580	160.00
							TOTAL (KG) :	3495.81

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 — 5450 — 900	25	110	7.250	116	3.858	3244.60
2	FT2	900 — 12650 — 900	20	200	14.450	28	2.469	999.01
3	FT3	900 — 5450 — 900	20	110	7.250	116	2.469	2076.54
4	FT4	900 — 12650 — 900	16	200	14.450	28	1.580	639.37
5	FT5	1650 / 150 / 150	16	450	1.950	377	1.580	1161.72
6	FT6	5400 / 12610	16	200	36.320	10	1.580	573.95
							TOTAL (KG) :	8695.19

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 — 700 — Avg. 800	16	150	2.500	8	1.580	31.60
1	TP2	150 — 700 — Avg. 800	16	150	2.500	8	1.580	31.60
2	TP3	700 — 100	16	150	3.000	4	1.580	18.96
4	TP4	550 / 150 / @ 100	12	2 Nos.	12.500	2	0.617	12.96
							TOTAL (KG) :	81.23
							TOTAL NOS OF PEDESTAL :	4.00
							TOTAL WEIGHT (KG) :	324.92

BAR BENDING SCHEDULE OF RCC SEISMIC RESTRAINER - 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	900 / 975 / 850 / 850	32		4.550	12	6.321	345.13
2	TS2-L	900 — 1100 — 100	16	120	4.200	6	1.580	39.82
3	TS3-L	975 — 1100 — 100	20	110	4.350	10	2.469	107.41
							TOTAL (KG) :	492.36

BAR BENDING SCHEDULE OF RCC SEISMIC RESTRAINER - 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	1200 — 900 — 850 / 850	32		5.000	12	6.321	379.26
2	TS2-R	900 — 1100 — 100	16	120	4.200	8	1.580	53.10
3	TS3-R	1200 — 1100 — 100	20	110	4.800	10	2.469	118.52
							TOTAL (KG) :	550.87

BAR BENDING SCHEDULE OF RCC LONGITUDINAL RESTRAINER

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	TH1	475 / 1580 / 850 / 850	32	100	5.335	38	6.321	202.33
2	TH2	475 — 100 / 510	16	150	2.170	8	1.580	27.43
3	TH3	510 — 100 / 1580	25	150	4.330	4	3.858	57.59
							TOTAL (KG) :	287.36
							TOTAL NOS OF LONGITUDINAL RESTRAINER :	3.00
							TOTAL WEIGHT (KG) :	862.08

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 CANAL-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. S.N.R.B Nec.No. 265 Civil"A"	Signature	Drawing Name: ABUTMENT BAR BENDING SCHEDULE OF BRIDGE OVER RIVER KAMALA CANAL Reference Drawings: -
			Checked By	Mr. S.M.	Signature	Scale: AS SHOWN Chainage: 238+095
			Approved By	Mr. H.B.	Signature	Date: JUNE 2023 Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/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 — 3250 — 150	16	150	3.850	37	1.580	225.11
2	RT1B	450 — 3250 — 150	20	150	3.850	37	2.469	351.73
3	RT2A	450 — 5750 — 150	12	150	6.350	21	0.889	118.53
3	RT2B	150 — 3250 — 150, 640	16	150	4.190	21	1.580	139.05
4	RT2C	150, 480 — 3700 — 150	12	150	4.480	21	0.889	83.63
5	RT3A	7161 — 150, 450	16	150	7.761	16	1.580	196.23
6	RT3B	800, 4194 — 150, 450	20	150	5.594	16	2.469	221.00
7	RT3C	150, 2892 — 150, 640	16	150	3.832	16	1.580	96.89
8	RT3D	200 — 390 — 390, 200 — 210	16	150	1.390	41	1.580	90.06
9	RT4A	1483.5 — 150, 150	12	150	1.784	25	0.889	39.63
10	RT4B	1483.5 — 150, 150	16	150	1.784	25	1.580	70.46
11	RT5	300 — 870, 300	12	150	1.470	58	0.889	75.79
12	RT6	5511	12	2 Nos.	5.511	2	0.889	9.80
13	RT7	5750 — 150	16		5.900	5	1.580	46.62
14	RT8	5527.59 — 150	12		5.678	5	0.889	25.23
							TOTAL (KG) :	1789.74

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 — 3250 — 150	16	150	3.850	35	1.580	212.94
2	RT1B	450 — 3250 — 150	20	150	3.850	35	2.469	332.72
3	RT2A	450 — 5750 — 150	12	150	6.350	21	0.889	118.53
4	RT2B	150 — 3250 — 150, 640	16	150	4.190	21	1.580	139.05
5	RT2C	150, 480 — 3700 — 150	12	150	4.480	21	0.889	83.63
6	RT3A	6865 — 150, 450	16	150	7.465	16	1.580	188.74
7	RT3B	800, 3898 — 150, 450	20	150	5.298	16	2.469	209.30
8	RT3C	150, 2892 — 150, 640	16	150	3.832	16	1.580	96.89
9	RT3D	200 — 390 — 390, 200 — 210	16	150	1.390	41	1.580	90.06
10	RT4A	1483.5 — 150, 150	12	150	1.784	25	0.889	39.63
11	RT4B	1483.5 — 150, 150	16	150	1.784	25	1.580	70.46
12	RT5	300 — 870, 300	12	150	1.470	58	0.889	75.79
12	RT6	5215	12	2 Nos.	5.215	2	0.889	9.27
13	RT7	5750 — 150	16		5.900	5	1.580	46.62
14	RT8	5527.59 — 150	12		5.678	5	0.889	25.23
							TOTAL (KG) :	1738.86

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	RC-B1	130, 735, 850, 305, 445, 200, 305, 200	16	150	3.170	40	1.580	200.38
2	RC-B2	150 — 5850 — 150	10	150	6.150	20	0.617	75.93
							TOTAL (KG) :	276.30

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

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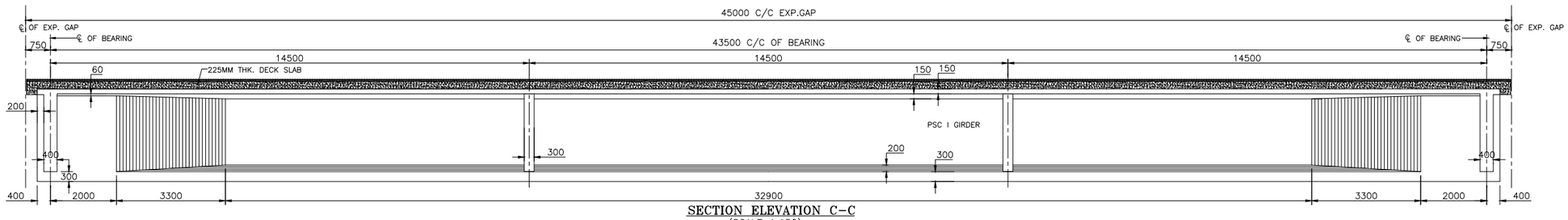
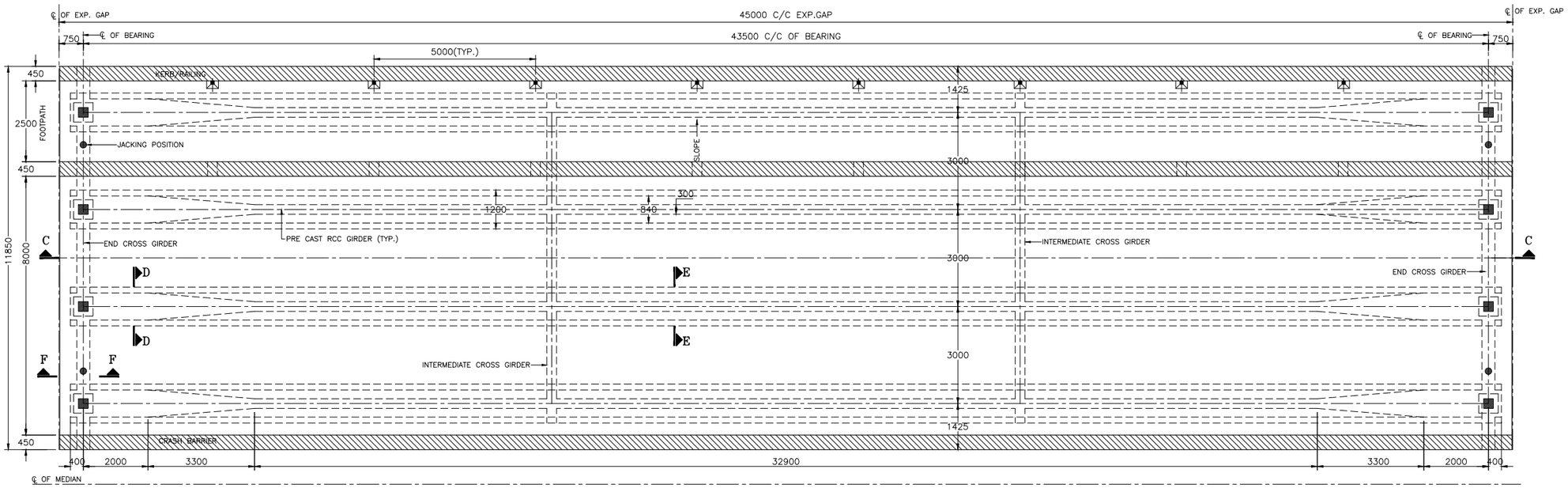
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of KAMALA CANAL-Dhalkebar-Pathlaiya Road Section (130 KM) of 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. S.N.R.B Nec.No. 265 Civil"A"	Signature	Drawing Name ABUTMENT BAR BENDING SCHEDULE OF BRIDGE OVER RIVER KAMALA CANAL Reference Drawings -
			Checked By	Mr. S.M.	Signature	
			Approved By	Mr. H.B.	Signature	

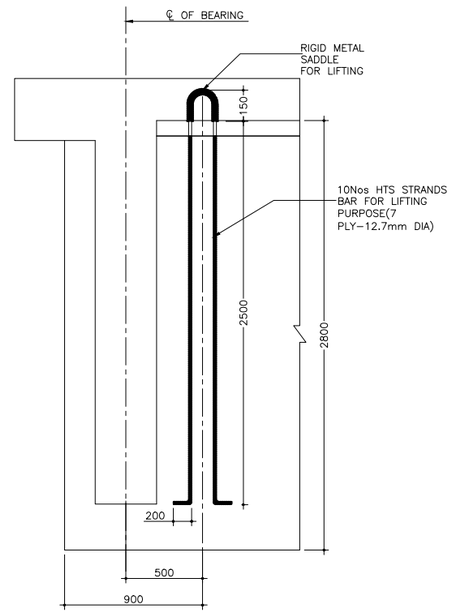
Scale:	Date:
AS SHOWN	JUNE 2023
Chainage: 238+095	Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/DD -9
	Sheet No. 2 / 2



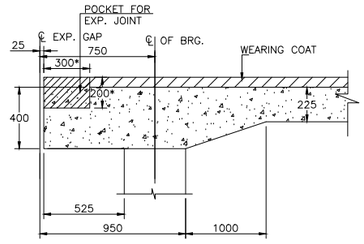
SECTION ELEVATION C–C
(SCALE 1:150)



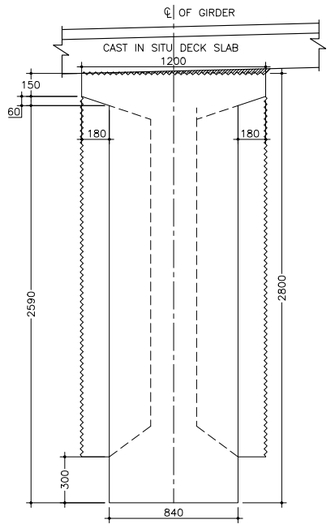
PLAN OF GIRDER A1 TO P1
(SCALE 1:150)



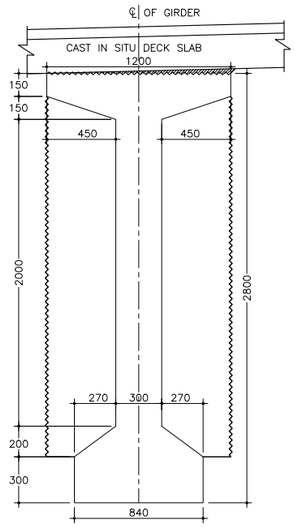
LIFTING HOOK DETAIL
SCALE 1:40



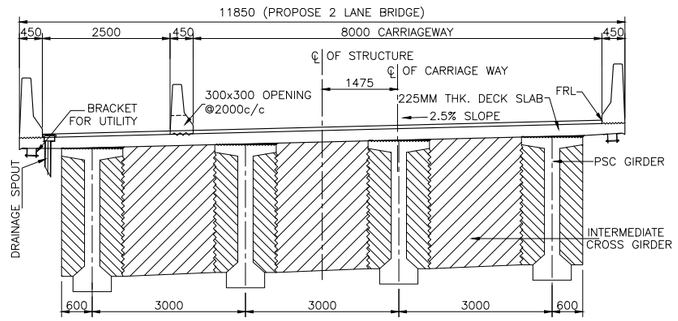
SECTION F–F
(SCALE 1:40)



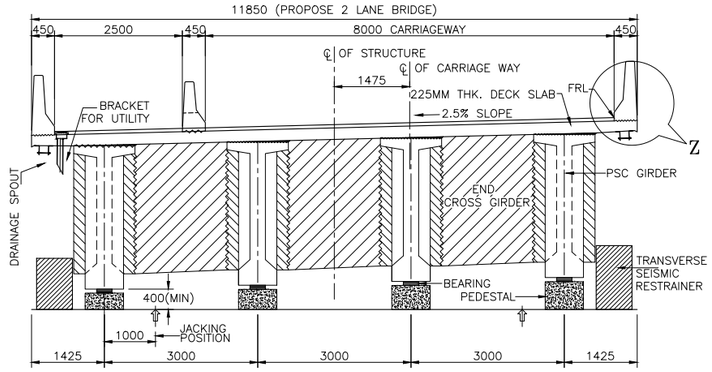
SECTION D–D
(END SECTION OF GIRDER)
(SCALE 1:40)



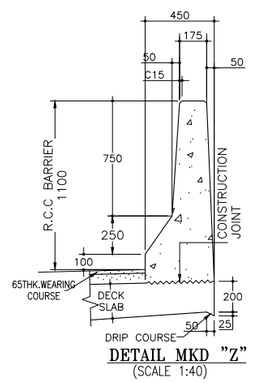
SECTION E–E
(MID SECTION OF GIRDER)
(SCALE 1:40)



