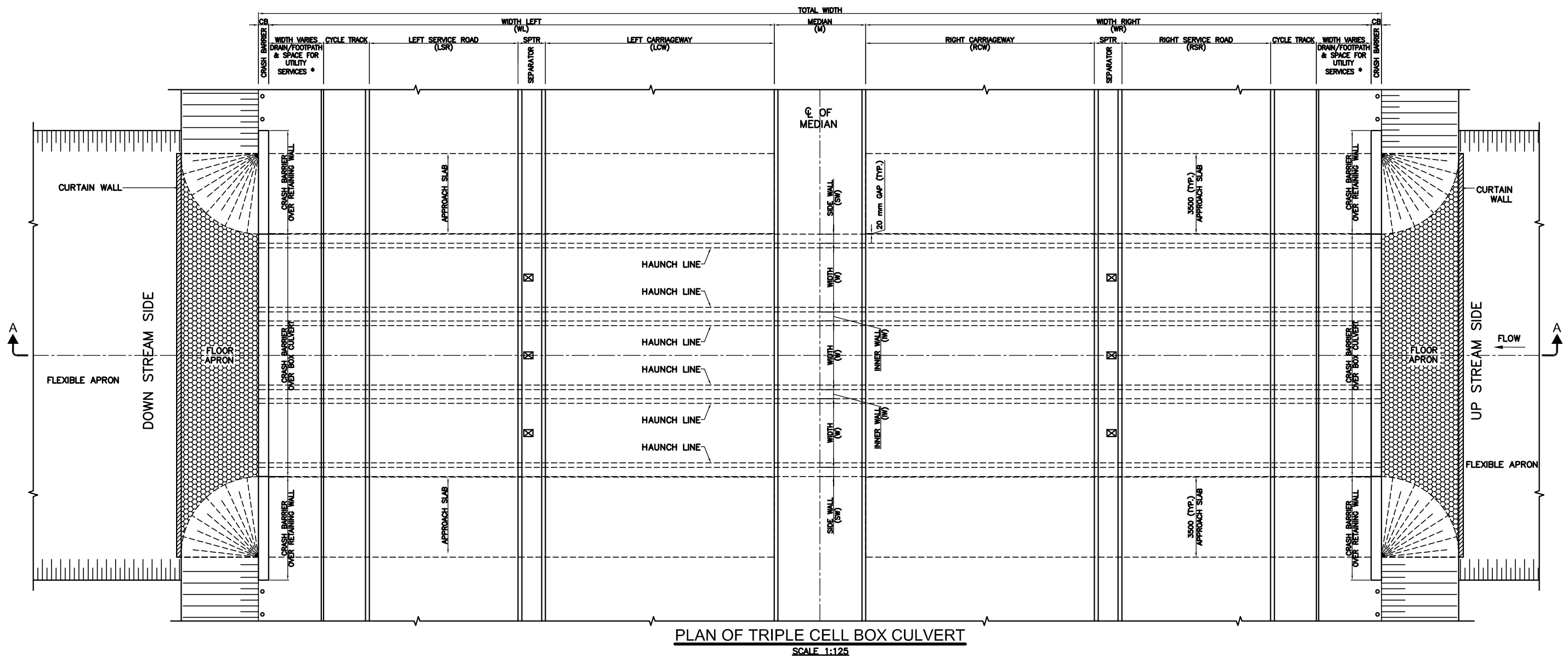
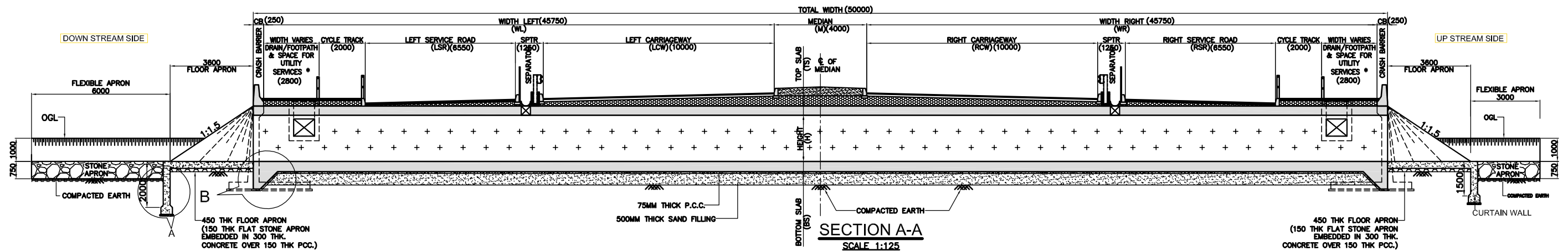
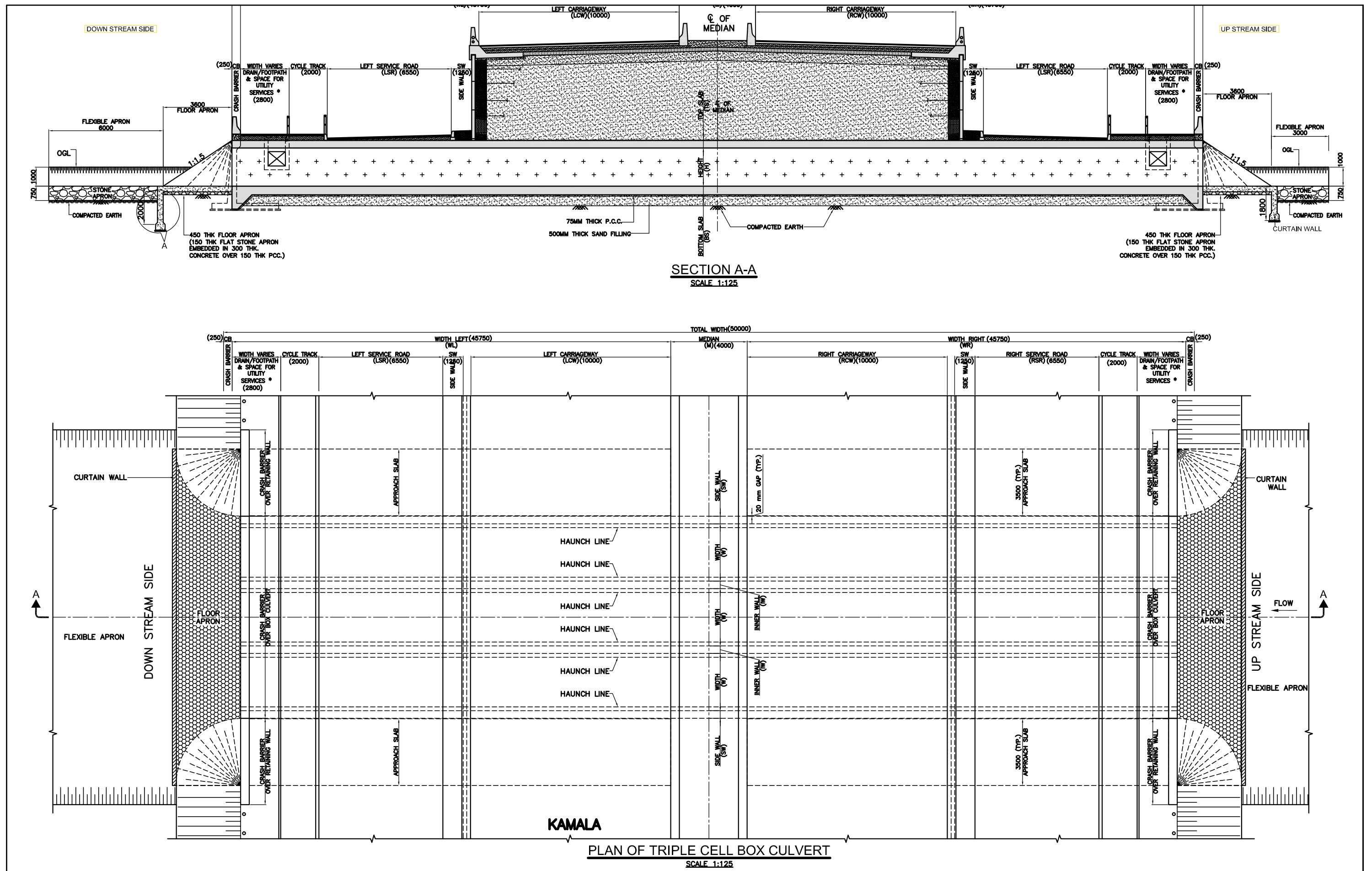
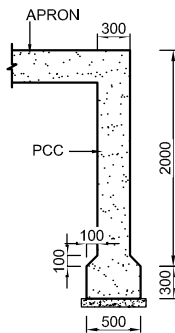




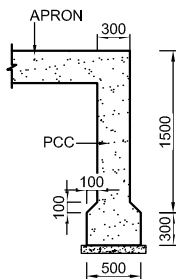
EMPLOYER	PROJECT	DESIGN CONSULTANT			Drawing Name:	Scale:	Date:
 Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Development Cooperation Implementation Division	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala–Dhalkebar–Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of		Designed By	Mr. BISHNU GUPTA	AS NOTED	28.03.2024
		Joint Venture of		Checked By	Mr. SANJIB MITRA		
		In Association With		Approved By	Mr. Harikrishna Bhavsar		
		epf&sa EPTISA Servicios De Ingeniera Madrid, Spain		STUP Consultants Private Limited Kolkatta, India		Reference Drawings: 1. MISCELLANEOUS DRAWING 2. PLAN & PROFILE DRAWING	
						Drawing No.: KDP/DPR/STR/CULVERT/DD-13 Sheet No.: 1/1	



