National Highways & InfrastructureDevelopment Corporation Ltd.
(A Government of India Undertaking)

NATIONAL COMPETITIVE BIDDING
(THROUGH E-TENDERING MODE)

Name of the Work: **Special Repairs of NH-6 from Dulte to Champhai (km 69.0150 to km 150.000) [Total Length 80.985 km] (Package-1) in the State of Mizoram in FY 2021-22 (Item Rate & Work Order Basis)**

[Contract Package No.: NHIDCL/RO-Aizawl/Maint./2021-2022/Dulte-Champhai/01]

BID DOCUMENT

VOLUME-I

Feb, 2021

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Volume – I

(SECTION-I)
NOTICE INVITING TENDER
(E-TENDERING MODE ONLY)

National Highways & Infrastructure Development Corporation Limited
Notice Inviting e-Tender
(National Competitive Bidding through e-Tendering mode only)

Date: 25.02.2021

1. National Highways and Infrastructure Development Corporation Ltd. (hereinafter called "the Employer") invites sealed bids in single stage two cover system i.e. the Technical and Financial Bids on item rate basis for the following works from the experienced Road/Bridge Contractors/firms/organizations excluding those firms who have been declared as non-performing by MoRT&H/NHAI/NHIDCL or the firms those are blacklisted/debarred for specified period by MoRT&H/NHAI/NHIDCL :-

Sr. No.	*Name of work/Contract Package*	*Stretch/ Length (km) of NH-06*	*Estimated Civil Cost Put to Tender (Rs. In Crore)(Incl of all Taxes)*	*Bids Security (Rs. In Crore)*	*Average annual turnover for last 5 Years (Rs. In Crore)*	*Time of Completion* in Months	*Eligibility Criteria as Completed work of similar nature during last 5 Years (Rs. In Crore)*
1	Special Repairs of NH-6 from Dulte to Champhai (km 69.0150 to km 150.000 [Total Length 80.985 km] (Package-1) in the State of Mizoram in FY 2021-22 (Item Rate & Work Order Basis)	80.985	3.27	Declaration to be submitted	For one value of Work 2.95 Cr OR Two value of work each 1.31 Cr	6	One similar Completed work not less than the amount equal to 90% of the total value of contract (2.95 Crore) **OR** Two similar Completed work not less than the amount equal to 40% of the total value of contract (1.31 Crore)

Cost of Bid Documents : Rs. 20000/- in the form of DD in favour of National Highways& Infrastructure Development Corporation Limited (NHIDCL)(Non-Refundable)

2. Date of Publishing is from 25.02.2021.
3. The complete BID document can be viewed / downloaded from web portal www.eprocure.gov.in from 25.02.2021 to 18.03.2021 (up to 17.00 Hrs. IST).
4. Bidder must submit its Financial bid at https://eprocure.gov.in and Technical Bid at https://bims.gov.in on or before 19.03.2021up to 1030 hours IST. Bids received online shall be opened on 19.03.2021 (at 1100 hours IST).

5. Bid documents can be seen at and downloaded from the websitewww.nhidcl.com and https://eprocure.gov.inin Bid documents contain qualifying criteria for bidder, specification, bill of quantities, conditions and other details.
6. The site for theork is available.
7. Bidder shall submit the following documents.
   i) Copy of PAN Card.
   ii) Demand Draft for cost of documents
   iii) Declaration for Bid Security.
8. The interested bidder can download the NIT / bidding document from the website https://eprocure.gov.in, https://bims.gov.in&www.nhidcl.com
9. The participate in bidding process, bidder have to get (DSC) "Digital Signature Certificate" as per Information Technology Act-2000, to participate in online bidding. This certificate will be required for digitally signing the bid. Bidder can get above mentioned digital certificate from any approved vendors. The Bidder, who already posses valid (DSC)"Digital Signature Certificate" need not to procure new Digital Signature Certificate.
10. The bidders have to submit their bids online in electronic format with Digital Signature. The bid cannot be uploaded without Digital Signature. No proposal will be accepted in physical form.
11. Bids will be opened online as per time schedule mentioned at Sr. No. 19.
12. Before submission of online bids, bidder must ensure that scanned copy of all the necessary documents have been attached with bid.
13. The department will not be responsible for delay in online submission of bids whatsoever reasons may be.
14. All the required information for bid must be filled and submitted online.
15. Bidders should get ready with the scanned copies of cost of documents & EMD as specified in the tender documents. The original instruments in respect of cost of documents, EMD and relevant documents will be submitted to the Tenders Inviting Authority by Registered post/courier/by hand as per time schedule specified.
16. The details of cost of documents, EMD/ Bid Security specified in the tender documents should be the same, as submitted online (Scanned copies) otherwise bid will not be accepted.
17. Bidders can contact the undersigned for any guidance for getting DSC or any other relevant details in respect of e-tendering process.
18. The guidelines for submission of bid online can be downloaded from the website www.nhidcl.com&https://eprocure.gov.in.
19. **Schedule of Bidding Process**

The Company shall endeavor to adhere to the following schedule:

S. No	Description	Period
1.	Date of issue of NIT	25.02.2021
2.	Date of issue of Sale of Tender Documents	25.02.2021
3.	Date of close of sale of Tender Documents (through online)	18.03.2021 (up to 1700 Hrs)
4.	Last Date of receipt of pre-bid queries	10.03.2021
5.	Date of Pre-Bid meeting	10.03.2021 (at 1600 Hrs)
6.	Date of uploading of reply to the pre-bid queries	12.03.2021
7.	Last Date of submission of Tender/Bid (online& hard copy)	19.03.2021(up to 1030 Hrs)
8.	Opening of Technical BIDs at venue	20.03.2021(up to 1100 Hrs)
9.	Date of Uploading of list of Technically Qualified Applicants	To be intimated later
10.	Date of Opening of Financial Bids of Qualified Applicants	To be intimated later

11.	Date of issue of letter of award (LOA)	To be intimated later
12.	Validity of Bid	120 Days
13.	Return of signed duplicate copy of LOA	To be intimated later
14.	Submission of Performance Security (PS) and Additional Performance Security (APS), if any	Within 30 days of receipt of LOA. (The bidder has the option to provide 50% of PS and APS, if any within 30 days of receipt of LOA and the remaining PS and APS, if any to be provided within 30 days of signing of agreement)
15.	Signing of Agreement	Within 30 days of receipt of LOA. (The bidder has the option to provide 50% of PS and APS, if any within 30 days of receipt of LOA and the remaining PS and APS, if any to be provided within 30 days of signing of agreement)

For any clarification, the following office may be contacted:

Executive Director (Projects)
Regional Office-Aizawl, 3rd Floor, T-86,
Tuikhuahtlang, Aizawl, Mizoram-796001
Email:ro-mizoram@nhidcl.com

20. Conditional bids would be rejected.
21. NHIDCL reserves the right to accept/reject any or all the bids without assigning any reasons thereof.

Date: 25.02.2021

Executive Director (Projects)
Regional Office-Aizawl, 3rd Floor, T-86,
Tuikhuahtlang, Aizawl, Mizoram-796001
Email:ro-mizoram@nhidcl.com

(SECTION-II)
INSTRUCTIONS TO BIDDERS
& APPENDIX TO BID

Section II: Instructions to Bidders

Table of Clauses

Section II
Instructions to Bidders (ITB)
A. General

1. Scope of Bid

1.1 The Employer (i.e., Managing Director, National Highways & Infrastructure Development Corporation ltd.) invites bids for "as described in these documents and referred to as "the works". The name and identification number of the works is provided in the Notice Inviting Tender.

1.2 The successful bidder will be expected to complete the works by the intended completion date specified in the Contract data.

1.3 Throughout these Bidding Documents, the terms "bid" and "tender" and their derivatives (bidder/tender, bid/tender, bidding/tendering, etc.) are synonymous.

2. Source of Funds

2.1 The expenditure on this project will be met by National Highways & Infrastructure Development Corporation ltd (NHIDCL).

3 Eligible Bidders

3.1 This Invitation for Bids is open to all bidders meeting the qualification requirements prescribed in this document.

3.2 Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices by the Central Government, the State Government or any public undertaking, autonomous body, authority by whatever name called under the Central or the State Government.

4 Qualification of the Bidder

4.1 Deleted

4.2 All bidders shall furnish the following information and documents with their bids in Section-III, Qualification Information.

a) Scanned copies of Original documents defining the constitution or legal status, place of registration, and principal place of business; scanned copy of written power of attorney of the signatory of the Bid to commit the Bidder; & original copy of Written Power of Attorney to be submitted in the envelop of physical form.(Pl. Refer clause 12.2 of ITB)

b) Scanned copy of total monetary value of civil engineering construction works performed for each of the last five years; (2015-16, 2016-2017, 2017-2018,2018-2019, 2019-2020)

c) Scanned copy of experience certificate in works of a similar nature and size for each of the last five financial years (commencing from year 2015-16) with certificates from the concerned officer of the rank of Executive Engineer or equivalent;

d) Scanned copy of evidence of availability (either owned or leased or rented) of items of construction equipment named in the Appendix to ITB. [Clause 4.4 B(b) (i)]

e) Scanned copy of details of the technical personnel proposed to be employed for the Contract having the qualifications defined in Appendix to ITB. [Clause 4.4 B(b) (ii)]

f) Scanned copy of reports on the financial standing of the Bidder, and a certificate from Chartered Accountant as a proof of turnover for the last five years;

g) Scanned document in support of evidence access to line (s) of credit and availability of other financial resource facilities (10 % of Contract value), certified by bankers (not more than 3 months old).

h) Scanned undertaking that the bidder will be able to invest minimum cash upto 25 % of contract value of work, during implementation of work.

i) Deleted

j) Scanned copy of information regarding any litigation or arbitration during the last five years in which the Bidder is involved, the parties concerned, the disputed amount, and the present status;

k) Deleted

l) Deleted.

4.3 **Bids from joint ventures, consortiums, combination or any sort of arrangement between two or more than two entities are not allowed.**

4.4 **A. To qualify for award of the contract, each bidder in its name should have the following; -**

a) Achieved an average annual financial turnover (in all classes of civil engineering construction works only) equal to the amount indicated in NIT during last fiveyears ending 31st March of the previous financial year, duly certified by Chartered Accountant.

b) Satisfactorily completed (not less than 90% of contract value), as a prime contractor (or as a nominated subcontractor, provided further that all other qualification criteria are satisfied) similar works during last five years ending last day of month previous to the one in which bids are invited, at least Two contract of Highway (Road/ or Bridge works)/ Airport runway of 40%of the value of contract. (i.e.Rs. 1.31 crore).

[The "similar work" constitutes construction/maintenance of bituminous road, retaining walls & culverts work on National Highways/State Highways (The base year should be considered as 2020-21)]

(Following escalation factor shall be used to bring the value of such completed works at the level of current financial year i.e.,2019-2020)

Year Before	Multiplying Factor
One	1.10
Two	1.21
Three	1.33
Four	1.46
Five	1.61

4.4 B.

a) Each bidder must upload the scanned copies of following documents along with thesubmission of online bidding:

i. An affidavit on a Stamp Paper, duly attested from the Notary Public, that the information furnished with the bid documents is correct in all respects; and

ii. Such other certificates as defined in Section- III.

iii. Failure to submit the certificates/documents as specified above shall make the bid non-responsive.

b) Each bidder must demonstrate:

i. Evidence of availability (either owned or leased or rented) of the key equipments for this work as stated in the Appendix to ITB.

ii. Availability for this work of personnel with qualification & experience as stated in the Appendix to ITB.

c) Deleted.

d) Deleted.

4.4 C.Deleted

4.5 Contractors' experience and resources shall not be taken into account in determining the bidder's compliance with the qualifying criteria.

4.6 Bidders who meet the minimum qualification criteria will be qualified only if their available bid capacity is more than the total bid value. The available bid capacity will be calculated as under:

Assessed Available Bid capacity = (A* N* 2.5 - B)
Where,
A = Maximum value of civil engineering works executed in any one year during the last five years (escalation factor as specified in this section shall be used to bring the maximum value of civil engineering works to the level of current financial year i.e., 2020-21) taking into account the completed as well as works in progress.

N = Number of years prescribed for completion of the works for which bid is invited.

B = Value (escalation factor as specified in this section shall be used to bring the value to the level of current financial year i.e., 2020-21) of existing commitments and on-going works to be completed during the next 01 year (period of completion of the works for which bid is invited)

4.7 Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:

i. Made misleading or false representations in the forms, statements, affidavits andattachments submitted in proof of the qualification requirements; and/or

ii. Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or

financial failures etc. or debarring from MoRT&H/NHAI/NHIDCL/State PWD work etc.

iii. Tampered the bid document in any manner.

5 One Bid per Bidder

5.1 Each Bidder shall submit only one Bid for a particular package. A Bidder who submits more than one Bid for the same package will cause be disqualified.

6 Cost of Bidding

6.1 The Bidder shall bear all costs associated with the preparation and submission of his Bid, and the Employer will, in no case, be responsible or liable for those costs.

7 Site Visit

7.1 The Bidder, at his own cost, responsibility and risk, is encouraged to visit, examine and familiarize himself with the Site of Works and its surroundings including source of earth, water, road aggregates etc. and obtain all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense. He may contact the Branch Office of NHIDCL in this regard.

Section II
Instructions to Bidders (ITB)

Bidding Documents (On line)

8 Content of Bidding Documents

8.1 The set of bidding documents comprises the documents listed below and addenda (if any) issued in accordance with Clause 10:

Volume- I:-

1. Notice Inviting Tender
2. Instructions to Bidders & Appendix to Bid
3. Qualification Information
4. Forms Bank Guarantee, Agreement & LOA
5. Conditions of Contract & Contract Data
6. Scope of work
7. Technical Specifications
8. Implementation Manual & Maintenance Intervention Levels

Volume - II:-

9. Bill of Quantities (Should be filled in the prescribed format given in the bid document)

8.2 DELETED.

8.3 The bidder is expected to examine carefully all instructions, conditions of contract, contract data, forms, terms, specifications, bill of quantities, etc. in the Bid Document. Failure to comply with the requirements of Bid Documents shall be at the bidder's own risk. Pursuant to clause 26 hereof, bids, which are not substantially responsive to the requirements of the Bid Documents, shall be rejected.

9 Clarifications on Bid Documents

9.1 A prospective Bidder requiring any clarification on the bid documents may notify the Employer in writing or by cable ("cable" includes facsimile) or through e-tender portal at the Employer's address indicated in the Notice Inviting Tender. The Employer will respond to any request for clarification received earlier than 10 days prior to the deadline for submission of bids. Copies of the Employer's response will be hosted on website or which are required in the opinion of the Employer including a description of the enquiry, but without identifying its source.

9.2 **Pre-bid meeting**

9.2.1 The bidder or his official representative is invited to attend pre-bid meeting which will take place at the address, venue, time and date as indicated in appendix.

9.1.1 The purpose of the meeting will be to clarify issues and to answer question on any matter that may be raised at that stage.

9.1.2 The bidder is requested to submit any questions in writing or by cable/email so as to reach the Employer not later than one week before the meeting.

9.1.3 Minutes of the meeting, including the text of the questions raised (without

identifying the source of the enquiry) and the responses given will be transmitted without delay on website. Any modifications of the bid documents listed in Clause 8.1, which may become necessary as a result of the pre-bid meeting or which are required in the opinion of the Employer shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause 10 and not through the minutes of the pre-bid meeting.

9.1.4 Deleted

10 Amendment of Bidding Documents

10.1 Before the deadline for submission of bids, the Employer may modify the Bidding Documents by issuing addenda.

10.2 Any addendum thus issued shall be part of the Bidding Documents and shall be hosted on NHIDCL e-tendering portal i.e.,https://eprocure.gov.in andwww.nhidcl.com.Bidders are advised to keep them self-updated of all the addendums issued on e-tendering portal by daily checking the e-tendering portal and, NHIDCL does not assume any responsibility in case the bidder fails to do so and does not take any action, if required, with respect any relevant addendum.