SECTION OF SUPER STRUCTURE AT MID SPAN
SCALE 1:120



SECTION OF SUPER STRUCTURE AT SUPPORT SPAN
SCALE 1:120

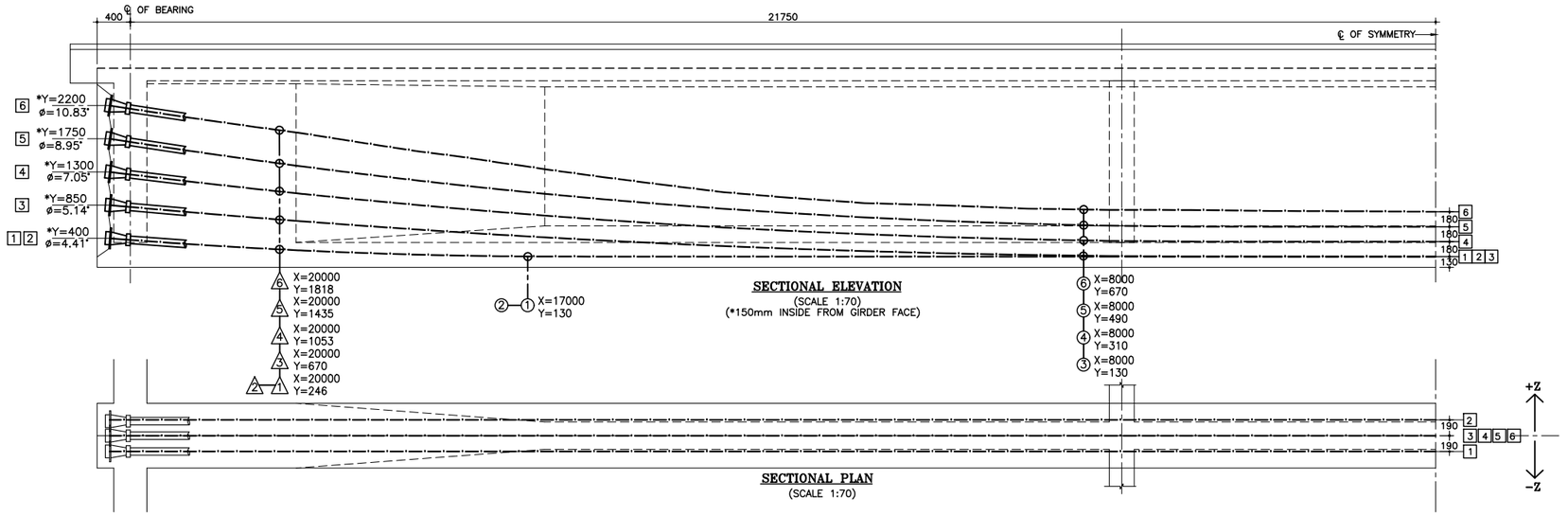


DETAIL MKD "Z"
(SCALE 1:40)

NOTES:

1. DIMENSIONS ARE IN MILLIMETERS, CHANGES & LEVELS ARE IN METER,UNLESS NOTED OTHERWISE.
2. CHAINAGE & LEVEL SHALL BE VERIFIED WITH THE RELEVANT PLAN & PROFILE DRAWING VARIATION (IF ANY) SHALL BE REPORTED TO ENGINEER FOR MODIFICATION.
3. CHAINAGE OF THE STRUCTURE IS AT THE CENTER LINE OF THE PROPOSED STRUCTURE.
4. EACH PRECAST GIRDER WILL BE LIFTED BY USING LIFTING STRAND AT EITHER END DURING LIFTING GIRDER SHALL BE KEPT PLUMB AND UPRIGHT.

EMPLOYER	PROJECT	DESIGN CONSULTANT					
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.S.N.R.B NEC NO. 265 CIVIL A	Signature	Drawing Name: SUPER STRUCTURE DETAILS OF BRIDGE OVER RIVER KAMALA CANAL	Scale: AS NOTED Date: JUNE, 2023
			Checked By	Mr.S.M	Signature	Reference Drawings:	Chainage: 238+095 Drawing No.: KDP/DPR/STR/BR/KAMALA CANAL /DD -10
			Approved By	Mr.H.B	Signature		Sheet No.: Sheet No. 1/1

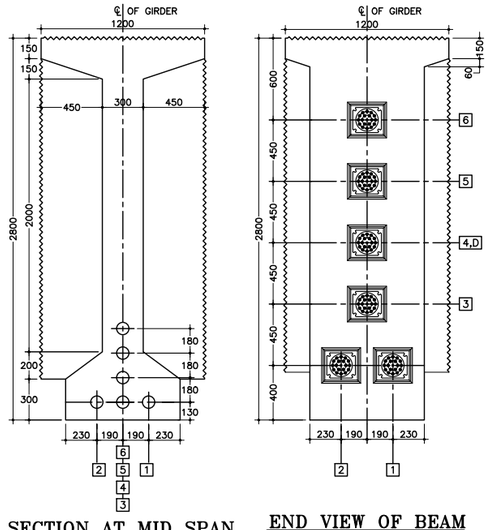


SECTIONAL ELEVATION
(SCALE 1:70)
(*150mm INSIDE FROM GIRDER FACE)

SECTIONAL PLAN
(SCALE 1:70)

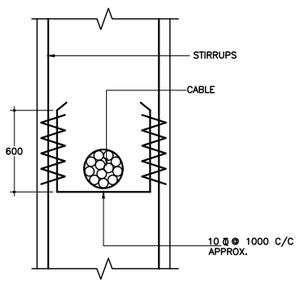
cable no	at X =	22000		19800		18000		16200		14400		12600		10800		9000		7200		5400		3600		1800		0	
		y	z	y	z	y	z	y	z	y	z	y	z	y	z	y	z	y	z	y	z	y	z	y	z	y	z
C6		2200	0	1780	0	1467	0	1206	0	996	0	839	0	732	0	678	0	670	0	670	0	670	0	670	0	670	0
C5		1750	0	1404	0	1146	0	931	0	759	0	629	0	541	0	497	0	490	0	490	0	490	0	490	0	490	0
C4(Dummy)		1300	0	1028	0	826	0	657	0	521	0	419	0	350	0	315	0	310	0	310	0	310	0	310	0	310	0
C3		850	0	652	0	505	0	382	0	284	0	209	0	159	0	134	0	130	0	130	0	130	0	130	0	130	0
C2		400	190	231	190	143	190	130	190	130	190	130	190	130	190	130	190	130	190	130	190	130	190	130	190	130	190
C1		400	-190	231	-190	143	-190	130	-190	130	-190	130	-190	130	-190	130	-190	130	-190	130	-190	130	-190	130	-190	130	-190

X=HORIZONTAL DISTANCE FROM MID SPAN SECTION ALONG LENGTH OF GIRDER
Y=VERTICAL DISTANCE TO CABLE CENTRE FROM SOFFIT OF WEB
Z=HORIZONTAL DISTANCE OF CABLE FROM CENTRE OF WEB



SECTION AT MID SPAN
(SCALE 1:45

END VIEW OF BEAM
(*150mm INSIDE FROM GIRDER FACE)
(SCALE 1:45)



TYPICAL DETAIL OF SUPPORTING ARRANGEMENT FOR CABLES
(SCALE 1:15)

LEGEND:

- ◯ — INDICATES END OF CABLE
- □ — INDICATE CABLE NUMBER
- * — ORDINATE AT ANCHORAGE END
- ○ — INDICATES START OF CURVE IN ELEVATION
- △ — INDICATES END OF CUVRE IN ELEVATION
- PS I — PRESTRESSING STAGE 1
- PS II — PRESTRESSING STAGE 2

TABLE–1:

CABLE NO.	STAGE OF PRESTR–ESSING	ANCHORAGE TYPE	CABLE LENGTH CONSIDERING GRIP ADDITIONAL CUTTING LENGTH IN M.	CALCULATED ELONGATION CONSIDERING GRIP LENGTH (MM)	JACKING FORCE (KN)	NUMBER OF STRANDS TO BE STRESSED
6	PS II	19 T 15	46.118	156.07	3694	19
5		19 T 15	46.048	156.37	3694	19
3		16 T 15	45.948	157.14	3111	16
2	PS I	15 T 15	45.918	156.83	2916	15
1		15 T 15	45.918	156.83	2916	15

CABLE 4 is dummy cable

NOTES FOR PRESTRESSING:

1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS NOT BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
   SEQUENCE OF CONSTRUCTION AND PRESTRESSING SHALL BE AS FOLLOWS:
   a) STAGE 1 CABLES SHALL BE STRESSED WHEN THE BEAM CONCRETE ATTAINS A MINIMUM STRENGTH OF 35Mpa OR AFTER 7 DAYS OF CASTING WHICHEVER IS LATER.
   b) ALL REMAINING CABLES SHALL BE STRESSED TO 100% OF JACKING FORCE WHEN THE BEAM CONCRETE IS 21 DAYS OLD WITH MINIMUM CONCRETE STRENGTH OF 48Mpa.
   c) IN CASE OF EMERGENCY OR SHORTFALL THE REMAINING STRANDS OF CABLE NO 4 MAY BE STRESSED

TABLE–3 SEQUENCE OF PRESTRESSING

SL. NO.	LOADING CASES	DAY NO.
1.	Casting of Girder	0
2.	1st stage Prestressing	7
3.	2nd stage Prestressing	21
4.	Launching of Girder	24
5.	Casting of Deck slab	28
6.	Removal of Deck shuttering	56
7.	Casting of Crash barrier	56
8.	Laying of Wearing Coat and Allowing Live load	63

3. PRESTRESSING SYSTEM

a) ALL PRESTRESSING STRANDS SHALL HAVE 7 PLY UNCOATED STRESS RELIEVED HIGH TENSILE STRANDS OF 15.2mm DIA CONFORMING TO CLASS 2 OF IS 14268–1995.
b) HDPE SHEATHING SHALL BE USED.
c) THE PARAMETERS ADOPTED FOR DESIGN ARE AS FOLLOLWS:
i) ANCHORAGE TYPE.....19 T 15
ii) SLIP AT EACH END.....10mm
iii) SHEATH DIA .....100mm.
iv) SHEATH THICKNESS.....±3mm
v) CO–EFFICIENT OF FRICTION.....0.17
vi) WOBBLE CO–EFFICIENT.....0.002/m
vii) NOMINAL AREA OF EACH STRAND.....140 mm^2
viii) NOMINAL ULTIMATE BREAKING LOAD OF EACH STRAND.....260.7KN
ix) MODULUS OF ELASTICITY OF HIGH TENSILE STEEL.....$1.95X10^5$ MPa
d) ALL THE DESIGN PARAMETERS ADOPTED SHALL BE VERIFIED AT SITE.
e) ALL PRESTRESSING ACCESSORIES BEING PATENTED ITEMS SHALL BE OBTAINED FROM AUTHORISED MANUFACTURERS ONLY.

4. PRESTRESSING OPERATIONS

a) STRESSING OPERATION SHALL BE DONE AS PER PROCEDURE GIVEN IN MORTH'S SPECIFICATIONS.
b) CABLE LENGTHS MENTIONED IN THE DRAWING ARE INCLUSIVE OF 950 MM. EXTRA AT EACH END. THE TOTAL LENGTH OF CABLE SHALL BE VERIFIED AT SITE.
c) STAGES OF PRESTRESSING SHALL BE AS IN TABLE–1&3.
d) STRESSING OF CABLES SHALL BE CARRIED OUT SIMULTANEOUSLY FROM BOTH ENDS & ALL STRANDS IN A CABLE SHALL BE TENSIONED SIMULTANEOUSLY. ONLY MULTI PULL JACKS SHALL BE USED FOR STRESSING.
e) GROUTING OF CABLES SHALL BE DONE IN SAME SEQUENCE AS STRESSING AND SHALL CONFORM TO IRC:112–2011.
f) ANCHORAGE POCKET SHALL BE FILLED WITH PREPACKED NON–SHRINK MORTAR, END FACES OF GIRDERS TO BE COATED WITH TWO COATS OF EPOXY.
g) EXTENSIONS SHALL BE RECHECKED AT 24 HOURS AFTER ANCHORING TO OBSERVE SLOW SLIPPAGE. THE MATTER SHALL BE REPORTED FOR EXCESSIVE SLIPPAGE IF ANY.
h) INITIAL SLACKNESS IN CABLES SHALL BE REMOVED BY APPLYING SMALL TENSION. THE INITIAL TENSION REQUIRED TO REMOVE SLACKNESS SHALL BE TAKEN AS THE STARTING POINT FOR MEASURING ELONGATION & CORRECTION SHALL BE APPLIED AS PER CL. 12.2.1.3 OF IS:1343– 198
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 EXTENSIONS GIVEN IN TABLE NO.–1 SHALL BE MODIFIED AT SITE IN CASE ACTUAL VALUE OF AREA OF STRANDS 'A' & MODULUS OF ELASTICITY 'E' VARIES FROM THOSE ASSUMED IN DESIGN, REVISED EXTENSION SHALL BE CALCULATED AS UNDER
REVISED EXTENSION = $\frac{(195 \times 10^5) \times \text{ORIGINAL EXTENSION}}{(\text{NEW MODULUS})} \times \frac{\text{OLD AREA OF STRANDS}}{\text{NEW AREA}}$
6. EXTENSION OF CABLE SHALL BE VERIFIED FOR A FEW CABLES AT SITE. IN CASE OF VALUE OF μ AND K ARE FOUND TO BE DIFFERENT THAN THOSE CONSIDERED FOR DESIGN, EXTENSION SHALL BE SUITABLY MODIFIED AFTER APPROVAL OF DESIGN OFFICE
7. THE GRIP LENGTH FROM ANCHORAGE FACE UP TO GRIPPING POINT IN JACK ASSUMED IN EXTENSION IS 750MM & THE ADDITIONAL LENGTH TAKEN FOR CUTTING IS 200MM. IF GRIP LENGTH VARIES THAN THOSE CONSIDERED, THE EXTENSIONS SHALL BE MODIFIED AS UNDER:–
NEW EXTENSIONS=EX+EX (GRIP–750)/(LENGTH)
WHERE, EX IS EXTENSION AS SPECIFIED IN RESPECTIVE DRAWING.

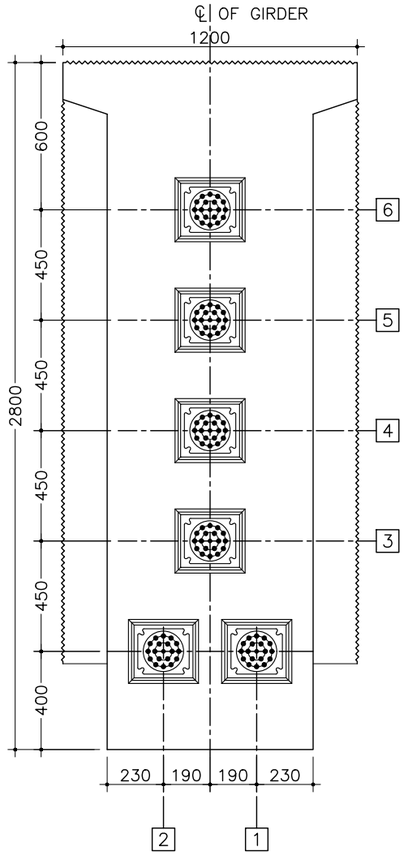
5. SPECIAL NOTE FOR PRESTRESSING

a) IF THE CALCULATED ELONGATION IS REACHED BEFORE THE CALCULATED GAUGE PRESSURE IS OBTAINED, CONTINUE TENSIONING TILL ATTAINING, THE CALCULATED GUAGE PRESSURE PROVIDED THE ELONGATION DOES NOT EXCEED 1.05 TIMES THE CALCULATED ELONGATION.
b) IF THE CALCULATED ELONGATION HAS NOT BEEN REACHED CONTINUE TENSIONING IN INTERVALS OF 5 kg/sqcm UNTILL THE CALCULATED ELONGATION IS REACHED PROVIDED THE GAUGE PRESSURE DOES NOT EXCEED 1.05 TIMES THE CALCULATED GAUGE PRESSURE.
c) IF THE ELONGATION AT 1.05 TIMES THE CALCULATED GUAGE PRESSURE IS LESS THAN 95 TIMES THE CALCULATED ELONGATION THE FOLLOWING MEASURES MUST BE TAKEN:
i) RECALIBRATE THE PRESSURE GAUGE
ii) CHECK THE CORRECT FUNCTIONING OF THE JACK PUMP & LEADS
iii) DETENSION THE CABLE SLIDE IT IN ITS DUCT TO CHECK THAT IT IS NOT BLOCKED BY MORTAR WHICH HAS ENTERED THROUGH HOLES IN THE SHEATH. RETENSION THE CABLE IF FREE.
d) IF THE REQUIRED ELONGATION IS NOT OBTAINED FURTHER FINISHING OPERATION SUCH AS CUTTING OR SEALING SHOULD NOT BE UNDER TAKEN WITHOUT THE APPROVAL OF THE DESIGN OFFICE
9. THE GAUGE PRESSURE FOR PRESTRESSING SHALL BE WORKED OUT PRIOR TO ANY STRESSING OPERATION DULY TAKING IN TO ACCOUNT THE RAM AREA OF THE JACK & THE JACK EFFICIENCY. THE STRESSING EQUIPMENTS SHALL BE WELL MAINTAINED AND THE CALIBRATION CHARTS SHALL BE AVAILABLE AT SITE.AFTER APPROVAL OF CLIENT.
10. IF CABLE NUMBER 4 (DUMMY CABLE) IS NOT IN USE, IT IS GROUTED BEFORE SLAB CASTING.
11. THIS DRAWING IS APPLICABLE FOR BOTH INNER AND OUTER GIRDER.

