

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
MINISTRY OF ROAD TRANSPORT AND HIGHWAYS, GOVERNMENT OF INDIA
OFFICE OF EXECUTIVE DIRECTOR: REGIONAL OFFICE: ITANAGAR
GD APARTMENT, SENKI PARK, DIVISION-IV, NEAR GOVT. MIDDLE SCHOOL
ARUNACHAL PRADESH-791113
E-mail: roitanagarnhidcl@gmail.com



A GOVT. OF INDIA UNDERTAKING

NHIDCL/RO-ITA/02/ICBR/D-G/2020-21/ 6367

Date: 08.08.2023

To,

The Executive Director-II
HQ, NHIDCL, 3rd Floor, PTI Building
4, Parliament Street
New Delhi-110001

Sub: Construction of High-Altitude hill road from Doginala to Gau from Km 0+000 to Km 15+320 in Upper Subansiri District of Arunachal Pradesh on EPC Mode. Reg-Change of Scope Proposal.

- Ref.: (i) RO letter No. NHIDCL/RO-ITA/02/ICBR/D-G/2020-21/6099 dated 23.06.2023.
- (ii) HQ, NHIDCL email dated 14.06.2023 (23:57PM).
- (iii) RO letter No. NHIDCL/RO-ITA/02/ICBR/D-G/2020-21/5088 dated 09.06.2023.

Sir,

1. Please refer to this office letter cited under ref. (iii) above vide which the proposal of Change of Scope was submitted to HQ, NHIDCL for approval of the Competent Authority.
2. Further, after due discussion/deliberation at HQ, NHIDCL under the Chairmanship of ED (T), certain observations were raised on the proposal regarding items considered in the estimate. Accordingly, proposal was withdrawn by this office vide letter No. NHIDCL/RO-ITA/02/ICBR/D-G/2020-21/6200 dated 05.07.2023.
3. Now, GM (P), PMU-Ziro vide letter No. NHIDCL/PMU-ZIRO/2023-24/ICBR/D-G/CoS/6629 dated 17.07.2023 has submitted detailed justification regarding considering the various Items in the estimate submitted towards the Change of Scope in the existing Contract Agreement.



Sumit
08/08

4. This office has scrutinized the comments/justification submitted by the GM(P) and following is submitted in addition to the reply submitted by the GM (P) in the instant case:
- i. Initially to reach the Start Point of project, Contractor needs to construct a diversion road of 1.22Km and a Coffor Dam to mobilize the Machineries at project site at his own expenses and mobilized 3 Excavator, 1 Rock Blaster and 2 ROC through the Coffor Dam to start the progress of strategically important project.
 - ii. By constructing the Diversion Road and the Coffor Dam (Photograph attached), the Contractor was able to achieve about 18% Physical Progress as on date. As the project is being monitored by the Ministry of Home Affairs on regular intervals, thus, the progress on the ground was essential. Considering the same, the Contractor has carried out such immediate works so that the project can be executed by any means.
 - iii. As the Machineries and Manpower was deployed by the EPC Contractor, therefore, the idling charges for not providing the requisite clearance by the Authority is will be much higher. Therefore, to avoid the Contractual Obligation on either party, the work was allowed to progress at project site. Therefore, considering the matter, we may allow to augment the Cost towards the Construction of Coffor Dam and Diversion Road by the Contractor in the interest of project progress.
 - iv. **It is further submitted that the Coffor Dam and Diversion Road was essential to carryout the Construction of Abutment at far end of the project. To cross the River Subansiri and commence the Construction work, it was inescapable requirement for the progress of the project.**
 - v. The HLEC during its 52nd Meeting has already approved the Change of Scope for Construction of Bailey Suspension Bridge and to be adjusted in the Cost Saving against the CCS Approval.