10.3 To give prospective bidders reasonable time to take an addendum into account in preparing their bids, the Employer shall extend, as necessary, the deadline for submission of bids, in accordance with Clause 20.2.

Section II
Instructions to Bidders (ITB)

C. Preparation of Bids

11 Language of Bid

11.1 All documents relating to the Bid shall be in English.

12 Documents Comprising the Bid

12.1 The e-bid submitted by the bidder shall be in two separate parts.

Part-I - This shall be named Technical Bid and shall comprise of information submitted in section-III.

Part-II - It shall be named Financial Bid and shall comprise of Priced bill of quantities.

Documents to be submitted in physical form must reach the **Executive Director (Projects),**Regional Office-Aizawl, 3rd Floor, T-86,Tuikhuahtlang, Aizawl, Mizoram-796001.

Though, the scanned copies of following documents is required to be uploaded during submission of e-bid on the e-tendering portal, As per clause 12.1 above, however, following original documents in physical form shall be submitted in a sealed envelope and addressed to the addressee given in the NIT duly super scribed "Name of Work, Bid due date and time". Name and address of the bidder should also be indicated on the envelope.

a) EMD/Bid Security declaration

b) Bid Document Fee

c) Deleted

d) Written Power of Attorney of the signatory (whose digital signature certificate is used during e-tender submission) of the bidder to commit the bid

e) Affidavit duly notarized

f) Original experience certificate or notarized copy of certificate duly signed by authorized signatory.

12.2 The following documents, which are not submitted with the bid, will be deemed to be part of the bid.

Section	Particulars
1.	Notice Inviting Tender
2.	Instruction to the bidders
3.	Conditions of Contract
4.	Contract Data
5.	Technical Specifications

13 Bid Prices

13.1 The Contract shall be for the whole Works, as described in Clause 1.1 based on the priced Bill of Quantities submitted by the Bidder.

13.2 The bidder shall quote bid prices on appropriate format enclosed as part of tender document on e-tender portal i.e.https://eprocure.gov.in. The items for which no rate or price is entered by the Bidder will be required to be executed free of cost and shall be deemed covered under the other rates and prices in the Bill of Quantities quoted.

13.3 All duties, taxes including GST, royalties and other levies payable by the Contractor under the Contract, or for any other cause, shall be included in the rates, prices, and total Bid price submitted by the Bidder.

13.4 The rates and prices quoted by the Bidder shall be fixed for the duration of the Contract and shall not be subject to adjustment.

14 Currencies of Bid and Payment

14.1 The unit rates and the prices shall be quoted by the bidder entirely in Indian Rupees. All payments shall be made in Indian Rupees.

15 Bid Validity

15.1 Bids shall remain valid for a period of **120 days** after the deadline date for bid submission specified in Clause 20. A bid valid for a shorter period shall be rejected by the Employer asnon-responsive.

15.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified additional period. The request and the bidders' responses shall be made in writing or by cable. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid, but will be required to extend the validity of his bid security for a period of the extension, and in compliance with Clause 16 in all respects.

16 Earnest Money / Bid Security/ Forfeiture/ Debarment

16.1 Bidder must submit Bid Securing Declaration. In case the bid is withdrawn or modified during the period of its validity or if the bidder fail to sign the contract in case the work is awarded to the bidder or the bidder fail to submit a performance security before the deadline defined in clause 7 of the Request for Proposal (RFP), then the bidder will be suspended for participation in the tendering process for the works of MoRTH/NHAI/NHIDCL and works under other Centrally Sponsored Schemes, for a period of one year from the bid due date of this work.

17 Alternative Proposals by Bidders

17.1 Bidder shall submit offers that fully comply with the requirement of the Bidding Documents. Conditional offer or alternate offer will not be considered further in the process of evaluation and the bid will be declared non-responsive.

18 Format and Signing of Bid

18.1 The Bidder shall submit e-bid comprising of the documents as described in Clause 12 of the ITB.

18.2 DELETED.

18.3 DELETED.

18.4 The documents to be submitted in the physical form along with the demand draft for fees/security shall be typed or written in ink and shall be signed by a person duly authorized to sign on behalf of the bidder. All the pages of the documents as mentioned here shall be signed by the person/persons signing the bid. Documents as mentioned here shall contain no overwriting, alterations or additions, except those to comply with instructions, issued by the employer or as necessary to correct errors made by the bidder, in which case such corrections shall be made by scoring out the cancelled portion, writing the correction and signing and dating it along with the stamp by the person or persons signing the Bid

Section II
Instructions to Bidders (ITB)

D. Submission of Bids

19 Marking of Bids

19.1 The documents to be submitted in physical form as per clause 12.2 of ITB shall be submitted in a sealed Envelope super scribed as "Documents in Physical Form" at the top left corner.

19.2 DELETED.

19.3 DELETED.

19.4 DELETED.

19.5 DELETED.

20 Deadline for Submission of Bids

20.1 Complete e-Bid to be uploaded on NHIDCL e-tender portal before due date & time. The Envelope containing "Documents in Physical Form" must also be received by the Employer at the address **Executive Director (P),Regional Office-Aizawl, 3rd Floor, T-86, Tuikhuahtlang, Aizawl, Mizoram-796001** not later than the date and time indicated in the NIT. In the event of the specified date for the submission of documents in Physical form being declared a holiday for the Employer, the same will be received up to the specified time on the next working day.

20.2 The Employer may extend the deadline for submission of bids by issuing an amendment in accordance with Clause 10, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will then be subject to the new deadline.

21 Late Submission of Document in Physical Form:

21.1 Any document in physical form if received by the Employer after the deadline prescribed in Clause 20 will be returned unopened to the Bidder and also the e-bid submitted by such bidder shall not be considered.

22 Modification and Withdrawal of Bids

22.1 Bidders may modify or withdraw their e-bids as directed on the e-tendering portal, before the Bid Due Date and time as prescribed in Clause 20.

22.2 DELETED.

22.3 No bid may be modified after the deadline for online submission of bids.

22.4 Withdrawal or modification of a Bid between the deadline for submission of bids and the expiration of the original period of bid validity specified in Clause 15.1 above or as extended pursuant to Clause 15.2 shall result in the forfeiture of the Bid security pursuant to Clause 16.

22.5 Bidders may modify the prices of their bids before deadline of online submission of bid.

Section II
Instructions to Bidders (ITB)

E. Bid Opening and Evaluation

23 Bid Opening

Bid opening shall be carried out in two stages. Firstly, 'Technical Bid' of all the bids received (except those received late) shall be opened on the date and time mentioned in Notice InvitingTender (NIT). 'Financial Bid' of those bidders whose technical bid has been determined to be substantially responsive shall be opened on a subsequent date through online process of e-tendering, which will be notified to such bidders.

23.1 The Employer will open the "Technical Bid" of all the bids received (except those received late), in the presence of the bidders/bidders' representatives who choose to attend at the time, date and place specified in the NIT. In the event of the specified date for the submission of bids being declared a holiday for the Employer, the Bids will be opened at the appointed time and location on the next working day.

23.1.1 DELETED

23.1.2 DELETED

23.2 In all cases, the amount of Bid Security, forms and validity shall be announced. Thereafter, the Employer at the opening as the Employer may consider appropriate, will announce the bidders' names and such other details.

23.3 The Employer will prepare minutes of the Bid opening, including the information disclosed to those present in accordance with Clause 23.1.

23.4

(i) The bids accompanied with valid bid security, bid document fee, Tender Processing fee will be taken up for evaluation with respect to the information furnished in Part I of the Qualification Information and other bid.

(ii) As soon as possible, the Evaluation Committee will finalize the list of responsive bidders whose financial bids are eligible for consideration. However, to assist in the examination, evaluation of technical bids, the Employer may at his discretion, ask any bidder for clarification of his bid, however, no additional documents in support of clarification will be entertained.

23.5 The Employer shall inform the bidders, whose technical bids are found responsive, of the date, time and place of opening of the financial bids. The bidders so informed, or their representative, may attend the meeting of opening of financial bids.

23.6 At the time of the opening of the 'Financial Bid', the names o f the bidders whose bids were found responsive in accordance with clause 23.5 will be announced. The financial bids of only these bidders will be opened. The responsive bidders' names, the Bid prices, the total amount of each bid, pursuant to clause 22 and such other details as the Employer may consider appropriate will be announced by the Employer at the time of bid opening. Any Bid price, which is not read out and recorded, will not be taken into account in Bid Evaluation.

23.7 The Employer shall prepare the minutes of the opening of the Financial Bids.

24 Process to be Confidential

24.1 Information relating to the examination, clarification, evaluation, and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other person not officially concerned with such process until the award to the successful Bidder has been announced. Any attempt by a Bidder to influence the Employer's processing of bids or award decisions may result in the rejection of his Bid

25 Clarification of Bids and Contacting the Employer

25.1. To assist in the examination, evaluation, and comparison of Bids, the Employer may, at his discretion, ask any Bidder for clarification of his Bid, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable, but no change in the price or substance of the Bid shall be sought, offered, or permitted.

25.2. Subject to sub-clause 25.1, no Bidder shall contact the Employer on any matter relating to his bid from the time of the bid opening to the time the contract is awarded.

25.3. Any effort by the Bidder to influence the Employer in the Employer's bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidders' bid.

26 Examination of Bids and Determination of Responsiveness

26.1 During the detailed evaluation of "Technical Bids", the Employer will determine whether each Bid

a) meets the eligibility criteria defined in Clauses 3 and 4 of ITB;

b) the required documents in physical form submitted by the bidder as well as the documents uploaded by the bidder are in order; and

c) is substantially responsive to the requirements of the Bidding Documents. During the detailed evaluation of the "Financial Bids", the responsiveness of the bids will be further determined with respect to the remaining bid conditions, i.e., priced bill of quantities, technical specifications etc.

26.2 DELETED.

26.3 DELETED.

27 DELETED.

28 Evaluation and Comparison of Financial Bids

28.1 The Employer will evaluate and compare only the bids determined to be substantially responsive in accordance with Clause 26.

28.2 DELETED

28.3 If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's/Employer's estimate of the cost of work to be performed under the contract, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the performance security set forth in Clause 33 be increased and an additional performance security of 05 (five) percent may be obtained at the expense of the successful Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.

28.4 A bid, which contains several items in the Bill of Quantities which are unrealistically priced low and which cannot be substantiated satisfactorily by the bidder, may be rejected as non-responsive.

29 Price Preference

29.1 There will be no price preference to any bidder.

F. Award of Contract

30 Award Criteria

30.1 Subject to Clause 32, the Employer will award the Contract to the Bidder whose Bid has been determined to be substantially responsive to the bidding documents and who has offered the lowest evaluated Bid Price.

31 Employer's Right to Accept any Bid and to Reject any or all Bids

31.1 Notwithstanding Clause 30, the Employer reserves the right to accept or reject any Bid, and to cancel the bidding process and reject all bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the Employer's action.

32 Notification of Award and Signing of Agreement.

32.1 The bidder whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity period by cable, telex or facsimile confirmed by registered letter. This letter (hereinafter and in the Part I *General Conditions of Contract* called the "Letter of Acceptance") will state the sum that the Employer will pay to the Contractor in consideration of the execution, completion and maintenance of the Works, by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").

32.2 The notification of award (LOA) will constitute the formation of the Contract, subject only to the furnishing of a performance security in accordance with the provisions of Clause 33.

32.3 The Agreement will incorporate all agreements between the Employer and the successful Bidder. It will be signed by the Employer and the successful Bidder after the performance security is furnished.

32.4 Upon furnishing by the successful Bidder of the Performance Security, the Employer will promptly notify the other Bidders that their Bids have been unsuccessful.

33 Performance Security

33.1 Within 10 (ten) days after receipt of the Letter of Acceptance, the successful Bidder shall deliver to the Employer a Performance Security of 5 (five) percent of the Contract Price, valid for the period of 28 days after the expiry of defect liability period of 6 (Six) months plus additional security for unbalanced Bids in accordance with Clause 28.3 of ITB and sign the contract. The validity shall account for additional 3 months time to account for BG verification, signing of contract and start date.

33.2 The performance security shall be in the form of a Bank Guarantee in the name of the Employer, from a Bank as applicable in case of bid security defined in Appendix to ITB.

33.3 Failure of the successful bidder to comply with the requirement of sub-clause 33.1 shall constitute sufficient ground for cancellation of the award and forfeiture of the bid security and debarment for a period as specified in clause 16.7.

34 Advances - Deleted

35 Corrupt or Fraudulent Practices

The Employer will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question and will declare the firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract with NHIDCL and any other agencies, if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for the contractor, or in execution.

The Employer requires the bidders/Contractors to strictly observe the laws against fraud and corruption enforced in India, namely, Prevention of Corruption Act, 1988.

<table>
<tr><th colspan="3">Appendix to ITB</th></tr>
<tr><td>Instructions to Bidders Clause Reference</td><td colspan="2"></td></tr>
<tr><td>(1.1)</td><td colspan="2">The Employer is Regional Office-Aizawl, 3rd Floor, T-86, Tuikhuahtlang, Aizawl, Mizoram-796001</td></tr>
<tr><td>(1.1)</td><td colspan="2">Special Repairs of NH-6 from Dulte to Champhai (km 69.0150 to km 150.000) [Total Length 80.985 km] (Package-1) in the State of Mizoram in FY 2021-22.</td></tr>
<tr><td>(4.4)
B) (b) (i)</td><td>Name of the Equipment</td><td>Quantity</td></tr>
<tr><td></td><td>Tipper/Trucks</td><td>3</td></tr>
<tr><td></td><td>Hydraulic Excavator</td><td>0</td></tr>
<tr><td></td><td>Motor Grader</td><td>0</td></tr>
<tr><td></td><td>Excavator 1.0 cum bucket capacity</td><td>0</td></tr>
<tr><td></td><td>Vibratory Roller</td><td>2</td></tr>
<tr><td></td><td>Hot Mix (batch mix/drum mix type) plant with Electronic Control (Minimum 75 TPH Capacity)</td><td>1</td></tr>
<tr><td></td><td>Paver finisher</td><td>1</td></tr>
<tr><td></td><td>Front end Loader</td><td>1</td></tr>
<tr><td></td><td>Smooth Wheeled Roller</td><td>1</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td>Bitumen pressure distributer @ 1750 sqm per hr</td><td>1</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td>Water Tanker</td><td>1</td></tr>
<tr><td></td><td>Concrete Mixer with Integrated weight batching facility</td><td>0</td></tr>
<tr><td></td><td>Generator set (63/100/250 KVA)</td><td>1</td></tr>
<tr><td></td><td colspan="2">Any other equipment required for carrying out work as per MoRT&H specification.</td></tr>
<tr><td></td><td colspan="2">Note: The bidder must upload scanned copy of the documentary evidence in support of his owning/leased/ rented of the above equipment's. In case the bidder proposes to hire or take the above equipment on lease, he should, along with the lease/rent agreement, attach the proof of ownership of these equipment's with the company/ entity from whom the equipment's are proposed to be hired on lease/ rent.</td></tr>
<tr><td>(4.4)
(B) (b) (ii)</td><td colspan="2">The Number of Technical personnel, Qualifications and Experience will be as follows:
The Technical Personnel are :</td></tr>
</table>

SL. No.	Personnel	Qualification	Particular Experience (minimum requirement)	No. of Persons
1	Project Manager	B.E (Civil) or equivalent + 10 Years Exp.	5 years on highway constructions / maintenance work.	1
2	Plant manager	B.E (Mech.) or equivalent + 10 Years Exp.	2 year relevant Exp.	1
3	Site Engineer	B.E (Civil) + 3Years Exp. Or Diploma + 5 Years Exp.	2 years on highway constructions / maintenance work.	1
4	Quantity Surveyor	B.E.Civil+3Years Exp. Or Dip. Civil. + 5Years Exp.	2 years on highway constructions / maintenance work.	1
5	Soil and Material Engineer	B.E. Civil+ Year Exp. Or Dip. Civil+ 7 year Exp.	2 years on highway constructions / maintenance work	0
			Total	**4**
		Note: The detailed signed and scanned CV's of the Key Technical Personnel at S. No. 1 signed by the key personnel himself, must be uploaded along with the bid. The name and educational qualification of other personnel should be given. Noncompliance of the above or non-furnishing of the CV as above.		