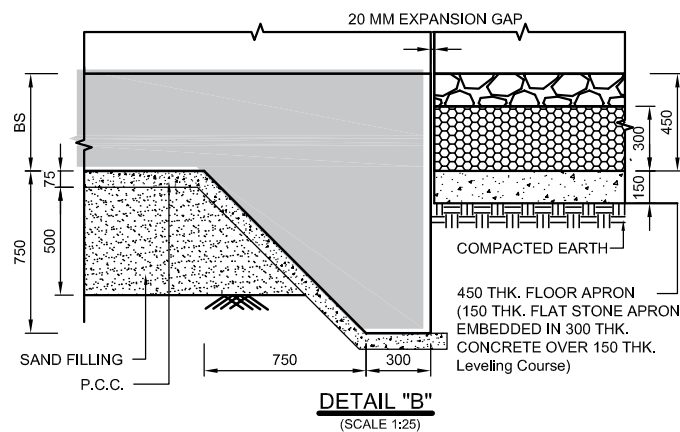
EMPLOYER	PROJECT	DESIGN CONSULTANT	Designed By	Signature	Drawing Name:	Scale:	Date:
 Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Development Cooperation Implementation Division	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design 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	Mr. BISHNU GUPTA		GENERAL ARRANGEMENT DRAWING FOR TRIPLE CELL AT VUP LOCATION (URBAN SECTION) Reference Drawings: 1. MISCELLANEOUS DRAWING 2. PLAN & PROFILE DRAWING	AS NOTED	28.03.2024
			Mr. SANJIB MITRA				Drawing No.: KDP/DPR/STR/CULVERT/DD-14
			Mr. Harikrishna Bhavsar				Sheet No.: 1/1



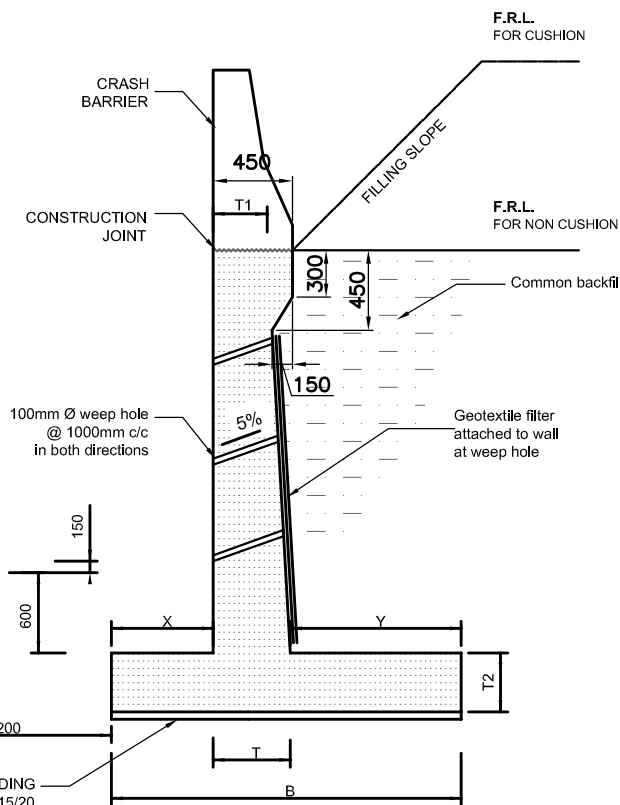
TYPICAL CROSS SECTION OF CURTAIN WALL (DOWN STREAM SIDE) (SCALE 1:50)



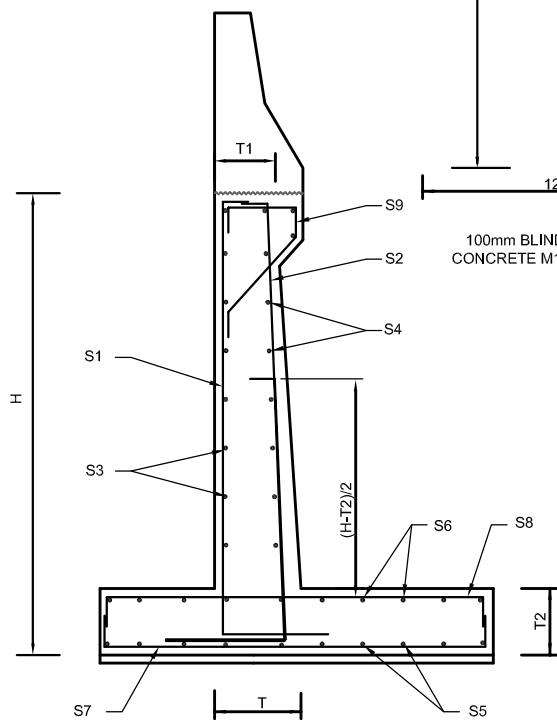
CROSS SECTION OF CURTAIN WALL (UP STREAM SIDE) (SCALE 1:50)



DETAIL "B" (SCALE 1:25)



RCC CANTILEVER RETAINING WALL (Scale 1:75)



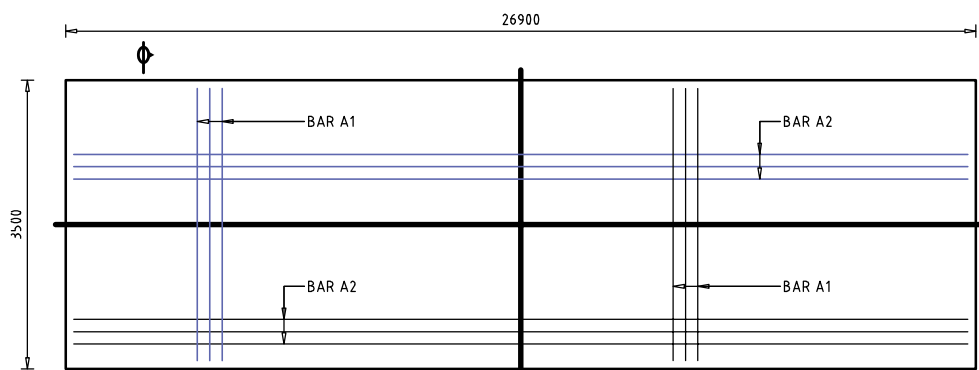
ARRANGEMENT OF REINFORCEMENTS (Scale 1:75)

TABLE FOR DIMENSIONS OF THE RCC WALLS WITH SURCHARGE LOAD OF 2T SQ. M DUE TO ROAD TRAFFIC

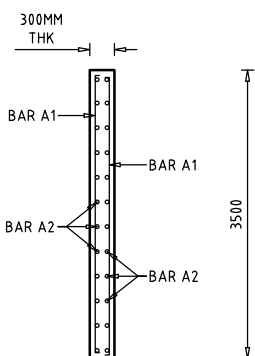
H, m	B, m	T, m	T1, m	T2, m	X, m	Y, m	Maximum Pressure T/m ²
3	2.1	0.4	0.3	0.6	0.4	1.3	13.04
4	2.6	0.5	0.3	0.6	0.6	1.5	15.61
5	3	0.5	0.3	0.6	0.85	1.65	18.58
6	3.8	0.8	0.3	0.6	0.9	2.1	20.6
7	5.25	1.25	0.3	0.9	1	3	20.42
8	5.4	1.6	0.3	1	1	2.8	25.62
9	6.1	2.1	0.3	1.1	1	3	28.79

NOTES :

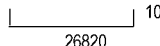
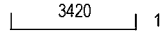
- Wall height is to be modified as per actual site condition or as directed by the Engineer.
- Wall height for more than 6.0 m, soil investigation is to be done or as directed by the Engineer.
- Expansion Joint is to be provided maximum at a distance of 30.0 m C/C .It should be located, wherever possible, at every major changes in wall height or as directed by the Engineer.
- Lowest weep hole should not be more than 200mm above final ground level at the toe of wall or as directed by the Engineer.
- Curtail the alternate bar S2 at a distance of (H-T2)/2 from level A.
- Geotextile in wall back side (where expansion joint is located) is to be provided throughout height to control soil erosion from back side.
- Reinforcements for intermediate height may be worked out by interpolation.
- If the maximum pressure exceeds the allowable soil bearing capacity, increase the base width.
- The clear cover of concrete shall be 50mm.
- Others not mentioned shall be in accordance with standard specifications for Road & Bridge works publish by department of Road . MOPIT. Government of Nepal.