NOTES:

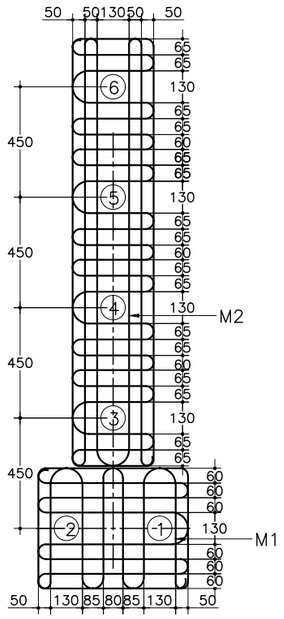
1. DIMENSIONS ARE IN MILLIMETERS, CHANGES & LEVELS ARE IN METER,UNLESS NOTED OTHERWISE.
2. CHAINAGE & LEVEL SHALL BE VERIFIED WITH THE RELEVANT PLAN & PROFILE DRAWING VARIATION (IF ANY) SHALL BE REPORTED TO ENGINEER FOR MODIFICATION.
3. CHAINAGE OF THE STRUCTURE IS AT THE CENTER LINE OF THE PROPOSED STRUCTURE.
4. WHERE ABSOLUTELY NECESSARY THE UNTENSIONED REINFORCEMENT BARS/MESH MAY BE SUITABLY REPOSITIONED TO SUIT.

EMPLOYER	PROJECT	DESIGN CONSULTANT					
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.S.N.R.B NEC NO. 265 CIVIL A	Signature	Drawing Name: MAIN GIRDER DETAILS OF BRIDGE OVER RIVER KAMALA CANAL	Scale: AS NOTED	Date: JUNE, 2023
		Checked By	Mr.S.M	Signature	Reference Drawings:	Chainage: 238+095	Drawing No.: KDP/DPR/STR/BR/KAMALA CANAL /DD -11
		Approved By	Mr.H.B	Signature			Sheet No.: Sheet No. 1/1

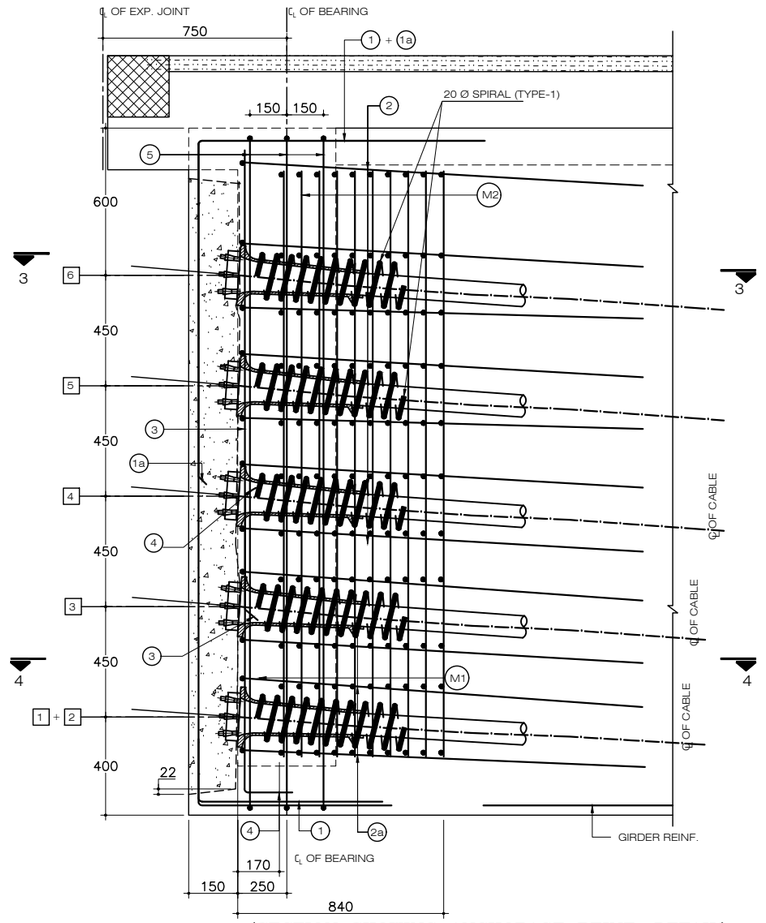


END VIEW OF BEAM

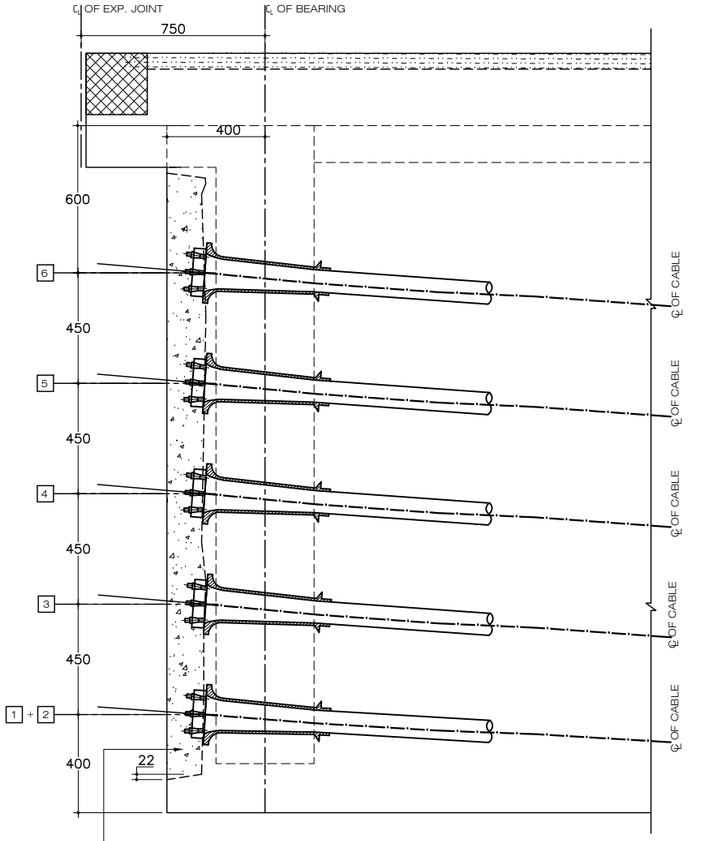
ANCHORAGE BLOCK DIMENSION SHOULD BE AS PER MANUFACTURING AGENCY



DETAILS OF 16 MESH TYPE M1 & M2 IN 10 LAYERS AT EQUAL SPACING
(SCALE 1:20)



(SECTION SHOWING ANCHORAGE REINF. DETAIL)
(SCALE 1:30)



(SECTION SHOWING ANCHORAGE DIMENSION DETAIL)
(SCALE 1:30)

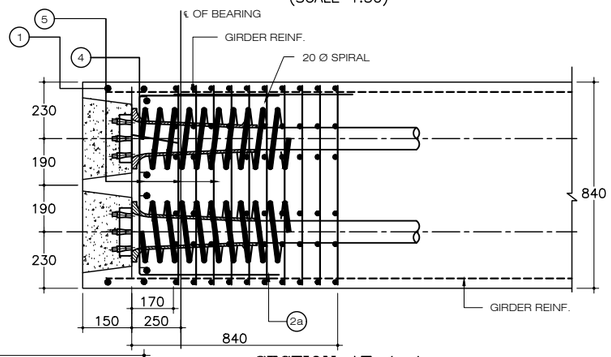
RECESS SHALL BE FILLED WITH EPOXY MORTAR OR EQUIVALENT MATERIAL VIZ. NITOBOND AFTER STRESSING, GROUTING AND CUTTING OF STRANDS.

NOTES:

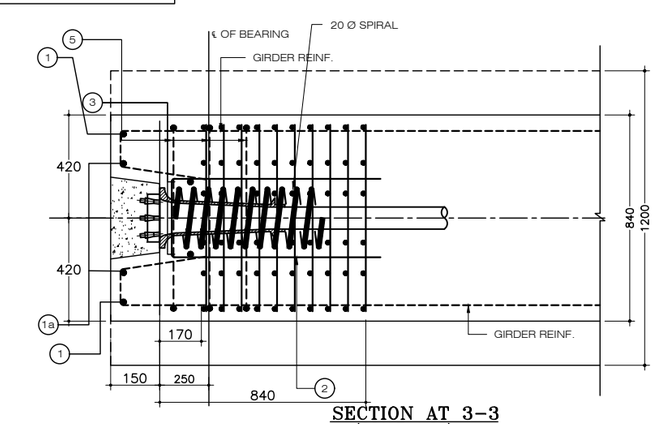
1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE NOT BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. WHEREVER REINFORCEMENT IS FOUND TO BE FOULING WITH THE PRESTRESSED CABLE, ANCHORAGE , LOCAL ADJUSTMENT IN REINFORCEMENT DETAIL CAN BE DONE WITH APPROVAL OF THE ENGINEER. NO CHANGE SHALL BE PERMITTED ON PRESTRESS CABLE ALIGNMENT UNDER ANY CIRCUMSTANCE.
4. THIS DRAWING IS APPLICABLE FOR BOTH INNER & OUTER GIRDER.
5. FIRST LAYER OF MESH TYPE–A AS SHOWN ABOVE SHALL BE PLACED AS CLOSE AS POSSIBLE TO THE FACE OF ANCHORAGE.
6. LAPPING SHALL BE STAGGERED, BARS SHALL BE LAPPED IN SUCH A WAY THAT NOT MORE THAN 50% OF THE BARS ARE LAPPED AT ANY SECTION, LAP LENGTH SHALL BE PROVIDED AS "X*D" MENTIONED IN THE TABLE BELOW, WHERE 'D' IS THE SMALLER BAR UNLESS OTHERWISE SPECIFIED.

REINFORCEMENT SCHEDULE		
BAR MKD.	BAR DIA & SPACING/NOS.	BAR SHAPE
1	16 Ø 2 Nos.	700 / 700
1a	16 Ø 2 Nos.	700
2	20 Ø 4 Nos.	800 / 800
2a	20 Ø 3 Nos.	800 / 800
3	12 Ø 2 Nos.	
4	12 Ø 4 Nos.	
5	2L-20 Ø 6 NOS. STIRRUPS	

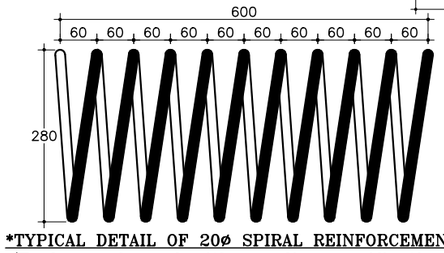
MANUFACTURER'S SPECIFICATION,



SECTION AT 4–4
(SCALE 1:25)



SECTION AT 3–3
(SCALE 1:25)



*TYPICAL DETAIL OF 20ø SPIRAL REINFORCEMENT
(To be conformed with supplier specification)
(SCALE 1:10)

FAVORABLE BOND CONDITION					
GRADE OF CONCRETE	PERCENTAGE OF LAPPED BARS	<25%	33%	50%	>50%
M50	X	29	33	41	44
M45	X	33	38	47	50

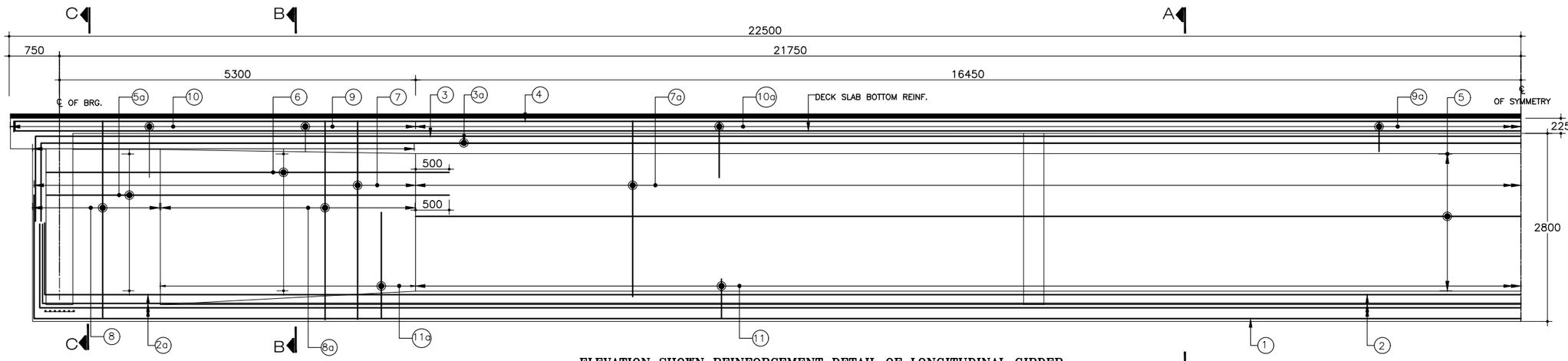
FAVORABLE ZONE:
a. RAFT/SLAB BOTTOM MAIN BAR.

UNFAVORABLE BOND CONDITION					
GRADE OF CONCRETE	PERCENTAGE OF LAPPED BARS	<25%	33%	50%	>50%
M50	X	42	48	59	63
M45	X	45.7	52.6	64	68.6

UNFAVORABLE ZONE:
a. RAFT/SLAB BOTTOM MAIN BAR.
b. WALL/COLUMN MAIN BAR.