SECTION III

QUALIFCATION INFORMATION

(To be Filled by Bidder)

SECTION III

QUALIFCATION INFORMATION

The information to be filled in by the Bidder in this section & document submitted in physical form will be used for the purposes of post qualification as provided for in Clause 4 of the Instructions to Bidders. This information will not be incorporated in the Contract.

1. For Individual Bidders

1.1

a) Year of Constitution

b) legal status of Bidder (Proprietorship/Partnership or Pvt. Ltd. firm)

[Upload scanned copy of original]

c) Place of registration:

_____

d) Principal place of business:

_____

1.2 Power of attorney of signatory of Bid *[Upload scanned copy & also supply Original copy inenvelop of physical form]*

1.3 Total value of Civil Engineering construction work performed in the last Five years (in Rs. _____ Lakhs) refer ITB Clause 4.4 A (a)
(Upload scanned copies of certificate from Chartered Accountant & also supply original certificate from Chartered Accountant)

2019-2020----------

2018-2019----------

2017-2018----------
2016-2017----------
2015-2016----------

Total ----------

Average per year----------

1.4 (a) Work performed as prime contractor, work performed in the past as a nominated sub-contractor provided further that all other qualification criteria are satisfied (in the same name) of a similar nature during the last five years as per ITB Clause 4.4A(b).

Project Name	Name of the Employer *	Description of work	Contract No.	Value of Contract (Rs. Crore)	Date of issue of work order	Stipulated period completion	Actual date of completion	Remarks explaining reasons for delay & work

**** Upload certificate(s) from the Employer (to be given by an officer at the rank of Executive Engineer or equivalent & also supply original or certified copy in physical form in envelope)***

Note: In case of nominated sub-contractor – a certificate from the Executive Engineer or equivalent of the Prime Employer should be obtained from whom an approval for subcontractor has been obtained.

1.4 (b) Information on Bid Capacity (works for which bids have been submitted and accepted and works which are yet to be completed) as on the date 7 days before the last date for bid submission (as per Cl 4.6 of the ITB).

(i) Existing commitments and on-going works (B)

Description of works	Place & State	Contract No.	Name &Address of Employer	Value of Contract (Rs Cr)	Stipulated Period of Completion	Value of works remaining to be completed (Rs. Cr)	Escalation factor	Anticipated date of completion factor	Escalated value of remaining work during completion on period of work of which bids are invited
1	2	3	4	5	6	7	8	9	10

* Upload certificate (s) from the Engineer(s)-in-Charge of the rank of Executive Engineer or equivalent & also supply original or certified copy of certificate in physical form envelop.

(ii) Details of works for which bid submitted and accepted (i.e. where contract signing is pending)

Description of works	Place & State	Name & Address Of Employer	Date of issue of Letter of Acceptance (LOA) *	Value given in LOA	Stipulated period for completion	Value of work during completion period of work for which bids are invited
1	2	3	4	5	6	7

* Upload copy of LOA

(iii) Bid Capacity (Bidder shall calculate, mention his bid capacity and enclose the supporting calculation)

A = Rs. ……lakh (enclose the details)
N = ……years

B = Rs. ……lakh (enclose the details)

Assessed available bid capacity = AxNx2.5 – B
= Rs. ……. Lakhs

1.5 Availability of Key Equipment essential for carrying out the Works [Ref. Clause 4.4(B)(b) (i)]. The Bidder should list all the information requested below.

Item of Equipment	**Requirement**	**Availability Proposals**			**Page no. of the proof attached**
		Owned/Leased/ rented	**Nos./Capacity**	**Age/Condition**	
Tipper/Trucks					
Hydraulic Excavator					
Motor Grader					
Excavator 1.0 cum bucket capacity					
Dozer 180 HP @ 60 cum per hr					
Vibratory roller					
Hot Mix (batch mix) plant with Electronic Control (Minimum 75 TPH Capacity)					
Paver Finisher					
Front end Loader					
Smooth Wheeled Roller					
Vibratory Roller					
Bitumen pressure distributer @ 1750 sqm per hr					
Water Tanker					

Concrete Mixer with Integrated weight batching facility					
Air Compressor					
Generator set (63/100/250 KVA)					

Note: The bidder must upload the documentary evidence in support of his owning/leased/ rented of theabove equipments. In case the bidder proposes to hire or take the above equipment on lease, he should, along with the lease/rent agreement, attach the proof of ownership of these equipments with the company/ entity from whom the equipments are proposed to be hired on lease/ rent. The bidder shall submit an undertaking as per Performa Appendix 1.7 (ITB, Section -2) of the bid document.

1.6 Qualification and Experience of Key Personnel required for administration and execution of the Contract [Ref. Clause 4.4 (B) (b) (ii)]. **Upload biographical datafor technical personnel (Refer also to Cl. 4.2 (e) of Instruction to Bidders).**

(Refer also to Sub Clause 9.1 of the Conditions of Contract).

Sl. No.	Position	Name	Qualification	Total Professional Experience (Years)	Experience in the proposed position (Years)
1.	Project Manager				
2.	Plant manager				
3.	Site Engineer				
4	Quantity Surveyor				
5	Soil and Material Engineer				

Note: The detailed and signed CV's of the Key Technical Personnel at S. No. 1 signed by the key personnel himself must be uploaded along with the bid. The name and educational qualification of other personnel should be given.

1.7 Information on litigation history in which the Bidder is involved.

Other Party (ies)	Employer	Cause of Dispute	Amount Involved	Remarks showing Present Status

2. Bidders should upload the scanned copy of the following affidavits/ undertakings as per formats enclosed hereinafter & also send original copy of Affidavit/Undertakings:

(i) Affidavit (it should be on stamp paper attested by Notary Public)

(ii) Undertaking regarding minimum investment of cash towards working capital.

(iii) Undertaking that the Bids shall remain valid for the period specified in Clause 15.1.

SAMPLE FORMAT FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF CREDIT FACILITIES

(Clause 4.1(i) of ITB)

BANK CERTIFICATE

This is to certify that M/s…….. is a reputed company `with a good financial standing.

If the contact for the work, namely ……..is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs……. to meet their working capital requirements for executing the above contract during the contract period.

(Signature)
Name of Bank Senior Bank Manager
Address of the Bank

AFFIDAVIT

1. I, the undersigned, do hereby certify that all the statements made in the enclosed attachments are true and correct.
2. The undersigned also hereby certifies that neither our firm M/s_____ has abandoned any work on PWD/NHIDCL nor any contract awarded to us for such works have been rescinded, during last five years prior to the date of this bid.
3. The undersigned hereby authorize(s) and request(s) any bank, person, firm or corporation to furnish pertinent information deemed necessary and requested by PWD/NHIDCL to verify this statement or regarding my (our) competence and general reputation.
4. The undersigned understands and agrees that further qualifying information may be requested, and agrees to furnish any such information at the request of the PWD/NHIDCL and within the prescribed time.

_____

(Signed by an Authorized Representative of the Firm)

_____

Name of the Representative

_____

Name of Firm

_____

DATE

(To be notarized by Notary)

UNDERTAKING

I, the undersigned do hereby undertake that our firm M/s _____ _____ would invest minimum cash up to 25% of the value of the work during implementation of the Contract towards the working capital.

_____
(Signed by an Authorized Representative of the Firm)

_____
Name of the Representative

_____
Name of Firm

_____
DATE

(To be notarized by Notary)

UNDERTAKING

1 I, the undersigned do hereby undertake that our firm M/s._____ agree to abide by this bid for a period of _____ days after the date fixed for receiving the same and it shall be binding on us and may be accepted at any time before the expiration of that period.

_____

(Signed by an Authorized Representative of the Firm)

_____

Name of the Representative

_____

Name of Firm

_____

DATE

(On the letter head of the bidder)

Appendix 1.7 [Ref. clause 4.4 B (b) (i)]

Undertaking

I, the undersigned do hereby undertake that our firm

M/s…… agree to provide and will deploy required equipment as mentioned in the Appendix to ITB of the work ……

further it is

certified that the documents submitted as an evidence of availability of the key equipments for this work as stated in the Appendix to ITB, are genuine and correct. If anything, contrary to the details as submitted is found at any stage NHIDCL would be at liberty to debar/blacklist my firm for an appropriate period as decided by NHIDCL.

_____

(Signed by an Authorized Representative of the Firm)

_____

Name of the Representative

_____

Name of Firm

(Seal of the company)

_____

Date

(SECTION-IV)

FORMS OF BANK GURANTEES, LOA & AGREEMENT.

FORM OF DECLARATION FOR BID SECURITY

(On the letter head of the bidder)

I hereby submit a declaration that the bid submitted by the undersigned, on behalf of the bidder, [Name of the bidder], shall not be withdrawn or modified during the period of validity, i.e.not less than 180 (one Hundred eighty) days from the bid due date.

I, on behalf of the bidder, [Name of the bidder], also accept the fact that in case the bid is withdrawn or modified during the period of its validity or if we fail to sign the contract in case the work is awarded to us or we fail to submit a performance security before the deadline defined in clause 7 of the Request for Proposal (RFP), then [Name of the bidder] will be suspended for participation in the tendering process for the works of MoRTH/NHAI/NHIDCL and works under other Centrally Sponsored Schemes, for a period of one year from the bid due date of this work.

(Signature of the AuthorizedSignatory)
(Official-Seal)

FORM OF BANK GUARANTEE FOR PERFORMANCE SECURITY

Contract Package No: NHIDCL/RO-Aizawl/Maintenance/2021-2022/Dulte-Chmaphai/01

To

Executive Director (Projects),
National Highways and Infrastructure Development Corporation Ltd.
Regional Office-Aizawl, 3rd Floor, T-86,
Tuikhuahtlang, Aizawl, Mizoram-796001

WHEREAS…… (name and address of contractor) hereinafter called "the contractor" has undertaken, in pursuance of Letter of Acceptance No. ……. Dated…….. to execute…….. (name of Contract and brief description of Works) (hereinafter called "the contract").

AND WHEREAS it has been stipulated by you in the said contract that the Contractor shall furnish you with a Bank Guarantee for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee:

NOW THEREOF we hereby affirm that we are the guarantor and responsible to you on behalf of the Contractor, up to a total of Rs…… (amount of guarantee) (Rupees…….. (in words), , and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of…….. (amount of guarantee) as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract or of the works to be performed there under or of any of the contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until 28 days from the date of expiry of the Defects Liability Period.

This guarantee shall also be operatable at our ……..….. branch at Aizawl, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

Notwithstanding anything contained herein before, our liability under this guarantee is restricted to Rs. _____ (Rs._____in words) and the guarantee shall remain valid till_____. Unless a claim or a demand in writing is served upon us on or before_____ all our liability under this guarantee shall cease.

Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below:-

Sl. No	Particulars	Details
1	Name of the Beneficiary	National Highways and Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	7601010002070
3	Beneficiary Bank Branch	IFSC SYNB0007960
4	Beneficiary Bank Branch Name	Syndicate Bank, Aizawl
5	Beneficiary Bank Address	Lower Chanmari, Aizawl

Signature and seal of the Guarantor with Name, Designation, Employee Code Number & Telephone Number……

Name of the Issuing Bank/ Branch ……Name of the Controlling Branch/Bank…..

Address & Telephone Number……Address & Telephone Number…….

Date……..

In the presence of (if this is to be witnessed as per bank's policy)……

1……
(Name, Address & Occupation)

2……
(Name, Address & Occupation)

An amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract including additional security for unbalance bids, if any and denominated in Indian Rupees.

FORM OF LETTER OF APPLICATION

To,
Executive Director (Projects),
Regional Office-Aizawl, 3rd Floor, T-86,
Tuikhuahtlang, Aizawl, Mizoram-796001
Email:ro-mizoram@nhidcl.com

DESCRIPTION OF WORKS: Special Repairs of NH-6 from Dulte to Champhai (km 69.0150 to km 150.000) [Total Length 80.985 km] (Package-1) in the State of Mizoram in FY 2021-22.
[Contract Package No.: NHIDCL/RO-Aizawl/Maintenance/2021-2022/Dulte-Chmaphai/02]

Dear Sir,

Having examined the Bid Document, Instruction to Bidders, Qualification Information, Scope of works, etc. for the subject work, we, hereby submit our bid for the subject work.

It is certified that the information furnished in this document is true and correct. The proposal is unconditional and unqualified. We undersigned accept that NHIDCL reserves the right to reject any or all application without assigning any reason.

Thanking you,

Yours faithfully,

(Authorized Signatory) for and on behalf of

M/s_____

FORM OF LETTER OF ACCEPTANCE

No. …….. Dated ……..

To

M/s…….

Sub.: ……. Name of Work ……

Sir,

Based on your bid submitted on …….. in compliance of bidding document of NHIDCLfor execution of the work of ……. , it is hereby notified that your bid for a contract price of **Rs…… (Rupees in words……)** has been accepted for and on behalf of NHIDCL

You are hereby requested to furnish Performance Security plus additional security in the form detailed in para. 33.2 of ITB for an amount equivalent to **Rs…… (Rupees inwords……)** within 10 days as per provisions of clause 33.1 of ITB of the bid document andsign the contract agreement failing which the actions as stipulated in clause-.33.3 of ITB shall be taken.

Thanking you,

Yours faithfully,

(……..)
Executive Director (P)

FORM OF AGREEMENT

AGREEMENT

This agreement made the _____day of _____ 2021_____ between the National Highways & Infrastructure Development Corporation Ltd., Aizawl (hereinafter called "the Employer" of the one part and _____ (here in after called "the Contractor") of the other part.

AND WHEREAS the Employer invited bids from eligible bidders of the execution of certain works, viz "Special Repairs of NH-6 from Dulte to Champhai (km 69.0150 to km 150.000) [Total Length 80.985 km] (Package-1) in the State of Mizoram in FY 2021-22" Contract Package no: **NHIDCL/RO-Aizawl/Maintenance/2021-2022/Dulte-Chmaphai/01**" AND WHEREAS pursuant to the bid submitted by the Contractor, vide letter dated ---------- (here in after referred to as the "BID" or "ÖFFER") for the execution of works, the Employer by his letter of acceptance dated ---------- accepted the offer submitted by the Contractor for the execution and completion of such works and the remedying of any defects thereon, on terms and conditions in accordance with the documents listed in para 2 below.

AND WHEREAS the Contractor by a deed of undertaking dated ---------- has agreed to abide by all the terms of the bid, including but not limited to the amount quoted for the execution of Contract, as stated in the bid, and also to comply with such terms and conditions as may be required from time to time.

AND WHEREAS pursuant to the bid submitted by the Contractor vide letter dated ---------- (hereinafter referred to as the "the Offer"), the employer has by his letter of acceptance no.---------- accepted the offer submitted by the Contractor for the execution and completion of such works and the remedying of any defects therein, on terms and conditions in accordance in the conditions of particular application and condition included hereinafter;

AND WHEREAS the contractor has agreed to undertake such works and has furnished a performance security pursuant to clause 33 of the instructions to bidders (Section-I).

