

**INVITATION FOR
QUOTATION**

Date: 04.08.2024

You are invited to submit your most competitive quotation for the following works: -

Brief Description of the Works	EVC (Rs. in Lakhs approx.)	Period of Completion
Construction of Bridge-cum-Culvert at Thimmanatti Village, Madakkal GP, Krishnagiri District, Tamil Nadu	41.13 lakhs	25-11-2024

To assist you in the preparation of your quotation, we are enclosing the following:

- a) Instructions to Bidders.
- b) Draft Contract Agreement format which will be used for finalizing the agreement for this Contract.
- c) Detailed Bill of Quantities.
- d) Layout Drawings of the works.

You are requested to provide your offer latest by 15.08.2024 before 5:00 PM.

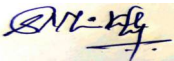
Quotations will be opened in the presence of Bidders or their representatives who choose to attend on 16.08.2024 at 11:00 AM in the office of **BAIF INSTITUTE FOR SUSTAINABLE LIVELIHOODS AND DEVELOPMENT, "Kamadhenu", P.B. No. 3, Sharadanagara, Tiptur 572201, Tumkur Dist.**

We look forward to receiving your quotations and thank you for your interest in this project.

For BAIF INSTITUTE FOR SUSTAINABLE LIVELIHOODS AND DEVELOPMENT.



B. Shivarudrappa
Regional Director



A) Instructions to Bidders

1. Scope of Works

BAIF INSTITUTE FOR SUSTAINABLE LIVELIHOODS AND DEVELOPMENT, Tiptur (EMPLOYER)

invites quotations for the works as detailed in the table given below.

Brief Description of the Works	EVC (Rs. in Lakhs approx.)	Period of Completion
Construction of Bridge-cum-Culvert at Thimmanatti Village, Madakkal GP, Krishnagiri District, Tamil Nadu	41.13 lakhs	24-11-2024

The successful bidder will be expected to complete the works by the intended completion period specified above.

2. Qualification of the bidder:

- Financial turnover not less than Rs.40 Lakh OR
- Satisfactorily completed as prime contractor (or as a sub-contractor duly certified by the employer/main contractor) at least one similar work of value not less than Rs.30 Lakh OR satisfactorily completed as prime contractor (or as a sub-contractor duly certified by the employer/main contractor) at least two similar works of value not less than Rs.15 Lakh.
- The following work will be considered as similar - Civil, structural works for RCC Frame Structures and Industrial Sheds. The bidders should produce latest valid GST & Income Tax clearance certificate and contractor license valid as on date.

3. Bid Price

- The contract shall be for the whole works as described in the Bill of quantities, drawings and technical specifications. Corrections, if any, shall be made by crossing out, initialing, dating and re writing.
- All duties, taxes, and other levies payable by the contractor under the contract shall be included in the total price.
- The rates quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
- The rates should be quoted in Indian Rupees only.

4. Submission of Quotations

- The bidder is advised to visit the site of works at his own expense and obtain all information that may be necessary for preparing the quotation.
- Each bidder shall submit only one quotation.
- The quotation submitted by the bidder shall comprise of the following: -
 - Quotation in the format given in Annexure I
 - Signed Bill of Quantities as per Annexure II and
 - Audited financial statement and work completion report from the concerned authorities

as proof for items mentioned in clause 2 (a) and 2 (b).

4. GST & Income tax clearance certificate and contractor license valid as on date

d) Quotations must be received in the office of **BAIF INSTITUTE FOR SUSTAINABLE LIVELIHOODS AND DEVELOPMENT, SHARADANAGARA, TIPTUR** not later than the time and date given in the letter of invitation. If the specified date is declared a holiday, quotations shall be received up to the appointed time on the next working day.

e) Any quotation received by **BAIF INSTITUTE FOR SUSTAINABLE LIVELIHOODS AND DEVELOPMENT – KARNATAKA, Tiptur**, after the deadline for submission of quotations will be ~~not~~ returned unopened to the bidder.

f) Quotation should be addressed to **BAIF / BISLD Karnataka “Kamadhenu” P.B. No. 3, Sharadanagara, Tiptur 572201, Karnataka Telephone: 08134-250658 / 251337**

E-mail: bisld.tamilnadu@baif.org.in

5. Validity of Quotations

Quotation shall remain valid for a period not less than 15 days after the last date specified for submission.

6. Opening of Quotations

Quotations will be opened in the presence of bidders or their representatives who choose to attend on the date and time and at the place specified in the letter of invitation.

7. Information relating to evaluation of quotations and recommendations for the award of contract shall not be disclosed to bidders or any other persons not officially concerned with the process until the award to the successful bidder is announced.

8. Evaluation of Quotations

The Employer will evaluate and compare the quotations determined to be substantially responsive i.e. which

- a) Meet the qualification criteria specified in clause 2 above.
- b) Are properly signed; and
- c) Conform to the terms and conditions, specifications, and drawings without material deviations.

9. Award of contract

The Employer will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered among the lowest three evaluated quotation prices, who meets the specified qualification criteria and who agrees comprehensively to all the terms and conditions mentioned in this document and agrees to enter into an agreement as given below. NGST will reserve the rights for the finalization of bidders amongst the lowest three bidders.

- a) The party whose quotation is accepted, will be notified of the award of the contract by the Employer prior to the expiry of the validity period of the quotation. The terms of the accepted offer shall be incorporated in the Purchase Order.
- b) The contract may be given to more than one bidder/s as found suitable if they agree to provide the material at the least price offered.
- c) The contract shall be terminated at any point of time if the quality of material delivered, the scope of work, and specifications are not found to be satisfactory. The payment for work done till date shall be released in favor of the bidder, only after satisfactory inspection by NGST.
- d) Arrangement of water and electric power and any other machine and equipment (as cranes, excavators, etc.) necessarily required for installation, transportation and handling, etc. will be within the scope of the bidder. Bidders are requested to include all such costs.

- e) The bidder shall submit a work completion report mentioning the amount of work done.

10. Notwithstanding the above, the Employer reserves the right to accept or reject any quotation and to cancel the bidding process and reject all quotations any time prior to the award of contract.

11. The bidder whose bid is accepted will be notified of the award of contract by the Employer prior to expiry of the validity period of the quotation.

12. Bid security of unsuccessful bidders will be refunded prior to expiry of the validity period of the quotation.

13. Performance Security

Within 15 days of receiving the letter of acceptance, the successful bidder shall deliver the performance security (either a bank guarantee or a bank draft in favour of BAIF INTITUTE FOR SUSTAINABLE LIVELIHOODS AND DEVELOPMENT, Sharadanagara, Tiptur 572201), for an amount equivalent of 2% of the contract price to **BAIF INTITUTE FOR SUSTAINABLE LIVELIHOODS AND DEVELOPMENT, Sharadanagara, Tiptur.** The Performance Security shall be valid till the expiry of the period of maintenance of the work, specified in clause 14.

14. Period of Maintenance:

The “Period of Maintenance” for the work is **Twelve months** from the date of taking over possession or one full monsoon season whichever occurs later. During the period of maintenance, the contractor will be responsible for rectifying any defects in the construction free of cost to the Employer.

15. Purchase of all construction materials including cement and steel as per the specifications (ISI certification marked goods wherever available) shall be the responsibility of the contractor.

.....

**QUOTATIO
N**

Annexure I

To

**BAIF INSTITUTE FOR SUSTAINABLE LIVELIHOODS AND DEVELOPMENT,
Sharadanagara, Tiptur 572201**

**Subject: Quotation for Construction of Bridge-cum-Culvert at Thimmanatti Village,
Madakkal GP, Krishnagiri District, Tamil Nadu**

Reference: Request for quotation dated 04.08.2024 from BAIF Institute for Sustainable
Livelihood Development – Karnataka, Sharadanagara, Tiptur 572201, Tumkur District.