SECTIONAL PLAN VIEW OF APPROACH SLAB NOT TO SCALE



SECTIONAL ELEVATION VIEW OF APPROACH SLAB AT SEC T

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	A1	100  100	16	150	27.020	48	1.580	2049.52
2	A2	100  100	12	150	3.620	360	0.889	1158.40
TOTAL (KG) :								3207.92

BAR BENDING SCHEDULE FOR RETAINING WALL																
HEIGHT (H) m	HIGH YIELD STEEL REINFORCEMENT															
	S1		S2		S3		S4		S5		S6		S7		S8	
	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing mm
3	12	150	12	150	12	150	12	150	16	200	16	200	16	150	16	200
4	12	150	16	200	12	150	12	150	16	200	16	200	16	150	16	150
5	12	150	20	150	12	150	12	150	16	200	16	200	20	200	20	200
6	16	150	20	150	16	150	16	150	16	200	16	200	20	150	20	150
7	20	150	20	125	20	150	20	150	16	200	16	200	20	200	25	125
8	25	200	25	150	20	150	20	150	20	150	20	150	20	150	25	150
9	25	150	25	125	25	150	25	150	20	150	20	150	20	150	25	125

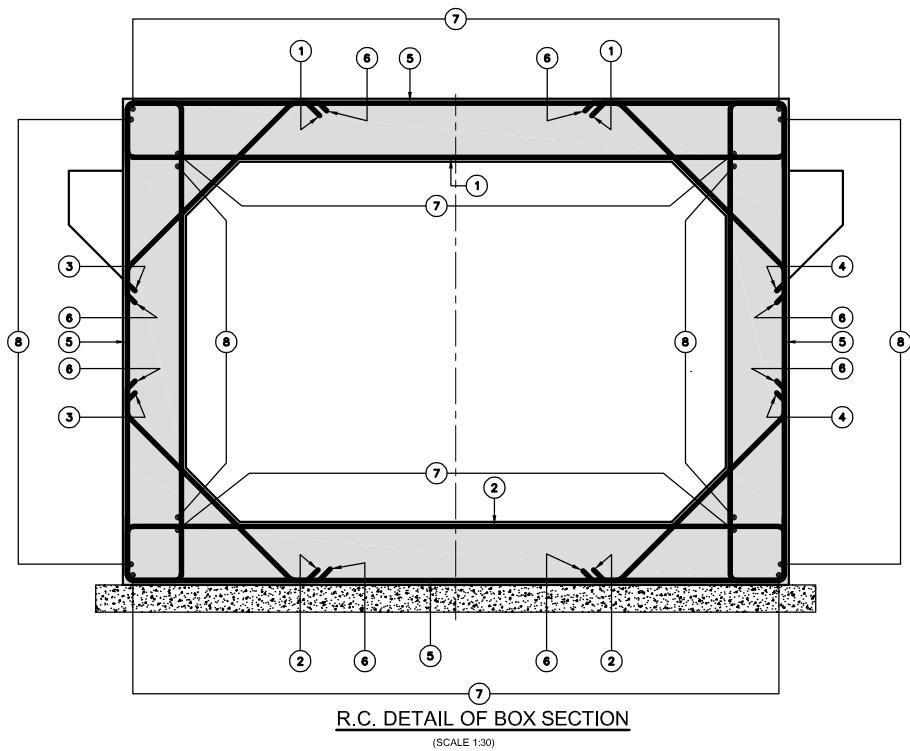
EMPLOYER	PROJECT	DESIGN CONSULTANT	Designed By			B.G.	Signature	Drawing Name:	Scale:	AS NOTED	Date:	19.12.2023
 Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Development Cooperation Implementation Division	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of		ep4sa			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								
			Checked By			Mr. S.M.	Signature	RC DETAILS OF SINGLE CELL BOX CULVERT OF 3 M WIDE				
			Approved By			Mr. H.B.	Signature	Reference Drawings:				
									Drawing No.: KDP/DPR/STR/BR/BASATOL/DD-15			
									Sheet No.: 1/3			

EMPLOYER	PROJECT	DESIGN CONSULTANT		Designed By	B.G. Mr. NEC No. 7997 CIVIL "A"	Signature 	Drawing Name:	Scale:	AS NOTED	Date:	19.12.2023
 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-Pathalya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of					RC DETAILS OF SINGLE CELL BOX CULVERT OF 3 M WIDE Reference Drawings:			Drawing No.:	KDP/DPR/STR/BR/BASATOL/DD-15
		 EPTISA Servicios De Ingenieria Madrid, Spain	 STUP Consultants Private Limited Kolkatta, India	Checked By	Mr. S.M.	Signature 					
		In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited		Approved By	Mr. H.B.	Signature 					

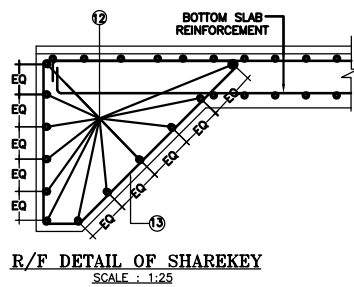
BAR BENDING SCHEDULE OF REINFORCEMENT FOR CAST-I-SITU CULVERT (1X3 mX3 m) WITH FILL HEIGHT 1.5 M							
BAR MKD.	DESCRIPTION OF BAR	BAR DIA (MM)	SPACING (MM)	BAR LENGTH (MM)	NO OF BAR	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1		16	130	6920	206	1,580	2252.674
2		16	130	7020	206	1,580	2285.227
3		16	130	7020	206	1,580	2285.227
4		16	130	7020	206	1,580	2285.227
5		16	130	15644	206	1,580	5092.605
6		16	130	2043	824	1,580	2660.238
7		10	150	26950	89	0,617	1480.586
8		10	150	26950	90	0,617	1497.222
9		12	200	2317	135	0,889	278.04
10		16	-	26750	6	1,580	253.63
11		12	200	920	402	0,889	328.75
12		12	-	26950	16	0,889	383.29
13		12	200	4460	135	0,889	535.20
RS1		16	150	2695	50	1,580	212.938
RS2		10	150	3650	38	0,617	85.617
TOTAL WEIGHT (KG)							21916.466

BAR BENDING SCHEDULE OF REINFORCEMENT FOR CAST-I-SITU CULVERT (1X3 mX3 m) WITH FILL HEIGHT 4.5 M							
BAR MKD.	DESCRIPTION OF BAR	BAR DIA (MM)	SPACING (MM)	BAR LENGTH (MM)	NO OF BAR	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1		16	130	6920	206	1,580	2252.674
2		16	130	7020	206	1,580	2285.227
3		16	130	7020	206	1,580	2285.227
4		16	130	7020	206	1,580	2285.227
5		16	130	15644	206	1,580	5092.605
6		16	130	2043	824	1,580	2660.238
7		10	150	26950	89	0,617	1480.586
8		10	150	26950	90	0,617	1497.222
9		12	200	2317	135	0,889	278.04
10		16	-	26750	6	1,580	253.63
11		12	200	920	402	0,889	328.75
12		12	-	26950	16	0,889	383.29
13		12	200	4460	135	0,889	535.20
RS1		16	150	2695	50	1,580	212.938
RS2		10	150	3650	38	0,617	85.617
TOTAL WEIGHT (KG)							21916.466

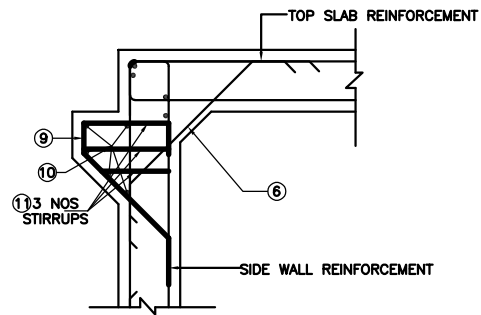
EMPLOYER	PROJECT	DESIGN CONSULTANT		Designed By	Mr. B.G.	Signature	Drawing Name:	Scale: AS NOTED	Date:		
 Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Development Cooperation Implementation Division	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of			Mr. HEC No. 7097 CIVIL "A"				RC DETAILS OF SINGLE CELL BOX CULVERT OF 3 M WIDE	Reference Drawings:	19.12.2023
		 EPTISA Servicios De Ingenieria Madrid, Spain	 STUP Consultants Private Limited Kolkatta, India		Checked By	Mr. S.M.					Signature
		In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited		Approved By	Mr. H.B.	Signature	Sheet No.: 3/3				



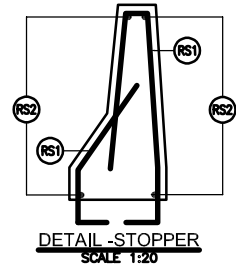
R.C. DETAIL OF BOX SECTION
(SCALE 1:30)



R/F DETAIL OF SHAREKEY
(SCALE 1:25)



DETAIL - A
(SCALE 1:30)



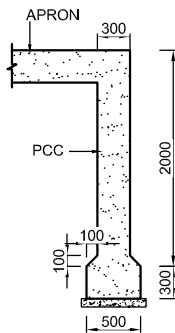
DETAIL - STOPPER
(SCALE 1:20)

BAR BENDING SCHEDULE OF REINFORCEMENT FOR CAST-I-SITU CULVERT (1X 6M X3M)							
BAR MKD.	DESCRIPTION OF BAR	BAR DIA (MM)	SPACING (MM)	BAR LENGTH (MM)	NO OF BAR	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1		16	130	12220	206	1,580	3977,987
2		16	130	12320	206	1,580	4010,540
3		16	130	8020	206	1,580	2610,758
4		16	130	7970	206	1,580	2594,481
5		16	130	22852	206	1,580	7438,031
6		16	130	2608	824	1,580	3395,938
7		10	150	26950	169	0,617	2811,451
8		10	150	26950	96	0,617	1597,037
9		12	200	2317	135	0,889	278,04
10		16	-	26750	6	1,580	253,63
11		12	200	920	402	0,889	328,75
12		12	-	26950	19	0,889	455,16
13		12	200	5410	135	0,889	649,20
RS1		16	150	2695	90	1,580	383,289
RS2		10	150	6650	38	0,617	155,988
TOTAL WEIGHT (KG)							30941,271