Sunil
2 | Page
08/08

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GD APARTMENT, SENKI PARK, DIVISION-IV, NEAR GOVT. MIDDLE SCHOOL

ARUNACHAL PRADESH-791113

E-mail: roitnagarnhidcl@gmail.com**A GOVT. OF INDIA UNDERTAKING**

5. Considering the above-mentioned facts and to smooth execution of project further, it is necessitated that the items considered in the Change of Scope Proposal are essential and to be considered. Accordingly, the cost estimate has been prepared by the Authority's Engineer and reviewed by the GM (P) and the same was found in order. There is certain change in the Cost Estimate submitted by this office vide letter under ref. (iii) above. Accordingly, the revised cost estimate has been prepared by the AE/GM(P) has been reviewed by this office and found in order.
6. Construction of Abutments and approaches to the bridge has been considered for construction as per Article-13.2 of the Contract Agreement (SOR-2018-19 applied). The cost has been worked out for construction of 500M approaches, the details is as under:

Sr. No.	Particulars	Amount (INR)	Remarks
1.	Construction of Abutments as specification required for BSB of 320FT.	Rs 33,33,671/-	Abutments work to be executed under CoS
2.	Construction of 500M approach road including Protection Work, Drains, Culvert, Coffor Dam and diversion Road (1.40Km) for construction work.	Rs 8,51,91,763/-	
Sub-Total (including GST @12%)		Rs 8,85,25,434/-	As per SOR-2018-19
Civil Wok (Excluding GST)		Rs 7,90,40,566/-	Contract was awarded excluding GST
Reduction in Amount by 22.50% as per Clause 13.2 (iv)(a)		Rs 1,45,17,655/-	As per Clause 13.2 (iv)(a) of CA.
Total Civil Cost after reduction in Amount by 22.50% (Tendered value)		Rs 6,45,22,911/-	
Add Price Escalation as per Clause 13.2 (iv) (a) [by updating SOR-2018 to Base Date]		Rs 36,58,449/-	WPI: March'18: 116.30 WPI on Base Date (Sept'20)- 122.90 Net Change = 5.67%
Total Cost under COS		Rs 6,81,81,360/-	May be considered as CoS



3 | Page
 Smt
 08/08

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Sr. No.	Particulars	Amount (INR)	Remarks
3.	Construction of Bailey Suspension Bridge of 320FT Span length by GRSE (Actual Cost).	Rs 2,92,23,554/-	The BSB will be launched by M/s GRSE.
Total Value of Works (INR)		Rs 9,74,04,914/-	

7. As stated above, it is proposed that the construction of abutments for launching/erection of Bailey Suspension Bridge (i/c. Diversion of Road & Coffor Dam) to be carried out by the existing EPC Contractor as per terms and condition of Article-13.2 of the Contract Agreement at the COS amount of **Rs 6.82 Crore**. Further, the Launching/Erection of the Bailey Suspension Bridge will be carried out by the M/s GRSE as per MoU signed on 05.02.2021 further amended on 13.06.2022. M/s GRSE has submitted the estimate for an amount of **Rs 2.92 Crore (copy enclosed)**. Supply order has been placed by NHIDCL for launching/erection (copy enclosed).
8. In view of the above, proposal as forwarded and recommended by the Authority's Engineer and GM (P) has been scrutinized in this office and based on the facts mentioned in aforesaid Para(s), it is hereby recommended to seek approval of the Competent Authority for issuance of "Change of Scope Notice/Order for Construction of 500M approach road including Abutments for launching of 320FT Bailey Suspension Bridge to cross River Subansiri". As per Article-13, Clause-13.2 of the Contract Agreement, total Amount of COS under the existing Contract Agreement will be of Rs 6.82 Cr. (Excluding GST).
9. This is for your information and necessary action please.



Sunil Kumar
 (Sunil Kumar) 08/08

Executive Director (Projects)
 NHIDCL, R.O. Itanagar

Encl.: As stated above.