Sir,

We offer to execute the Works described in your letter referred to above in accordance with the
Conditions of Contract enclosed therewith for a total Contract Price of Rs. _____
(as per details of work specifications given in Annexure II attached herewith)

[in figures]

Rs. _____ [in words] including taxes.

This quotation and your written acceptance of it shall constitute a binding contract between us
We understand that you are not bound to accept the lowest or any quotation you receive.

We hereby certify that we have taken steps to ensure that no person acting for us or on our
behalf will engage in bribery.

We hereby confirm that this quotation is valid for 45 days as required in Clause 5 of the
Instructions to Bidders.

Yours faithfully

Date: _____

Authorized Signature :

Name & Title of Signatory : _____

Name of Bidder : _____

Address : _____

**B) LETTER OF ACCEPTANCE (ON LETTERHEAD
OF THE EMPLOYER)-CUM-NOTICE TO
PROCEED WITH THE WORK**

Dated: _____

To: _____ [Name and address of the Contractor]

Dear Sirs,

This is to notify you that your Quotation dated _____ for execution of the _____ for the contract price of Rupees _____ [Amount in words and figures], is hereby accepted by us.

You are hereby requested to furnish performance security for an amount of Rs. _____ (equivalent to 2% of the contract price) within 15 days of the receipt of the letter. The Performance Security in the form of Bank guarantee or a Bank draft in favour of (Employer) shall be valid till the expiry of the period of maintenance i.e. up to Failure to furnish the Performance Security will entail cancellation of the award of contract.

You are also requested to sign the agreement form and proceed with the work not later than _____ under the instructions of the Engineer, _____ and ensure its completion within the contract period.

With the issuance of this acceptance letter and your furnishing the Performance Security, contract for the above said work stands concluded.

Yours faithfully

Authorized Signature
Name and title of Signatory

C) Bill of Quantities

BILL OF QUANTITY FOR PROPOSED CONSTRUCTION OF TWO CELL BOX CULVERTS (5.00 m x 3.50 m) AT THUMMANATTI

SCHEDULE OF QUANTITIES

Sr. No.	DESCRIPTION OF ITEM	UNIT	QTY
	EXCAVATION	LS	
A	BOX CULVERT		
1.A	PLAIN CEMENT CONCERETE (PCC)		
	Plain Cement Concrete M10 with OPC/PPC cement at 240 kg with 20mm and down size graded granite metal coarse aggregates @0.84 cum and fine aggregates @0.56 cum complete as per drawing and technical specifications. MORTH Specification No. 1500,1700 & 2100		
	Culvert Bottom PCC	Cum.	20.90
2.A	REINFORCED CEMENT CONCRETE (RCC): DESIGN MIX/SITE MIX/READY MIX		
	Providing and laying in position, compacting with mechanical vibrators and curing as directed, machine mixed cement concrete of 28 days works cube strength measured on 15 cm cubes as indicated in sub-items below, in RCC works, excluding shuttering formwork etc., to give a smooth exposed surface using 20mm and downsize granite aggregate (excluding Reinforcement) as per specifications and directions.		
	-M30 Grade Concrete in Raft, Wall, Slab	Cum.	88.51
	-M30 Grade Concrete in Crash barrier	Cum.	7.87
3.A	FORMWORK		
	Supplying with all lead and lift, unloading etc. complete and fabrication of steel reinforcements of all diameters conforming to IS-1786 of Grade Fe 500 including straightening, cutting, bending, hooking, lapping and/or welding, placing in position, with necessary chairs and spacer blocks, tying with annealed binding wire conforming to IS-280. complete as per design and direction.		
	-In Culvert Raft, Wall, Slab	Sq.m	308.77
4.A	REINFORCEMENT		

	Supplying with all lead and lift, unloading etc. complete and fabrication of steel reinforcements of all diameters conforming to IS-1786 of Grade Fe 500 including straightening, cutting, bending, hooking, lapping and/or welding, placing in position, with necessary chairs and spacer blocks, tying with annealed binding wire conforming to IS-280 (cost of the binding wire inclusive) etc. complete as per design and direction.		
	-In Culvert Raft, Wall, Slab	MT	6.33
B	RETURN WALL		
1.B	PLAIN CEMENT CONCRETE (PCC)		
	Plain Cement Concrete M10 with OPC/PPC cement at 240 kg with 20 mm and down size graded granite metal coarse aggregates @ 0.84 cum. and fine aggregates @0.56 cum. complete as per drawing and technical specifications. MORTH Specification No. 1500, 1700 & 2100		
	- Return wall Bottom PCC	Cum.	17.85
2.B	REINFORCED CEMENT CONCRETE (RCC) : DESIGN MIX/SITE MIX/READY MIX		
	Providing and laying in position, compacting with mechanical vibrators and curing as directed, machine mixed cement concrete, of 28 days works cube strength measured on 15cm cubes as indicated in sub-items below, in RCC works, excluding shuttering formwork etc., to give a smooth exposed surface using 20 mm and downsize granite aggregate (Excluding Reinforcement) as per specifications and directions.		
	-M30 Grade Concrete in Raft, Wall of return wall	Cum.	141.62
	-M30 Grade Concrete in Crash barrier	Cum.	9.88
3.B	FORMWORK		
	Supplying with all lead and lift, unloading etc. complete and fabrication of steel reinforcements of all diameters conforming to IS-1786 of Grade Fe 500 including straightening, cutting, bending, hooking, lapping and/or welding, placing in position, with necessary chairs and spacer blocks, tying with annealed binding wire conforming to IS-280 complete as per design and direction.		
	-In Return wall Raft, Wall, crash barrier	Sq.m	462.42
4.B	REINFORCEMENT		

	Supplying with all lead and lift, unloading etc. complete and fabrication of steel reinforcements of all diameters conforming to IS-1786 of Grade Fe 500 including straightening, cutting, bending, hooking, lapping and/or welding, placing in position, with necessary chairs and spacer blocks, tying with annealed binding wire conforming to IS-280 (cost of the binding wire inclusive) etc. complete as per design and direction.		
	-In Return wall Raft, Wall, crash barrier	MT	10.37
C	STONE PITCHING		
	EXCAVATION	LS	
1.C	PLAIN CEMENT CONCRETE (PCC)		
	Plain Cement Concrete M10 with OPC/PPC cement at 240 kg with 20 mm and down size graded granite metal coarse aggregates @0.84 cum. and fine aggregates @0.56 cum. complete as per drawing and technical specifications. MORTH Specification No. 1500, 1700 & 2100		
	- Stone pitching Bottom PCC	Cum.	23.83
2.C	FORMWORK		
	Supplying with all lead and lift, unloading etc. complete and fabrication of steel reinforcements of all diameters conforming to IS-1786 of Grade Fe 500 including straightening, cutting, bending, hooking, lapping and/or welding, placing in position, with necessary chairs and spacer blocks, tying with annealed binding wire conforming to IS-280 complete as per design and direction.		
	-In Stone Pitching	Sq.m	59.94
3.C	STONE PITCHING		
	Dry stone pitching 35 cm thick including supply of stones and preparing surface complete		
	-In Stone Pitching	Sq.m	306.24
D	APRON		
1.D	PLAIN CEMENT CONCRETE (PCC)		
	Plain Cement Concrete M15 with OPC/PPC cement at 240 kg with 20mm and down size graded granite metal coarse aggregates @0.84 cum. and fine aggregates @0.56 cum complete as per drawing and technical specifications. MORTH Specification No. 1500, 1700 & 2100		
	- Curtain walls Bottom PCC	Cum.	69.28
2.D	STONE PITCHING		