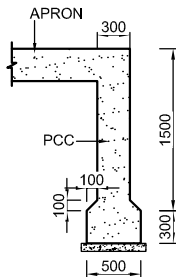
BAR BENDING SCHEDULE OF REINFORCEMENT FOR CAST-I-SITU CULVERT (1X 6M X3.5 M)							
BAR MKD.	DESCRIPTION OF BAR	BAR DIA (MM)	SPACING (MM)	BAR LENGTH (MM)	NO OF BAR	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1		16	130	13520	206	1,580	4401,177
2		16	130	13620	206	1,580	4433,730
3		16	130	9320	206	1,580	3033,948
4		16	130	9320	206	1,580	3033,948
5		16	130	24652	206	1,580	8024,987
6		16	130	3103	824	1,580	4040,489
7		10	150	26950	177	0,617	2944,537
8		10	150	26950	131	0,617	2179,290
9		12	200	3041	135	0,889	36492
10		16	-	26750	6	1,580	253,63
11		12	200	1220	402	0,889	435,95
12		12	-	26950	19	0,889	455,16
13		12	200	5600	135	0,889	672,00
RS1		16	150	2695	98	1,580	417,359
RS2		10	150	7250	38	0,617	170,062
TOTAL WEIGHT (KG)							35448,600

BAR BENDING SCHEDULE OF REINFORCEMENT FOR CAST-I-SITU CULVERT (1X 6M X 4.5M)							
BAR MKD.	DESCRIPTION OF BAR	BAR DIA (MM)	SPACING (MM)	BAR LENGTH (MM)	NO OF BAR	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1		16	130	9320	206	1,580	3033,948
2		16	130	13020	206	1,580	4238,412
3		16	130	10620	206	1,580	3457,138
4		16	130	10620	206	1,580	3457,138
5		16	130	27452	206	1,580	8936,473
6		16	130	3174	824	1,580	4132,940
7		10	150	26950	178	0,617	2961,173
8		10	150	26950	138	0,617	2295,741
9		12	200	3162	135	0,889	379,44
10		16	-	26750	6	1,580	253,63
11		12	200	1270	402	0,889	453,81
12		12	-	26950	19	0,889	455,16
13		12	200	5600	135	0,889	672,00
RS1		16	150	2695	98	1,580	417,359
RS2		10	150	7350	38	0,617	172,407
TOTAL WEIGHT (KG)							35316,767

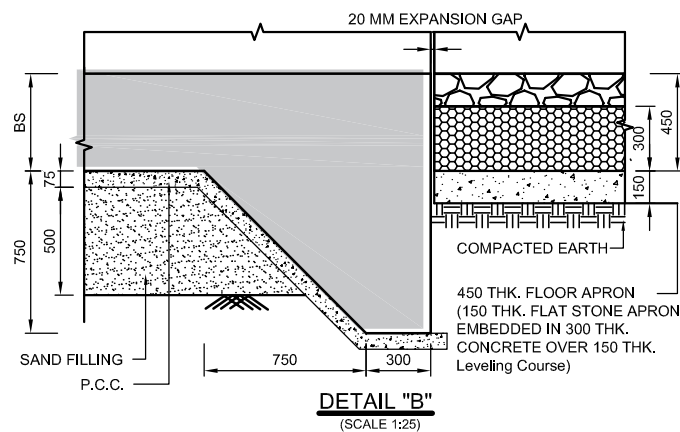
EMPLOYER		PROJECT		DESIGN CONSULTANT		Designed By		Signature		Drawing Name:		Scale:		Date:	
	Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Development Cooperation Implementation Division	Strategic Road Connectivity & Trade Improvement Project (SRCTIP)	Joint Venture of		Mr. B.G. M.C. No. 7897 CIVIL "A"				RC DETAILS OF SINGLE CELL BOX CULVERT OF 6 M WIDE		AS NOTED	19.12.2023			
			 EPTISA Servicios De Ingeniera Madrid, Spain	 STUP Consultants Private Limited Kolkatta, India	Checked By		Mr. S.M.					Drawing No.: KDP/DP/STR/BR/BASATOL/DD-16			
			In Association With Udaya Consultancy, Geocom International, Sundar Kriti Consultant and Rays Consultant Private Limited		Approved By		Mr. H.B.					Reference Drawings: Sheet No.: 2/2			



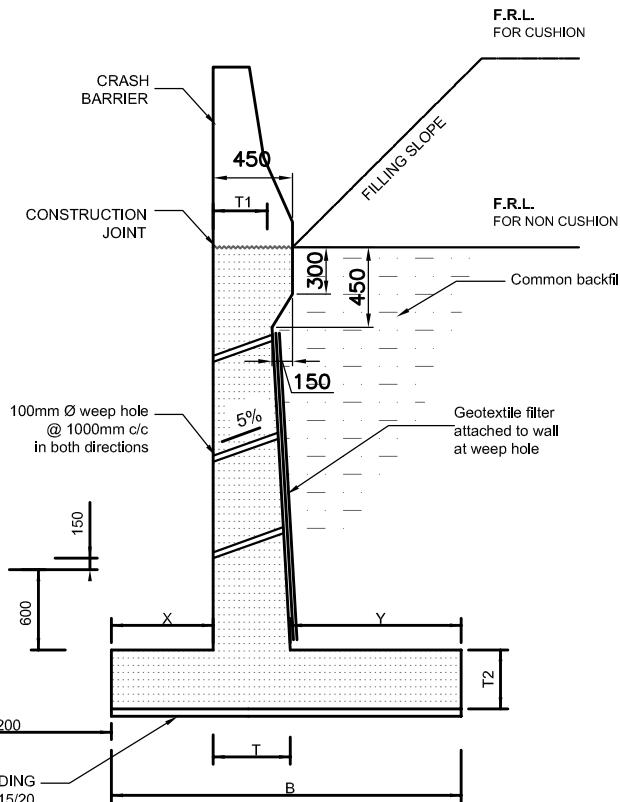
TYPICAL CROSS SECTION OF CURTAIN WALL (DOWN STREAM SIDE) (SCALE 1:50)



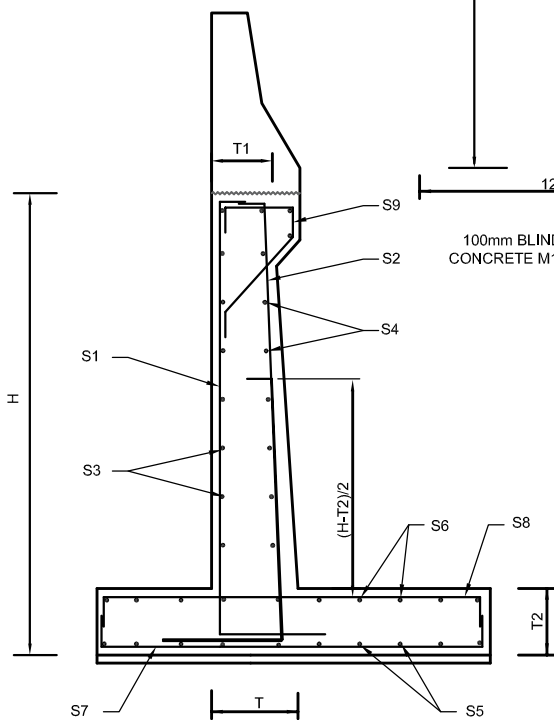
CROSS SECTION OF CURTAIN WALL (UP STREAM SIDE) (SCALE 1:50)



DETAIL "B" (SCALE 1:25)



RCC CANTILEVER RETAINING WALL (Scale 1:75)



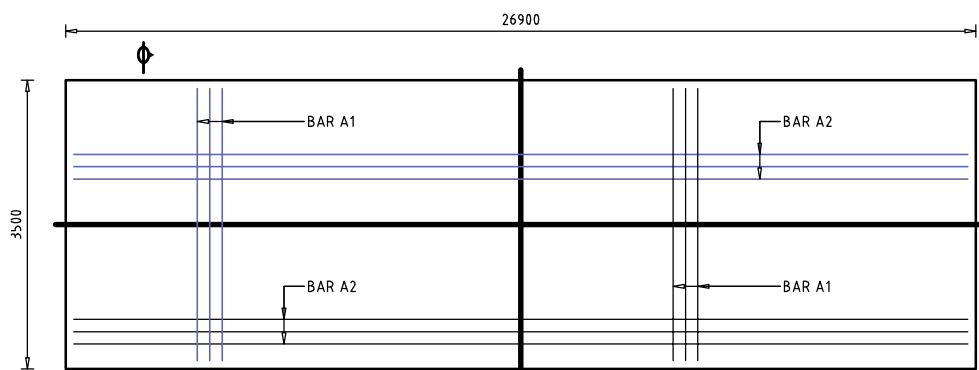
ARRANGEMENT OF REINFORCEMENTS (Scale 1:75)