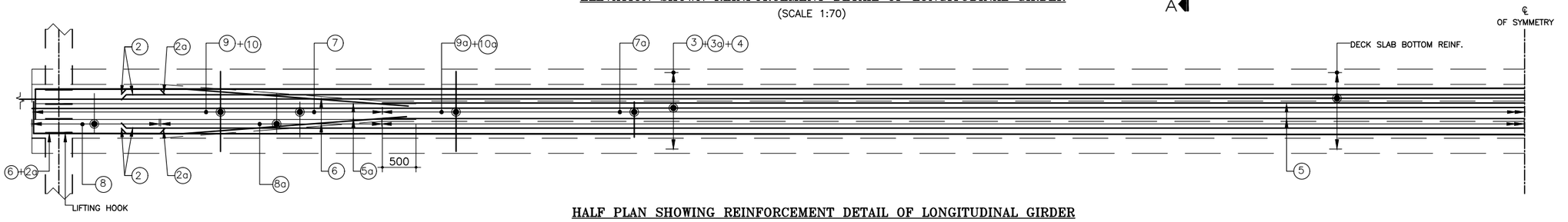
EMPLOYER	PROJECT	DESIGN CONSULTANT
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya 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.S.N.R.B NEC NO. 265 CIVIL A	Signature	Drawing Name: MAIN GIRDER REINFORCEMENT DETAILS OF BRIDGE OVER RIVER KAMALA CANAL	Scale: AS NOTED	Date: JUNE, 2023
Checked By	Mr.S.M	Signature	Reference Drawings: KDP/DPR/STR/BR/KAMALA CANAL /DD -15	Chainage: 238+095	Drawing No.: KDP/DPR/STR/BR/KAMALA CANAL /DD -12
Approved By	Mr.H.B	Signature			Sheet No.: Sheet No. 1/2



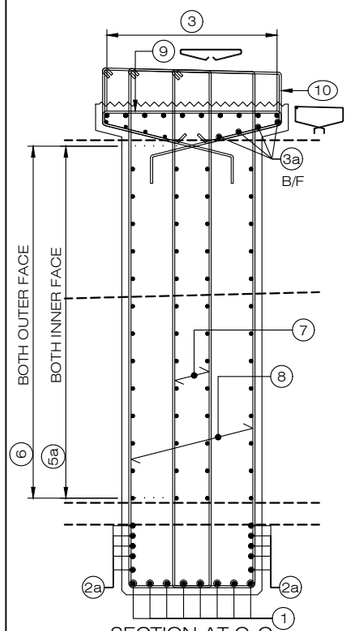
ELEVATION SHOWN REINFORCEMENT DETAIL OF LONGITUDINAL GIRDER

(SCALE 1:70)



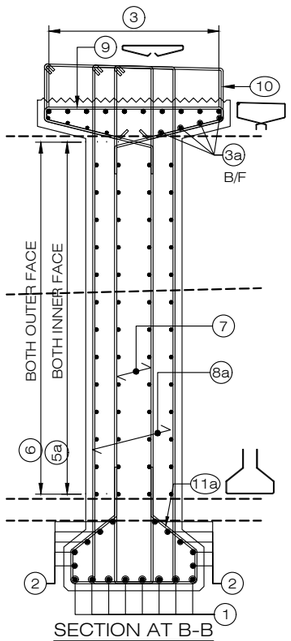
HALF PLAN SHOWING REINFORCEMENT DETAIL OF LONGITUDINAL GIRDER

(SCALE 1:70)



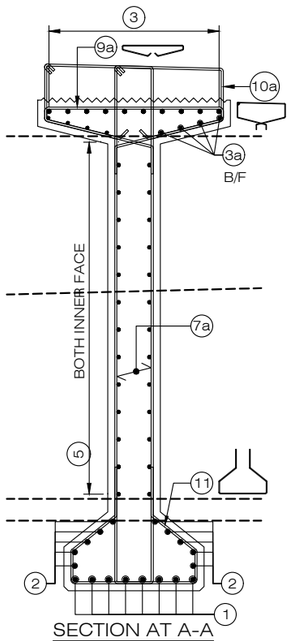
SECTION AT C-C

(SCALE 1:35)



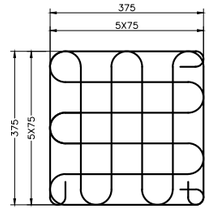
SECTION AT B-B

(SCALE 1:35)



SECTION AT A-A

(SCALE 1:35)



ø8 MESH REINF. AT BRG. LOCATIONS

SCALE 1:15

REINFORCEMENT DETAILS

BAR MKD.	BAR DIA & SPACING/NOS	BAR SHAPE
1	16 Ø 10 Nos.	
2	16 Ø 6 Nos. Each Side	
2a	16 Ø 6 Nos. Each Side	
3	16 Ø 14 Nos.	
3a	16 Ø 14 Nos.	
4	DECK REINFORCEMENT	
5	12 Ø 14 Nos. Each side	
5a	12 Ø 14 Nos. Each Side	
6	12 Ø 14 Nos. Each side	
7	2L-12 Ø @150c/c STIRRUP	
7a	2L-12 Ø @180c/c STIRRUP	
8	2L-12 Ø @150c/c STIRRUP	
8a	2L-12 Ø @150c/c STIRRUP	
9	12 Ø @ 150c/c	
9a	12 Ø @ 150c/c	
10	12 Ø @ 150c/c	150
10a	12 Ø @ 180c/c	150
11	12 Ø @ 150c/c	150
11a	12 Ø @ 150c/c	150

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED,
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED,
3. GRADE OF CONCRETE SHALL BE AS BELOW:
   a) CAST-IN-SITU DECK SLAB.....M45
   b) PRECAST PSC GIRDER.....M50
   c) CROSS GIRDER.....M45
4. CLEAR COVER TO OUTERMOST STEEL SHALL BE AS BELOW:
   a. CAST-IN-SITU SUPERSTRUCTURE).....45mm
   b. PRECAST PSC GIRDER.....40mm
5. REINFORCING STEEL SHALL BE HYSD (TMT) BARS (GRADE DESIGNATION Fe 500DD) CONFORMING TO TABLE 18 1 OF IRC: 112-2020,
6. ⊗ SHOWN JACK LOCATION IN PLAN AND ↑ SHOWN JACK LOCATION IN ELEVATION OTHERWISE MENTIONED,
7. CURING OF THE GIRDERS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE MORTH SPECIFICATIONS,
8. GIRDERS SHALL BE SECURELY SUPPORTED AT ALL TIMES BY BRACING TO PREVENT BEAMS TOPPLING OVER,
9. EACH GIRDER SHALL BE INDEPENDENTLY BRACED AGAINST OVERTURNING PRIOR TO RELEASE BY THE CRANE OR LIFTING DEVICE,
10. LIFTING LOOPS SHALL BE PLACED WITH THE PLANE OF THE LOOP PERPENDICULAR TO THE LONGITUDINAL AXIS OF THE GIRDER,
11. SHIFTING THE PSC GIRDERS TO SITE SHALL BE AS PER 1811 OF MORT & H REV-V,SECTION
12. RECESS FOR EXPANSION JOINT SHALL BE LEFT AS PER MANUFACTURER'S SPECIFICATION,
13. LAPPING SHALL BE STAGGERED, BARS SHALL BE LAPPED IN SUCH A WAY THAT NOT MORE THAN 50% OF THE BARS ARE LAPPED AT ANY SECTION, LAP LENGTH SHALL BE PROVIDED AS "X*D" MENTIONED IN THE TABLE BELOW, WHERE 'D' IS THE SMALLER BAR UNLESS OTHERWISE SPECIFIED.

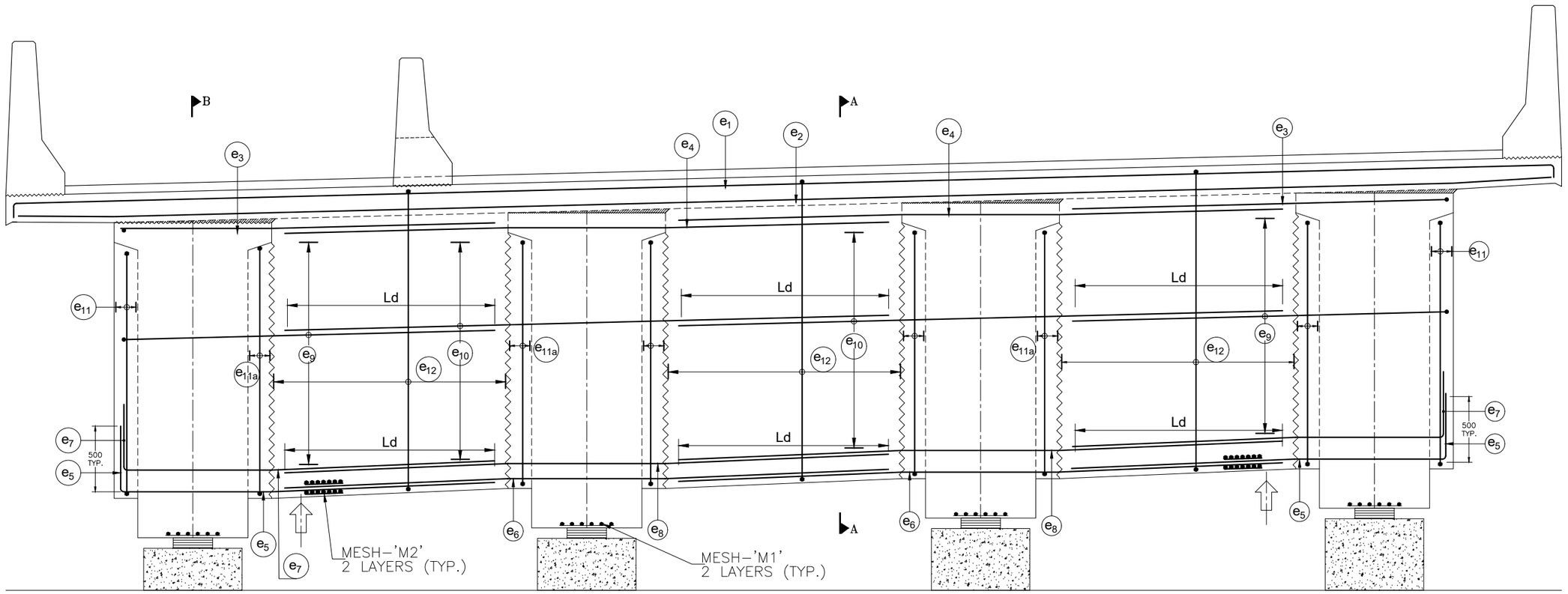
FAVORABLE BOND CONDITION					
GRADE OF CONCRETE	PERCENTAGE OF LAPPED BARS	<25%	33%	50%	>50%
M50	X	29	33	41	44

UNFAVORABLE BOND CONDITION					
GRADE OF CONCRETE	PERCENTAGE OF LAPPED BARS	<25%	33%	50%	>50%
M50	X	42	48	59	63

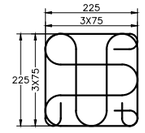
FAVORABLE ZONE:
a. RAFT/SLAB BOTTOM MAIN BAR.

UNFAVORABLE ZONE:
a. RAFT/SLAB BOTTOM MAIN BAR.
b. WALL/COLUMN MAIN BAR.

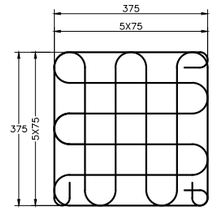
EMPLOYER	PROJECT	DESIGN CONSULTANT					
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya 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.S.N.R.B NEC NO. 265 CIVIL A	Signature	Drawing Name: MAIN GIRDER REINFORCEMENT DETAILS OF BRIDGE OVER RIVER KAMALA CANAL Reference Drawings: KDP/DPR/STR/BR/KAMALA CANAL /DD -15	Scale: AS NOTED Chainage: 238+095	Date: JUNE, 2023 Drawing No.: KDP/DPR/STR/BR/KAMALA CANAL /DD -12 Sheet No.: Sheet No. 2/2
			Checked By	Mr.S.M	Signature			
			Approved By	Mr.H.B	Signature			



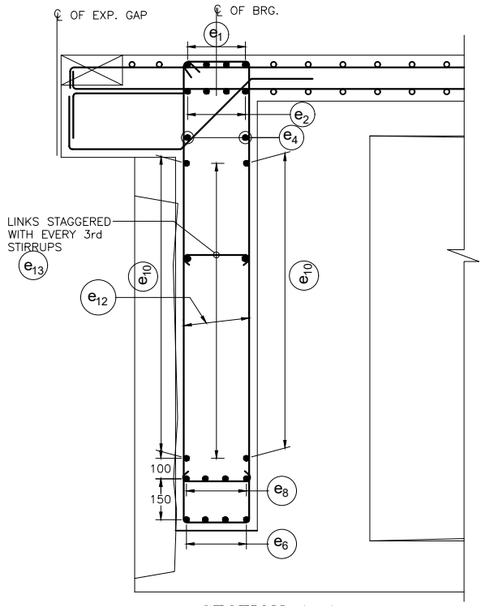
REINFORCEMENT DETAIL OF END CROSS GIRDER
(SCALE 1:35)



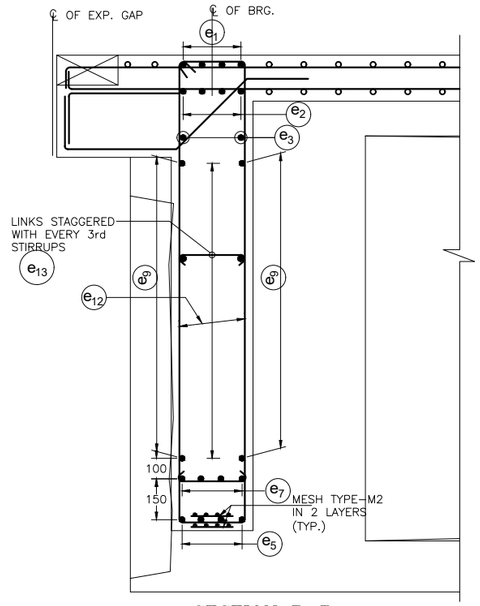
ø8 MESH TYPE–M2
(SCALE 1:15)



ø8 MESH TYPE–M1
(SCALE 1:15)



SECTION A–A
(SCALE 1:30)



SECTION B–B
(SCALE 1:30)

NOTES:–

1. ALL DIMENSIONS ARE IN mm AND LEVELS ARE IN METER, DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
2. CONCRETE GRADE FOR CROSS–GIRDER & DECK SLAB M45.
3. SUITABLE HOLES SHALL BE LEFT IN PRECAST GIRDER FOR SUPPORTING THE DECK SLAB SHUTTERING.
4. SUITABLE PROVISION FOR HANDLING & LIFTING HOOKS ETC TO BE PROVIDED.
5. BEAMS SHALL BE KEPT UPRIGHT AT ALL TIMES AND TO BE CLEARLY MARKED INDICATING SPAN LOCATION & RESPECTIVE ENDS BEFORE REMOVAL FROM CASTING BED.
6. TOP SURFACE OF PRECAST BEAM & VERTICAL EDGES OF END TO BE LEFT ROUGHENED FOR EFFECTIVE BONDING.
7. ALL SURFACES, COMING IN CONTACT WITH DECK SLAB/DIAPHRAGM SHALL BE ADEQUATELY PREPARED BY GREEN CUTTING. USING SURFACE RETARDERS OR BY MECHANICAL MEANS(SUCH AS 100% HACKING) TO ENSURE THAT COARSE AGGREGATES ARE JUST EXPOSED.
8. ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATE Fe500D) CONFORMING TO IS–1786 STANDARDS.
9. **LAPPING SHALL BE STAGGERED, BARS SHALL BE LAPPED IN SUCH A WAY THAT NOT MORE THAN 50% OF THE BARS ARE LAPPED AT ANY SECTION, LAP LENGTH SHALL BE PROVIDED AS "X*D" MENTIONED IN THE TABLE BELOW, WHERE 'D' IS THE SMALLER BAR UNLESS OTHERWISE SPECIFIED.**

FAVORABLE BOND CONDITION					
GRADE OF CONCRETE	PERCENTAGE OF LAPPED BARS	<25%	33%	50%	>50%
M45	X	33	38	47	50

UNFAVORABLE BOND CONDITION					
GRADE OF CONCRETE	PERCENTAGE OF LAPPED BARS	<25%	33%	50%	>50%
M45	X	45.7	52.6	64	68.6

FAVORABLE ZONE:
a. RAFT/SLAB BOTTOM MAIN BAR.