Copy to: -

- | | | |
|--|---|--------------------------|
| (i) GM (T), HQ, NHIDCL, New Delhi | : | For information, please |
| (ii) GM (P), PMU-Ziro, Arunachal Pradesh | : | For information, please. |

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
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ARUNACHAL PRADESH-791113
E-mail: roitanagarnhidcl@gmail.com



A GOVT. OF INDIA UNDERTAKING

NHIDCL/RO-ITA/02/ICBR/D-G/2020-21/ 6074

Dated: 21.06.2023

To,

M/s Garden Reach Shipbuilders & Engineers Ltd.
R/O-43/46, Garden Reach Road
Kolkata-700024
Email: Ghosh.subrato@grse.co.in
Ph.: +91-76030 39452/ +91-9830322885

[Kind Attn.: Shri. DIG Subrato Ghosh]

Sub: Construction of High-Altitude Hill Road from Doginala to Gau from KM 0+000 to KM 15+320 in Upper Subansiri District of the State of Arunachal Pradesh on EPC Mode- Supply Order-Reg.

- Ref.:** (i) Your Revised Rate Quotation No. GRSE/ BB/A-27/20-21/RO-Itanagar, NHIDCL, 320 ft BSB/455 dated 10.06.2023.
- (ii) NHIDCL/RO-ITA/02/ICBR/D-G/2020-21/5049 dated 05.06.2023
- (iii) LOA letter No. NHIDCL/RO-ITA/02/ICBR/D-G/2020-21/2181 dated 12.01.2022.
- (iv) Your Quotation No. GRSE/ BB/A-27/20-21/RO-Itanagar, NHIDCL, 320 ft BSB/224 dated 07.01.2022.
- (v) GRSE letter No. GRSE/BBD/NHIDCL/2021-22/02 dated 13.05.2021.
- (vi) NHIDCL/RO-ITA/02/ICBR/D-G/2020-21/1217 dated 11.05.2021.
- (vii) Memorandum of Understanding (MoU) signed dated 05.02.2021 (further amended on 13.06.2022).

Sir,

1. With reference to your rate quotation submitted for the construction of Bailey Suspension Bridge in the subject project, NHIDCL is hereby accepting all the Terms and Conditions as per rate quotation submitted by GRSE and request you to Supply, Transportation, Erection/Launching of **320 Feet Span Bailey Suspension Bridge With Timber Decking (Reinforced) and Max Load Carrying Capacity 40MT Single Vehicle (OG Paint Finish)**, at

Head Office: - 3RD Floor, PTI Building 4- Parliament Street, New Delhi-110001



Signature
21/08

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS, GOVERNMENT OF INDIA

OFFICE OF EXECUTIVE DIRECTOR: REGIONAL OFFICE: ITANAGAR

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the quoted rate of Rs 2,92,23,554/- (Rs: Two Crore Ninety Two Lakh Twenty Three Thousand Five Hundred and Fifty Four Only) inclusive of GST @18% as per the following cost abstract:

Sr. No.	Description	Qty.	Amount (in Rs) (M/s GRSE Ltd.)
1.	Supply of 320FT Span Bailey Suspension Bridge (Carriageway Width of 3.27M) Timber Decking (Reinforced), Weight-120.34MT (approx.), suitable for 40MT single vehicle (OG Paint Finish).	1 Nos.	Rs 1,88,74,347/-
2.	Transportation Charges upto project site at Doginala	As Quoted	Rs 14,48,012/-
3.	Erection/ Launching Charges	As Quoted	Rs 44,43,364/-
4.	Sub Total (Sr. 1 to 3)	-	Rs 2,47,65,723/-
5.	IGST @18%	-	Rs 44,57,830/-
6.	Total Cost (INR) i/c GST @18%		Rs 2,92,23,554/-
Rs: Two Crore Ninety-Two Lakh Twenty-Three Thousand Five Hundred and Fifty-Four Only.			

2. Supply of Bridge should adhere with the following Technical Condition:

Sr. No.	Parameters	Description
1.	Project Name	Doginala-Gau (Indo-China Border Road Project)
2.	Location	Near Doginala Upper Subansiri District in the State of Arunachal Pradesh.
3.	Bridge Type	Design and Standard as per GAD report submitted and site inspection carried out by the GRSE Team.
4.	Span	320Ft. (40MT), Span width of 3.27M Carriageway Timber Decking (Reinforced).

3. Transportation should be done by keeping the load classification of existing bridges en-route.

4. **Payment Terms:**

Payment shall be released as per Clause 4.0 of the MoU/or as amended.