	Dry stone pitching 75 cm thick including supply of stones and preparing surface complete		
	-In Stone Pitching	Sq.m	46.20
E	RR MASONRY WORK		
1.E	PLAIN CEMENT CONCRETE (PCC)		
	Plain Cement Concrete M15 with OPC/PPC cement at 240 kg with 20 mm and down size graded granite metal coarse aggregates @0.84 cum. and fine aggregates @0.56 cum complete as per drawing and technical specifications. MORTH Specification No. 1500,1700 & 2100		
	- Masonry wall Bottom PCC	Cum.	9.34
2.E	FORMWORK		
	Supplying with all lead and lift, unloading etc. complete and fabrication of steel reinforcements of all diameters conforming to IS-1786 of Grade Fe 500 including straightening, cutting, bending, hooking, lapping and/or welding, placing in position, with necessary chairs and spacer blocks, tying with annealed binding wire conforming to IS-280 complete as per design and direction.		
	-In RR Masonry PCC Side	Sq.m	9.74
2.E	RR MASONARY WORK		
	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications (Coursed rubble masonry)		
	-In RR Masonry work	Cum.	55.83

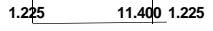
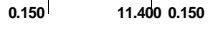
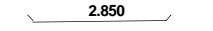
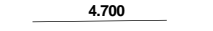
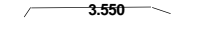
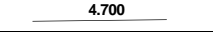
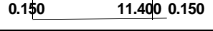
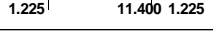
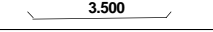
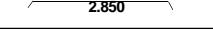
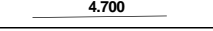
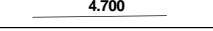
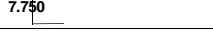
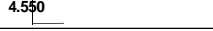

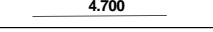
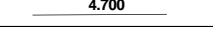
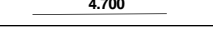
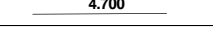
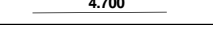
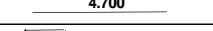
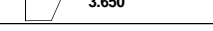
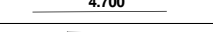
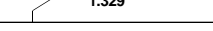
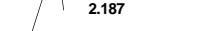
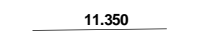
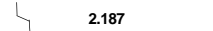
Detailed Estimate

No.	Description of the item	Work head	No.		L	B	D	Qty	Units
					m	m	m		
A	CULVERT								
(1)	PLAIN CEMENT CONCRETE (PCC)								
	Below Culvert	PCC	1	1	11.245	4.94	0.15	8.33	Cum
	Shear key		1	2	1.08		4.94	10.67	Cum
								20.90	Cum
(2)	REINFORCED CEMENT CONCRETE (RCC)								
		RCC							
	Raft		1	1	11.245	4.94	0.4	22.22	Cum
	Wall		1	2	4.94	0.4	3.5	13.83	Cum
	Stem		1	1	4.94	0.35	3.5	6.05	Cum
	Top slab		1	1	11.245	4.94	0.4	22.22	Cum
	Shear key		1	2	0.52		11.245	11.69	Cum
	Haunch		1	8	0.1125		4.94	4.45	Cum
								88.51	Cum
	Crash Barrier		1	2	0.3182		11.245	7.16	Cum
								7.87	Cum
(3)	SHUTTERING	FW							
	PCC Side Shuttering		1	2	11.245		1.25	28.11	Sqm
			1	2	4.94		1.25	12.35	Sqm
	Bottom Mate Side shuttering		1	1	32.37		0.4	12.95	Sqm
	Wall Side shuttering		1	6	4.95		3.5	103.95	Sqm
	Slab Top shuttering		1	1	11.245	4.94		55.55	Sqm
	Slab Top Side shuttering		1	1	32.37		0.4	12.95	Sqm
	Crash barrier		1	2	2.4	11.425		54.84	Sqm
								308.77	Sqm
B	RETURN WALL								
(1)	PLAIN CEMENT CONCRETE (PCC)								
	Below RETURN WALL								
	LHS	PCC	1	1	53.352		0.15	8.00	Cum
	RHS	PCC	1	1	54.845		0.15	8.23	Cum
								17.85	Cum

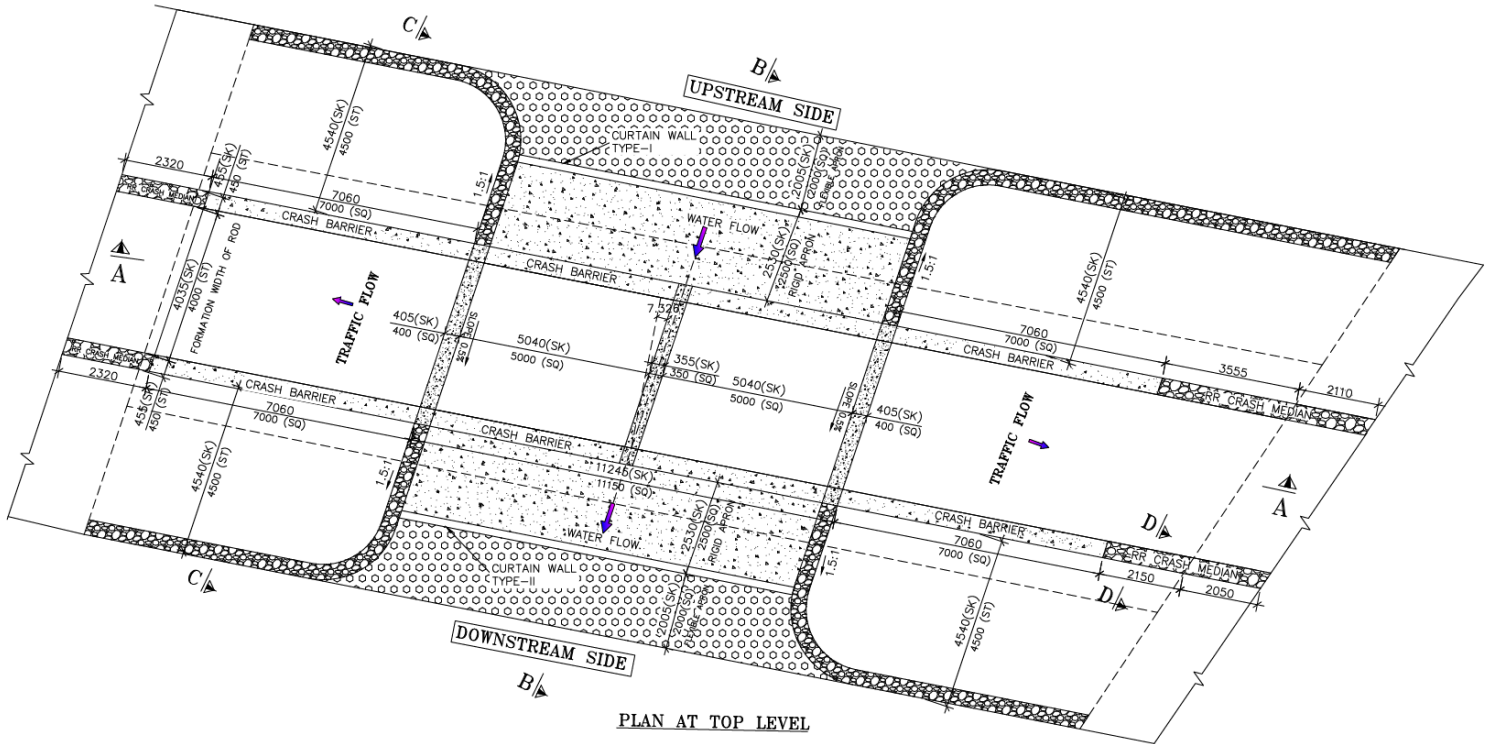
(2)	REINFORCED CEMENT CONCRETE (RCC)								
		RCC							
	Raft LHS		1	1	7.06	7.4681	0.45	23.73	Cum
	Raft RHS		1	1	87.28		0.45	39.28	Cum
	Wall LHS		1	1	7.06	2.328		16.44	Cum
	Wall LHS		1	1	7.06	2.328		16.44	Cum
	Wall RHS		1	1	7.06	2.328		16.44	Cum
	Wall RHS		1	1	7.06	2.328		16.44	Cum
								141.62	Cum
	Crash Barrier LHS		1	1	7.06	0.318		2.25	Cum
	Crash Barrier LHS		1	1	7.06	0.318		2.25	Cum
	Crash Barrier RHS		1	1	7.06	0.318		2.25	Cum
	Crash Barrier RHS		1	1	7.06	0.318		2.25	Cum
								9.88	Cum
(3)	SHUTTERING	FW							
	PCC Side Shuttering LHS		1	1	29.343	0.15		4.40	Sqm
	PCC Side Shuttering RHS		1	1	29.705	0.15		4.46	Sqm
	Return Wall Raft LHS		1	1	28.436	0.45		12.80	Sqm
	Return Wall Raft RHS		1	1	28.436	0.45		12.80	Sqm
	Return wall Stem Shuttering LHS		1	2	7.06	11.23		158.57	Sqm
	Return wall Stem Shuttering RHS		1	1	7.06	11.23		79.28	Sqm
	Return wall Stem Shuttering RHS		1	1	7.06	11.23		79.28	Sqm
	Crash Barrier Shuttering LHS		1	2	7.06	2.436		34.40	Sqm
	Crash Barrier Shuttering RHS		1	1	7.06	2.436		17.20	Sqm
	Crash Barrier Shuttering RHS		1	1	7.06	2.436		17.20	Sqm
								462.42	Sqm
C	STONE PITCHING								
(1)	PLAIN CEMENT CONCRETE (PCC)								
	PCC	PCC	1	1	51.575	0.8	0.1	4.13	Cum
	RCC		1	1	51.575	0.34		17.54	Cum
								23.83	Cum
(2)	SHUTTERING	PCC							
	PCC Side Shuttering		1	2	51.57	0.15		15.47	Sqm
	RCC Side Shuttering		1	2	51.57	0.8		82.51	Sqm
								107.78	Sqm