TABLE FOR DIMENSIONS OF THE RCC WALLS WITH SURCHARGE LOAD OF 2T SQ. M DUE TO ROAD TRAFFIC

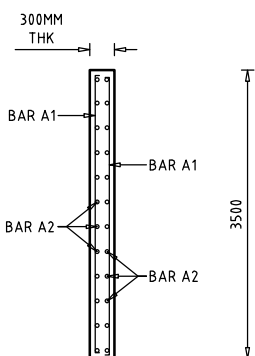
H, m	B, m	T, m	T1, m	T2, m	X, m	Y, m	Maximum Pressure T/m ²
3	2.1	0.4	0.3	0.6	0.4	1.3	13.04
4	2.6	0.5	0.3	0.6	0.6	1.5	15.61
5	3	0.5	0.3	0.6	0.85	1.65	18.58
6	3.8	0.8	0.3	0.6	0.9	2.1	20.6
7	5.25	1.25	0.3	0.9	1	3	20.42
8	5.4	1.6	0.3	1	1	2.8	25.62
9	6.1	2.1	0.3	1.1	1	3	28.79

NOTES :

1. Wall height is to be modified as per actual site condition or as directed by the Engineer.
2. Wall height for more than 6.0 m, soil investigation is to be done or as directed by the Engineer.
3. Expansion Joint is to be provided maximum at a distance of 30.0 m C/C .It should be located, wherever possible, at every major changes in wall height or as directed by the Engineer.
4. Lowest weep hole should not be more than 200mm above final ground level at the toe of wall or as directed by the Engineer.
5. Curtail the alternate bar S2 at a distance of (H-T2)/2 from level A.
6. Geotextile in wall back side (where expansion joint is located) is to be provided throughout height to control soil erosion from back side.
7. Reinforcements for intermediate height may be worked out by interpolation.
8. If the maximum pressure exceeds the allowable soil bearing capacity, increase the base width.
9. The clear cover of concrete shall be 50mm.
10. Others not mentioned shall be in accordance with standard specifications for Road & Bridge works publish by department of Road . MOPIT. Government of Nepal.



SECTIONAL PLAN VIEW OF APPROACH SLAB NOT TO SCALE

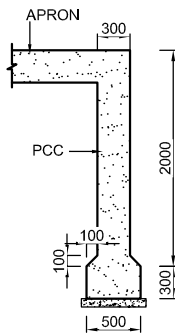


SECTIONAL ELEVATION VIEW OF APPROACH SLAB AT SEC T

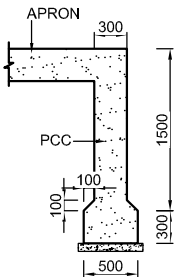
BAR BENDING SCHEDULE OF APPROACH SLAB								
S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	A1	100 100 26820	16	150	27.020	48	1.580	2049.52
2	A2	100 100 3420	12	150	3.620	360	0.889	1158.40
TOTAL (KG) :								3207.92

BAR BENDING SCHEDULE FOR RETAINING WALL																
HIGH YIELD STEEL REINFORCEMENT																
HEIGHT (H) m	S1		S2		S3		S4		S5		S6		S7		S8	
	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm
3	12	150	12	150	12	150	12	150	16	200	16	200	16	150	16	200
4	12	150	16	200	12	150	12	150	16	200	16	200	16	150	16	150
5	12	150	20	150	12	150	12	150	16	200	16	200	20	200	20	200
6	16	150	20	150	16	150	16	150	16	200	16	200	20	150	20	150
7	20	150	20	125	20	150	20	150	16	200	16	200	20	200	25	125
8	25	200	25	150	20	150	20	150	20	150	20	150	20	150	25	150
9	25	150	25	125	25	150	25	150	20	150	20	150	20	150	25	125

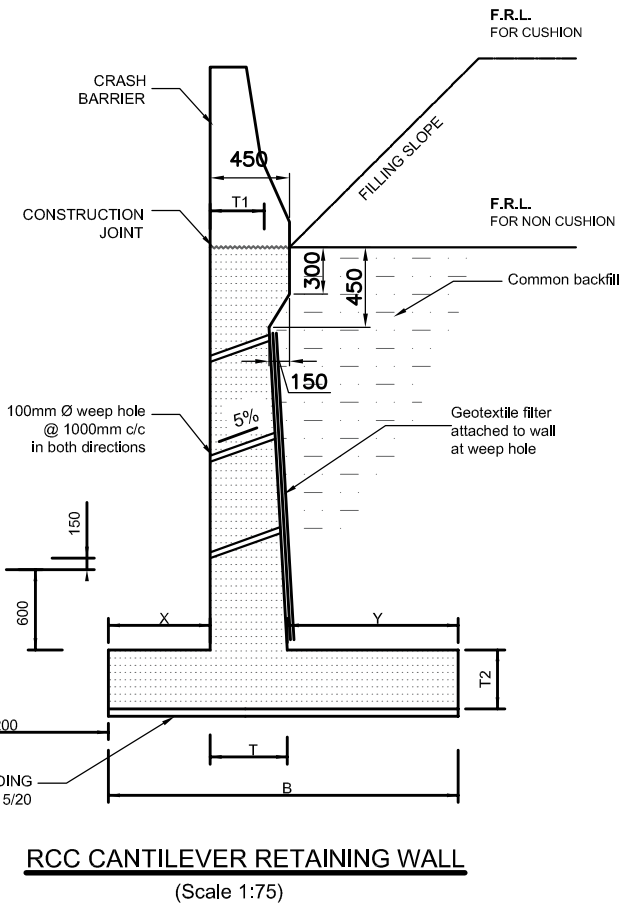
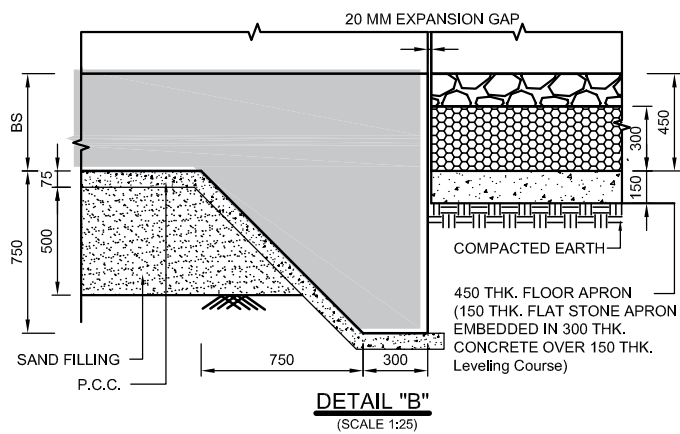
EMPLOYER	PROJECT	DESIGN CONSULTANT			Designed By	B.G. Mr. NEC No. 7097 CIVIL "A"	Signature 	Drawing Name:	Scale:	AS NOTED	Date:	19.12.2023
 Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Development Cooperation Implementation Division	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of			Checked By	Mr. S.M.	Signature 	RC DETAILS OF DOUBLE CELL BOX CULVERT OF 3 M WIDE Reference Drawings:			Drawing No.: KDP/DPR/STR/BR/BASATOL/DD-17 Sheet No.: 1/2	
		 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										



TYPICAL CROSS SECTION OF CURTAIN WALL (DOWN STREAM SIDE) (SCALE 1:50)



CROSS SECTION OF CURTAIN WALL (UP STREAM SIDE) (SCALE 1:50)

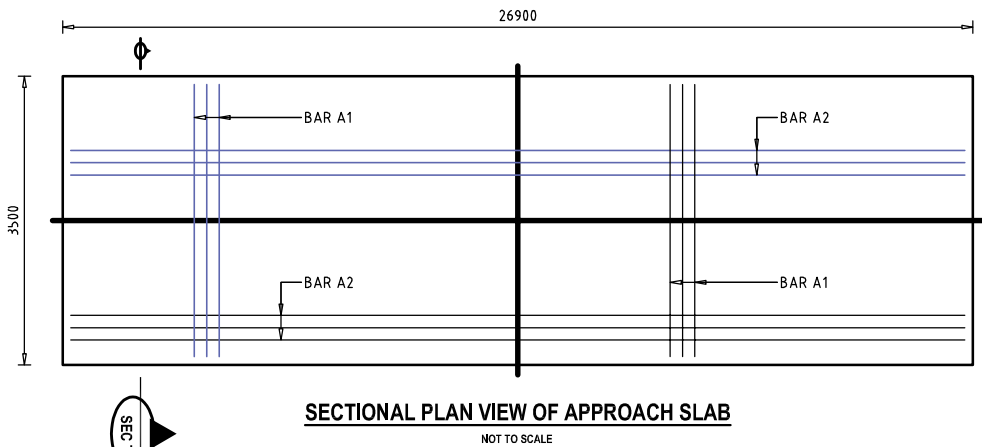


RCC CANTILEVER RETAINING WALL (Scale 1:75)

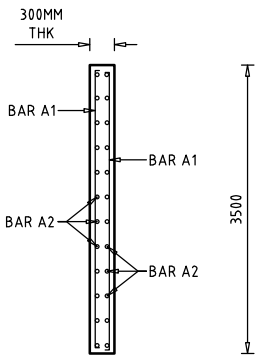
TABLE FOR DIMENSIONS OF THE RCC WALLS WITH SURCHARGE LOAD OF 2T SQ. M DUE TO ROAD TRAFFIC

H, m	B, m	T, m	T1, m	T2, m	X, m	Y, m	Maximum Pressure T/m ²
3	2.1	0.4	0.3	0.6	0.4	1.3	13.04
4	2.6	0.5	0.3	0.6	0.6	1.5	15.61
5	3	0.5	0.3	0.6	0.85	1.65	18.58
6	3.8	0.8	0.3	0.6	0.9	2.1	20.6
7	5.25	1.25	0.3	0.9	1	3	20.42
8	5.4	1.6	0.3	1	1	2.8	25.62
9	6.1	2.1	0.3	1.1	1	3	28.79