UNFAVORABLE ZONE:
a. RAFT/SLAB BOTTOM MAIN BAR.
b. WALL/COLUMN MAIN BAR.

SCHEDULE OF REINFORCEMENT (END CROSS GIRDERS TYP. EACH)

BAR MKD.	DESCRIPTION	SHAPE
e1	25 ℚ 4 nos	150
e2	25 ℚ 4 nos	150
e3	25 ℚ 4x2 Nos	150
e4	25 ℚ 4x2 Nos	
e5	25 ℚ 4 nos	
e6	25 ℚ 4 nos	
e7	25 ℚ 4 nos	300
e8	25 ℚ 4 nos	
e9	16 ℚ 8x2 Nos	150
e10	16 ℚ 8x2 Nos	
e11	2L–20 ℚ @ 150c/c	
e11a	2L–20 ℚ @ 150c/c	
e12	2L–20 ℚ @ 150c/c	
e13	12ℚLinked Every 3rd Layer	
MESH–M1	8ø @ 75 x 75	
MESH–M2	8ø @ 75 x 75	

EMPLOYER	PROJECT	DESIGN CONSULTANT					
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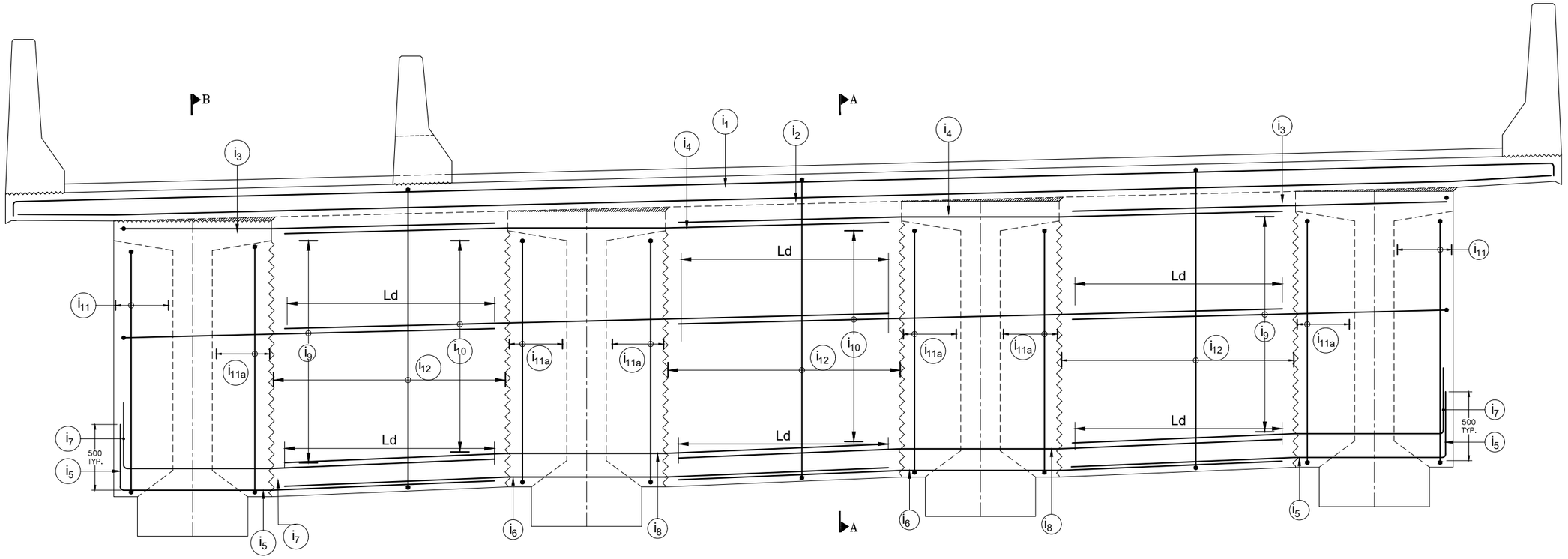
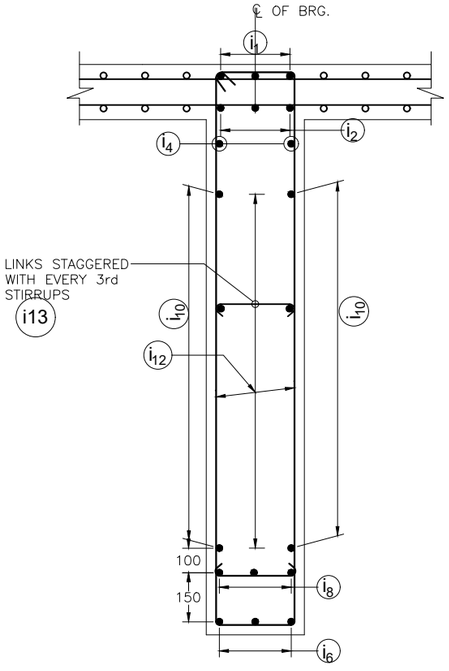
			Checked By	Mr.S.M	Signature	Reference Drawings: KDP/DPR/STR/BR/KAMALA CANAL /DD -15	Chainage: 238+095
			Approved By	Mr.H.B	Signature		

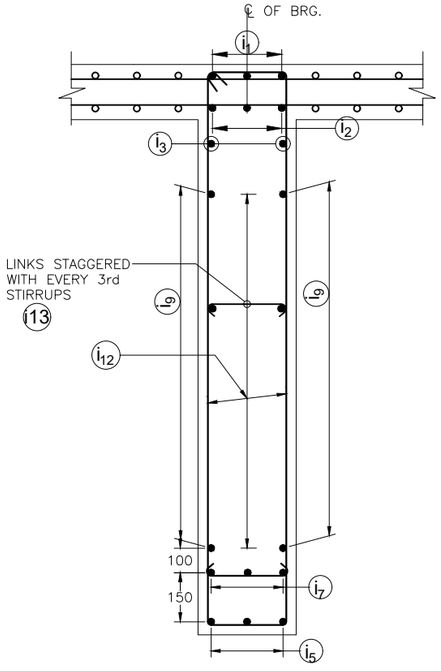
Date: JUNE, 2023
Drawing No.: KDP/DPR/STR/BR/KAMALA CANAL /DD -13
Sheet No.: Sheet No. 1/2



REINFORCEMENT DETAIL OF INTERMEDIATE CROSS GIRDER
(SCALE 1:35)



SECTION A–A
(SCALE 1:25)



SECTION B–B
(SCALE 1:25)

SCHEDULE OF REINFORCEMENT
(INTERMEDIATE CROSS GIRDERS TYP. EACH)

BAR MKD.	DESCRIPTION	SHAPE
i_1	16 Ø 3 nos	150
i_2	16 Ø 3 nos	150
i_3	12 Ø 3x2 Nos	150
i_4	12 Ø 3x2 Nos	
i_5	20 Ø 3 Nos	
i_6	20 Ø 3 Nos	
i_7	20 Ø 3 Nos	300
i_8	20 Ø 3 Nos	
i_9	12 Ø 8x2 Nos	150
i_{10}	12 Ø 8x2 Nos	
i_{11}	2L–20 Ø @ 150c/c	
i_{11a}	2L–20 Ø @ 150c/c	
i_{12}	2L–20 Ø @ 150c/c	
i_{13}	12Ø Linked Every 3rd Layer	

NOTES:–

1. ALL DIMENSIONS ARE IN mm AND LEVELS ARE IN METER, DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
2. CONCRETE GRADE FOR CROSS–GIRDER & DECK SLAB M45.
3. SUITABLE HOLES SHALL BE LEFT IN PRECAST GIRDER FOR SUPPORTING THE DECK SLAB SHUTTERING.
4. SUITABLE PROVISION FOR HANDLING & LIFTING HOOKS ETC TO BE PROVIDED.
5. BEAMS SHALL BE KEPT UPRIGHT AT ALL TIMES AND TO BE CLEARLY MARKED INDICATING SPAN LOCATION & RESPECTIVE ENDS BEFORE REMOVAL FROM CASTING BED.
6. TOP SURFACE OF PRECAST BEAM & VERTICAL EDGES OF END TO BE LEFT ROUGHENED FOR EFFECTIVE BONDING.
7. ALL SURFACES, COMING IN CONTACT WITH DECK SLAB/DIAPHRAGM SHALL BE ADEQUATELY PREPARED BY GREEN CUTTING. USING SURFACE RETARDERS OR BY MECHANICAL MEANS(SUCH AS 100% HACKING) TO ENSURE THAT COARSE AGGREGATES ARE JUST EXPOSED.
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FAVORABLE BOND CONDITION					
GRADE OF CONCRETE	PERCENTAGE OF LAPPED BARS	<25%	33%	50%	>50%
M45	X	33	38	47	50

UNFAVORABLE BOND CONDITION					
GRADE OF CONCRETE	PERCENTAGE OF LAPPED BARS	<25%	33%	50%	>50%
M45	X	45.7	52.6	64	68.6

FAVORABLE ZONE:
a. RAFT/SLAB BOTTOM MAIN BAR.

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b. WALL/COLUMN MAIN BAR.

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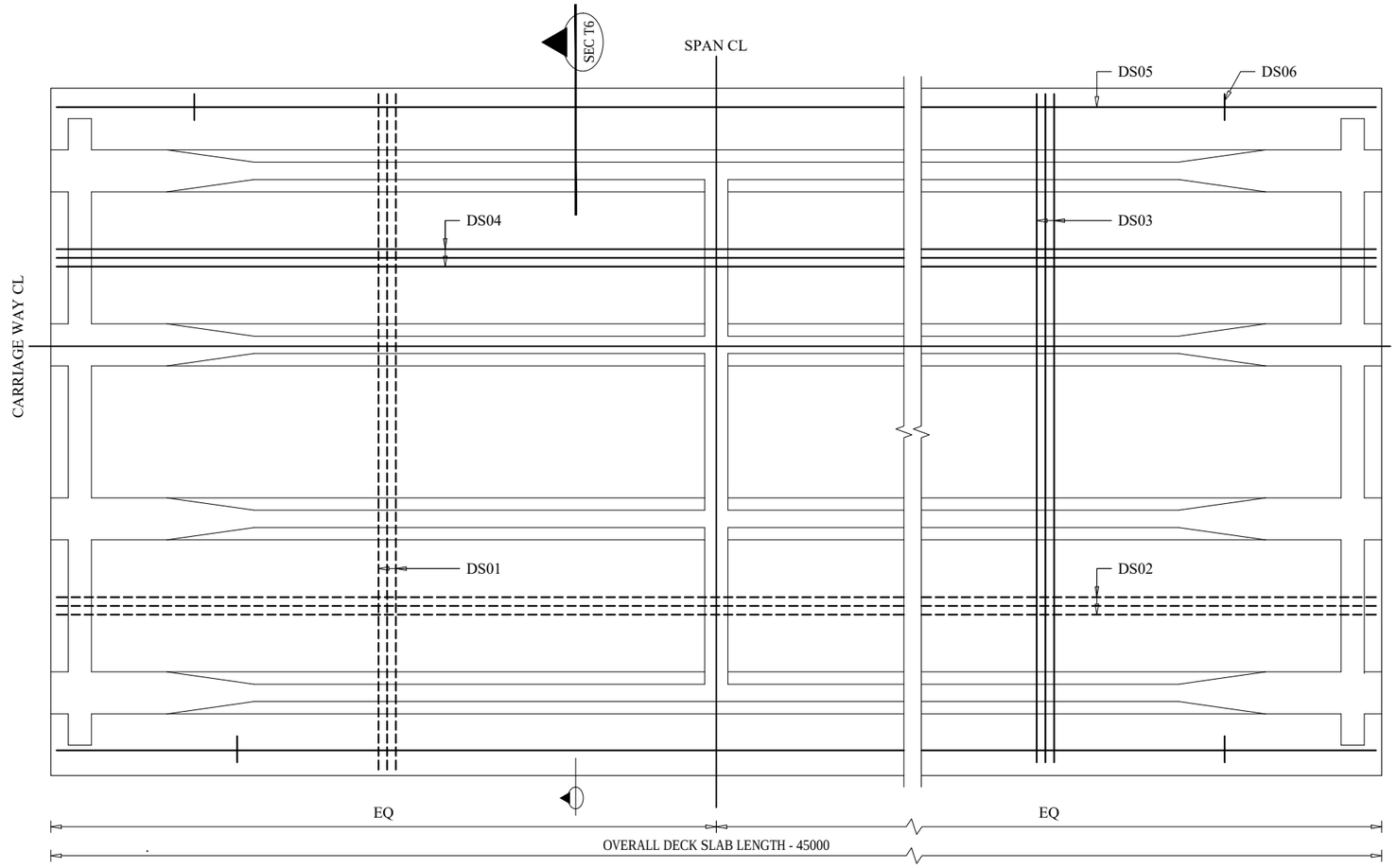
			Checked By	Mr.S.M	Signature			
			Approved By	Mr.H.B	Signature			



REINFORCEMENT DETAILS OF DECK SLAB - PLAN VIEW

SCALE - 1 : 100

BAR MARK	SHAPE	BAR DIA & SPACING/Nos.
DS01	150 150	16Ø @ 150 C/C
DS02	150 150	12Ø @ 150 C/C
DS03	150 150	16Ø @ 150 C/C
DS04	150 150	12Ø @ 150 C/C
DS05	150 150	(3+3) 6Nos Ø16
DS06		2L-Ø10 @300 C/C