(4)	STONE PITCHING								
	US LHS		1	1	11.1		5.4	59.94	Sqm
	US RHS		1	1	16.67		5.4	90.02	Sqm
	DS RHS		1	1	12.154		5.4	65.63	Sqm
	DS LHS		1	1	11.632		5.4	62.81	Sqm
								306.24	Sqm
D	APRONS								
(1)	PLAIN CEMENT CONCRETE (PCC)								
	Upstream Curtain wall	PCC							
	PCC		1	1	10.5	1.85	0.1	1.94	Cum
	Pedestral-1		1	1	10.5	1.65	0.55	9.53	Cum
	Pedestral-2		1	1	10.5	0.75	0.75	5.91	Cum
	Pedestral-3		1	1	10.5	0.45	0.75	3.54	Cum
	Pedestral-4		1	1	10.5	0.2	0.75	1.58	Cum
	PCC Bed		1	1	10.5	2.5	0.15	3.94	Cum
	Rigid Apron		1	1	10.5	2.53	0.3	7.97	Cum
	Downstream Curtain wall	PCC							
	PCC		1	1	10.5	1.5	0.1	1.58	Cum
	Pedestral-1		1	1	10.5	1.3	0.8	10.92	Cum
	Pedestral-2		1	1	10.5	0.45	0.75	3.54	Cum
	Pedestral-3		1	1	10.5	0.2	0.3	0.63	Cum
	PCC Bed		1	1	10.5	2.5	0.15	3.94	Cum
	Rigid Apron		1	1	10.5	2.53	0.3	7.97	Cum
								69.28	Cum
(2)	STONE PITCHING								
	US LHS		1	1	10.5	2		21.00	Sqm
	DS LHS		1	1	10.5	2		21.00	Sqm
								46.20	Sqm
D	RR MASONRY WALL								
(1)	PLAIN CEMENT CONCRETE (PCC)								
	Below RETURN WALL								
	LHS	PCC	1	1	18.572		0.15	2.79	Cum
	RHS	PCC	1	1	38.059		0.15	5.71	Cum
								9.34	Cum
(2)	SHUTTERING	FW							
	PCC Side Shuttering LHS		1	1	29.343		0.15	4.40	Sqm

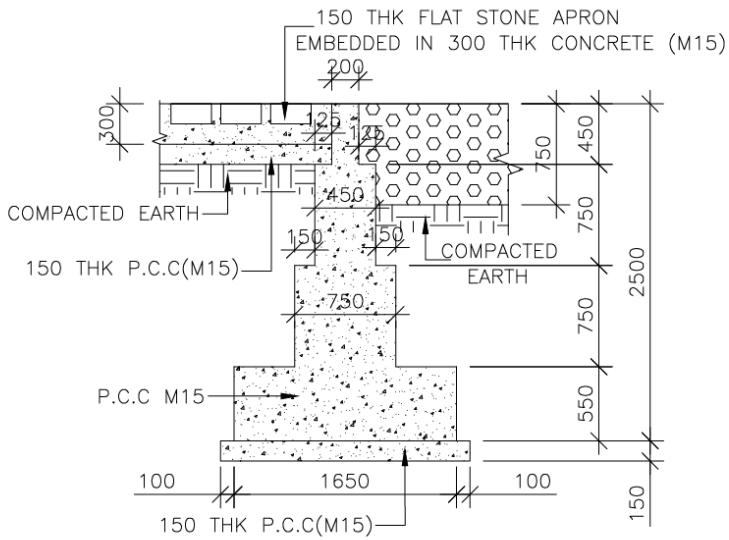
	PCC Side Shuttering RHS		1	1	29.705		0.15	4.46	Sqm
								9.74	Sqm
(3)	RR MASONARY WORK								
	RR - LHS		1	2	2.32	0.8	1.85	6.87	Cum
	RR - LHS		1	2	2.32	0.6	2.25	6.26	Cum
	RR - LHS		1	2	2.32	0.4	1.45	2.69	Cum
	RR - LHS - MEDIAN		1	2	2.32	0.4	1.1	2.04	Cum
	RR - RHS		1	1	5.66	0.8	1.85	8.38	Cum
	RR - RHS		1	1	5.66	0.6	2.25	7.64	Cum
	RR - RHS		1	1	5.66	0.4	1.45	3.28	Cum
	RR - RHS - MEDIAN		1	1	5.66	0.4	1.1	2.49	Cum
	RR - RHS		1	1	4.2	0.8	1.85	6.22	Cum
	RR - RHS		1	1	4.2	0.6	2.25	5.67	Cum
	RR - RHS		1	1	4.2	0.4	1.45	2.44	Cum
	RR - RHS - MEDIAN		1	1	4.2	0.4	1.1	1.85	Cum
								55.83	Cum