Head Office: - 3RD Floor, PTI Building 4- Parliament Street, New Delhi-110001



Signature
21/06

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5. Delivery Terms:

(i) The date of commencement of the work shall be reckoned from the date of Award of the Work i.e., **21.06.2023**.

(ii) The Erection works to be completed in all respect as per agreed terms under Clause 5 of MoU or within 02 Months from the handing over of project site by the NHIDCL.

(iii) Transportation cost shall be paid as per the terms specified in MoU.

6. LD shall be levied **@1/2% for each week of delay**, subject to maximum of 5% of the Agreement value of work for delay in completion of the project. LD can also be levied during the Defect Liability Period (DLP) of 12 month for failure to carryout regular/ routine periodical Maintenance or failure to rectify/ replace defective components **@1%** of sanctioned cost for each month for which maintenance replacement/ rectification is not carried out, subject to maximum of 5% of the Agreement value of work.

7. The DLP shall be **12 months from the date of Completion of Project**. The required/regular routine maintenance of the structure shall be made by Executing Agency.

8. It is intimated that the approach for Supply, Transportation, Launching/Erection is free from all the encumbrances at the project location.

9. Your proposal/Estimate for an amount of **Rs 2,92,23,554/- (Rs Two Crore Ninety Two Lakh Twenty Three Thousand Five Hundred and Fifty Four Only.)** for Supply, Transportation, Erection/ Commissioning (including DLP of 12 Months) of 320 FT Span Bailey Suspension Bridge (Carriageway Width of 3.27M) Timber Decking (Reinforced), Weight-120.34MT (approx.), suitable for 40MT single vehicle (OG Paint Finish) is hereby accepted by Regional Office, NHIDCL, Itanagar on Behalf of HQ, NHIDCL, New Delhi as per Terms & Condition set-forth under existing MoU and amended thereof on 13.06.2022.

10. You are requested to submit the Performance Security in the form of Bank Guarantee for an amount of **Rs 8,76,707/- (Rs Eight Lakh Seventy Six Thousand Seven Hundred and Seven Only)** as per Clause-6 of the MoU.

Head Office: - 3RD Floor, PTI Building 4, Parliament Street, New Delhi-110001



Su W!
21/00

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E-mail: roitanagarnhidcl@gmail.com



A GOVT. OF INDIA UNDERTAKING

- 11. Damages/ loss during transit will be borne by the Executing Agency i.e. M/s GRSE Limited.**
- 12. All other Terms & Condition specified under MoU dated 05.02.2021 (further amended on 13.06.2022) and mentioned under above Para(s) shall be governed.**



Sunil
(Sunil Kumar)
Executive Director (P)
RO-Itanagar, NHIDCL
21/06

Copy to: -

- (i) ED-II, HQ, NHIDCL-for information please.**
- (ii) GM (Tech.), HQ, NHIDCL-for information please.**
- (iii) GM (P), PMU- Ziro-for kind information please. You are requested to liaise with GRSE Team to expedite the transportation of BSB Part as per the status Abutment construction at project site.**
- (iv) DGM (FIN)- for information and record, please.**



गार्डन रीच शिपबिल्डर्स एण्ड इंजीनियर्स लिमिटेड
**Garden Reach Shipbuilders
& Engineers Limited**

(भारत सरकार का उपक्रम, रक्षा मंत्रालय)

(A GOVERNMENT OF INDIA UNDERTAKING, MINISTRY OF DEFENCE)

CIN NO. : L35111WB1934GO1007891

Ref.: GRSE/BB/A-27/20-21/RO-Itanagar,NHIDCL,320 ft. BSB/455

Date: 10 June 2023

To,
The Executive Director (Project)
Regional Office (Itanagar), Arunachal Pradesh
National Highways Infrastructure Development Corporation Ltd. (NHIDCL)
Ministry of Road Transport & Highways (MoRTH)