LEGEND FOR REINFORCEMENT BAR

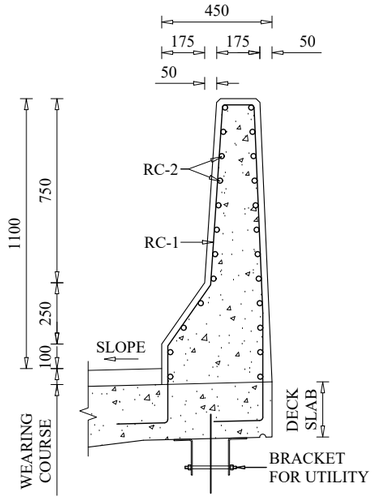
AB (M / E) 02 @ 250C/C

- SPACING OF BARS (mm)
- BAR SHAPE MARK
- MID OR EDGE
- SUPERSTRUCTURE SHORT FORM

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	**	- ***

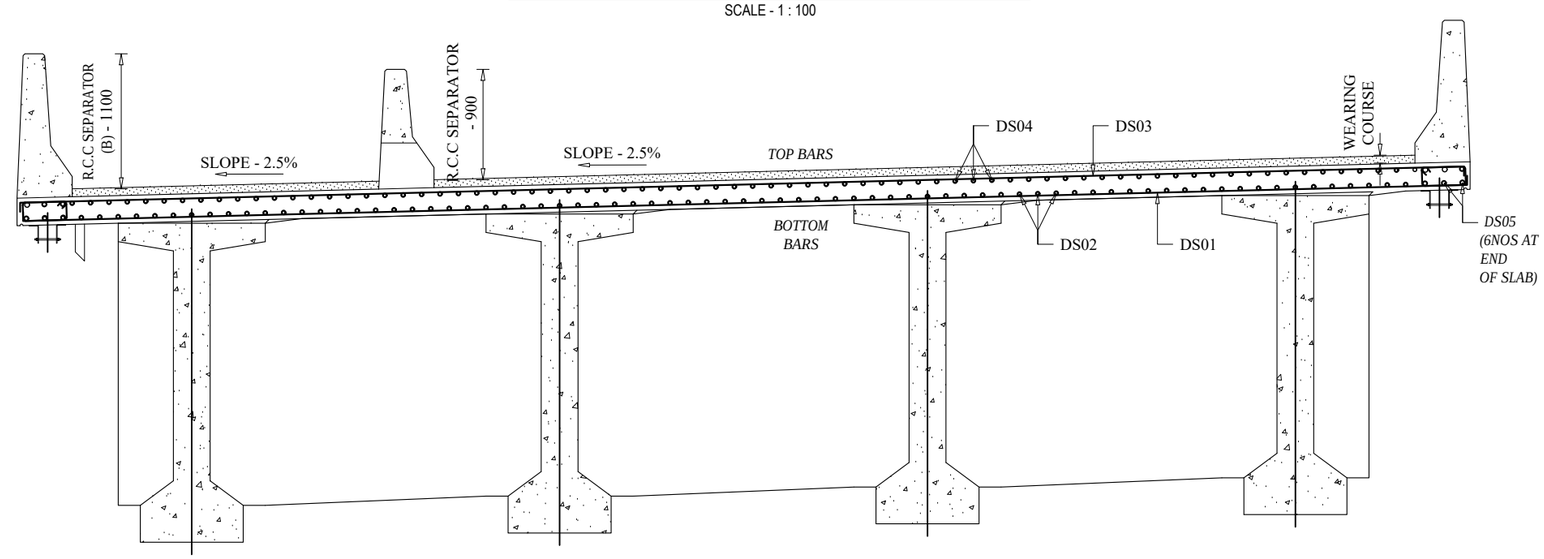
TOP BAR OR NEAR FACE REINFORCEMENT

BOTTOM BAR OR FAR FACE REINFORCEMENT



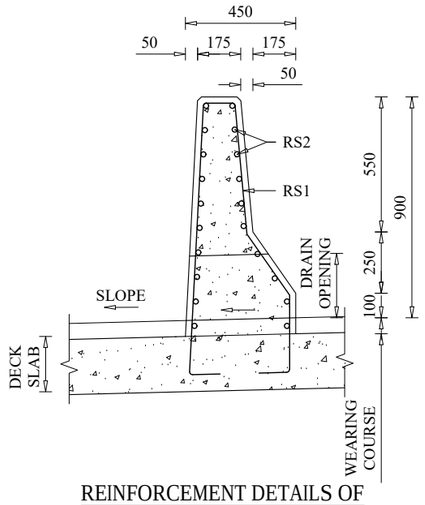
REINFORCEMENT DETAILS OF R.C.C BARRIER (A)- SECTIONAL VIEW

SCALE - 1 : 25



REINFORCEMENT DETAILS OF DECK SLAB - SECTIONAL VIEW AT T6

SCALE - 1 : 50



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

SCALE - 1 : 25

EMPLOYER	PROJECT	DESIGN CONSULTANT					
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.S.N.R.B NEC NO. 265 CIVIL A	Signature	Drawing Name: DECK SLAB DETAILS OF BRIDGE OVER RIVER KAMALA CANAL	Scale: AS NOTED
			Checked By	Mr.S.M	Signature	Reference Drawings: KDP/DPR/STR/BR/KAMALA CANAL /DD -15	Chainage: 238+095
			Approved By	Mr.H.B	Signature		

Date: JUNE, 2023

Drawing No.: KDP/DPR/STR/BR/KAMALA CANAL/DD -14

Sheet No.: Sheet No. 1/1

Bar bending schedule for Deck Slab

S.N	Bar Label	Bar Shape	Bar Dia (mm)	Bar spacing (mm)	No. of bars	Length (m)	Total Length(m)	Unit Weight (kg/m)	Weight (kg)
1	DS01	150 — 11770 — 150	16	150	302	12.07	3645.14	1.578	5753.26
2	DS02	150 — 44870 — 150	12	150	79	45.17	3568.43	0.89	3168.10
3	DS03	150 — 11770 — 150	16	150	302	12.07	3645.14	1.578	5753.26
4	DS04	150 — 44870 — 150	12	150	79	45.17	3568.43	0.888	3168.10
5	DS05	150 — 44870 — 150	16		12	45.17	542.04	1.578	855.52
6	DS06	145, 75, 410	10	300	302	1.26	380.52	0.617	234.60
Total Weight of Deck Slab (kg)									18932.84

Bar bending schedule for Longitudinal Girder

S.N	Bar Label	Bar Shape	Bar Dia (mm)	Bar spacing	No. of bars	Length	Total Length(m)	Unit Weight (kg/m)	Weight (kg)
1	1	100 — 44220 — 100	16		10	44.42	444.2	1.578	701.10
2	2	100 — 40000 — 100	16		12	40.20	482.4	1.578	761.39
3	2a	100 — 2900 — 100	16		24	3.10	74.4	1.578	117.43
4	3	100 — 44200 — 100	16		14	44.40	621.6	1.578	981.09
5	3a	44200	16		14	44.20	618.8	1.578	976.67
6	5	32900	12		28	32.90	921.2	0.888	817.85
7	5a	6150	12		56	6.15	344.4	0.888	305.76
8	6	100, 6150	12		56	6.25	350	0.888	310.73
9	7a	2945, 100, 220	12	180	183	6.53	1194.99	0.888	1,060.93
10	7	2945, 100, 220	12	150	78	6.53	509.34	0.888	452.20
11	8a	100, 2945, 760 — Tapered Section — 100, 2945, 220	12	150	46	Average 7.07	325.22	0.888	288.73
12	8	100, 2945, 760	12	150	34	7.61	258.74	0.888	229.71

Bar bending schedule for Longitudinal Girder

S.N	Bar Label	Bar Shape	Bar Dia (mm)	Bar spacing	No. of bars	Length	Total Length(m)	Unit Weight (kg/m)	Weight (kg)
13	9&9a	110, 1120, 570, 100	12	150	296	2.68	793.33	0.89	704.33
14	10	335, 1120, 570, 200	12	150	78	3.33	259.75	0.89	230.61
15	10a	335, 1120, 570, 200	12	180	184	3.33	612.75	0.89	544.01
16	11&11a	150, 310, 230, 760	12	150	264	2.14	564.96	0.89	501.58
Total Weight for One Longitudinal Beam (kg)									8984.1
Total Weight for Four webs (kg) = 8984.1 X 4=									35936.6

Bar bending schedule for Cross Girder at support

S.N	Bar Label	Bar Shape	Bar Dia (mm)	Bar spacing	No. of bars	Length	Total Length(m)	Unit Weight (kg/m)	Weight (kg)
1	e1	150 — 11770 — 150	25		4	12.07	48.28	3.853	186.04
2	e2	150 — 11770 — 150	25		4	12.07	48.28	3.853	186.04
3	e3	150 — 2860	25		16	3.01	48.16	3.853	185.58
4	e4	4600	25		16	4.6	73.6	3.853	283.61
5	e5	500 — 2860	25		8	3.36	26.88	3.853	103.58
6	e6	4600	25		8	4.6	36.8	3.853	141.80
7	e7	500 — 2860	25		8	3.36	26.88	3.853	103.58
8	e8	4600	25		8	4.6	36.8	3.853	141.80
9	e9	150 — 2860	16		32	3.01	96.32	1.578	152.03
10	e10	4600	16		32	4.6	147.2	1.578	232.33
11	e11	2140, 100, 220	20	150	4	4.92	19.68	2.466	48.53
12	e11a	2140, 100, 220	20	150	12	4.92	59.04	2.466	145.60
13	e12	2645, 100, 220	20	150	39	5.93	231.27	2.466	570.35

EMPLOYER	PROJECT	DESIGN CONSULTANT					
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.S.N.R.B (NEC NO. 265 CIVIL A)	Signature	Drawing Name: SUPERSTRUCTURE BAR BENDING SCHEDULE OF BRIDGE OVER RIVER KAMALA CANAL	Scale: AS NOTED
			Checked By	Mr.S.M	Signature	Reference Drawings:	Chainage: 238+095
			Approved By	Mr.H.B	Signature		

Date: JUNE, 2023

Drawing No.: KDP/DPR/STR/BR/KAMALA CANAL/DD -15

Sheet No.: Sheet No. 1/2

Bar bending schedule for Cross Girder at support

S.N	Bar Label	Bar Shape	Bar Dia (mm)	Bar spacing	No. of bars	Length	Total Length(m)	Unit Weight (kg/m)	Weight (kg)
14	e13	100 — 220 — 100	12	300	24	0.42	10.08	0.888	8.95
15	Mesh-M1		8		4	2.17	8.7	0.4	13.7
16	Mesh-M2		8		4	5.24	21.0	0.4	33.1
Total Weight for 1 Cross Girder (kg)									2536.63
Total Weight for 2 Cross Girder (kg)									5073.25

Bar bending schedule for Webs

S.N	Bar Label	Bar Shape	Bar Dia (mm)	No. of bars	Length(m)	Total Length(m)	Unit Weight (kg/m)	Weight (kg)
1	M1	MESH TYPE M1	16	20	19.566	391.32	1.58	617.63
2	M2	MESH TYPE M2	16	20	9.452	189.04	1.58	298.37
3	SPIRAL	SPIRAL REINFORCEMNET (10 TURNS EACH)	20	8	5.727	45.8170274	2.47	112.99
4	1	2720 — 700 — 700	16	4	4.12	16.48	1.58	26.01
5	1a	1360 — 700	16	4	2.06	8.24	1.58	13.01
6	2	345 — 800 — 800	20	8	1.945	15.56	2.47	38.37
7	2a	730 — 800 — 800	20	6	2.33	13.98	2.47	34.48
8	3	1360	12	4	1.36	5.44	0.89	4.83
9	4	1360 — 700	12	8	2.06	16.48	0.89	14.63
10	5	2720 — 730	20	12	7.1	85.2	2.47	210.12
Sub-Total								1,370.44
Total Weight for Four webs (kg) = 1370.4 X 4=								5481.75

Bar bending schedule for Approach Slab

S.N	Bar Label	Bar Shape	Bar Dia (mm)	Bar spacing	No. of bars	Length	Total length	Unit Weight (kg/m)	Weight (kg)
1	1601	100 — 3420 — 100	16	150	148	3.62	535.76	1.578	845.61
2	1201	100 — 10970 — 100	12	150	48	11.17	536.16	0.888	476.01
Total Weight for one approach Slab (Kg)									1,321.62
Total Weight for one Sapn of bridge (Kg)									2,643.24

Bar bending schedule for Cross Girder at Mid

S.N	Bar Label	Bar Shape	Bar Dia (mm)	Bar spacing	No. of bars	Length	Total Length(m)	Unit Weight (kg/m)	Weight (kg)
1	i1	150 — 11770 — 150	16		3	12.07	36.21	1.578	57.15
2	i2	150 — 11770 — 150	16		3	12.07	36.21	1.578	57.15
3	i3	150 — 2860	12		12	3.01	36.12	0.888	32.07
4	i4	4600	12		12	4.6	55.2	0.888	49.01
5	i5	500 — 2860	20		6	3.36	20.16	2.466	49.72
6	i6	4600	20		6	4.6	27.6	2.466	68.07
7	i7	500 — 2860	20		6	3.36	20.16	2.466	49.72
8	i8	4600	20		6	4.6	27.6	2.466	68.07
9	i9	150 — 2860	12		32	3.01	96.32	0.888	85.51
10	i10	4600	12		32	4.6	147.2	0.888	130.69
11	i11	2095, 100, 320	20	150	4	5.03	20.12	2.466	49.62
12	i11a	2095, 100, 320	20	150	12	5.03	60.36	2.466	148.86
13	i12	2645, 100, 320	20	150	39	6.13	239.07	2.466	589.58
14	i13	100 — 320 — 100	12	300	24.00	0.52	12.48	0.888	11.08
Total Weight for 1 Cross Girder (kg)									1446.28
Total Weight for 2 Cross Girder (kg)									2892.57

BAR BENDING SCHEDULE OF R.C.C BARRIER

S.N	Bar Label	Bar Shape	Bar Dia (mm)	Bar spacing	No. of bars	Length	Total length	Unit Weight (kg/m)	Weight (kg)
1	RC-A1	130, 850, 735, 445, 305, 200, 305	16	150	273	3.17	865.41	1.58	1365.91
2	RC-A2	100 — 40820 — 100	10	150	20	41.02	820.4	0.62	505.81
Total Weight (Kg)									1,871.72

BAR BENDING SCHEDULE OF R.C.C SEPARATOR

S.N	Bar Label	Bar Shape	Bar Dia (mm)	Bar spacing	No. of bars	Length	Total length	Unit Weight (kg/m)	Weight (kg)
1	RS1	130, 1110, 535, 305, 150, 315	16	150	273	2.695	735.735	1.58	1161.24
2	RS2	100 — 40820 — 100	10	150	17	41.02	697.34	0.62	429.94
Total Weight (Kg)									1,591.17

EMPLOYER	PROJECT	DESIGN CONSULTANT				
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.S.N.R.B (NEC NO. 265 CIVIL A)	Signature	Drawing Name: SUPERSTRUCTURE BAR BENDING SCHEDULE OF BRIDGE OVER RIVER KAMALA CANAL
			Checked By	Mr.S.M	Signature	Reference Drawings:
			Approved By	Mr.H.B	Signature	