BOX CULVERT - BARBENDING SCHEDULE															
Sl. No.	Description	Shape of the bar	Bar Spacing c/c	Dia of bar	No. of members	No. of Bars	Total no. of bars	Cutting length (m)	Total cutting length (m)	8 mm	10 mm	12 mm	16mm	20 mm	25 mm
BOX CULVERT															
1	Bottom Raft									-	-	-	-	-	-
	Bottom main bar Y12		0.2	12	25	1	25	13.850	346.250	-	-	346.25	-	-	-
	Top main bar Y12		0.2	12	25	1	25	11.700	292.500	-	-	292.50	-	-	-
	Bottom extra bar Y16		0.2	16	25	1	25	2.850	71.250	-	-	-	71.25	-	-
	Bottom distribution bar Y10		0.2	10	59	1	59	4.700	277.300	-	277.30	-	-	-	-
	Top extra bar Y16		0.2	16	25	2	50	3.550	177.500	-	-	-	177.50	-	-
	Top distribution bar Y10		0.2	10	59	1	59	4.700	277.300	-	277.30	-	-	-	-
Top Slab															
	Bottom main bar Y12		0.2	12	25	1	25	11.700	292.500	-	-	292.50	-	-	-
	Top main bar Y12		0.2	12	25	1	25	13.850	346.250	-	-	346.25	-	-	-
	Bottom extra bar Y12		0.2	12	25	2	50	3.500	175.000	-	-	175.00	-	-	-
	Bottom extra bar Y16		0.2	16	25	1	25	2.850	71.250	-	-	-	71.25	-	-
	Bottom distribution bar Y10		0.2	10	59	1	59	4.700	277.300	-	277.30	-	-	-	-
	Top distribution bar Y10		0.2	10	59	1	59	4.700	277.300	-	277.30	-	-	-	-
WALL															
	Vertical main bar Y16		0.2	16	25	2	50	7.750	387.500	-	-	-	387.50	-	-
	Vertical main bar Y12		0.12	12	41	2	82	4.550	373.100	-	-	373.10	-	-	-
	Vertical main bar Y12		0.15	12	33	2	66	4.550	300.300	-	-	300.30	-	-	-
	Distribution bar Y10		0.2	10	23	2	46	4.700	216.200	-	216.20	-	-	-	-
	Distribution bar Y10		0.2	10	23	4	92	4.700	432.400	-	432.40	-	-	-	-
	Additional bar Y12			12	4	2	8	4.700	37.600	-	-	37.60	-	-	-
	Additional bar Y10			10	4	1	4	4.700	18.800	-	18.80	-	-	-	-
	Additional bar Y10			10	4	2	8	4.700	37.600	-	37.60	-	-	-	-
	Additional bar Y10			10	4	1	4	4.700	18.800	-	18.80	-	-	-	-
	Shear key Y10		0.15	10	25	2	50	3.650	182.500	-	182.50	-	-	-	-
	Shear Key Y10			12	10	2	20	4.700	94.000	-	-	94.00	-	-	-
	Haunch		0.2	10	58	8	464	1.330	617.120	-	617.12	-	-	-	-
CRASH BARRIER															
	Crash Barrier bar Y12		0.11	12	105	2	210	2.190	459.900	-	-	459.90	-	-	-
	Crash Barrier bar Y12			12	15	2	30	11.350	340.500	-	-	340.50	-	-	-
	Crash Barrier bar Y12		0.11	12	105	2	210	1.569	329.511	-	-	329.51	-	-	-
										0	2632.6	3387.4	707.5	0	0
										0.395	0.617	0.888	1.580	2.470	3.850
										0	1624	3008	1118	0	0
										0.00	1.62	3.01	1.12	0.00	0.00
										5.750					

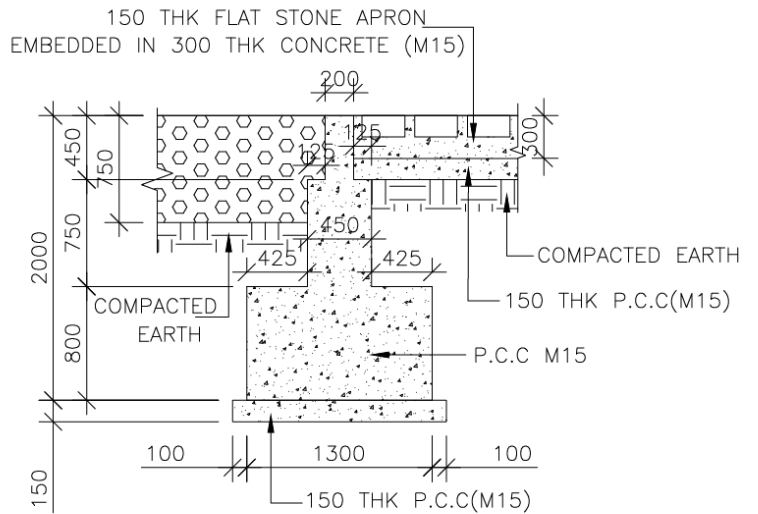
D) Structural Drawings :



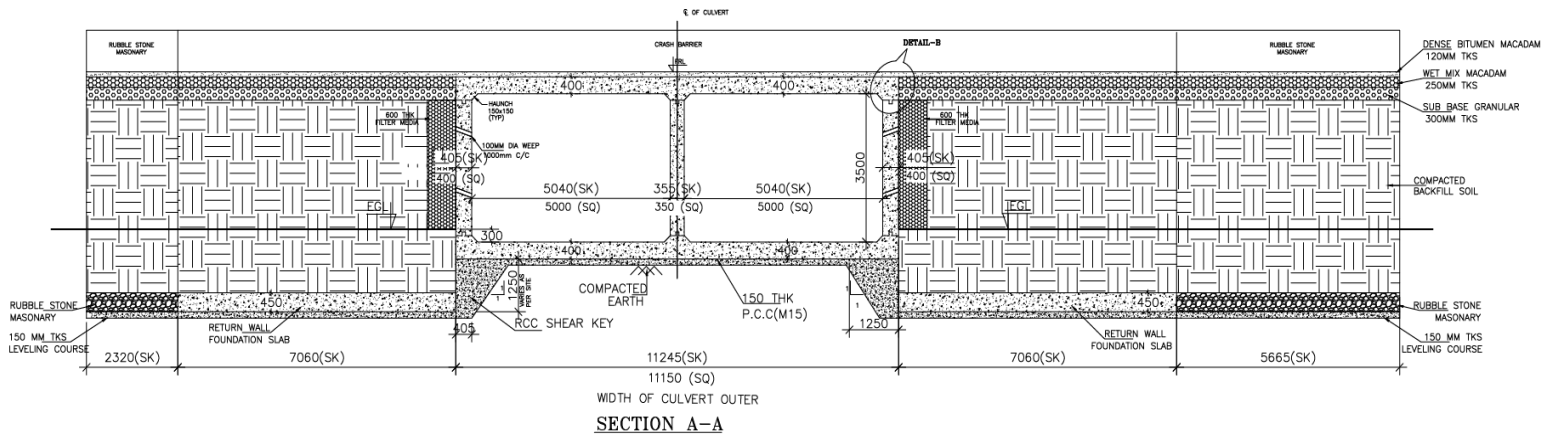
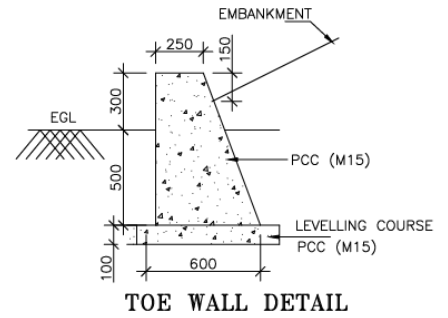
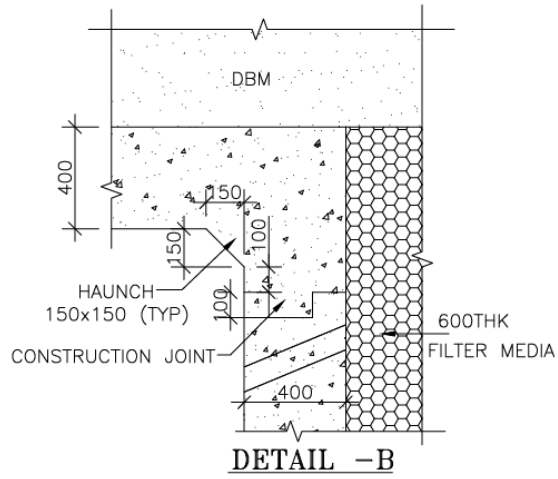
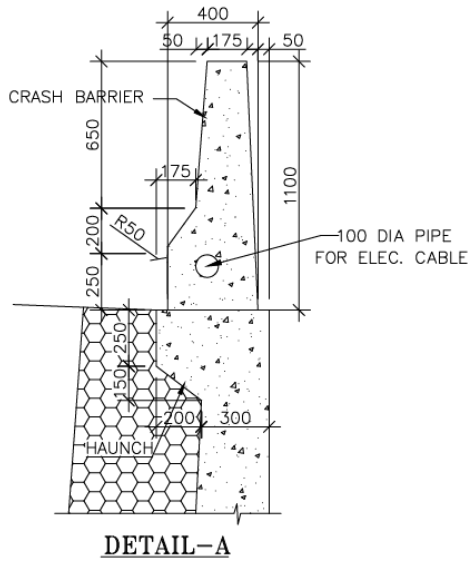
PLAN AT TOP LEVEL