REVISED RATE QUOTATION/ OFFER

**SUPPLY, TPT. AND ERECTION / LAUNCHING OF 320 FEET SPAN BAILEY SUSPENSION
BRIDGE WITH TIMBER/STEEL DECKING (REINFORCED) IN OLIVE GREEN PAINTED
FINISHED ON ROAD FROM DOGINALA TO GAU FROM KM 0+000 TO KM 15+320 IN UPPER
SUBANSIRI DISTRICT OF ARUNACHAL PRADESH**

Sir,

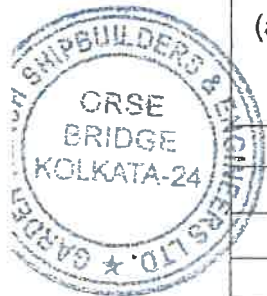
1) Refer to the following: -

- Memorandum of Understanding (MoU) signed dated 05 Feb 2021 (further amended on 13.06.2022).
- NHIDCL, RO-ITA letter No.NHIDCL/RO-ITA/02/ICBR/D-G/2020-21/5049 dated 05 June 2023 regarding revised rate Quotation for construction of 320 Ft Span BSB (carriage width of 3.27 M) Timber decking Reinforcement, weight 120.34 MT (approx.) suitable up to IRC load class of 40 MT single vehicle (OG painted finished).
- Discussion regarding additional rate quotation/offer requirement for 320 Ft. Span BSB (carriage width of 3.27 M) with steel decking Reinforcement.

2) In this regard, we hereby furnish our Quotation for caption subject as follows: -

Option - I

Sl. No.	Details / Descriptions (Olive Green Painted)	Amount
(a).	One set 320 feet span Bailey Suspension Bridge (Carriageway width 3.27 Meters) <u>Timber Decking Reinforcement</u> , Weight-120.34 MT (approx.), suitable up to IRC Load Class of 40 MT single vehicle (OG paint finish)	Ex-works price, GRSE, Kolkata ₹ 1,88,74,347.00
	Transportation charge up to project site	₹ 14,48,012.00
	Erection/Launching charge	₹ 44,43,364.00
	<u>F.O.R destination price incl. Erection charge</u>	₹ 2,47,65,723.00
	IGST@18%	₹ 44,57,830.14
	<u>Total F.O.R destination price incl. Erection charge plus IGST</u>	₹ 2,92,23,554.00
	Rupees two crores ninety two lakhs twenty three thousand five hundred fifty four only	



Cont..Page 2/-

(ब्रैली ब्रिज विभाग) 61, गार्डन रीच रोड, कोलकाता-700 024 (Bailey Bridge Dept.) 61, Garden Reach Road, Kolkata-700 024

फैक्स/Fax : 033-2469 1400, दूरभाष/Telephone : 033-2469 7164 Ext. - 455 / 7605055731

Website : www.grse.in, E-mail : debbarna.hilikeswar@grse.co.in

Option - II

Sl. No.	Details / Descriptions (Olive Green Painted)	Amount
(a).	One set 320 feet span Bailey Suspension Bridge (Carriageway width 3.27 Meters) Steel Decking Reinforcement , Weight-136.32 MT (approx.), suitable up to IRC Load Class of 24 MT single vehicle (OG paint finish)	Ex-works price, GRSE, Kolkata ₹ 2,08,77,882.00
	Transportation charge up to project site	₹ 16,40,108.00
	Erection/Launching charge	₹ 44,47,967.00
	F.O.R destination price incl. Erection charge	₹ 2,69,65,957.00
	IGST@18%	₹ 48,53,872.26
	Total F.O.R destination price incl. Erection charge plus IGST	₹ 3,18,19,830.00
Rupees three crores eighteen lakhs nineteen thousand eight hundred thirty only		

Note: Cost indicated above for transportation is indicative only and actual cost incurred along with handling charge @ 5% on basic cost is to be reimbursed as per MoU.