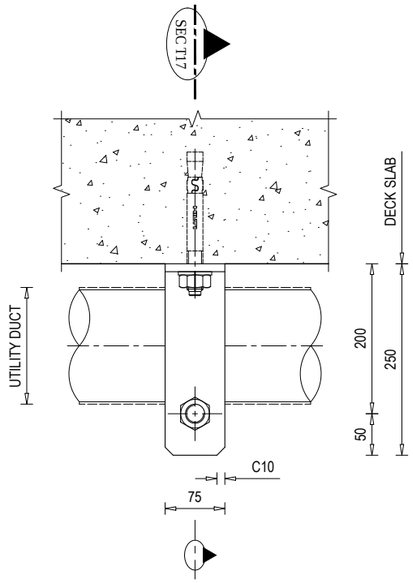
Scale: AS NOTED

Chainage: 238+095

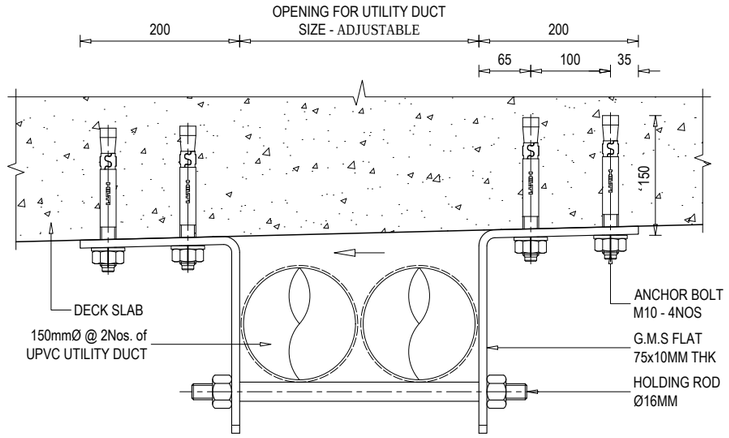
Date: JUNE, 2023

Drawing No.: KDP/DPR/STR/BR/KAMALA CANAL/DD -15

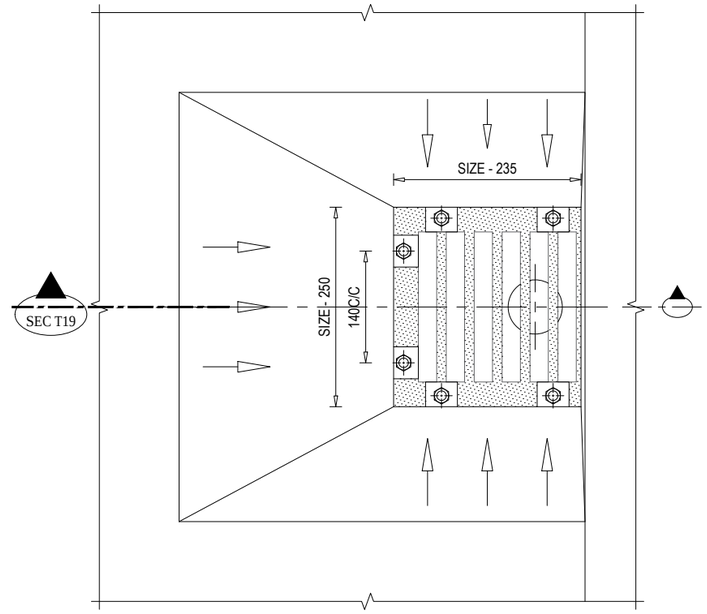
Sheet No.: Sheet No. 2/2



FRONT VIEW

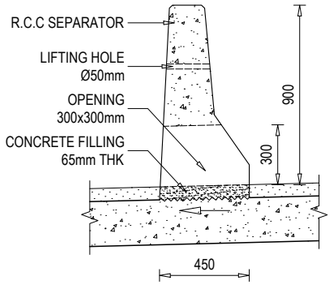


SECTIONAL ELEVATION VIEW AT SEC T17

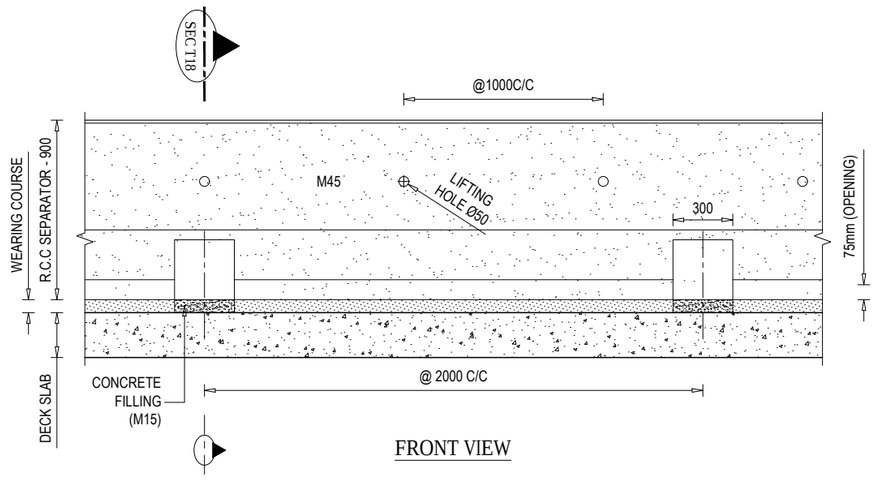


PLAN VIEW

DETAILS OF GALVANIZED MILD STEEL (G.M.S)
UTILITY DUCT CLAMP
SCALE - 1 : 10

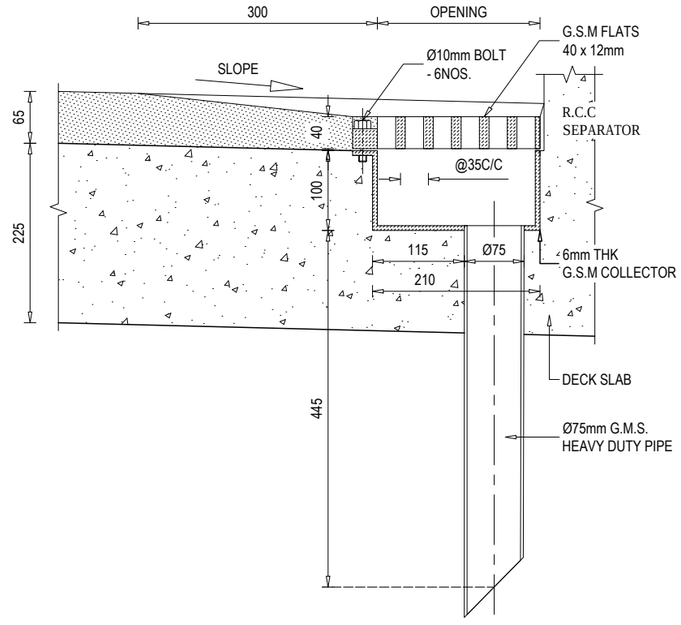


SECTIONAL ELEVATION VIEW AT SEC T18



FRONT VIEW

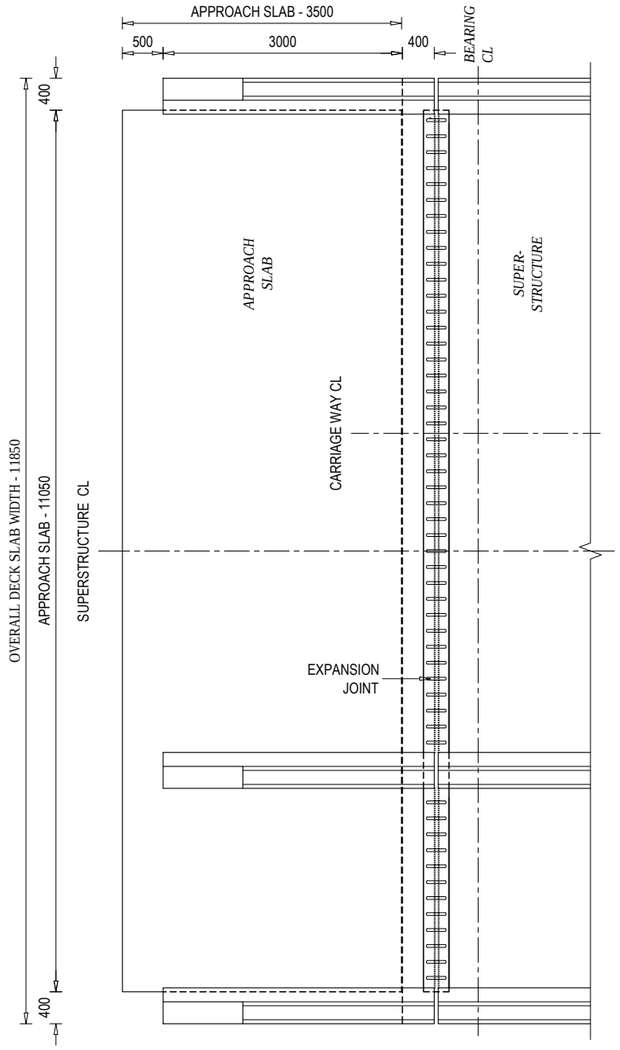
DETAIL ELEVATION VIEW AT R.C.C SEPARATOR
& IT'S DRAIN OPENING
SCALE - 1 : 40



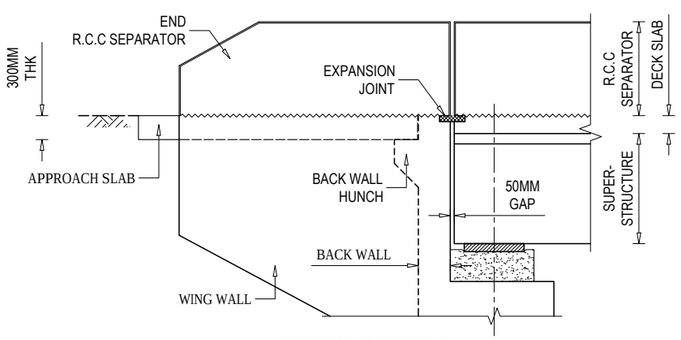
SECTIONAL ELEVATION VIEW AT SEC T19

DETAILS OF GALVANIZED MILD STEEL (G.M.S)
DRAINAGE SPOUT
SCALE - 1 : 10

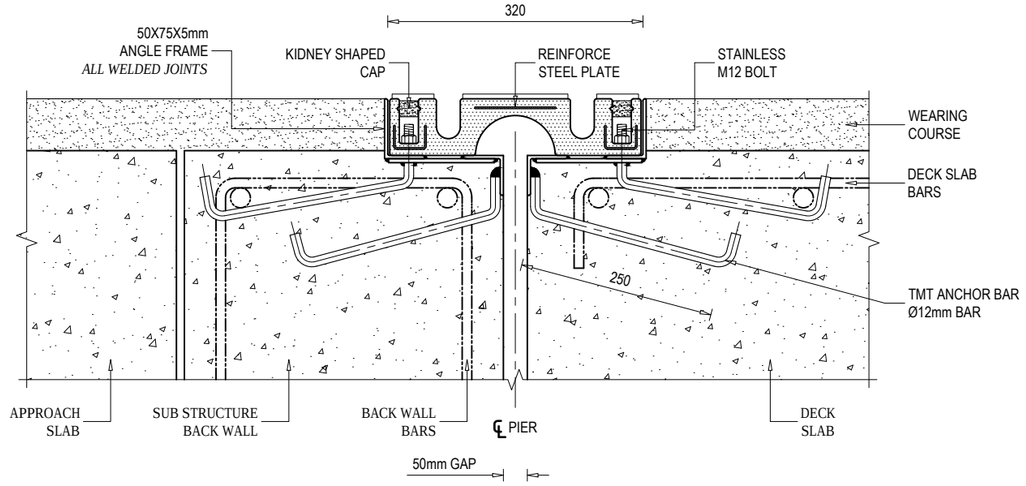
EMPLOYER	PROJECT NAME	DESIGN CONSULTANTS				Drawing Name	Scale:	Date:
Government of Nepal Ministry of Physical Infrastructure and Transport **Department of Roads** **Development Cooperation Implementation Division**	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation 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. S.N.R.B Nec.No. 265 Civil"A"	Signature	MISCELLANEOUS DETAILS OF BRIDGE OVER RIVER KAMALA CANAL	AS SHOWN	JUNE 2023
			Checked By	Mr. S.M.	Signature	Reference Drawings -	Chainage: 238+095	Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/DD-16
			Approved By	Mr. H.B.	Signature			Sheet No. 1 / 2