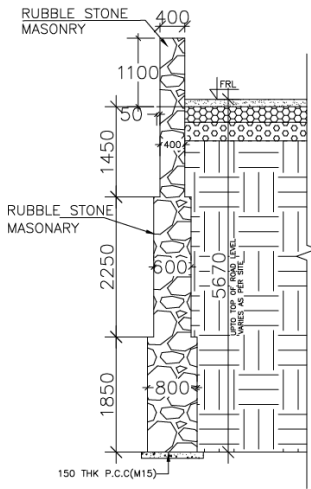


TYPICAL CROSS SECTION OF CURTAIN WALL TYPE-I



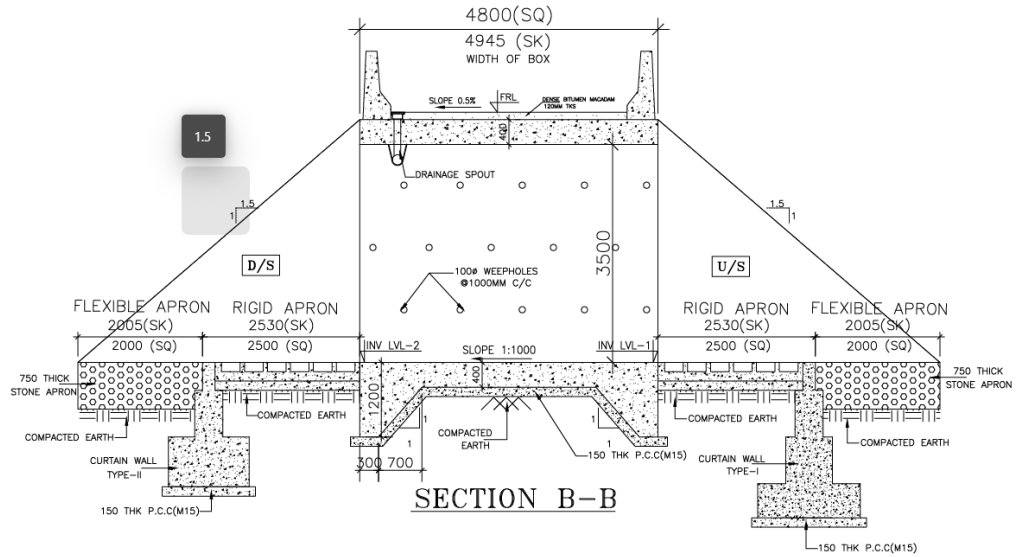
TYPICAL CROSS SECTION OF CURTAIN WALL TYPE-II



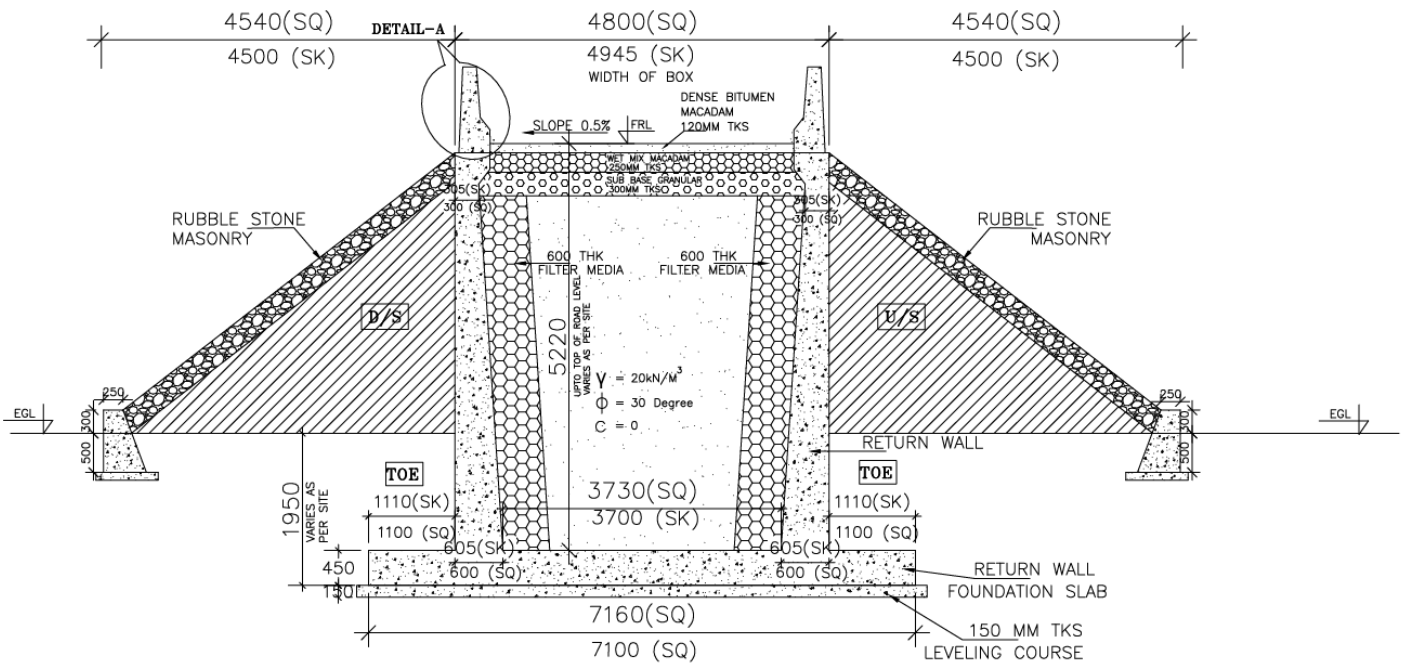


SECTION D-D

TOE WALL DETAIL



SECTION B-B



SECTION C-C
RETURN WALL

STRUCTURE	PROPOSED WIDTH OF BOX IN M		NO.OF VENT	INVERT LEVEL VENT IL-1 UPSTREAM	INVERT LEVEL VENT IL-2 DOWNSTREAM	FORMATION WIDTH OF ROAD IN M	FRL	LENGTH OF BOX	FLOW DIRECTION
	WIDTH	HEIGHT							
TWO CELL BOX CULVERT	5	3.5	2	651.6	651.585	4	655.62	11.15	L-R