- 3) Applicable IGST rate @18% is considered, if any change in tax structure (other than GST) at the time of dispatch, the same will be borne by the Customer.
- 4) **COMPLETION OF THE PROJECT:** The date of commencement of the work shall be reckoned from the date of the award of the work or dispatch clearance by NHIDCL as per readiness of the site for erection of bridge whichever is later.
 - (a) **For Supply of Bridge Material:** The supply of material is to be completed within 03 (three) months from the date of LOA.
 - (b) **For Bridge Erection:** The work shall be completed in all respect within a period of 03 (three) months to be reckoned from the date of satisfactory handing over of the project site to GRSE.
- 5) **TRANSPORTATION (as per MoU):** Bridge materials shall be transported up to project site in upper Subansiri District of Arunachal Pradesh. The approach road should be approachable by 9/15/20 MT trucks. Cost indicated in quotation is indicative and actual cost paid for transportation along with handling charge @ 5% on basic cost to be reimbursed as per MoU.
- 6) **PAYMENT TERMS (as per MoU):**
 - a) 20% of total project cost within 07 days of receipt of proof of dispatch of material.
 - b) 60% of total project cost within 10 days or the receipt of complete material at site.
 - c) 20% of total project cost after completion of project in all respect
- 7) The Customer shall provide secured place for storage of Bridge materials near the Project site.
- 8) **Validity of Quotation:** 90 days from date of quotation submission.
- 9) All other terms and conditions shall be as per signed MoU dated 05 Feb 2021 (further amended on 13.06.2022).

Regards & thanking you,

For Garden Reach Shipbuilders & Engineers Ltd.
(A Govt. of India Undertaking - Ministry of Defence)

H. Debbarna

Manager (Bailey Bridge)

डिप्टी मॅनेजर डेबबर्मा / H. DEBBARMA

प्रबंधक / Manager

बैली ब्रिज विभाग / Bailey Bridge Deptt.

जी० आर० एस० ई० लि० / G.R.S.E. Ltd.

61, गार्डन रीच रोड / 61, Garden Reach Road

कोलकाता-700 024 / Kolkata - 700 024





SCHEDULE OF REINFORCEMENT:-

1. ALL DIMENSIONS ARE IN mm, AND LEVELS IN METRES UNLESS OTHERWISE MENTIONED. ONLY

2. CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH

3. GRADE OF STEEL SHALL BE F_y 500D CONFORMING TO IS : 1786

OF IRC:78-2014 HAVING PROPERTIES $C=0$, $\phi=35^\circ$, $\gamma=20^\circ$ & $S=18 \text{ kN/m}^3$.

3. MELT HOLES, 60 DIA IN SLOPE 1:20 SPACED @ 1000MM C/C BOTH HORIZONTALLY AND VERTICALLY. SHALL BE IN PROVIDED IN STAGGERED MANNER IN ABUTMENTS. MEDIAN WALL & RETURN WALL

6. THE FOUNDATION STRATA SHALL HAVE NET BEARING CAPACITY OF 500 kN/m² ABOVE THE GROUND LEVEL.

7. IN CASE OF EXCAVATION IN ROCK THE ANNULAR SPACE AROUND THE FOUNDATION SHALL BE GULFED IN A 15 GRADE CONCRETE TO THE TOP OF ROCK.

8. IT MAY BE ENSURED THAT MINIMUM EMBEDMENT OF FOUNDATION IS 1.5M IN
COST BOOK NO. 044 IN 1983 DOES NOT PROVIDE ANY INFO.

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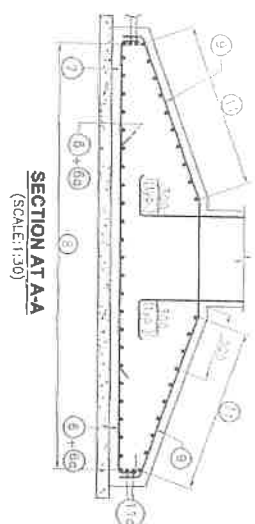
FOUNDATION FOR ABILITYMENT

In Upper Suburban District of
 Pasadena on EPC Mode
 Model No. - 201301
 Email: ajaykumar@epc.com
 Drawing No. - SUBURBAN/5/201
 01 OF