NOW THIS AGREEMENT WITNESSETH as follows:

1 In this agreement works and expressions shall have the same meanings as are respectively assigned to them in the conditions of contract hereinafter referred to;

2 The following documents shall be deemed to form and be read and constructed as part of this agreement viz.
   a) The Contract Agreement,
   b) Letter of Acceptance,
   c) Notice to proceed with the works,
   d) Contractor's Bid,
   e) Contract Data,
   f) Conditions of Contract including Special Conditions of Contract
   g) Technical Specifications,
   h) Drawings, if any
   i) Scope of work
   j) Bill of Quantities
   k) Any other document listed in the Contract Data.

3 The foregoing documents shall be constructed as complementary and mutually explanatory one with another. Should any ambiguities or discrepancy be noted then the order of precedence of these documents shall subject to the condition of particular applications be as listed above.

4 In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the works and remedy any defects therein in conformity in all respect with the provisions of the contract.

5 the employer hereby covenants to pay the contractor in consideration of the execution and completion of the works and the remedying of defects therein the contract price or such other sum as may become payable under the provisions of the contract at the times and in the manner prescribed by the contract.

IN WITNESS WHEREOF the parties here to have caused this agreement to be executed the day and year first before written, signed, sealed and delivered by the said Employer through his Authorized Representative and the said Contractor through his Power of Attorney holder in the presence of:

Binding Signature of Employer _____

For and on behalf of
National Highways & Infrastructure Development Corporation Ltd.
Regional Office-Aizawl, 3rd Floor, T-86,
Tuikhuahtlang, Aizawl, Mizoram-796001
Email:ro-mizoram@nhidcl.com

Binding Signature of Contractor _____

For and on behalf of _____

In the presence of		**In the Presence of**	
1.	Name:	1.	Name:
	Address:		Address:
2.	Name:	2.	Name:
	Address:		Address:

(SECTION-V)

CONDITIONS OF CONTRACT AND CONTRACT DATA

Table of Clauses

Section V

CONDITIONS OF CONTRACT

Part I General Conditions of Contract (GCC) and Contract Data

A. General

1. Definitions

1.1 Terms which are defined in the Contract Data are not defined in the Conditions ofContract but keep their defined meanings. Capital initials are used to identify defined terms.

Bill of Quantities means the priced and completed Bill of Quantities forming part of theBid.

Compensation Events are those defined in Clause 41 hereunder.

The Completion Date is the date of completion of the Works as certified by theEngineer, in accordance with Clause 49.1.

The Contract is the Contract between the Employer and the Contractor to execute,complete, and maintain the Works. It consists of the documents listed in Clause 2.3.

The Contract Data defines the documents and other information, which comprise theContract.

The Contractor is a person or corporate body whose Bid to carry out the Works hasbeen accepted by the Employer.

The Contractor's Bid is the completed bidding document submitted by the Contractorto the Employer and includes technical and financial bids.

The Contract Price is the price stated in the Letter of Acceptance and thereafter asadjusted in accordance with the provisions of the Contract.

Days are calendar days; months are calendar months.

A **Defect** is any part of the Works not completed in accordance with the Contract.

The Defects Liability Certificate is the certificate issued by Engineer, after the DefectLiability Period has ended and upon correction of Defects by the Contractor.

The Defects Liability Period is 12 months calculated from the Completion Date.

Drawings include calculations and other information provided or approved by theEngineer for the execution of the Contract.

The Employer is the party as defined in the Contract Data, who employs the Contractorto carry out the Works. The Employer may delegate any or all of its functions to a person or body nominated by him for specified functions.

The Engineer is the person named in the Contract Data (or any other competentperson appointed by the Employer and notified to the Contractor, to act in replacement of the Engineer) who is responsible for supervising the execution of the Works and administering the Contract.

Equipment is the Contractor's machinery and vehicles brought temporarily to the Site toconstruct the Works.

The Initial Contract Price is the Contract Price listed in the Employer's Letter ofAcceptance.

The Intended Completion Date is the date on which it is intended that the Contractorshall complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Engineer by issuing an extension of time after the approval from Employer.

Materials are all supplies, including consumables, used by the Contractor forincorporation in the Works.

Plant is any integral part of the Works that shall have a mechanical, electrical,electronic, chemical, or biological function.

The **Site** is the area defined as such in the Contract Data.

Site Investigation Reports are those that were included in the bidding documents andare factual interpretative reports about the surface and subsurface conditions at the Site.

Specification means the Specification of the Works included in the Contract and anymodification or addition made or approved by the Engineer.

The **Start Date** is given in the Contract Data. It is the date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.

A **Sub-Contractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract, which includes work on the Site.

Temporary Works are works designed, constructed, installed, and removed by theContractor that are needed for construction or installation of the Works.

A **Variation** is an instruction given by the Engineer after the approval from NHIDCL, which varies the Works.

The **Works** are what the Contract requires the Contractor to construct, install, maintain, and handover to the Employer, as defined in the Contract Data.

2. Interpretation

2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Engineer will provide instructions clarifying queries about these Conditions of Contract.

2.2 If sectional completion is specified in the Contract Data, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).

2.3 The documents forming the Contract shall be interpreted in the following order of priority.

(a) Agreement,
(b) Letter of Acceptance
(c) Contractor's Bid,
(d) Contract Data,
(e) Conditions of Contract
(f) Technical Specifications,
(g) Drawings, if any
(h) Implementation Manual
(i) Scope of Work
(j) Bill of Quantities, and
(k) Any other document listed in the Contract Data.

3. Language and Law

3.1 The language of the Contract and the law governing the Contract are stated inthe Contract Data.

4. Engineer's Decisions

4.1 Except where otherwise specifically stated, the Engineer will decide contractualmatters between the Employer and the Contractor in the role representing the Employer.

5. Delegation

5.1 The Engineer, duly informing the Employer, may delegate any of his duties andresponsibilities to other people except to the Adjudicator, after notifying the Contractor, and may cancel any delegation after notifying the Contractor.

6. Communications

6.1 Communications between parties that are referred to in the Conditions shall beeffective only when in writing. A notice shall be effective only when it is delivered.

7. Subcontracting

7.1 The Contractor may subcontract any portion of work, up to a limit specified in Contract Data, with the prior approval of the Employer in writing. Subcontracting shall not alter the Contractor's obligations.

7.2 The Contractor shall not be required to obtain any consent from the Employer for:

a. the sub-contracting of any part of the Works for which the Sub-Contractor is named in the Contract;
b. the provision of labour or labour component.
c. the purchase of Materials which are in accordance with the standards specified in the Contract.

7.3 Beyond what has been stated in clauses 7.1 and 7.2, if the Contractor proposes sub-contracting of any part of the work during execution of the Works, because of some unforeseen circumstances to enable him to complete the Works as per terms of the Contract, the Employer will consider the following before according approval:

a) The Contractor shall not sub-contract the Works more than the limit specified in Contract Data..
b) The Contractor shall not sub-contract any part of the Work without prior consent of the Employer. Any such consent shall not relieve the Contractor from any liability or obligation under the Contract and he shall be responsible for the acts, defaults and neglects of any of his sub-Contractor, his agents or workmen as fully as if they were the acts, defaults or neglects of the Contractor, his agents and workmen.

7.3 The Engineer should satisfy himself before recommending to the Employer whether
a) the circumstances warrant such sub-contracting; and
b) the sub-Contractor so proposed for the Work possess the experience, qualifications and equipment necessary for the job proposed to be entrusted to him in proportion to the quantum of Works to be sub-contracted.

8. Other Contractors

8.1 The Contractor shall cooperate and share the Site with other Contractors, publicauthorities, utilities, and the Employer between the dates given in the Schedule of Other Contractors, as referred to in the Contract Data. The Contractor shall also provide facilities and services for them as described in the Schedule. The Employer may modify the Schedule of Other Contractors, and shall notify the Contractor of any such modification.

9. Personnel

9.1 The Contractor shall employ the technical personnel named in the Contract Data or other technical persons approved by the Engineer. The Engineer will approve any proposed replacement of technical personnel only if their relevant qualifications and experience are substantially equal to or better than those of the personnel stated in the Contract Data. If the personnel stated in the contract data are not deployed on site by the contractor, it will be treated as a breach of contract and action will be taken as per clause 53.

9.2 If the Engineer asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the Works in the Contract.

10. Employer's and Contractor's Risks

10.1 The Employer carries the risks which this Contract states are Employer's risks,and the Contractor carries the risks which this Contract states are Contractor's risks.

11. Employer's Risks

11.1 The Employer is responsible for the excepted risks which are (a) in so far as theydirectly affect the execution of the Works in the Employer's country, the risks of war, hostilities, invasion, act of foreign enemies, rebellion, revolution, insurrection or military or usurped power, civil war, riot commotion or disorder (unless restricted to the

Contractor's employees), natural calamities and contamination from any nuclear fuel or nuclear waste or radioactive toxic explosive, or (b) a cause due solely to the design of the Works, other than the Contractor's design.

12. Contractor's Risks

12.1 All risks of loss of or damage to physical property and of personal injury anddeath, which arise during and in consequence of the performance of the Contract other than the excepted risks, referred to in clause 11.1, are the responsibility of the Contractor.

13. Insurance

13.1 The Contractor at his cost shall provide, in the joint names of the Employer and theContractor, insurance cover from the Start Date to the end of defect liability period for events (a) to (d), in the amounts and deductibles stated in the Contract Data for the following events which are due to the Contractor's risks:

a) Loss of or damage to the Works, Plant and Materials;
b) Loss of or damage to Equipment;
c) Loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and
d) Personal injury or death.

13.2 Insurance policies and certificates for insurance shall be delivered by the Contractor to the Engineer for the Engineer's approval before the Start Date. All such insurance shall provide for compensation to be payable in Indian Rupees to rectify the loss or damage incurred.

13.3 If the Contractor does not provide any of the policies and certificates required, the Employer may effect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be debt due.

13.4 Alterations to the terms of insurance shall not be made without the approval of the Engineer.

13.4 Both parties shall comply with any conditions of the insurance policies.

14. Site Investigation Reports

14.1 The Contractor, in preparing the Bid, may rely on any Site Investigation Reportsreferred to in the Contract Data, supplemented by any other information available to him, before submitting the bid.

15. Queries about the Contract Data

15.1 Executing Director will clarify queries on the Contract Data.

16. Contractor to Construct the Works & do maintenance

16.1 The Contractor shall construct, install and maintain the Works in accordance withthe documents forming part of the contract.

17. The Works to Be Completed by the Intended Completion Date

17.1 The Contractor may commence execution of the Works on the Start Date andshall carry out the Works in accordance with the Programme submitted by the Contractor, as updated with the approval of the Engineer, and complete them by the Intended Completion Date.

18. Approval by the Engineer

18.1 The Contractor shall submit Specifications and Drawings showing the proposedTemporary Works to the Engineer, who is to approve them if they comply with specifications and drawings.

18.2 The Contractor shall be responsible for design of Temporary Works.

18.3 The Engineer's approval shall not alter the Contractor's responsibility for design of the Temporary Works.

18.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required.

18.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Engineer before their use.

19. Safety

19.1 The Contractor shall be responsible for the safety of all activities on the Site.

20. Discoveries

20.1 Anything of historical or other interest or of significant value unexpectedlydiscovered on the Site shall be the property of the Employer. The Contractor shall notify the Engineer of such discoveries and carry out the Engineer's instructions for dealing with them.

21. Possession of the Site

21.1 The Employer shall give complete possession of the Site to the Contractor on thedate of signing of agreement.

22. Access to the Site

22.1 The Contractor shall allow access to the Site and to any place where work inconnection with the Contract is being carried out, or is intended to be carried out to the engineer and any person/persons/agency authorized by:

a. The Engineer b.
The Employer

23. Instructions

23.1 The Contractor shall carry out all instructions of the Engineer, which comply withthe applicable laws where the Site is located.

23.2 The Contractor shall permit the Employer to inspect the Contractor's accountsand records relating to the performance of the Contractor and to have them audited by Auditors appointed by the Employer if so required by the Employer.

24. Deleted

25. ARBITRATION

The procedure for arbitration will be as follows:

(a) In case of Dispute or difference arising between the Employer and a domestic contractor relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996. The arbitral tribunal shall consist of 3 arbitrators one each to be appointed by the Employer and the Contractor. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties and shall act as presiding arbitrator. In case of failure of the two arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed by the Secretary General of Indian Road Congress.

(b) If one of the parties fails to appoint its arbitrator in pursuance of sub-clause (a) and (b) above within 30 days after receipt of the notice of the appointment of its arbitrator by the other party, then the Secretary General of Indian Road Congress shall appoint the arbitrator. A certified copy of the order of the Secretary General of Indian Road Congress making such an appointment shall be furnished to each of the parties.

(c) Arbitration proceedings shall be held at New Delhi, India, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.

(d) The decision of the majority of arbitrators shall be final and binding upon both parties.

(e) The cost and expenses of Arbitration proceedings will be borne equally by both parties in accordance with the following fee structure (the signing of the contract shall be the acceptance of the fee structure given below by both the parties):

S.No.	Particulars of fee and other charges	Schedule Amount payable per Arbitrator/ per case
1.	Arbitrator fee	Rs.15,000/- per day subject to a publishing the Award within 12 months. 12 months will be reckoned from the date of first meeting.
2.	Reading Charges	Rs.15,000/-
3.	Secretarial Assistance and Incidental Charges (telephone, fax,postage etc.)	Rs.20,000/-

4.	Charges for Publishing/ declaration of the Award	Maximum of Rs.20,000/-
5.	Other expenses (As per actual Against bills subject to maximum of the prescribed ceiling given below) Traveling Expenses, Lodging and Boarding	Economy class by air, first class AC by train, AC car by road. (i) Up to Rs.15,000/- per day (metro cities) (ii) Up to Rs.7,000/- per day (other cities) (iii)Rs.3,000/- per day own arrangement)
6.	Local Travel	Rs.1,500/- per day
7.	Extra charges for days other than hearing / meeting days (maximum for 2 days	Rs.3,500/- per day
Note:-	**Lodging, boarding and traveling expenses shall be allowed only for those members who are residing 100kms. Away from place of meeting. Delhi, Mumbai, Chennai, Kolkata, Bangalore and Hyderabad shall be considered as Metro Cities.**	

However, the expenses incurred by each party in connection with the preparation, presentation, etc. of its proceedings shall be borne by each party itself.

(f) Performance under the contract shall continue during the arbitration proceedings and payments due to the contractor by the employer shall not be withheld, unless they are the subject matter of the arbitration proceedings.

26 Deleted

B. Time Control

27. Programme

27.1 The Engineer shall issue the indent of work in stages specifying the time limit forthe same as and when required. The Contractor shall submit to the Engineer for approval a programme within the time stipulated in the Contract Data showing the general methods, arrangements, order, and timing for all the activities in the Works, along with monthly cash flow forecasts.

27.2 An update of the Programme shall be a programme showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining Works, including any changes to the sequence of the activities.

27.3 The Contractor shall submit to the Engineer for approval an updated Programme at intervals. If the Contractor does not submit an updated Programme within this period, the Engineer may withhold the amount stated in the Contract Data from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Programme has been submitted.

27.4 The Engineer's approval of the Programme shall not alter the Contractor's obligations. The Contractor may revise the Programme and submit it to the Engineer again at any time. A

revised Programme shall show the effect of Variations and Compensation Events.

28. Extension of the Intended Completion Date

28.1 The Engineer shall extend the Intended Completion Date only after the approval of NHIDCL if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining Works, which would cause the Contractor to incur additional cost.

28.2 The Engineer shall decide whether and by how much time to extend the Intended Completion Date within 21 days of the Contractor asking the Engineer for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Indented Completion Date.