NOTES:

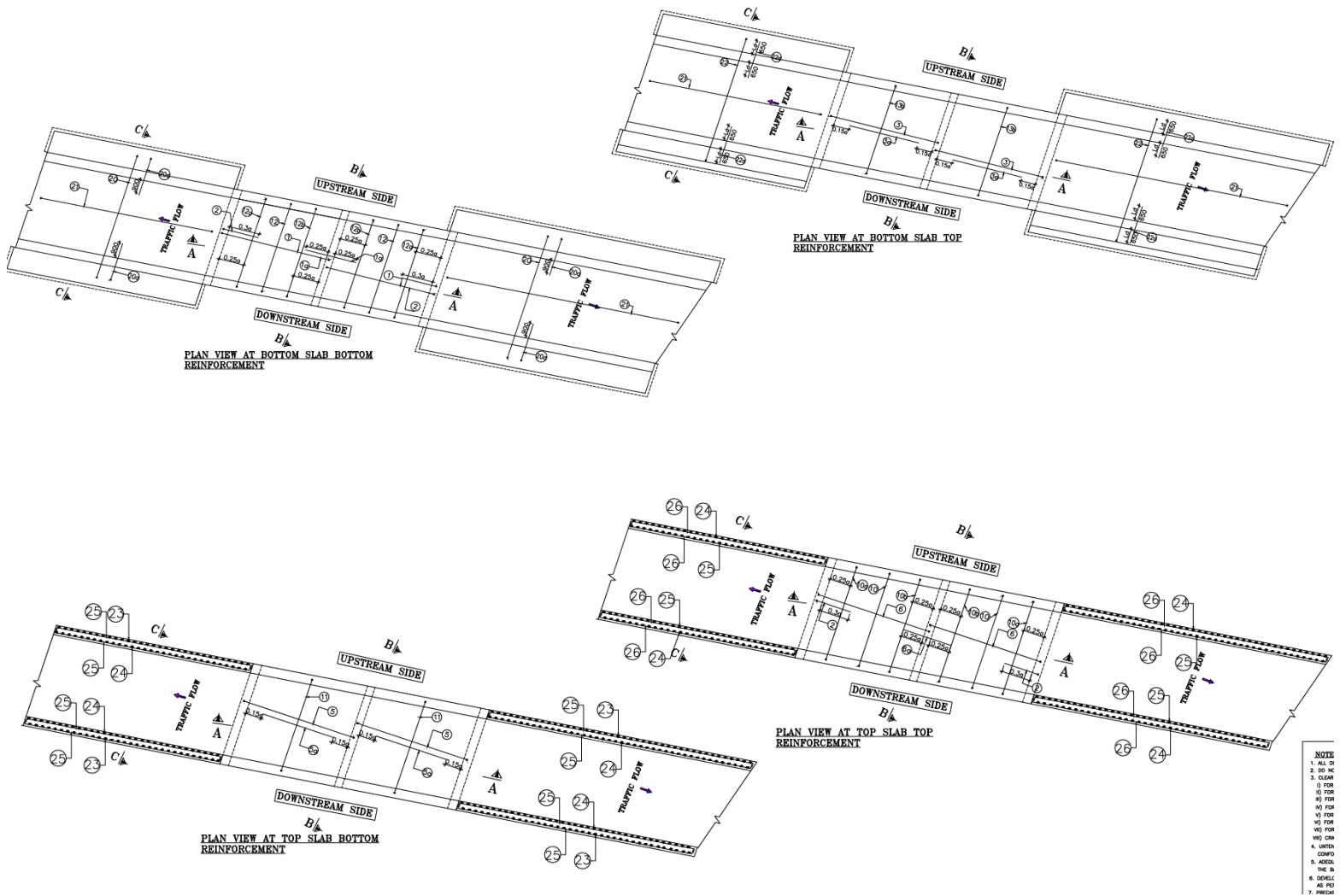
1. ALL DIMENSIONS ARE IN MILLIMETERS
2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. BACK FILLING SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPEDIX:6 OF IRC:78-2014 HAVING PROPERTIES $C=0$ & $\phi \geq 30^\circ$
4. SAFE BEARING CAPACITY OF SOIL CONSIDERED BELOW THE BOX IS 34 T/SQM AND BELOW THE RETURN WALL IS 41 T/SQM AND SAME SHALL BE ASCERTAINED PRIOR TO RESTING OF FOUNDATION AND IN NO CASE IT SHALL BE LESS THAN GROSS BASE PRESSURE MENTIONED IN THE DRAWING
5. WEEP HOLES SPACED AT 1000 C/C BOTH HORIZONTALLY AND VERTICALLY STAGGERED SHALL BE PROVIDED FROM EGL TO HFL
6. WEARING COAT THICKNESS AS PER SPECIFICATIONS.
7. VEHICULAR LIVE LOAD 70R & 2 CLASS A VEHICLES CORRESPONDING TO 2 LANE TRAFFIC.
8. ALL DESIGN MIX CONCRETE SHALL CONFORM TO TABLE 6.4 AND CI.18.5.4 of IRC: 112-2011 AND NOMINAL MIX SHALL CONFORM TO CI.18.5.4 of IRC: 112-2011.
9. GRADE OF STEEL SHALL BE Fe 500D (HYS) AS PER TABLE 18.1 OF IRC: 112-2011.
- 10.GRADE OF CONCRETE
 - a)FOR BOX-M30
 - b)FOR RETURN WALL-M30
 - c)FOR LEVELING COURSE - M15
 - d)RCC PILLAR-M20
 - e)CRASH BARRIER-M40
- 11.IN CASE OF LOOSE STRATA, SOIL REPLACEMENT WITH GRANULAR SOIL SHALL BE EXTENDED 900MM BEYOND THE FOUNDATION OUTER LINE WITH MINIMUM 95% COMPACTION CORRESPONDING TO MODIFIED PROCTOR DENSITY IN 3 LAYERS. FOUNDATION SHALL BE REST ON THE COMPACTED GRANULOR SOIL.
- 12.EXPOSURE - 'MODERATE'.
- 13.METAL BEAM CRASH BARRIER/GUARD STONE SHALL BE PROVIDED FOR PROTECTION AS PER THE REQUIREMENT AND RELEVANT SCHEDULES
- 14.SPECIFICATION FOR FLOOR PROTECTION WORK SHALL BE AS PER CL.20.1.2.2 AND 20.1.2.4 OF IRC-SP-2004.
- 15.THE FILTER MEDIA SHALL COMPLY TO PARA 2.1 OF APPENDIX-6 OF IRC:78-2014 AND MATERIAL OF FLOOR PROTECTION WORKS SHALL COMPLY TO ARTICLE 20 OF IRC:SP 13-2004
- 16.SLOPE PROTECTION MATERIAL SHALL BE AS PER CL:8.2.2.1 OF IRC 89 AND METHODOLOGY SHALL BE SUBMITTED TO CLIENT AND GOT APPROVED BEFORE EXECUTION.