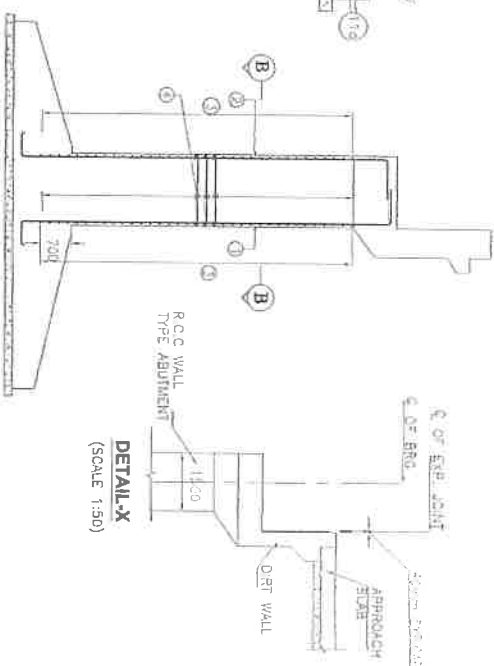
DN	GS	MR

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SCHEDULE OF REINFORCEMENT -				REVISION
Bar Schedule	Bar Shape and Size	Bar Spacing	Bar Length	Bar Quantity
1		16	125	
2		20	155	
3		12	155	
4		12	155	
5		12	155	
6		20	120	
7		16	110	
8		10	200	
9		12	150	
10		NOT IN USE		
11		10	200	
12		10		
13		20	115	
14		16	85	
15		21-10 @ 1000 c/c (as shown)		
16		20	110	
17		12	244	



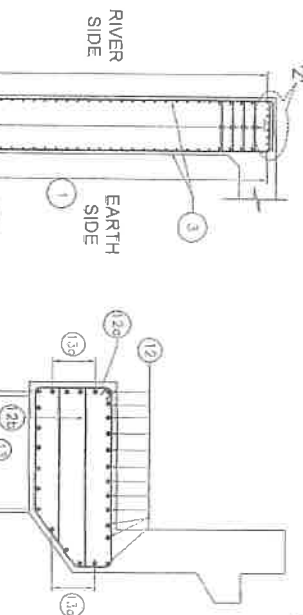
SECTION AT A-A
(SCALE:1:30)



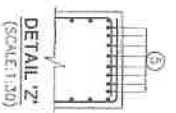
DETAIL-X
(SCALE 1:50)



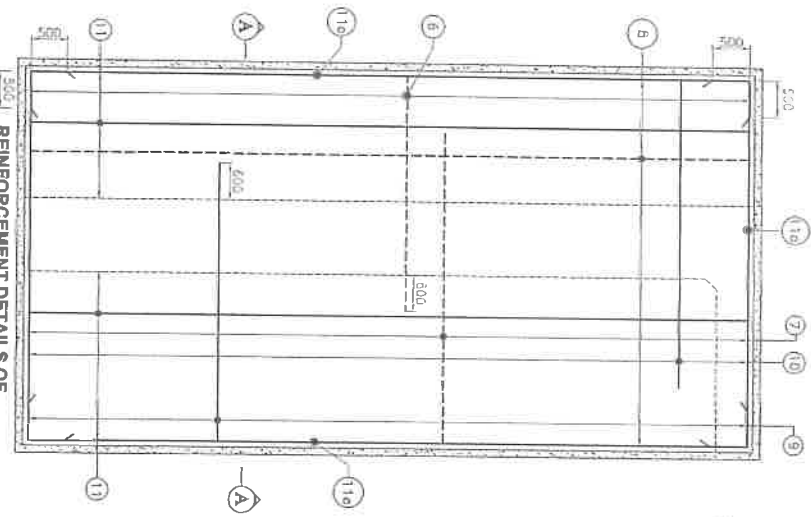
ELEVATION RC DETAIL ABUTMENT
(SCALE:1:50)