29. Delays Ordered by the Engineer

29.1 The Engineer may instruct the Contractor to delay the start or progress of anyactivity within the Works. Delay/delays totaling more than 30 days will require prior written approval of the Employer.

30. Management Meetings

30.1 The Engineer may require the Contractor to attend a management meeting. The business of a management meeting shall be to review the plans for the Works.

30.2 The Engineer shall record the business of management meetings and provide copies of the record to those attending the meeting. The responsibility of the parties for actions to be taken shall be decided by the Engineer either at the management meeting or after the management meeting and stated in writing to all those who attended the meeting.

C. Quality Control

31. Identifying Defects

31.1 The Engineer shall check the Contractor's work and notify the Contractor of anyDefects that are found. Such checking shall not affect the Contractor's responsibilities. The Engineer may instruct the Contractor to search for a Defect and to uncover and test any work that the Engineer considers may have a Defect.

32. Tests

32.1 The contractor shall be solely responsible for :

a. Carrying out the mandatory tests prescribed in the documents forming part of contract.

b. For the correctness of the test results, whether preformed in his laboratory or elsewhere.

32.2 If the Engineer instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples.

32.3 Subject to further condition in contract data

33. Correction of Defects noticed during the Defect Liability Period.

33.1 It is the terms of contract that Short Term Improvement and Maintenance of road shall be of very high standard, requiring no major repairs for at least six (6) months after the date of completion of works.

33.2 If any defects including shrinkage, cracks, other faults appear in the work within six months of "Taking over" certificate, the Engineer shall give notice to the Contractor of any defects before the end of the Defects Liability Period, which begins at Completion, and is for six months thereafter. The Defects Liability shall be extended for as long as defects remain to be corrected.

33.3 Every time notice of a defect is given, the Contractor shall correct the notified defect at his own cost within the length of time specified by the Engineer's notice. If the contractor is in default the Engineer shall cause the same to be made good by other workmen and deduct the expenses from any sums that may be due to the contractor.

34. Uncorrected Defects

34.1 If the Contractor has not corrected a Defect/completed the work, to thesatisfaction of the Engineer, within the time specified in the Engineer's notice, the Engineer will assess the cost of having the Defect corrected/completed, and the Contractor will pay this amount.

D. Cost Control

35. Bill of Quantities

35.1 The Bill of Quantities shall contain items for the construction, installation, testing,and commissioning and maintaining works to be done by the Contractor.

35.2 The Bill of Quantities is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rates in the Bill of Quantities for each item for the work executed.

35.3 Changes in the Quantities

35.3.1 If the final quantity of the work-done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent provided the change exceeds 1% of initial Contract Price, the Engineer shall adjust the rate to allow for the change. The Engineer shall follow the guidelines of the Employer to determine the changed rate.

35.3.2 The Engineer shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the Prior approval of the Employer.If requested by the Engineer, the Contractor shall provide the Engineer with a detailed cost breakdown of any rate in the Bill of Quantities.

35.3.3 Change of scope due to six laning or OMT

Deleted

36. Variations

36.1 The Engineer shall, having regard to the scope of the Works and the sanctionedestimated cost, have power to order only after approval from NHIDCL / as per NHIDCL guidelines, in writing, Variations within the scope of the Works he considers necessary or advisable during the progress of the Works. Such Variations shall form part of the Contract and the Contractor shall carry them out and include them in updated Programmes produced by the Contractor. Oral orders of the Engineer for Variations, unless followed by written confirmation, shall not be taken into account.

37. Payments for Variations

37.1 If rates for Variation items are specified in the Bill of Quantities, the Contractor shall carry out such work at the same rate. This shall apply for Variations only up to the limit prescribed in the Clause 35. If the Variation exceeds this limit, the rate shall be derived under the provisions of clause 37.2 and 37.3 for quantities (higher) exceeding the deviation limit.

37.2 If the rates for Variation are not specified in the Bill of Quantities, the Engineer shall derive the rate from similar items in the Bill of Quantities.

37.3 If the rate for Variation item cannot be determined in the manner specified in Clause 37.1 or 37.2, the Contractor shall, within 14 days of the issue of order of Variation work, inform the Engineer the rate which he proposes to claim, supported by analysis of the rates. The Engineer shall assess the quotation and determine the rate based on prevailing market rates within one month of the submission of the claim by the Contractor and approval from NHIDCL will be taken. As far as possible, the rate analysisshall be based on the standard data book and the current schedule of rates of the district public works division. The decision of the Employer on the rate so determined shall be final and binding on the Contractor.

38. Cash Flow Forecasts

38.1 When the Programme is updated, the Contractor shall provide the Engineer withan updated cash flow forecast.

39. Payment Certificates

39.1 The Contractor shall submit to the Engineer monthly statements of the value of the work executed less the cumulative amount certified previously supported with detailed measurement of the items of work executed.

39.2 The Engineer shall check the Contractor's monthly statement within 14 days and certify the amount to be paid to the Contractor after taking into account any credit or debit for the month in question.

39.3 The value of work executed shall be determined, based on measurements by the Engineer.

39.4 The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed.

39.5 The value of work executed shall also include the valuation of Variations and Compensation Events.

39.6 The Engineer / Employer may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

39.7 The final bill shall be submitted by the contractor within one month of the actualdate of completion of the work; otherwise, the Engineers certificate of the measurement and of the total amount payable for work accordingly shall be final and payment made accordingly within a period of sixty days as far as possible.

40. Payments

40.1 Payments shall be adjusted for deductions for advance payments, security deposit, other recoveries in terms of the Contract and taxes at source, as applicable under the law. The Employer shall pay the Contractor the amounts Engineer had certified within 28 days of the date of each certificate.

40.2 The Authorized Representative of the Employer shall make the payment certified by the Engineer.

40.3 Items of the Works for which no rate or price has been entered in the Bill of Quantities, will not be paid for by the Employer and shall be deemed to be covered by other rates and prices in the Contract.

41. Compensation Events

41.1 The following shall be Compensation Events unless they are caused by the Contractor:

a) The Engineer orders a delay or delays exceeding a total of 30 days.
b) The effects on the Contractor of any of the Employer's Risks.

41.2 If a Compensation Event would prevent the Works being completed before the Intended Completion Date, the Intended Completion Date shall be extended. The Engineer shall decide whether and by how much the Intended Completion Date shall be extended after the approval of the employer.

41.3 The contractor shall not be entitled to compensation to the extent that the Employer‟s interests are adversely affected by the Contractor not having given early warning or not having cooperated with the Engineer/Employer.

42. Taxes & Currencies for payments

42.1 The rates quoted by the Contractor shall be deemed to be inclusive of the sales and other levies, duties, royalties, cess, toll, taxes of Central and State Governments, local bodies and authorities that the Contractor will have to pay for the performance of this Contract. The Employer will perform such duties in regard to the deduction of such taxes at source as per applicable law.

42.2 All payments will be made in Indian Rupees.

43. Price Adjustment - Deleted

43.1. Deleted

43.2. Deleted

44. Security Deposit / Retention Money

44.1 The Employer shall retain security deposit of 6 % (six percent) of the amount from each payment due to the Contractor until Completion of the whole of the Works.

44.2 The security deposit/retention money and the performance security will be released to the Contractor when the Defect Liability period is over, and the Engineer has certified that the Defects, if any, notified by the Engineer to the Contractor before the end of this period have been corrected.

44.3 If the contractor so desires then the Security Deposit/retention money can be released on submission of unconditional Bank Guarantee at the following two stages: -

(a) At a point after the progress of work in financial term (gross value of work done) has reached 50% of the contract amount

(b) After the retention money has been deducted to the full value (5% of the Contract Amount).

45. Liquidated Damages

45.1 The Contractor shall pay liquidated damages to the Employer at the rate or part thereof stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount defined in

the Contract Data. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's other liabilities.

45.2 If the Intended Completion Date is extended after liquidated damages have been paid,the Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting in the next payment certificate. The contractor shall not be paid interest on the over payment of liquidated damages.

46. Advance Payment: Deleted

47. Securities

47.1 Subject to further condition in contract data, the Performance Security equal toFive percent of the contract price and additional security for unbalanced bids shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in the form given in the Contract Data and by a prescribed bank. The Performance Security shall be valid until a date 28 days after the expiry of Defect Liability Period and the additional performance security for unbalanced bids shall be valid until a date 28 days from the date of issue of the certificate of completion. The validity shall account for additional 3 months' time to account for BG verification, signing of contract and start date

48. Cost of Repairs

48.1 Loss or damage to the Works or Materials to be incorporated in the Worksbetween the Start Date and the end of the Defects Liability Period shall be remedied/ rectified by the Contractor at their cost if the loss or damage arises from the Contractor's acts or omissions.

E. Finishing the Contract

49. Completion

49.1 The Contractor shall request the Engineer to issue a certificate of Completion ofthe Works, and the Engineer will do so upon deciding that the Works is completed.

50. Taking Over

50.1 The Employer shall take over the Site and the Works within seven days of theEngineer's issuing a certificate of Completion.

51. Final Account

51.1 The Contractor shall supply to the Engineer with a detailed account of the totalamount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Engineer shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Engineer shall issue within 56 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Engineer shall decide on the amount payable to the Contractor and issue a payment certificate within 56 days of receiving the Contractor's revised account.

52. Operating and Maintenance Manual

52.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them within 28 days from date of issue of certificate of completion.

52.2 If the Contractor does not supply the Drawings and/or manuals by the stipulated date or they do not receive the Engineer's approval, the Engineer shall withhold the amount equal to Rs. 5 lakhs from payments due to the Contractor.

53. Termination

53.1 The Employer may terminate the Contract if the Contractor causes a fundamental breach of the Contract.

53.2 Fundamental breaches of Contract include, but shall not be limited to, the following:

a) the Contractor stops work for 28 days when no stoppage of work is shown on the current Programme and the stoppage has not been authorized by the Engineer;
b) the Contractor is declared as bankrupt or goes into liquidation other than for approved reconstitution or amalgamation;
c) the Engineer/Employer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable

period of time determined by the Engineer;

d) the Contractor does not maintain a Security, which is required;

e) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in clause 45;

f) the Contractor fails to provide insurance cover as required under clause 13;

g) if the Contractor, in the judgment of the Employer, has engaged in the corrupt or fraudulent practice in competing for or in executing the Contract. For the purpose of this clause, "corrupt practice" means offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in Contract execution. "Fraudulent Practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Employer and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid process at artificial non-competitive levels and to deprive the Employer of the benefits of free and open competition.

if the Contractor has not completed at least thirty percent of the value of Work required to be completed after half of the completion period has elapsed;

if the Contractor fails to set up a field laboratory with the prescribed equipment, within the period specified; and

any other fundamental breach as specified in the Contract Data.

53.3 Notwithstanding the above, the Employer may terminate the Contract for convenience.

53.4 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible but in no case later than 7 days.In the event the employer terminates the agreement on account of any of the specified defaults of the Contractor, the Agreement allows the Employer to forfeit the performance security & retention money of the contractor.

54. Payment upon Termination

54.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer shall issue a certificate for the value of the work done and Materials ordered less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable to the Employer.

54.2 Save and except Cl 35.3.3, if the Contract is terminated at the Employer's convenience, the Engineer shall issue a certificate for the value of the work done, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works and less advance payments outstanding on the date of the certificate, less other recoveries due in terms of the Contract, and less taxes due to be deducted at source as per applicable law.

In case of termination on account of award of 2 laning work stated in Cl 35.3.3, the Engineer shall issue a certificate for the value of work done till termination, less advance payments outstanding, less other recoveries due in terms of contract and less taxes due to be deducted at source as per applicable law.

55. Property

55.1 All Materials on the Site, Plant, Equipment, Temporary Works, and Works shallbe deemed to be the property of the Employer for use for completing balance work if the Contract is terminated because of the Contractor's default.

56. Release from Performance

56.1 If the Contract is frustrated by the outbreak of war or by any other event entirelyoutside the control of the Employer or the Contractor, the Engineer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.

F. Other Conditions of Contract

57. Labour

57.1 The Contractor shall, make arrangements of his own cost and expenses for the engagement of all staff and labour, local or others; for their payment, housing, feeding and transport; and for compliance with various labour laws/ regulations.

57.2 The Contractor shall, as asked by the Engineer, deliver to the Engineer a return in detail, in such form and at such intervals as the Engineer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Engineer may require.

58. COMPLIANCE WITH LABOUR REGULATIONS

58.1 During the currency of the Contract, the Contractor and his sub-Contractors shallabide at all times by all existing labour enactments and rules made thereunder, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be notified already or that may be notified under any labour law in future either by the State or the Central Government or the local authority. Salient features of some of the major labour laws that are applicable to construction industry are given below. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made thereunder, regulations or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the Contractor, the Engineer/Employer shall have the right to deduct any money due to the Contractor including from his performance security/ retention money. The Employer/Engineer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer. The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

58.2 SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK.

a) **Workmen Compensation Act 1923**: - The Act provides for compensation in case of injury by accident arising out of and during the course of employment.

b) Payment of Gratuity Act 1972: - Gratuity is payable to an employee underthe Act on satisfaction of certain conditions on separation if an employee has completed the prescribed minimum years (say, five years) of service or more or on death the rate of prescribed minimum days‟ (say, 15 days) wages for every completed year of service. The Act is applicable to all establishments employing the prescribed minimum number (say, 10) or more employees.

c) Employees P.F. and Miscellaneous Provision Act 1952: The Act Providesfor monthly contributions by the Employer plus workers at the rate prescribed (say, 10% or 8.33%). The benefits payable under the Act are:

i. Pension or family pension on retirement or death as the case may be.
ii. Deposit linked insurance on the death in harness of the worker.
iii. Payment of P.F. accumulation on retirement/death etc.

d) Maternity Benefit Act 1951: - The Act provides for leave and some otherbenefits to women employees in case of confinement or miscarriage etc.

e) Contract Labour (Regulation & Abolition) Act 1970: - The Act provides forcertain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by Law. The principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer if they employ prescribed minimum (say 20) or more contract labour.

f) Minimum Wages Act 1948: - The Employer is to pay not less than theMinimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Constructions of buildings, roads, runways are scheduled employment.

g) Payment of Wages Act 1936: - It lays down as to by what date the wagesare to be paid, when it will be paid and what deductions can be made from the wages of the workers.

h) Equal Remuneration Act 1979: - The Act provides for payment of equalwages for work of equal nature to male and female workers and for not making discrimination against female employees in the matters of transfers, training and promotions etc.

i) Payment of Bonus Act 1965: - The Act is applicable to all establishment employing prescribed minimum (say, 20) or more workmen. The Act provides for payments of annual bonus within the prescribed range of percentage of wages to employees drawing up to the prescribed amount of wages, calculated in the prescribed manner. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. States may have different number of employment size.

j) Industrial Disputes Act 1947: - The Act lays down the machinery andprocedure for resolution of industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.

k) Industrial Employment (Standing Orders) Act 1946: - It is applicable to allestablishments employing prescribed minimum (say, 100, or 50). The Act provides for laying

down rules governing the conditions of employment by the Employer on matters provided in the Act and get these certified by the designated Authority.

l) Trade Unions Act 1926: - The Act lays down the procedure for registrationof trade unions of workmen and Employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.

m) Child Labour (Prohibition & Regulation) Act 1986: - The Act prohibitsemployment of children below 14 years of age in certain occupations and processes and provides for regulations of employment of children in all other occupations and processes. Employment of child labour is prohibited in building and construction industry.

n) Inter-State Migrant Workmen's (Regulation of Employment & Conditions of Service) Act 1979: - The Act is applicable to an establishmentwhich employs prescribed minimum (say, five) or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as Housing, Medical-Aid, Travelling expenses from home up to the establishment and back etc.

o) The Building and Other Construction workers (Regulation of Employment and Conditions of Service) Act 1996 and **the Cess Act of 1996**: -All the establishments who carry on any building or other construction work and employs the prescribed minimum (say, 10) or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

p) Factories Act 1948: - The Act lays down the procedure for approval of plansbefore setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing the prescribed minimum (say, 10) persons or more with aid of power or another prescribed minimum (say, 20) or more persons without the aid of power engaged in manufacturing process.