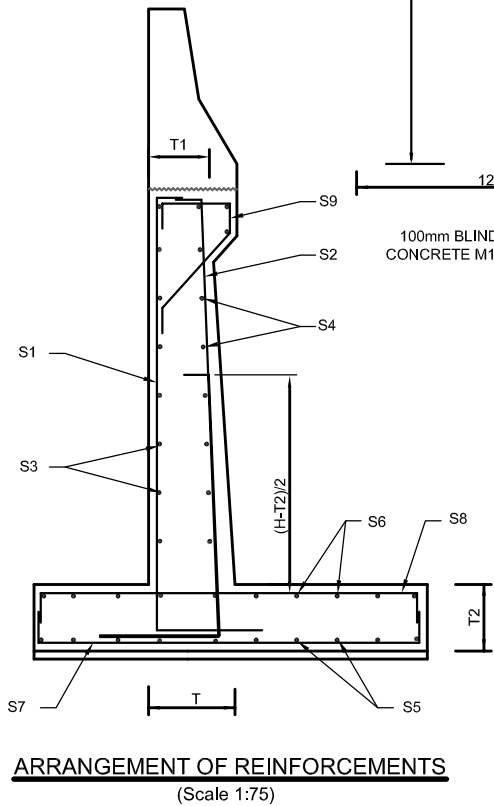
- NOTES :
- Wall height is to be modified as per actual site condition or as directed by the Engineer.
 - Wall height for more than 6.0 m, soil investigation is to be done or as directed by the Engineer.
 - Expansion Joint is to be provided maximum at a distance of 30.0 m C/C .It should be located, wherever possible, at every major changes in wall height or as directed by the Engineer.
 - Lowest weep hole should not be more than 200mm above final ground level at the toe of wall or as directed by the Engineer.
 - Curtail the alternate bar S2 at a distance of (H-T2)/2 from level A.
 - Geotextile in wall back side (where expansion joint is located) is to be provided throughout height to control soil erosion from back side.
 - Reinforcements for intermediate height may be worked out by interpolation.
 - If the maximum pressure exceeds the allowable soil bearing capacity, increase the base width.
 - The clear cover of concrete shall be 50mm.
 - Others not mentioned shall be in accordance with standard specifications for Road & Bridge works publish by department of Road . MOPIT. Government of Nepal.



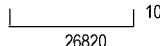
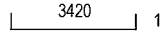
SECTIONAL PLAN VIEW OF APPROACH SLAB NOT TO SCALE



SECTIONAL ELEVATION VIEW OF APPROACH SLAB AT SEC T

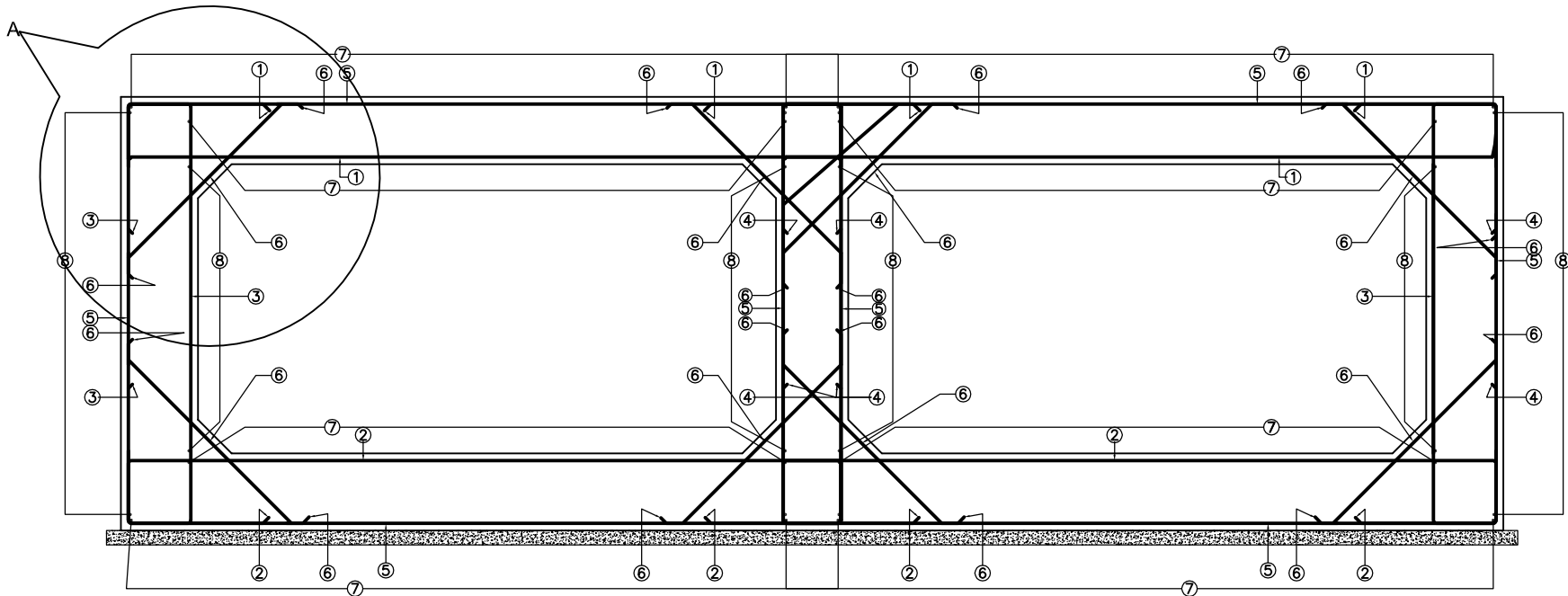


ARRANGEMENT OF REINFORCEMENTS (Scale 1:75)

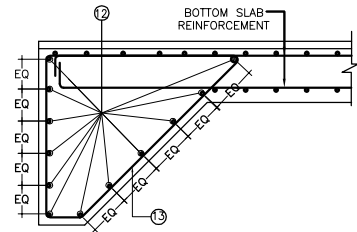
BAR BENDING SCHEDULE OF APPROACH SLAB								
S.No.	BAR MARK	DESCRIPTION OF BAR	BAR DIA.(MM)	SPACING (MM)	BAR LENGTH (M)	No. OF BARS	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	A1	100  100	16	150	27.020	48	1.580	2049.52
2	A2	100  100	12	150	3.620	360	0.889	1158.40
TOTAL (KG) :								3207.92

BAR BENDING SCHEDULE FOR RETAINING WALL																
HEIGHT (H) m	HIGH YIELD STEEL REINFORCEMENT															
	S1		S2		S3		S4		S5		S6		S7		S8	
	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm	φ, mm	Spacing, mm
3	12	150	12	150	12	150	12	150	16	200	16	200	16	150	16	200
4	12	150	16	200	12	150	12	150	16	200	16	200	16	150	16	150
5	12	150	20	150	12	150	12	150	16	200	16	200	20	200	20	200
6	16	150	20	150	16	150	16	150	16	200	16	200	20	150	20	150
7	20	150	20	125	20	150	20	150	16	200	16	200	20	200	25	125
8	25	200	25	150	20	150	20	150	20	150	20	150	20	150	25	150
9	25	150	25	125	25	150	25	150	20	150	20	150	20	150	25	125

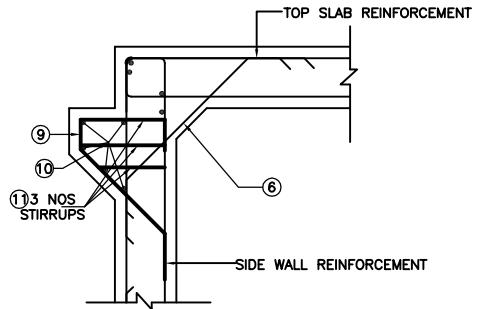
EMPLOYER	PROJECT	DESIGN CONSULTANT	Designed By	B.G. Mr. NEC No. 7997 CIVIL "A"	Signature	Drawing Name:	Scale:	AS NOTED	Date:	19.12.2023
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Development Cooperation Implementation Division	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhalkebar-Paihlaiya Road Section (130 KM) of Mahendra Highway and Bridges	Joint Venture of ep4sa 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	Checked By	Mr. S.M.	Signature	RC DETAILS OF DOUBLE CELL BOX CULVERT OF 6 M WIDE Reference Drawings:			Drawing No.:	KDP/DPR/STR/BR/BASATOL/DD-18
			Approved By	Mr. H.B.	Signature				Sheet No.:	1/2



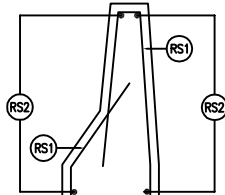
R.C. DETAIL OF BOX SECTION
(SCALE 1:50)



R/F DETAIL OF SHAREKEY
(SCALE 1:25)

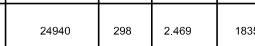
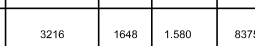
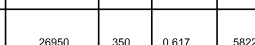
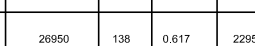
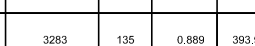
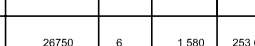
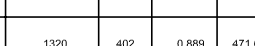
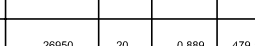
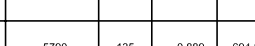
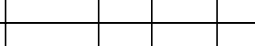
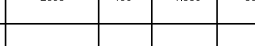