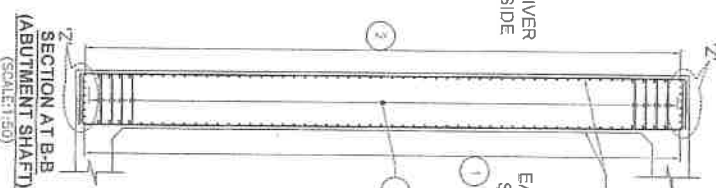
RC DETAILS OF DIRT WALL
& ABUTMENT CAP
(SCALE: 1:25)



DETAIL 2
(SCALE: 1:30)



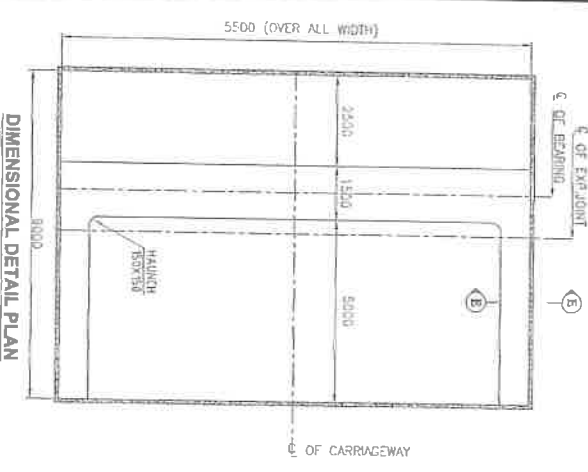
REINFORCEMENT DETAILS OF ABUTMENT FOOTING



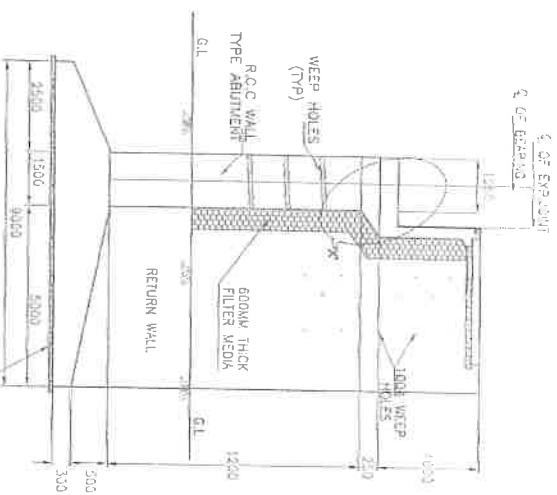
SECTION A1-B-B
(ABUTMENT SHAFT)
(SCALE:1:50)

NOTES
1. ALL D

1. ALL DIMENSIONS ARE IN MM, AND FEET/INCHES UNLESS OTHERWISE MENTIONED. ONLY DIMENSIONS ARE TO BE FOLLOWED.
2. CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH OF 30 MPa.
3. GRADE OF STEEL SHALL BE Fe-415 CONFORMING TO IS: 1786.
4. BACK FILLING BEHIND ABUTMENTS SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC-2014 HAVING PROPERTIES $C=0$, $\phi=35^\circ$, $\gamma=20 \text{ kN/m}^3$, $\delta = 18 \text{ kN/m}^3$.
5. WEIR HOLES: 100 DIA IN SLOPE 1:20 SPACING 6100mm C/C BOTH HORIZONTALLY AND VERTICALLY SHALL BE PROVIDED IN STAGGERED MANNER IN ABUTMENTS, MEDIAN WALL & RETURN WALL ABOVE THE GROUND LEVEL.
6. THE FOUNDATION STRATA SHALL HAVE NET BEARING CAPACITY OF 500 kN/m².
7. IN CASE OF EXCAVATION IN ROCK THE ANNULAR SPACE AROUND THE FOUNDATION SHALL BE FILLED IN M 15 GRADE CONCRETE TO THE TOP OF ROCK.
8. IT MAY BE ENSURED THAT MINIMUM UNWEIGHTED FOUNDATION IS 1.5M IN ALL DIRECTIONS.
9. SOFT ROCK OR 0.5M IN HARD ROCK AS PER PROVISION OF IRC - 7B.



DIMENSIONAL DETAIL PLAN



ELEVATION
(SCALE: 1:100)

[illegible]