59. Drawings and Photographs of the Works

59.1 The contractor shall do photography/videography of the site firstly before the start of the work, secondly mid-way in the execution of different stages of work and lastly after the completion of the work. No separate payment will be made to the contractor for this.

59.2 The Contractor shall not disclose details of Drawings furnished to him and works on which he is engaged without the prior approval of the Engineer in writing. No photograph of the works or any part thereof or plant employed thereon, except those permitted under clause 59.1, shall be taken or permitted to be taken by the Contractor or by any of his employees or any employees of his sub-Contractors without the prior approval of the Engineer in writing. No photographs/ Videography shall be published or otherwise circulated without the approval of the Engineer in writing.

60. The Apprenticeship Act 1961

60.1 The Contractor shall duly comply with the provisions of the Apprenticeship Act1961 (III of 1961), the rules made thereunder and the orders that may be issued from time to time under the said Act and the said Rules and on his failure or neglect to do so he shall be subject to all liabilities and penalties provided by the said Act and said Rules.

CONTRACT DATA TO GENERAL CONDITIONS OF CONTRACT

Clause Reference

Items marked "N/A" do not apply in this Contract. [CL.1.1]

The Employer is:-
Regional Office-Aizawl, 3rd Floor, T-86,
Tuikhuahtlang, Aizawl, Mizoram-796001
Email:ro-mizoram@nhidcl.com

Name of Authorized Representative: -
Executive Director (Projects),
Regional Office-Aizawl, 3rd Floor, T-86,
Tuikhuahtlang, Aizawl, Mizoram-796001
Email:ro-mizoram@nhidcl.com

2. The Engineerin Chargeis: [CL.1.1]
   Designation: General Manager (Projects)
   Address: National Highways & Infrastructure Development Corporation Ltd.
   Project Monitoring Unit-Seling
   C/o Tourist Lodge, Thingsulthliah,
   Aizawl, Mizoram-796161

3. The intended Completion Date for the whole of the works is **6 months**from start date. [CL.1.1, 17&28]
4. The location of site is given in the Bid notice (SECTION I) [CL.1.1]
5. The start date shall be reckoned within 15 days after the date of issue of the notice to proceed with the work. [CL.1.1]
6. (a) The name and identification number of the contract is given in the table given in Bid Notice (SECTION I) [CL.1.1]
7. (a) The law which applies to the contract is the law of Union of India. [CL.3.1]
   (b) The language of the contract documents is English [CL.3.1]
8. The limit of subcontracting is 50% of initial contract price [CL.7.1]
9. Schedule of other contractor –NIL [CL.8.1]
10. Technical Personnel are as given in the ITB (SECTION II) [CL.7.1]
11. Amount of Insurance are: [CL.13.1]
    (a) Rupees equivalent to contract price
    (b) Rupees equivalent to 5% of contract price
    (c) Rupees equivalent to 5% of contract price
    (d) Rupees 20 lakhs for multiple incidents
    And deductible as per premium rate.

12. Site investigation report-NIL [CL.14.1]
13. (A) The period for submission of the programme for approval of Engineer shall be 21 days from the issue of Letter of Commencement. [CL.27.1]
    (B) (a) Identified indented work
        (1) Weekly Indent, Monthly Indent, Quarterly Indent and Bi-annual Indent – 3 days before start of week; 7 days before start of month; 15 days before start of quarter and 28 days

before bi-annual period concerned
(2) Emergent Indents – Within 24 hours

14. Amount to be withheld for delays in submission of updated programme: 1% of value of work corresponding to the updated programme.
15. The period for setting up a field laboratory with the prescribed equipment relevant toitems of work in BOQ is 30 days from the days from the date of notice to start work.
16. (a) Amount of liquidated damages for delay in completion of works

    For whole of work $(1/2000)^{th}$ of the Initial Contract Price, rounded off to the nearest Thousand, per day.
    For Sectional Completion (wherever specified, in item 6 of Contract Data (1/200)th of initial contract price for 5 km section, rounded off to the nearest thousand per day.

    (b) Maximum limit of liquidated damages for delay in completion of work.

    10 percent of the initial contract price rounded off to the nearest thousand.

[CL.45.1]

17. The standard form of Performance Security acceptable to the Employer shall be an shall be an unconditional Bank Guarantee of the type as presented in the Bidding Documents. [CL.47.1]
18. Other fundamental breach is that the contractor has failed to complete 75% of value of indented work in any 3 indents issued by the Engineer. [CL.53.2]
19. The percentage to apply to the value of work not completed representing the Employer's additional cost for completing the work shall be 20%. [CL.54.1]

(SECTION-VI)

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

7.1 PREAMBLE:

The Technical Specifications contained herein shall be read in conjunction with the other Bidding Documents as specified.

7.2 GENERAL REQUIREMENTS

The Technical Specifications in accordance with which the entire work described hereinafter shall be executed and completed by the Contractor shall comprise of the following:

7.2.1 PART – I – GENERAL TECHNICAL SPECIFICATIONS

The General Technical Specifications shall be the "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS" (FOURTH REVISION, August 2014) issued by the Ministry of Road Transport & Highways, Government of India and published by the Indian Roads Congress, hereinafter referred to as MORT&H Specifications.

PART – II – SUPPLEMENTARY TECHNICAL SPECIFICATIONS

The Supplementary Technical Specifications shall comprise of various Amendments/Modifications/Additions to the „SPECIFICATIONS FOR ROAD AND BRIDGE WORKS" referred to in PART-I above and Additional Specifications for particular item of works not already covered in Part – I.

A particular clause or a part thereof in "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS" **(FIFTH REVISION, April 2013)**, referred in Part-I above, where Amended/Modified/Added upon and incorporated in Part-II, referred to above, the Amendment/ Modification/ Addition supersedes the relevant clause or part of the clause.

When an Amended/Modified/Added Clause supersedes a Clause or part thereof in the said Specifications, then any reference to the superseded clause shall be deemed to refer to the Amended/Modified/Added Clause or part thereof.

In so far Amended/Modified/Added Clause may come in conflict or be inconsistent with any of the provisions of the MOST Specifications under reference, the Amended/Modified/Added clause and the additional specifications shall always prevail.

5.2.2 In the absence of any definite provisions on any particular issue in the aforesaid Specifications, reference may be made to the latest codes and specifications of IRC and BIS in that order, Where even these are silent, the construction and completion of the works shall conform to sound engineering practice as approved by the Engineer and, in case of any dispute arising out of the interpretation of the above, the decision of the Engineer shall be final and binding on the Contractor.

PART - II

7.3 AMENDMENTS/MODIFICATIONS/ADDITIONS TO EXISTING CLAUSES OF GENERAL TECHNICAL SPECIFICATIONS (PART- I).

SECTION 100 – GENERAL

Clause 102 Definitions:

The following abbreviation shall be added in this Clause: "MOST" – Ministry of Surface Transport, Govt. of India (Now Ministry of Road Transport and Highways) "NHIDCL" – National Highways & Infrastructure Development Corporation Ltd.

Clause 106 Construction Equipment:

Clause 106 (a) Add the following sentence. "The trial run is to be carried out laying the relevant pavement material and it is not to be part of the permanent works. The trial is to be carried out on prior approval of equipment by Engineer-in-Charge."

Add Sr. No. (g)

"The Contractor shall furnish to the engineer the detailed technical literature and other relevant documents regarding the performance of plant/equipment for approval prior to its purchase or mobilization on site."

Clause 107 Contract Drawings:

Clause 107.3 Deleted this Sub-Clause entirely.

Clause 108.4 The clause shall be read as follows:

"Identification of quarry sites and borrowareas shall be the responsibility of the Contractor. Materials procured from quarry sites and borrow areas identified by the Contractor and to be used in Works must comply with the requirements of quality as stipulated in the Technical Specifications for particular item of work".

Clause 109 Setting Out:

Clause 109.10 Add new sub-clause

"Before carrying out any survey work the Contractor shall submit to the Engineer for the approval a programme and methodology for the calibration of all optical and electronic survey equipment to be used on site during construction of the works. The Contractor will maintain calibration records for all such equipment in his site office, available at all times for inspection by the Engineer.

Clause 110 Public Utilities:

Clause 110.1 Revise the clause as under:

Existing services like water pipes, sewers, oil pipelines, cables, gas ducts etc. Owned byvarious authorities including Public Undertaking aLocal Authorities shall be checked and located by the Contractor prior to commencement of work.

Clause 110.2 Revise the clause as under:

The Contractor's programme must take into account the period of notice and duration of diversionary works of each body as existing at site. The Contractor must also allow for any effect of these services and alterations upon the Works and for arranging regular meetings with the various bodies at the commencement of the Contract and throughout the period of the Works in order tomaintain the required co-ordination. During the period of the Works, the contractor shall have no objection if the public utilitybodies and their decisions in the execution of their proposal in terms of programme and construction. Provided that, in the opinion of the Engineer, the Contractor has received reasonable notice thereof before the relevant alterations are put in hand.

Clause 111 Precautions for Safeguarding the Environment:

Clause 111.1 General

Add the following after the first paragraph:

The Contractor shall preserve existing trees, plants and other vegetation that are to remain within or adjacent to the works and shall use every precaution necessary to prevent damage or injury thereto. On completion of the Works, all areas disturbed by the Contractor's construction activities shall be restored in their original condition, or as may be acceptable to the Engineer. The cost of this work shall be deemed to be included in the rates generally.

Clause 111.4 Add the following sentence:

"The Contractor is to ensure that there is good drainage at all construction areas, to avoid creation of stagnant water bodies especially in urban/industrial areas, including water in old water bodies."

Clause 111.5 Pollution from Hot Mix Plants and Batching Plants

Add the following paragraph at the end of this Sub-clause.

The H.M.P. should be sited at least 500m away from the nearest abitation. The H.M.P. shall be fitted with a dust extraction unit in order that the exhaust gases comply with the requirements of the relevant current

emission control legislation. "All operations at plants shall be undertaken in accordance with all current rules and regulations protecting the environment."

Clause 111.6 Substances Hazardous to Health

Add the following after the first paragraph as follows:

"The use of any herbicide or other toxic chemical shall be strictly in accordance with the manufacturer's instructions. The Engineer shall be given at least 6 working day's notice of the proposed use of any herbicide or toxic chemical.

A register of all herbicides and other toxic chemicals delivered to the site, shall be kept and maintained up to date by the contractor. The register shall include a name physical properties and characteristics, chemical ingredients, health and safety hazard information, safe handling and storage procedures, and emergency and first aid procedures for the product."

Clause 111.9 Add the following sentence at the end of the para.

Vehicles delivering materials to the site shall be covered to avoid spillage of materials on public roads.

Clause 111.12 After the last sentence add the following:

"The costs of compliance with Clause 111 shall be deemed to be included in the rates for items included in the Bill of Quantities."
Refer to Clause 114.2 (xv) of MOST Specification.

Clause 111.13 Add new Sub-Clause:

"The Discharge Standards promulgated under the Environment Protection Act, 1986 shall be adhered to strictly. All waste arising from the project is to be disposed of in a manner which is acceptable to the State Pollution Control Board and the Engineer."

All vehicles and machinery employed in the execution of the works shall be regularly maintained to ensure that pollutant emission levels comply with the relevant requirements of current pollution control legislation. During routineservicing operations, the effectiveness of exhaust silencers must be checked and if found to be defective must be replaced. Notwithstanding this requirement, noise levels from any item of plant must comply with the relevant legislation for levels of sound emission. Non compliant plant is to be removed from site.

Vehicle maintenance and refueling shall be carried out in such a fashion that spillage of fuels and lubricants do not contaminate the ground or nearby watercourse. An "oil interceptor" shall be provided for wash down and refueling areas. Fuel storage shall in proper bounded areas. All spilt and collected petroleum products shall be disposed of in accordance with

the relevant legislation.

Clause 111.14 Add the following New Sub-Clause:

All temporary accommodation must be constructed and maintained in such a fashion that uncontaminated water is available for drinking, cooking and washing. The sewage system for the camp must be properly designed, built and operated so that no health hazard occurs and no pollution to the air, ground or adjacent watercourses take place compliance with relevant legislation must be strictly adhered to Garbage bins must be provided in the camp and regularly emptied and the garbage disposed of in a hygienic manner. Construction camps are to be sited away from vulnerable people and adequate health care is to be provided for the work force.

Clause 111.15 Add the following New Sub-Clause:

All works are to be carried out in such a fashion that the damage or disruption to the flora and fauna is reduced to a minimum wherever possible. Trees or shrubs will only be felled or removed that impinge directly on the permanent works or necessary temporary works, after seeking approval of the Engineer.

Clause 112 Arrangement For Traffic During Construction:

Clause 112.1 General

Delete the last sentence and add the following:

"The Contractor shall submit, for the Engineer's approval, Traffic Control Plan 5 days prior to commencement of the temporary / permanent works."

The plan shall include:

i. Typical drawings for temporary diversions in accordance with Clause 112.3
ii. Typical details of arrangements for construction under traffic including details of traffic arrangement after the cessation of work each day. Special consideration shall be given in the preparation of the Traffic Control Plan to the safety of pedestrians and workers at night. Temporary diversions will be constructed only with the approval of the Engineer.

Clause 112.2 Passage of Traffic along a part of the Existing Carriage way under improvement:

Delete this clause replace as follows:

"For strengthening of existing carriage way, where part of the existing carriage way is proposed to be used for passage of traffic &hard holder are not available then, treated shoulders shall be provided on the side on which work is not in progress. If the existing shoulder width less than 1.5m the same shall be extended up to 1.5m for earth work duly compacted. The top 15.0cm or as directed by the engineer including

extended shoulder of 1.5m width shall be filled up by granular sub base material duly bounded with binding material and compacted. The sub base material shall conform to MOST specification Clause 401, the work of excavation and filling of granular sub-base material so carried out shall be paid under relevant items of bill of quantities. The contractor shall maintain the bypass/diversion during the period of construction by way of watering, compacting, and making good loss of sub-base material after filling up of the rutting/depression etc. by additional quantity of granular sub base material. The items operations like maintenance, making good the loss of material, watering, compacting, leveling and dressing along with additional quantity of sub-base material shall be considered as incidental to the work and no extra payment will be ade for these operations. The continuous length in which such works shall be carried out would be within a range of 200 to 500m at a place.

Clause 112.6 Measurements for Payments and Rate

Add "and no extra payment will be made except the treatment of shoulders for earth work and granular sub-base as per Clause 112.2 above." At the end of first paragraph.

Clause 112.7 Side Roads and Property Accesses

Add new sub Clause:

"At all times, the Contractor shall provide safe and convenient passage for vehicles pedestrians and livestock to and from side roads and property accesses connecting to the roadway. Work which affects the use of side roads and existing accesses shall not be undertaken without providing adequate prior provisions to the satisfaction of the Engineer."

Clause 112.8 Plant and Equipment

Add new sub-Clause:

"During the day, plant and equipment working in a position adjacent to traffic and having a projection beyond the normal width of the item, for example, a grader blade shall have a fluorescent red marker attached to the outer end of the projection. During poor light conditions an additional traffic controller with an illuminated red marker shall direct traffic around such plant and equipment. At night, all plant items and similar obstructions shall be removed from the normal path of vehicles, to provide a lateral clearance of at least 6m where practicable, with a minimum clearance of 1.2m. Plant and equipment, within 6m of the normal path of vehicles, shall be lit by not less than two yellow steady lamps suspended vertically from the point of the obstruction nearest to a traffic lane, and one yellow steady lamps at each end of the obstruction on the side farthest away from the traffic lane."