DETAIL - A
(SCALE 1:30)

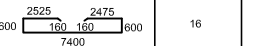
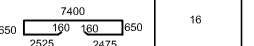
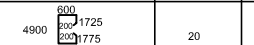
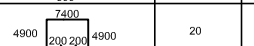
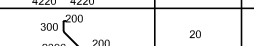
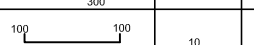
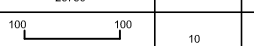
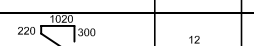
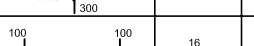
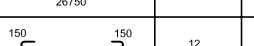
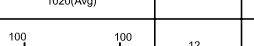
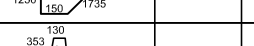
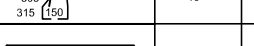


DETAIL - STOPPER
(SCALE 1:20)

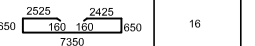
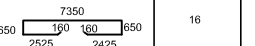
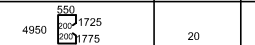
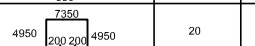
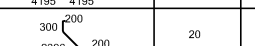
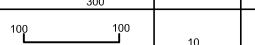
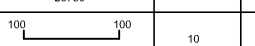
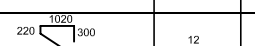
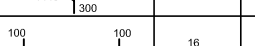
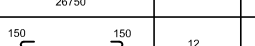
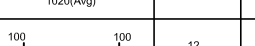
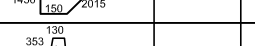
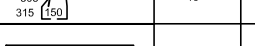
SCHEDULE OF REINFORCEMENT FOR CAST-I-SITU CULVERT (2X 6M X3M)

BAR MKD.	DESCRIPTION OF BAR	BAR DIA (MM)	SPACING (MM)	BAR LENGTH (MM)	NO OF BAR	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	550  550	16	150	13820	358	1.580	7818.366
2	650  650	16	150	14020	358	1.580	7931.512
3	1525  1625	20	180	9200	298	2.469	6769.383
4	4350  1525	20	180	9000	298	2.469	6622.222
5	4350  4350	20	180	24940	298	2.469	18350.914
6	300  2396	16	130	3216	1648	1.580	8375.258
7	100  26750	10	150	26950	350	0.617	5822.531
8	100  26750	10	150	26950	138	0.617	2295.741
9	220  1443	12	200	3283	135	0.889	393.96
10	100  26750	16	-	26750	6	1.580	253.63
11	150  1020(Avg)	12	200	1320	402	0.889	471.68
12	100  26750	12	-	26950	20	0.889	479.11
13	100  1400	12	200	5790	135	0.889	694.80
RS1	130  305	16	150	2695	190	1.580	809.165
RS2	150  150	10	150	14200	38	0.617	333.086
TOTAL WEIGHT (KG)							67421.359

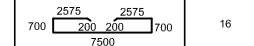
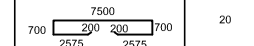
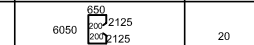
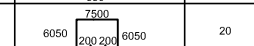
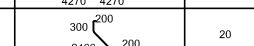
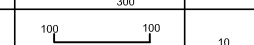
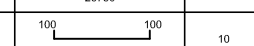
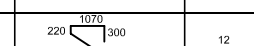
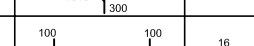
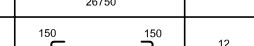
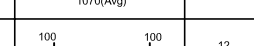
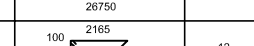
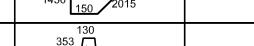
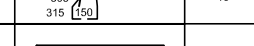
SCHEDULE OF REINFORCEMENT FOR CAST-I-SITU CULVERT (2 X 6M X3.5 M) WITH FILL HEIGHT 0 M

BAR MKD.	DESCRIPTION OF BAR	BAR DIA (MM)	SPACING (MM)	BAR LENGTH (MM)	NO OF BAR	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	600  600	16	150	13920	358	1.580	7874.939
2	650  650	16	130	14020	358	1.580	7931.512
3	1725  1775	20	180	10100	298	2.469	7431.605
4	4900  1725	20	180	9950	298	2.469	7321.235
5	4900  4900	20	180	26040	298	2.469	19160.296
6	300  2396	20	180	3396	1192	2.469	9995.141
7	100  26750	10	150	26950	350	0.617	5822.531
8	100  26750	10	150	26950	159	0.617	2645.093
9	220  1443	12	200	3283	135	0.889	393.96
10	100  26750	16	-	26750	6	1.580	253.63
11	150  1020(Avg)	12	200	1320	402	0.889	471.68
12	100  26750	12	-	26950	18	0.889	431.20
13	100  1250	12	200	5220	135	0.889	626.40
RS1	130  305	16	150	2695	190	1.580	809.165
RS2	150  150	10	150	14200	38	0.617	333.086
TOTAL WEIGHT (KG)							71501.472

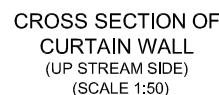
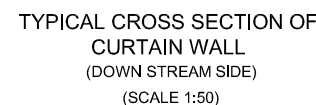
SCHEDULE OF REINFORCEMENT FOR CAST-I-SITU CULVERT (2 X 6M X3.5 M) WITH FILL HEIGHT 0.6 M

BAR MKD.	DESCRIPTION OF BAR	BAR DIA (MM)	SPACING (MM)	BAR LENGTH (MM)	NO OF BAR	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	650  650	16	130	13920	412	1.580	9062.779
2	650  650	16	130	13920	412	1.580	9062.779
3	1775  1775	20	180	10200	298	2.469	7505.185
4	4950  1725	20	180	9950	298	2.469	7321.235
5	4950  4950	20	180	26040	298	2.469	19160.296
6	300  2396	20	180	3396	1192	2.469	9995.141
7	100  26750	10	150	26950	349	0.617	5805.895
8	100  26750	10	150	26950	160	0.617	2661.728
9	220  1443	12	200	3283	135	0.889	393.96
10	100  26750	16	-	26750	6	1.580	253.63
11	150  1020(Avg)	12	200	1320	402	0.889	471.68
12	100  26750	12	-	26950	21	0.889	503.07
13	100  1450	12	200	5980	135	0.889	717.60
RS1	130  305	16	150	2695	190	1.580	809.165
RS2	150  150	10	150	14150	38	0.617	331.914
TOTAL WEIGHT (KG)							74056.054

SCHEDULE OF REINFORCEMENT FOR CAST-I-SITU CULVERT (2X 6M X 4.5M) WITH FILL HEIGHT 1.0 M

BAR MKD.	DESCRIPTION OF BAR	BAR DIA (MM)	SPACING (MM)	BAR LENGTH (MM)	NO OF BAR	UNIT WEIGHT (Kg/m)	TOTAL WEIGHT (Kg)
1	700  700	16	130	14370	412	1.580	9355.757
2	700  700	20	130	14450	412	2.469	14699.753
3	2125  2125	20	180	12100	298	2.469	8903.210
4	6050  2125	20	180	12000	298	2.469	8829.630
5	6050  6050	20	180	28540	298	2.469	20999.802
6	300  2466	20	180	3466	1192	2.469	10201.165
7	100  26750	10	150	26950	352	0.617	5855.802
8	100  26750	10	150	26950	201	0.617	3343.796
9	220  1513	12	200	3403	135	0.889	408.36
10	100  26750	16	-	26750	6	1.580	253.63
11	150  1070(Avg)	12	200	1370	402	0.889	489.55
12	100  26750	12	-	26950	21	0.889	503.07
13	100  1450	12	200	5980	135	0.889	717.60
RS1	130  305	16	150	2695	192	1.580	817.683
RS2	150  150	10	150	14350	38	0.617	336.605
TOTAL WEIGHT (KG)							85683.140

EMPLOYER	PROJECT	DESIGN CONSULTANT	Designed By	B.G. Mr. NEC No. 7997 CIVIL "A"	Signature	Drawing Name:	Scale:	AS NOTED	Date:	19.12.2023
 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	Checked By	Mr. S.M.	Signature	RC DETAILS OF DOUBLE CELL BOX CULVERT OF 6 M WIDE			Drawing No.: KDP/DPR/STR/BR/BASATOL/DD-18	Sheet No.: 2/2
			Approved By	Mr. H.B.	Signature	Reference Drawings:				