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

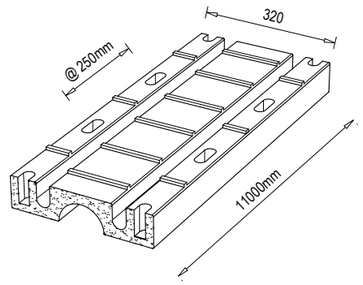


ELEVATION VIEW



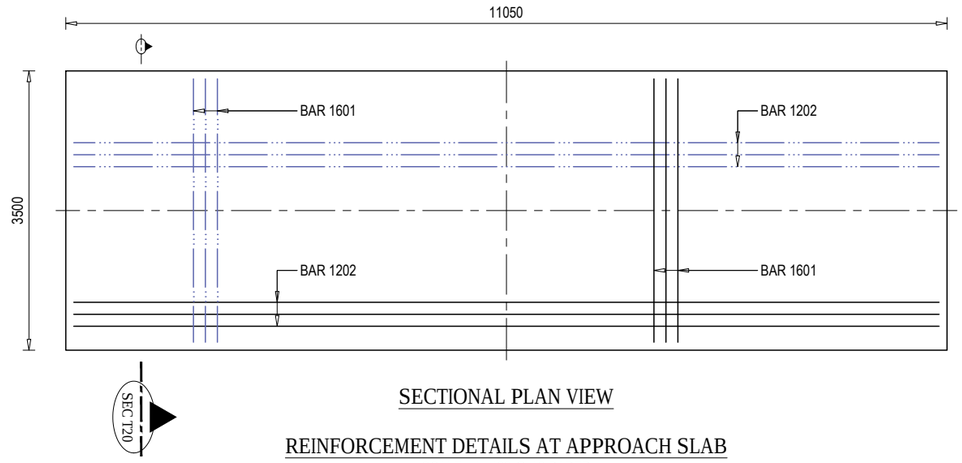
SLAB SEAL TYPE EXPANSION JOINTS ARRANGEMENT IN A CARRIAGEWAY

SCALE - 1 : 10 @ A3 PAPER



EXPANSION JOINT ISOMETRIC VIEW - SEAL TYPE

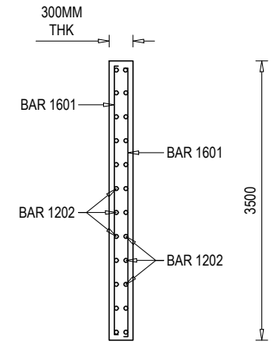
SCALE - NONE



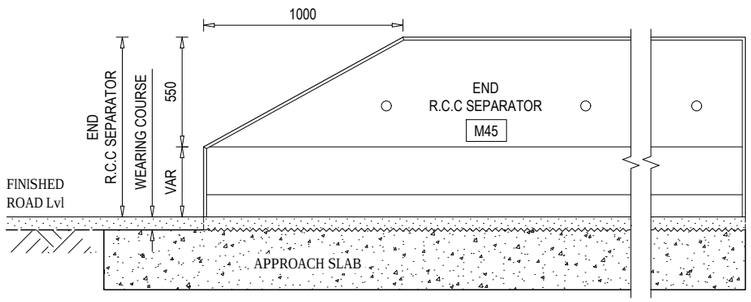
SECTIONAL PLAN VIEW

REINFORCEMENT DETAILS AT APPROACH SLAB

SCALE - 1 : 100 @ A3 PAPER

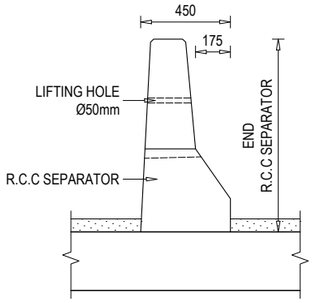


SECTIONAL ELEVATION VIEW AT SEC T20



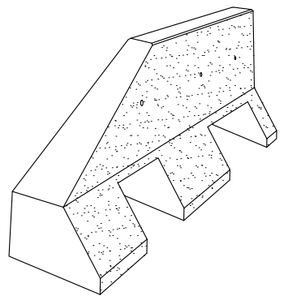
ELEVATION VIEW OF END R.C.C SEPARATOR

SCALE - 1 : 40 @ A3 PAPER



SIDE VIEW

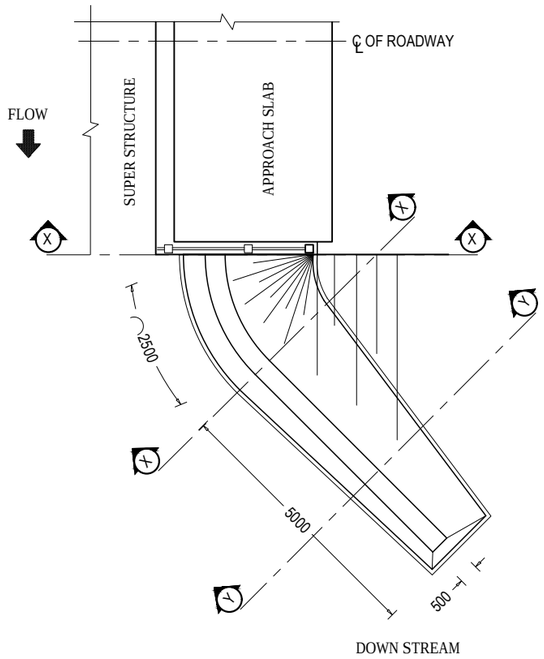
SCALE - 1 : 40 @ A3 PAPER



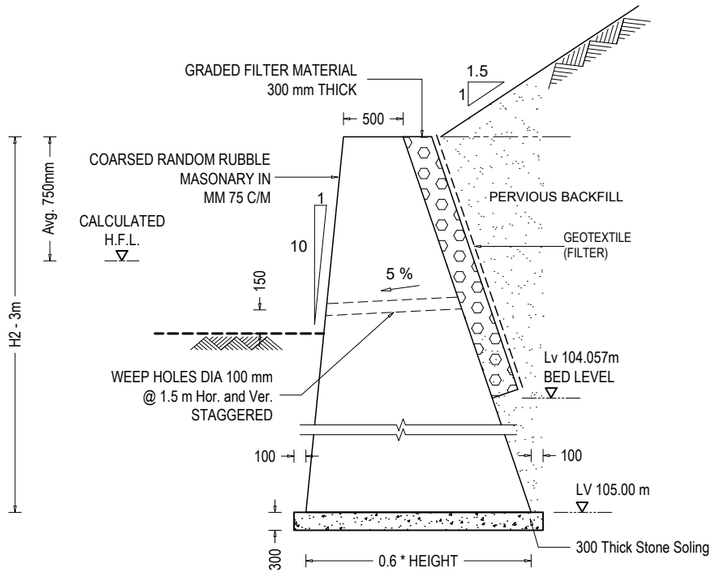
END R.C.C SEPARATOR ISOMETRIC VIEW

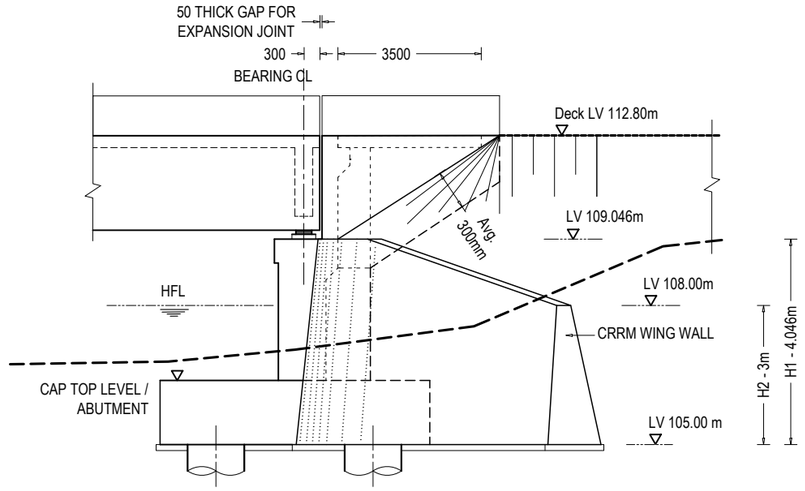
SCALE - NONE

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. S.N.R.B Nec.No. 265 Civil"A"	Signature	Drawing Name: MISCELLANEOUS DETAILS OF BRIDGE OVER RIVER KAMALA CANAL	Scale: AS SHOWN Date: JUNE 2023
			Checked By	Mr. S.M.	Signature	Reference Drawings: KDP/DPR/STR/BR/KAMALA CANAL/DD-15	Chainage: 238+095 Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/DD-16
			Approved By	Mr. H.B.	Signature		Sheet No. 2 / 2

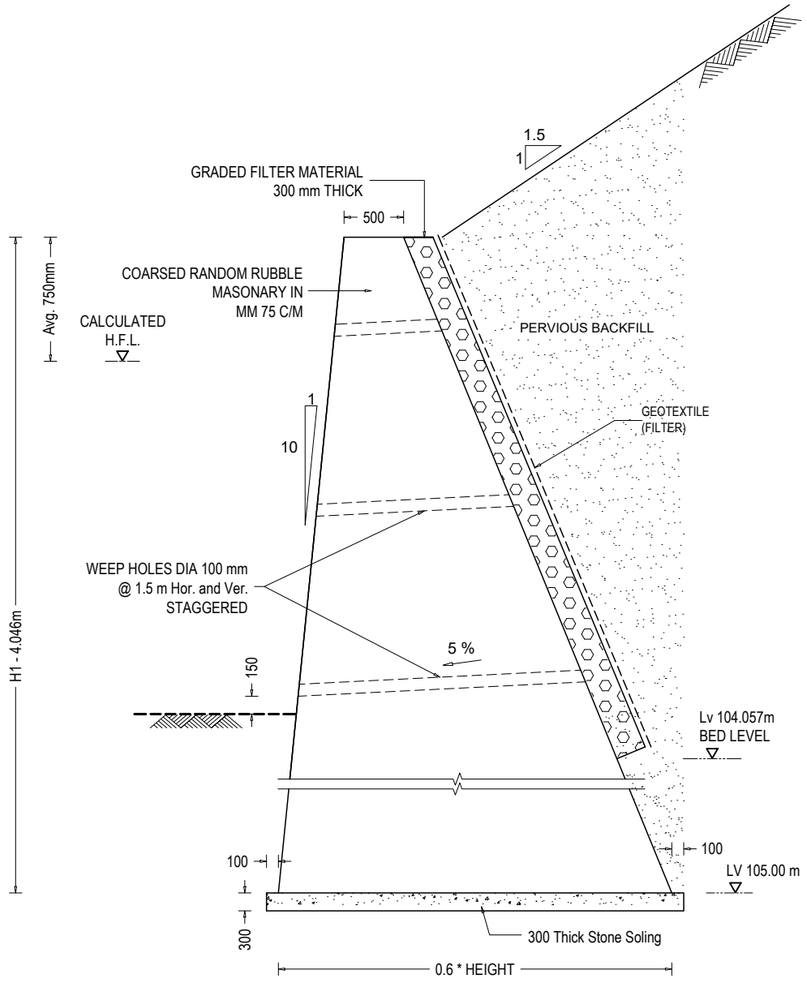


NOTE : AT DOWN STREAM ONLY





WING WALL ELEVATION

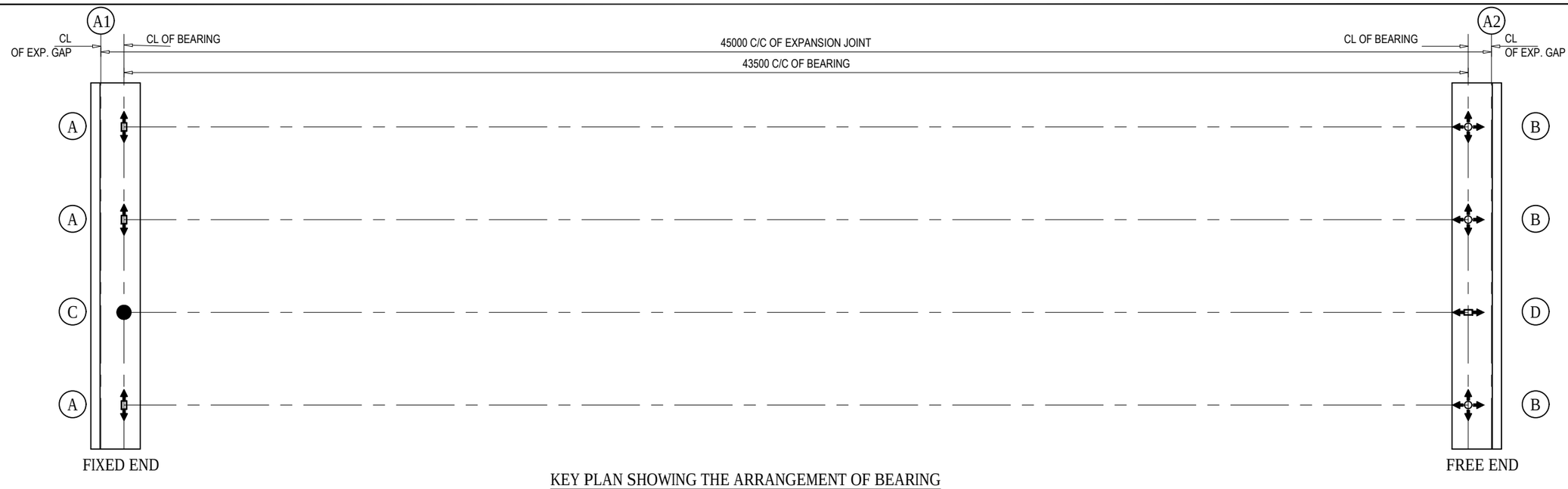


STONE MASONRY WING WALL SECTION X - X

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-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. S.N.R.B Nec.No. 265 Civil"A"	Signature	Drawing Name WING WALL DETAILS OF BRIDGE OVER RIVER KAMALA CANAL Reference Drawings	Scale: AS SHOWN Chainage: 238+095
			Checked By	Mr. S.M.	Signature		Date: JUNE 2023 Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/DD-17 Sheet No. 1 / 1
			Approved By	Mr. H.B.	Signature		



KEY PLAN SHOWING THE ARRANGEMENT OF BEARING

SCALE - 1: 150

TABLE SHOWING DATA FOR DESIGN OF BEARINGS

	Structure Reference						
1	Bearing Identification mark				A	B	C	D
	Type of Bearing				Guided Bearing in transverse Direction	Free Bearing	Fixed Bearing	Guided Bearing in Longitudinal Direction
2	Seating Material and characteristic strength	Upper Surface			M35	M35	M35	M35
		Lower Surface			M35	M35	M35	M35
3	Design Load (KN)	Serviceability Limit state (SLS Rare)	Vertical	max (LL)	201.85 T	159.45 T	201.85 T	159.45 T
				min (NO LL)	152.76 T	152.76 T	152.76 T	152.76 T
			Transverse					
			Longitudinal	max (LL)	22.16 T	8.66 T	22.16 T	8.66 T
				min (NO LL)	7.64 T	7.64 T	7.64 T	7.64 T
		Serviceability Limit state (SLS Frequent)	Vertical	max (LL)	189.58 T	157.78 T	189.58 T	157.78 T
				min (NO LL)	152.76 T	152.76 T	152.76 T	152.76 T
			Transverse					
			Longitudinal	max (LL)	18.53 T	8.40 T	18.53 T	8.40 T
				min (NO LL)	7.64 T	7.64 T	7.64 T	7.64 T
		Ultimate Limit state (ULS Basic)	Vertical	max (LL)	281.04 T	217.45 T	281.04 T	217.45 T
				min (NO LL)	207.41 T	207.41 T	207.41 T	207.41 T
			Transverse					
			Longitudinal	max (LL)	33.45 T	11.90 T	33.45 T	11.90 T
				min (NO LL)	10.37 T	10.37 T	10.37 T	10.37 T
		Ultimate Limit state (ULS Seismic)	Vertical	max (LL)	347.09 T	299.68 T	347.09 T	299.68 T
				min (NO LL)	288.92 T	288.92 T	288.92 T	288.92 T
			Transverse		89.61 T	89.61 T	89.61 T	89.61 T
			Longitudinal	max (LL)	244.42 T	11.75 T	244.42 T	11.75 T
				min (NO LL)	238.31 T	10.37 T	238.31 T	10.37 T
4	Displacement (mm)	SLS		Transverse	3.20 mm	3.20 mm		
				Longitudinal		56.84 mm		56.84 mm
		ULS		Transverse	4.80 mm	4.80 mm		
				Longitudinal		85.26 mm		85.26 mm
5	Rotation (Radians)	SLS	Rare	max (LL)	0.00346 radian			
				min (NO LL)	0.00261 radian			
		ULS	Basic	max (LL)	0.00483 radian			
				min (NO LL)	0.00354 radian			

NOTE:

1. MATERIAL SPECIFICATIONS, DESIGN OF BEARINGS ACCEPTANCE CRITERIA AND INSTALLATION SHALL BE IN ACCORDANCE WITH IRC:83 (PART 3)-2018.
2. BEARINGS SHALL BE OBTAINED FROM MANUFACTURERS.
3. INSTALLATION OF BEARINGS SHALL BE UNDER THE SUPERVISION OF REPRESENTATIVE OF THE MANUFACTURER.
4. FOR DESIGN LOADS AND ROTATIONS REFER TABLE IN THE DRAWING.
5. FOR BEARINGS, DETAILED SHOP DRAWINGS SHALL BE PREPARED BY THE SUPPLIER AND BE DULY APPROVED BEFORE MANUFACTURE AND INSTALLATION.
6. THE GROUT/BEDDING MORTAR SHALL BE HIGH STRENGTH FREE FLOWING NON SHRINK GROUT (80 MPa STRENGTH).
7. ALL BEARING SHALL BE PLACED IN TRULY HORIZONTAL PLANE ONLY.
8. FOR DESIGN OF POT BEARINGS, THE DESIGN HORIZONTAL FORCE SHALL, IN NO CASE BE LESS THAN 10% AND GREATER THAN 25% OF THE DESIGN VERTICAL LOAD.
9. THE CONTRACTOR AND SUPPLIER OF BEARINGS SHALL BE FURNISH A MINIMUM TROUBLE FREE WARRANTY OF 10 YEARS AFTER OPENING OF THE BRIDGE.

LEGEND

	A Guided Bearing in transverse Direction
	B Free Bearing
	C Fixed Bearing
	D Guided Bearing in Longitudinal Direction

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		Designed By	Mr. S.N.R.B Nec.No. 265 Civil"A"	Signature	Drawing Name BEARING DATA OF BRIDGE OVER RIVER KAMALA CANAL	Scale: AS SHOWN	Date: JUNE 2023
		Checked By	Mr. S.M.	Signature			Drawing No.- KDP/DPR/STR/BR/KAMALA CANAL/DD -18
		Approved By	Mr. H.B.	Signature	Reference Drawings	Chainage: 238+095	Sheet No. 1 / 1