Clause 113 General Rules For the Measurement of Works for Payment:

Clause 113.2 Measurements for Lead of Materials

Delete this Clause and replace with:

"The rates in the Bill of Quantities are deemed to include the costs of haulage from source of supply to the site for all materials required for the Works."

Clause 114 **Scope of rates for different items of work:**

Add to Clause 114.2 (xvii). Cost of all provisions for executing the work safely including all protective clothing, barriers, earplugs etc.

Clause 115 Methodology and Sequence of Work:

Substitute "28 days" for "30 days" in the 2nd line.

Clause 121 Field Laboratory:

Clause 121.1 Scope

Delete this Clause and replace with:

"The work under this Clause covers the provision and maintenance of a fully equipped laboratory." The equipment in the laboratory shall be as decided by Engineer, keeping in view of item of works prescribed in BOQ.

Clause 121.2 Description

Delete this Clause and replace with:

"The Contractor shall construct a fully furnished and equipped field laboratory to the satisfaction of the Engineer. The laboratory will be located at a site approved by the Engineer and must be of adequate size to perform all the tests required under the contract including sufficient light, electric and water supply. The Contractor shall provide working drawings incorporating all the services based on the information given in the changes for the approval of the Engineer prior to commencement of construction. An office must be provided in the laboratory for the exclusive use of the Engineer's, Materials Engineer, adequate toilet and washing facilities must be provided. The contractor shall provide the field laboratory within one month from the date of the commencement of the work. Prior to this,
contractor must make suitable alternative arrangements for the

testing of materials, which are acceptable to the Engineer.

Clause 121.3 Laboratory Equipment shall be provided as prescribed by the Engineer relevant to items of work in BOQ.

Clause 121.3.2 For soils and aggregates

Delete item no. (xi) and (xii)

Clause 121.3.5 Add New Sub-Clause:

For Control of Profile and Surface

Evenness

i)	Theodolite	2 sets
ii)	Precision automatic level	2 sets
iii)	Precision staff	4 sets
iv)	Camber templates 2 lane	
	a) Crown type cross-section	4 sets
	b) Straight run cross-section	4 sets

Steel Tape

a)	3 m long	4 sets
b)	5 m long	4 sets
c)	10 m long	4 sets
d)	20 m long	4 sets
e)	30 m long	4 sets

Clause 121.3.6 Add New Sub-Clause:

In addition clause 121.3 any equipment which is not mentioned in this clause but which is necessary for the work for complying with the provisions of the contract and Section 900 of MOST specifications or as required by the engineer shall be provided by the contractor. No extra payment shall be made to the contractor and it will be considered as incidental to the work.

Clause 121.6 Delete this Sub-Clause.

Clause 121.7 Substitute this Sub-Clause by the following:

"There is no separate item in the Bill of Quantities for establishing and maintenance of the laboratory and supply, erection maintenance of equipment and also running cost of testing. The rates quoted by the Contractor shall be deemed to cover the cost of all these items."

Clause 126: Supply of Video Cassettes

126.1 Description

The work consists of taking video films of important activities of the work as directed by the Engineer during the currency of the project and editing them and converting them to a CD (master CD+ 4 copies) film of playing time not less than 60 minutes and up to 180 minutes as directed by the Engineer. It shall contain narration of the activities in English by competent narrator. The editing of the film and the script for narration shall be as approved by the Engineer. The CD shall be acceptable quality and the film shall be capable of producing colour pictures.

126.2 Measurement for Payment & Rates

No separate payment shall be made and the work shall be treated as incidental.

SECTION 300 – EARTHWORK EROSION CONTROL AND DRAINAGE

Clause 301	**Excavation for Roadway and Drains**
Clause 301.3.3	Excavation – General
	Delete the last two sentences of last paragraph. And add, "The earthwork shall be carried out as per the sequences stated in this contract or as directed by engineer-in-charge".
Clause 301.3.12	**Back-filling**
	After the last sentence add the following:
	"Density requirements for back filling shall be in accordance with Table 300-2" of MOST.
Clause 301.9	Rates
Clause 301.9.2	This Clause is replaced as follows:
	"The contract unit rate for loosening and re-compacting at sub-grade level shall include full compensation for loosening to the specified depth, removing the loosened soil outside the roadway wherever considered necessary, rolling the surface below, breaking the clods, spreading the excavated soil layers, watering where necessary and compacting to the requirements."
Clause 304	Excavation for Structures:

Clause 304.3.7	Back filling
	Add second paragraph as under:
	"The working space between the structure and the excavation shall be cleared out completely of all construction materials and loose earth that fallen into the excavation during construction. The excavation shall be pumped dry and all saturated and soft earth removed prior to being inspected by the Engineer who will give his permission for the placement of any fill material, provided the space has been properly prepared. Compaction will only be carried out with mechanical compactors of sufficient capacity to ensure correct compaction of the back fill material. The fill is to be brought up in layers not greater than 150 mm. Mass filling of structures with machines will not be permitted and contractors should make allowance in their rates for the methodology Described above."
Clause 305	Embankment Construction:
Clause 305.2	Material and General Requirements
Clause 305.2.1	Physical Requirements
Clause 305.2.1.2	Amend the first sentence of this Clause as under:
	"Highly expansive soils such as Ch, MH or OH exhibiting marked swell and shrinkage properties („free swelling index" exceeding 50 per cent when tested as per IS 2720 – Part 40) shall not be used in construction of sub grade and embankment."
Clause 305.2.1.4	Delete the second and third sentence of Clause 305.2.1.4, i.e., "However, the Engineer may……..Compacted layer thickness."
Clause 305.2.2.2	Borrow Materials
	Paragraph 1 of this clause shall read as under:
	"No borrow area shall be made available by the Employer for this work. The arrangement for the source of supply of the material for embankment and sub grade as well as compliance to the different environmental requirements in respect of excavation and borrow areas as stipulated, from time to time, by the Ministry of Environment and Forest, Government of India and the local bodies, as applicable shall be the sole responsibility of the Contractor."
	Paragraph 8 of this Clause given below Table 300-2 shall read as under:
	"The contractor shall at least 7 working days before commencement of compaction submit the following to the Engineer for approval:

i) The Values of maximum dry density and optimum moisture content obtained in accordance with IS 2720 (Part 8) for each fill material he intends to use.
ii) The graphs showing values of density against moisture content from which each of the values in (i) above of the maximum dry density and optimum moisture content were determined.
iii) The dry density-moisture content-CBR relationship for each of the fill materials be intends to use in the sub grade."

Clause 305.3 Construction Operations

Clause 305.3.4 Compacting ground supporting embankment/subgrade

Delete "where necessary" in the first sentence of the first paragraph.

Clause 305.3.5.2 In Paragraph 3, delete "IS: 2720 (Part 7) or "and "as the case may be".

Clause 305.3.6 Compaction
The second paragraph of this Clause shall read as under:

"Only vibratory rollers of not less than 8 – 10 ton static weight with plain or pad foot drum shall be used for compaction."

Clause 305.4 Construction of Embankment and sub-grade under special condition.

Clause 305.4.1 Add new para after para 1 as under:

"The earthwork for widening the existing road embankment and shoulders shall be carried out in layers duly compacted. On completion of earth work to the required height the triangular portion on the sloping face of the layers shall be cut in such a manner that the specified slope is achieved. This operation is incidental to work and no extra payment shall be made for this."

Clause 305.4.7 Earthwork for high Embankment

Substitute the first paragraph of this clause as under:

"In the case of high embankments, the Contractor shall use the material from the approved borrow area."

Soil Erosion and Sedimentation Control

Clause 306.4 Measurement for Payment

Substitute the Clause 306.4 as follows:

"All temporary sedimentation and pollution control works shall be

deemed as incidental to the earthwork and other items of work and as such no separate payment shall be made for the same."

Clause 306.5 Rate

This Clause is deleted.

Clause 307 Turfing with sods.

Clause 307.5 Add "(iii) application of top soil" after (ii). Delete "the contract unit rate for application of top soil shall be as per clause 301.9.5".

Clause 309 Surface/Sub-Surface Drains

Clause 309.2 Surface Drains

Add at the end of third paragraph:
Metal grates for sumps on concrete lined surface drains shall be heavy duty (trafficable by commercial vehicle) proprietary products with gaps between bars no greater than 26mm. The Contractor shall submit proposals for grating to the Engineer for approval before commencing construction of the sumps."

Clause 309.4 Measurement for Payment

Delete the first sentence and replace with:

"Surface drains not lined shall be included in the items for excavation for the roadway in accordance with Clause – 301.8."

Clause 309.5 Rates

Add at the end of this clause as under:

"The rate for concrete lined drains shall include bedding concrete and jointing. The rate for lined surface drains shall include inlet sumps and metal grates where specified."

Add Clause 314 as under:

Clause 314 Leveling and Dressing over area:

Clause 314.1 Scope

The work shall consist of excavation, removal, filling and satisfactory disposal of all materials necessary for the area to be leveled and dressed in line, grades as directed by the Engineer. It shall include cutting and filling the ground in all type of soil where variation of existing ground level is + 30 cm or less. It will also include the grubbing of the existing rank vegetation and clearance of undergrowth completely.

Clause 314.2 Construction Operation

The engineer shall identify the area where leveling and dressing is to be carried out. The clearing and grubbing of rank vegetation and undergrowth shall be carried out as per clause 201.1. If the stagnant water is existing on the side, the same shall be pumped / bailed out. The area shall be kept dry throughout the operation of leveling and dressing. The leveling and dressing shall be carried out by excavating the high area and filling the low area with the excavated material in proper slope. This operation will be carried out manually/mechanically as per site conditions.

Clause 314.3 Measurements

The measurement shall be made for the area to be leveled and dressed in Sqm.

Clause 314.4 Rates

The contract unit rates for the items for leveling and dressing shall be payment in full for carrying out the required operations including full compensation for:

1. Cost of all labour, materials, tool, equipment and incidentals to complete the work.
2. Clearing and grubbing the rank vegetation and undergrowth and their disposal within 1000m.
3. Pumping and bailing out of water and keeping the area dry during construction.
4. In all type of soils and saturated earth.

SECTION 400 - SUB-BASES, BASES (NON-BITUMINOUS) ANDSHOULDERS:

Clause 401.4.1 Substitute “Smooth wheeled roller” by “Vibratory Roller” or as approved by Engineer-In-charge.

Clause 401.4.2 Spreading and Compacting

The following shall be added to Paragraph 1:

“The thickness of the loose layers shall be so regulated that the maximum thickness of the layer after compaction does not exceed
150 mm.”

The fifth paragraph of this Clause shall be as under:

“Immediately thereafter, rolling shall start with the help of a vibratory roller of minimum 80 to 100 KN static weight with plain drum or pad foot drum of heavy pneumatic tyre roller of minimum 200 to 300 KN weight having a minimum tyre pressure of 0.7 kN/m2 or adequate capacity capable of achieving the required compaction. Rolling shall commence at the lower edge and proceed towards the upper edge longitudinally for portions having unidirectional cross fall and super-elevation and shall commence at the edges and proceed towards the crown for portions having cross falls on both sides.”

Clause 401.7 Measurement for payment:

Add paragraph 3 as under:

For carrying out full depth repair and/or reconstruction of road pavement, if the granular sub-base materials laid on the shoulders for diversion of traffic (as per clause 112) is required to be scarified/removed and re-laid after compensating the loss during handling and by movement of traffic on completion of Full depth repair/reconstruction of road pavement, this operation shall be considered incidental to the work of providing granular sub-base and no extra payment shall be made for the same.

Clause 404.2.1 Coarse aggregate:

Amend this clause as under:

Coarse aggregate shall be either crushed or broken stone. The aggregates shall conform to the physical requirements set-forth in Table 400-6. The type and size range of the aggregate shall be specified in the contract or shall be as specified by the Engineer. If the water absorption value of the coarse aggregates is greater than 2 percent, the soundness test shall be carried out on the material delivered to site as per IS: 2386 (part 5).

Clause 404.2.3 Crushed Slag:

Delete this Clause

Clause 404.2.4 Over-burnt (Jhama) brick aggregates:

Delete this Clause.

Clause 404.3.4 Rolling:

Delete in first para "three wheeled ---------- rollers 80 to 100 kN capacity or tandem or"

SECTION 500 - BASE AND SURFACE COURSES (BITUMINOUS):

Clause 501.8.2.4 Profile Corrective Course and its application:

Replace (ii)) with

"The material for bituminous profile corrective course shall be laid independently of all other courses, adopting such construction procedures and using such equipment as may be appropriate to the specified type of material and thickness of the course manually/machine paid as approved by the engineer-in-charge. The method of providing profile corrective course shall be approved by the engineer-in-charge.

Clause 501.8.3.1 Preparing Existing Granular Surface

Amend the Clause as under:

"The surface on which bituminous profile corrective course is to be laid shall be thoroughly swept clean of dust and any other extraneous material using mechanical broom and dust collected removed or blown of using compressed air except in places where technical means cannot reach. A prime coat conforming to Clause 502 shall be applied prior to laying profile corrective course."

Clause 501.8.3.4 Laying the Profile Corrective Course.

Clause 501.8.3.4.1 This clause shall read as under:

"The surface on which profile corrective course is to be laid shall be thoroughly swept clean of dust and any other extraneous material using mechanical broom and dust collected removed or blown off using compressed air except in places where mechanical mans cannot reach."

"After preparing the granular surface as in Clauses 501.8.3.1 and 501.8.3.2, the profile corrective course with materials as per Clause 501.8.2.3/501.8.2.4 shall be laid and compacted to the requirement of particular Specification Clause."

Clause 502 Prime Coat Over Granular Base :

Clause 502.2.3 The type of bitumen emulsion shall be slow setting.

Clause 503 Tack Coat

Clause 503.2.1 The type of bitumen emulsion shall be medium setting.

Clause 504 Bituminous Macadam :

Clause 504.2 Materials

Clause 504..2.1 Bitumen:

The penetration grade of bitumen shall be 60/70.

Clause 507& 509 Bitumen

The penetration grade of bitumen shall be 60/70.

Clause 507.9 For DBM, Clause 508.9 for SDBC and Clause 509.9 for BC

These clauses stand amended to the extent that the rate shall cover the provision of bitumen in the mix as per job mix formula. No variation in the rate for this item will be admissible on account of quantity of bitumen used.

Clause 801

801 TRAFFIC SIGNS

801.1 GENERAL

801.1 The colour, configuration, size and location of all traffic signs for highways (otherthan Expressways for which the size of the signs, letters and their placement shall be as specified in the drawings and relevant Specifications or as directed by the Engineer) and for other roads, shall be in accordance with the Code of Practice for Road Signs, IRC:67:2010, or as shown on the drawings. In the absence of any details or for any missing details (for example, chevron signs etc.), the signs shall be provided in accordance with international standards and/or as directed by the Engineer.

801.1.2 Unless otherwise specified, the signs shall be reflectorised as shown on the drawings or as directed by the Engineer. They shall be of retro-reflectorised type and made of micro-prismatic type reflective as per IRC:67:2010.

801.1.3 In general, cautionary and mandatory signs' shall be fabricated through process of screen printing. In regard to informatory signs with inscriptions or cut letters of, coloured retroreflective sheeting comprising unmetalisedmicroprismatic element material as per IRC:67:2010 or durable transparent, coloured overlay film shall be used which must be bonded well on the base sheeting, as directed by the Engineer.

801.2 Materials

The various materials and fabrication of the traffic signs shall conform to the following requirements:

801.2.1 Concrete: Concrete shall be of the grade shown on the Contract drawing orotherwise as directed by the Engineer.

801.2.2 Reinforcing steel: Reinforcing steel shall conform to the requirement of IS:1786unless otherwise shown on the drawing.