LEGEND:

- U/S - UP STREAM
D/S - DOWN STREAM
FRL - FORMATION LEVEL
INV - INVERT LEVEL
EGL - EXISTING GROUND LEVEL
SQ - SQUARE LENGTH
SK - SKEW LENGTH

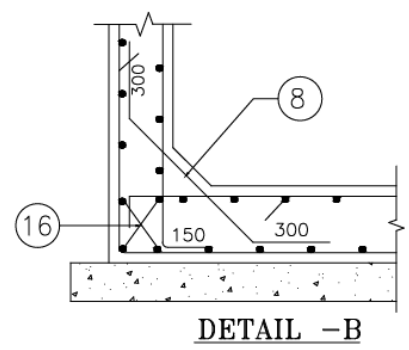
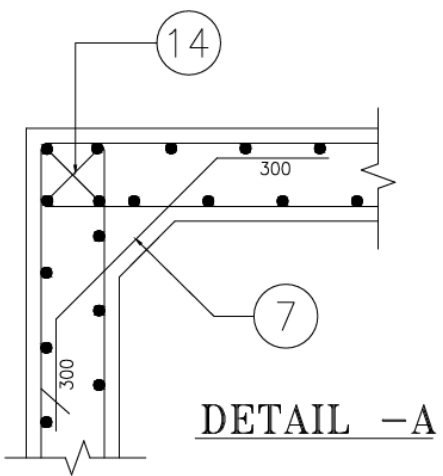
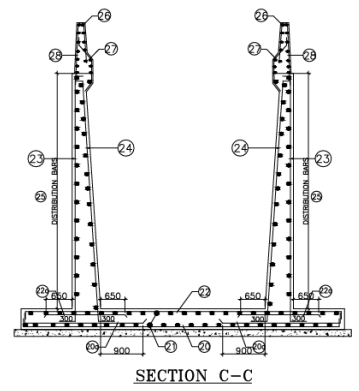
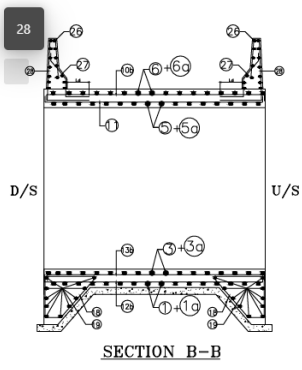
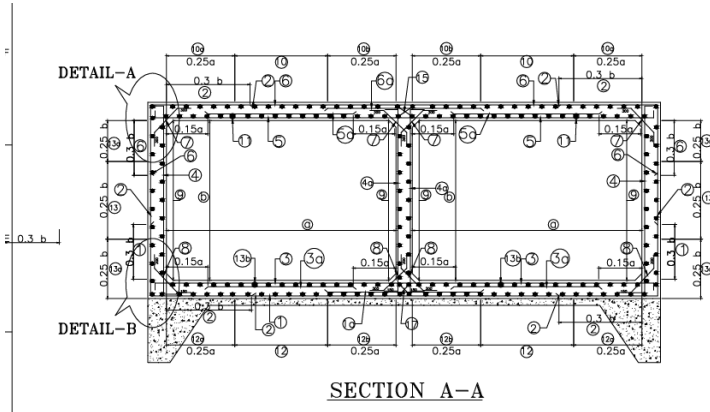
CODES OF REFERENCE :

- IRC 5-2015 , IRC 6-2017
IRC-78-2014
IRC-SP:13-2004
IRC 89-1997, IRC 112-2011



NOTES:

1. ALL DIMENSIONS ARE IN 'MM', UNLESS OTHERWISE SPECIFIED.
2. DO NOT SCALE THE DRAWING. FOLLOW FIGURED DIMENSION ONLY.
3. CLEAR COVER TO REINFT.
 - I) FOR TOP SLAB - 75mm
 - II) FOR BOTTOM SLAB - 75mm
 - III) FOR SIDE WALL - 75mm (EARTH FACE)
 - IV) FOR RETURN WALL - 75mm (EARTH FACE)
 - V) FOR WALL INSIDE - 40mm (NON EARTH FACE)
 - VI) FOR FOOTING - 75mm
 - VII) FOR FOR RCC PILLAR-40mm
 - VIII) CRASH BARRIER-40mm
4. UNTENSIONED REINFORCEMENT SHALL BE TMT BARS AND SHALL CONFORM TO IS:1786 (GRADE DESIGNATION Fe500D)
5. ADEQUATE NUMBER OF ϕ 12 CHAIRS SHALL BE PROVIDED TO SUPPORT THE BARS AT THE TOP FACE
6. DEVELOPMENT LENGTH AND LAP LENGTH SHALL BE AS PER CL.15.2.3.3 AND TABLE 15.4 IRC-112:2011
7. PRECAST MORTAR BLOCKS OF RESPECTIVE GRADES SHALL BE USED UNDER THE REINFORCEMENT TO ENSURE THE REQUIRED COVER.



BAR BENDING SCHEDULE FOR BOX

BAR NO.	①	①a	②	③	③a	④	④a	⑤	⑤a	⑥	⑥a
BAR SHAPE											
REINFORCEMENT DETAIL	Y12@200C/C	Y16@200C/C	Y16@200C/C	Y16@200C/C	Y12@200C/C	Y12@120C/C	Y12@150C/C	Y12@200C/C	Y12@200C/C	Y12@200C/C	Y16@200C/C

BAR NO.	⑦	⑧	⑨	⑩	⑩a	⑩b	⑪
BAR SHAPE							
REINFORCEMENT DETAIL	Y10@200C/C	Y10@200C/C	Y10@200C/C (BOTH SIDE)	Y10@200C/C	Y10@200C/C	Y10@200C/C	Y10@200C/C

BAR NO.	⑫	⑫a	⑫b	⑬	⑬a	⑬b	⑭	⑮	⑯	⑰	⑱	⑲
BAR SHAPE												
REINFORCEMENT DETAIL	Y10@200C/C	Y10@200C/C	Y10@200C/C	Y10@200C/C	Y10@200C/C	Y10@200C/C	12-4 NOS (BOTH SIDE)	10-4 NOS	10-4 NOS (BOTH SIDE)	10-4 NOS	Y10@150C/C (BOTH SIDE)	Y12-10 NOS (BOTH SIDE)

BAR BENDING SCHEDULE FOR RETURN WALL

BAR NO.	⑳	⑳a	㉑	㉒	㉒a	㉓	㉔	㉕	㉖	㉗	㉘
BAR SHAPE											
REINFORCEMENT DETAIL	Y16@250C/C	Y12@250C/C	Y10@150C/C	Y16@200C/C	Y16@200C/C	Y16@200C/C	Y16@150C/C	Y10@150C/C	Y12-15 NO. (BOTH SIDE)	Y12@110C/C	Y12@110C/C

NOTES:

- ALL DIMENSIONS ARE IN 'MM', UNLESS OTHERWISE SPECIFIED.
- DO NOT SCALE THE DRAWING. FOLLOW FIGURED DIMENSION ONLY.
- CLEAR COVER TO REINFT.
 - FOR TOP SLAB – 75mm
 - FOR BOTTOM SLAB – 75mm
 - FOR SIDE WALL – 75mm (EARTH FACE)
 - FOR RETURN WALL – 75mm (EARTH FACE)
 - FOR WALL INSIDE – 40mm (NON EARTH FACE)
 - FOR FOOTING – 75mm
 - FOR FOR RCC PILLAR–40mm
 - CRASH BARRIER–40mm
- UNTEMPERED REINFORCEMENT SHALL BE TMT BARS AND SHALL CONFORM TO IS:1786 (GRADE DESIGNATION Fe500D)
- ADEQUATE NUMBER OF ϕ 12 CHAIRS SHALL BE PROVIDED TO SUPPORT THE BARS AT THE TOP FACE
- DEVELOPMENT LENGTH AND LAP LENGTH SHALL BE AS PER CL.15.2.3.3 AND TABLE 15.4 IRC-112:2011
- PRECAST MORTAR BLOCKS OF RESPECTIVE GRADES SHALL BE USED UNDER THE REINFORCEMENT TO ENSURE THE REQUIRED COVER.