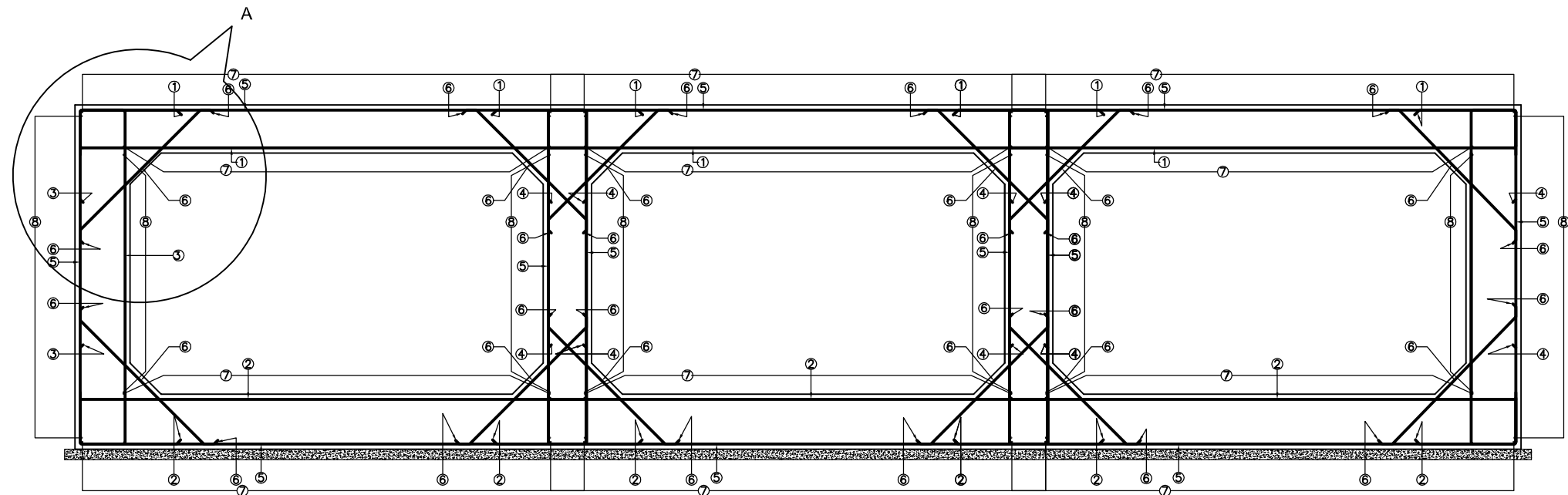
H, m	B, m	T, m	T1, m	T2, m	X, m	Y, m	Maximum Pressure T/m2
3	2.1	0.4	0.3	0.6	0.4	1.3	13.0
4	2.6	0.5	0.3	0.6	0.6	1.5	15.0
5	3	0.5	0.3	0.6	0.85	1.65	18.0
6	3.8	0.8	0.3	0.6	0.9	2.1	20.5
7	5.25	1.25	0.3	0.9	1	3	20.4
8	5.4	1.6	0.3	1	1	2.8	25.0
9	6.1	2.1	0.3	1.1	1	3	28.0

1. Wall height is to be modified as per actual site condition or as directed by the Engineer.
2. Wall height for more than 6.0 m, soil investigation is to be done or as directed by the Engineer.
3. Expansion Joint is to be provided maximum at a distance of 30.0 m C/C .It should be located, wherever possible, at every major changes in wall height or as directed by the Engineer.
4. Lowest weep hole should not be more than 200mm above final ground level at the toe of wall or as directed by the Engineer.
5. Curtail the alternate bar S2 at a distance of $(H-T2)/2$ from level A.
6. Geotextile in wall back side (where expansion joint is located) is to be provided throughout height to control soil erosion from back side.
7. Reinforcements for intermediate height may be worked out by interpolation.
8. If the maximum pressure exceeds the allowable soil bearing capacity, increase the base width.
9. The clear cover of concrete shall be 50mm.
10. Others not mentioned shall be in accordance with standard specifications for Road & Bridge works publish by department of Road . MOPIT. Government of Nepal.

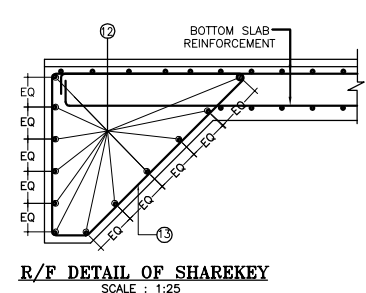


TOTAL (KG) :	3207.9
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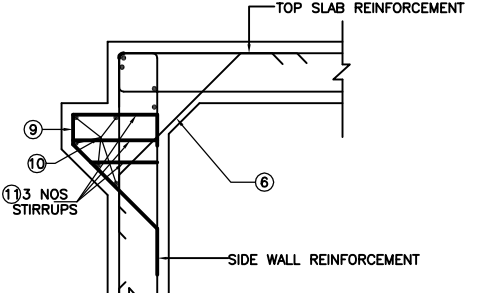
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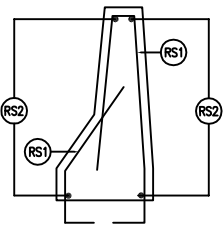
R.C. DETAIL OF BOX SECTION
(SCALE 1:60)



R/F DETAIL OF SHAREKEY
SCALE : 1:25



DETAIL - A
(SCALE 1:30)



DETAIL -STOPPER
SCALE 1:20

BAR BENDING SCHEDULE OF REINFORCEMENT FOR CAST-I-SITU CULVERT (3X 6M X3.5M)						
BAR MKD.	DESCRIPTION OF BAR	BAR DIA (MM)	SPACING (MM)	BAR LENGTH (MM)	NO OF BAR	UNIT WEIGHT (Kg/m)
1		16	150	13720	537	1.580
2		16	150	13920	537	1.580
3		20	150	10000	537	2.469
4		20	150	9900	537	2.469
5		20	150	25840	537	2.469
6		20	150	3537	2148	2.469
7		10	130	26950	598	0.617
8		10	130	26950	237	0.617
9		12	200	3283	135	0.889
10		16	-	26750	6	1.580
11		12	200	1320	402	0.889
12		12	-	26950	20	0.889
13		12	200	5790	135	0.889
RS1		16	150	2695	192	1.580
RS2		10	150	20850	38	0.617
TOTAL WEIGHT (KG)						120719.237

BAR BENDING SCHEDULE OF REINFORCEMENT FOR CAST-I-SITU CULVERT (3 X 6M X4.0M) WITH FILL HEIGHT 0 M						
BAR MKD.	DESCRIPTION OF BAR	BAR DIA (MM)	SPACING (MM)	BAR LENGTH (MM)	NO OF BAR	UNIT WEIGHT (Kg/m)
1		16	130	13720	618	1.580
2		20	150	14000	537	2.469
3		20	150	10900	537	2.469
4		20	150	10800	537	2.469
5		20	150	26840	537	2.469
6		20	150	3537	2148	2.469
7		12	130	26950	598	0.617
8		12	130	26950	267	0.617
9		12	200	3283	135	0.889
10		16	-	26750	6	1.580
11		12	200	1320	402	0.889
12		12	-	26950	20	0.889
13		12	200	5790	135	0.889
RS1		16	150	2695	192	1.580
RS2		10	150	20850	38	0.617
TOTAL WEIGHT (KG)						133437.618

BAR BENDING SCHEDULE OF REINFORCEMENT FOR CAST-I-SITU CULVERT (3 X 6M X4.0M) WITH FILL HEIGHT 0.5 M						
BAR MKD.	DESCRIPTION OF BAR	BAR DIA (MM)	SPACING (MM)	BAR LENGTH (MM)	NO OF BAR	UNIT WEIGHT (Kg/m)
1		16	130	13920	618	1.580
2		20	150	14100	537	2.469
3		20	150	10900	537	2.469
4		20	150	10800	537	2.469
5		20	150	27040	537	2.469
6		20	150	3537	2148	2.469
7		12	130	26990	600	0.889
8		12	130	26990	268	0.889
9		12	200	3283	135	0.889
10		16	-	26750	6	1.580
11		12	200	1320	402	0.889
12		12	-	26950	20	0.889
13		12	200	5790	135	0.889
RS1		16	150	2695	192	1.580
RS2		10	150	20950	38	0.617
TOTAL WEIGHT (KG)						140475.894

BAR BENDING SCHEDULE OF REINFORCEMENT FOR CAST-I-SITU CULVERT (3X 6M X 4.5M) WITH FILL HEIGHT 0.5 M						
BAR MKD.	DESCRIPTION OF BAR	BAR DIA (MM)	SPACING (MM)	BAR LENGTH (MM)	NO OF BAR	UNIT WEIGHT (Kg/m)
1		16	130	14020	618	1.580
2		20	150	14200	537	2.469
3		20	150	11700	537	2.469
4		20	150	11700	537	2.469
5		20	150	28140	537	2.469
6		20	150	3537	2148	2.469
7		12	150	26990	521	0.889
8		12	150	26990	259	0.889
9		12	200	3283	135	0.889
10		16	-	26750	6	1.580
11		12	200	1320	402	0.889
12		12	-	26950	20	0.889
13		12	200	5790	135	0.889
RS1		16	150	2695	282	1.580
RS2		10	150	21050	38	0.617
TOTAL WEIGHT (KG)						142318.382

	EMPLOYER Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Development Cooperation Implementation Division	PROJECT 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 CONSULTANT		Designed By	B.G. Mr. NEC No. 7997 CIVIL "A"	Signature	Drawing Name: RC DETAILS OF TRIPLE CELL BOX CULVERT OF 6 M WIDE Reference Drawings:	Scale: AS NOTED	Date: 19.12.2023
			Joint Venture of		Checked By	Mr. S.M.	Signature			
			In Association With		Approved By	Mr. H.B.	Signature			
			EPTISA Servicios De Ingenieria Madrid, Spain		STUP Consultants Private Limited Kolkatta, India		Drawing No.: KDP/DPR/STR/BR/BASATOL/DD-19			
							Sheet No.: 2/2			