801.2.3 Bolts, nuts, washers: High strength bolts shall conform to IS: 1367 whereasprecision bolts, nuts, etc., shall conform to IS:1364.

801.2.4 Plates and supports: Plates and support sections for the sign posts shallconform to IS:226 and IS:2062 or any other relevant IS Specifications.

801.2.5. Substrate; Sign panels may be fabricated on aluminium sheet, aluminium

compositepanel, fibre glass sheeting, or sheet moulding compound. Aluminum sheets used for sign boards shall be of smooth, hard and corrosion resistant aluminium alloy conforming to IS:736-Material designation 24345 or 1900. Aluminium Composite Panel and other materials shall meet the relevant ASTM (D903, E8, E393, E732)/BS/BIS requirements.

801.2.6 Shoulder mounted ground signs with a maximum side dimension not exceeding600mm shall not be less than 1.5 mm thick with Aluminium and 3 mm thick with Aluminum Composite Material. All other signs shall be at least 2 mm thick with Aluminium and 4 mm thick with Aluminium Composite Material. The thickness of the sheet shall be related to the size ofthe sign and its support and shall be such that it does not bend or deform under prevailing wind and other loads. All overhead signs made with Aluminium Composite Material shall be minimum 4 mm thick to withstand wind and other loads without deformation.

801.2.7 In respect of sign sizes not covered by IRC:67: 2010 the structural details(thickness, etc.) shall be as per the approved drawings or as directed by the Engineer.

801.3 Traffic Signs having Retro-Reflective Sheeting

801.3.1 General requirements: The retro-reflective sheeting used on the signshall consist of the white or coloured sheeting having a smooth outer-surface which has the property of retro-reflection over its entire surface. It shall be weather-resistant and show colour fastness. It shall be new and unused and shall show no evidence of cracking, scaling, pitting, blistering, edge lifting or curling and shall have negligible shrinkage or expansion. A certificate of having tested the sheeting for co-efficient of retro-reflection, day/night time colour luminous, shrinkage, flexibility, linear removal, adhesion, impact resistance, specular gloss and fungus resistance 3 years outdoor weathering and its having passed these tests shall be obtained from a Government Laboratory, by the manufacturer of the sheeting. The retro- reflective sheeting shall be either of Engineering Grade material with enclosed lens, High Intensity Grade with encapsulated lens or Micro-prismatic Grade retro-reflective element material as given in Clause below

801.3.2 Micro Prismatic Grade Sheeting (Type XI): Retro reflective sheeting typicallymanufactured as a cube corner. The reflective sheeting shall be retro reflective sheeting made of micro prismatic retro reflective material. The retro reflective surface, after cleaning with soap and water and in dry condition shall have the minimum co-efficient of retro reflection (determined in accordance with ASTM D 4956-09) as indicated in Table 800

Table 800 Acceptable Minimum Coefficient of Retro-reflection for Type XI Prismatic Grade Sheeting[A] (Candelas per Lux per Square Metre)

Observation Angle	Entrance Angle	white	Yellow	Orange	Green	Red	Blue	Brown	Florescent yellow-Green	Florescent yellow	Florescent Orange
0.1°[B]	-4°	830	620	290	83	125	37	25	660	500	250
0.1°[B]	+30°	325	245	115	33	50	15	10	260	200	100
0.2°	-4°	580	435	200	58	87	26	17	460	350	175
0.2°	+30°	220	165	77	22	33	10	7	180	130	66
0.5°	-4°	420	315	150	42	63	19	13	340	250	125
0.5°	+30°	150	110	53	15	23	7	5	120	90	45

1.0°	-4°	120	90	42	12	18	5	4	96	72	36
1.0°	+30°	45	34	16	5	7	2	1	36	27	14

A Minimum Coefficient of Retro reflection (R_A) ($cd.lx^{-1}.m^{-2}$).
B Values for 0.1^o observation angles are supplementary requirements that shall apply only when specified by the purchaser in the contract or order.

When totally wet, the sheeting shall show not less than 90 percent of the values, of retro reflection indicated in above Table. At the end of 10 years, the sheeting shall retain at least 80 percent of its original retro-reflectance.

801.3.3 Messages / borders: The messages (legends, letters, numerals etc.) and bordersshall either be screen-printed or of cut-outs from durable transparent overlay or cut-out from same type of reflective sheeting (excluding for black colour) for the cautionary/ mandatory signs. Screen printing shall be processed and finished with materials and in a manner specified by the sheeting manufacturer. For the information and other signs, the messages (legends, letters, numerals etc.) and borders shall be cut-out from durable transparent overlay film or cut out from same reflective sheeting only. Cut-outs shall be bonded with the sheeting in the manner specified by the manufacturer. Both the screen-printed areas and cut-out messages sheetings and cut-out durable transparent overlay film shall be covered under the warranty period of the sheeting type, issued by the sheeting manufacturer

801.3.4 For screen-printed transparent coloured areas on white sheeting, the co-efficient of retro-reflection shall not be less than 50 per cent of the values of corresponding colour in Tables 800 as applicable.

801.3.4.1 Cut-out messages and borders, wherever used, shall be made out of retro-reflectivesheeting (as per Clauses 801.3.2 as applicable), except those in black which shall be of non-reflective sheeting.

801.3.5 Color: Unless otherwise specified, the general color scheme and properties shall beas stipulated in ASTM 4956-09. The colors shall be durable and uniform in acceptable hue when viewed in day light or under normal headlights at night and in inclement weather conditions.

801.3.6 Adhesives: The sheeting shall have either a pressure-sensitive adhesive of theaggressive-tack type requiring no heat, solvent or other preparation for adhesion to a smooth clean surface, or a tack free adhesive activated by heat, applied in a heat-vacuum applicator, in a manner recommended by the sheeting manufacturer. The adhesive shall be protected by an easily removable liner (removable by peeling without soaking in water or other solvent) and shall be suitable for the type of material of the base plate used for the sign. The adhesive shall form a durable bond to smooth, corrosion and weather resistant surface of the base plate such that it shall not be possible to remove the sheeting from the sign "base in one piece by use of sharp

instrument. In case of pressure-sensitive adhesive sheeting, the sheeting shall be applied in accordance with the manufacturer's Specifications. Sheeting with adhesives requiring use of solvents or other preparation for adhesive shall be applied strictly in accordance with the manufacturer's instructions.

801.3.7 Refurbishment: Where existing signs are specified for refurbishment, the sheetingshall have a semi-rigid aluminum backing or materials as per Clause 801.2.5, pre-coated with aggressive-tack type pressure sensitive adhesive. The adhesive shall be suitable for the type of material used for the sign and should thoroughly bond with that material.

801. 3.8 Fabrication

801.3.8.1 Surface to be reflectorised shall be effectively prepared to receive the retro-reflective sheeting. The sheeting of the material as per IRC:67:2010 , shall be de-greased either by acid or hot alkaline etching and all scale/dust/ coating of any type removed/ scrubbed to obtain a smooth plain surface before the application of retro-reflective sheeting. If the surface is rough, approved surface primer may be used. After cleaning, metal shall not be handled, except by suitable device or clean canvas gloves, between all cleaning and preparation operation and application of reflective sheeting/primer. There shall be no opportunity for the substrate to come in contact with grease, oil or other contaminants prior to the application of retro-reflective sheeting.

801.3.8.2 Complete sheets of the material shall be used on the signs except where it is unavoidable; at splices, sheeting with pressure sensitive adhesives shall be overlapped not less than 5 mm. Where screen printing with transparent colours is proposed, only butt jointing shall be used. The material shall cover the sign surface evenly and shall be free from twists, cracks and folds. Cut-outs to produce legends and borders shall be bonded with the sheeting in the manner specified by the manufacturer.

801.3.9 Warranty and durability: The Contractor shall obtain from the manufacture a ten yearwarranty for satisfactory field performance including stipulated retro-reflectance of the retro-reflective sheeting of micro-prismatic sheeting, a seven-year warranty for high intensity grade and a five year warranty for the sheeting of engineering grade and submit the-same to the Engineer. In addition, a ten year, seven year and a five year warranty for satisfactory In-field performance of the finished sign with retro-reflective sheeting of micro prismatic, high intensity grade and engineering grade respectively, inclusive of the screen printed or cut out letters/legends and their bonding to the retro-reflective sheeting shall be obtained from the contractor/supplier and submitted to the Engineer. The Contractor/ supplier shall also furnish the LOT numbers and certification that the signs and materials supplied against the assigned work meets all the stipulated requirements and carry the stipulated warranty and that the contractor/supplier is the authorized converter of the particular sheeting:

All signs shall be dated during fabrication with indelible markings to indicate the start of warranty. The warranty shall also cover the replacement obligation by the sheeting manufacturer as well as contractor for replacement/repair/restoration of the retro-reflective efficiency.

A certificate in original shall be given by the sheeting manufacturer that its offered retro-reflective sheeting has been tested for various parameters such as co-efficient of retro-reflection, day/night time colour and luminance, shrinkage, flexibility, linear removal, adhesion, impact resistance, specular gloss and fungus resistance and 3 year outdoor weathering; the tests shall be carried out by a Government Laboratory in accordance with various ASTM procedures and the results must show that the sheeting have passed the requirements for all the above mentioned parameters. A copy of the test reports shall be attached with the certificate.

801.4 Installation

801.4.1 The traffic signs shall be mounted on support posts, which may be of Gl pipes conforming to IS: 1239, Rectangular Hollow Section conforming to IS :4923 or Square Hollow Section conforming to IS:3589. Sign posts, their foundations and sign mountings shall be so constructed as to hold these in a proper and permanent position against the normal storm wind loads or displacement by vandalism. Normally, signs with an area up to 0.9 sqm shall be mounted on a single post, and for greater area two or more supports shall be provided. Post-end(s) shall be firmly fixed to the ground by means of properly designed foundation. The work of foundation shall conform to relevant Specifications as specified.

801.4.2 All components of signs (including its back side) and supports, other than the reflective portion and G.I. posts shall be thoroughly de scaled, cleaned, primed and painted with two coats of epoxy/ fibre glass/ powder coated paint, Any part of support post below ground shall be painted with protective paint.

801.4.3 The signs shall be fixed to the posts by welding in the case of steel posts and by bolts and washers of suitable size. After the nuts have been tightened, the tails of the bolts shall be furred over with a hammer to prevent removal.

801.5 Measurements for Payment

The measurement of standard cautionary, mandatory and information signs shall be in numbers of different types of signs supplied and fixed, while for direction and place identification signs, these shall be measured by area in square, metres.

801.6. Rate

The Contract unit rate shall be payment in full for the cost of making the road sign, including all materials, installing it at the site furnishing of necessary test certificates, warranty and incidentals to complete the work in accordance with these Specifications.

Note: The warranty as specified in clause- 801.3.9 should be in the name of NHIDCL and it must be deposited to the Engineer in Charge.

802 OVERHEAD SIGNS

802.1 General

802.1.1 Overhead signs may be used in lieu of, or as an adjunct to, kerb mounted signs where the situation so warrants for proper information and guidance of the road users. The following conditions may be considered while deciding about the provision of overhead signs:

- Traffic volume at or near capacity
- Complex interchange design
- Three or more lanes in each direction
- Restricted sight distance
- Closely spaced interchanges
- Multi. -lane exits
- Large percentage of commercial vehicles
- High speed traffic

804 Reflective Pavement Markers (Road Studs/Cat eyes)

804.1 General

The work covers the providing and mixing of reflective pavement marker (RPM) or road stud, a device which is bonded to or anchored within the road surface for lane marking and delineation for nighttime visibility. It reflects incident light in directions close to the direction from which it came.

804.2 Material

804.2.1 Plastic body of RPM/road stud shall be moulded from ASA (Acrylic Styrene Acrylonitrite) or HIPS (Hi-impact Polystyrene) or Acrylonitrite Butadiene Styrene (ABS) or any other suitable material approved by the Engineer. The markers shall support a load of 13635 kg tested in accordance with ASTM D 4280.

804.2.2 Reflective panels shall consist of number of lenses containing single or dual prismatic cubes capable of providing total internal reflection of the light entering the lens face. Lenses shall be molded of methyl merthcrylate conforming to ASTMD 788 or equivalent.

804.3 Design

The slope or retro-reflecting surface shall preferably be 35+5 degree to base and the area of each retro-reflecting surface shall not be less than 13.0 sqcm.

804.4 Optical Performance

804.4.1Unidirectional and bi-directional studs

Each reflector or combination of reflectors on each face of the stud shall have a

Coefficient of Luminous Intensity (C.I.L.) not less than that given in Table 800-12 or Table 800-13 as appropriate.

804.4.2 Omni-directional studs

Each Omni-directional stud shall have a minimum (C.I.L.) of not less than 2 mcd/lx

Table 800-12 Minimum C.I.L. Values for Category „A" studs

Entrance	Observation		C.I.L. in mcd/lx	
angle	angle	White	Amber	Red
0^0U 5^0 L&R	0.3^0	220	110	44
0^0U 10^0 L&R	0.5^0	120	60	24

Table 800-13 Minimum C.I.L. Values for Category „B" studs

Entrance	Observation		C.I.L. in mcd/lx	
angle	angle	White	Amber	Red
0^0U 6^0 L&R	0.3^0	20	10	4
0^0U 10^0 L&R	0.5^0	15	7.5	3

Note: 1) The entrance angle or 0^0U corresponds to the normal aspect of the reflectors when the reflecting road stud is installed in horizontal road surface.

2) A stud that incorporates one or more corner cube reflectors shall be considered to be included in category „A". A stud that incorporates one or more bi-convex reflectors shall be considered to be included in category „B".

804.5 Tests

804.5.1 Coefficient of luminance intensity can be measured by procedure described in ASTM E
809 "Practice for Measuring Photometric Characteristics" or as recommended in BS: 873 – Part 4:1973.

804.5.2 Under test conditions, a stud shall not be considered to fail the photometric requirements if the measured C.I.L at any one position of measurement is less than the values specified in Table 800-12 or 800-13 provided that
(i) the value is not less than 80% of the specified minimum, and
(ii) the average of the left and right measurements for the specific angle is greater than the specified minimum.

804.6 **Solar Powered Road Markers (Solar Studs)**

The solar studs shall be made of Aluminum alloy and poly carbonate material which shall be absolutely weather resistance and strong enough to support a load of 13635 kg tested in accordance with ASTM D4280. Its colour may be white, red, yellow, green or blue or combination as directed by the Engineer. Its water resistance shall meet the requirements of IP 65 in accordance with IS:12063:1987 Category 2 for protection against water ingress. The dimensions of solar studs shall not be less than 100 mm x 100 mm x 10 mm. It shall have super bright LEDs so as to provide long visibility from a distance of more than 800m. Its flashing rate shall not be less than 1 Hz. Its should be able to give the prescribed performance in the temperature range of -40^0C to $+55^0$C. Its life shall be not less than 3 years.

804.7 Fixing of Reflective Markers

804.7.1 Requirements

The enveloping profile of the head shall be smooth and the studs shall not present any sharp edges in traffic. The reflective portions of the studs shall be free from crevice or ledges where dirt might accumulate. All road studs shall be legibly market with the name, trademark or other means of identification of the manufacturer. Marker height shall not exceed 20 mm. Marker width shall not exceed 130 mm. The base of the marker shall be flat within 1.3 mm. If the bottom of the marker is configured, the outermost faces of the configurations shall not deviate more than 1.3 mm from a flat surface. All road studs shall be legibly marked with the name, trade mark or other means of identification of the manufacturer.

804.7.2 Placement

The reflective marker shall be fixed to the road surface using the adhesives and the procedure recommended by the manufacturer. No nails shall be used to affix the marker, as nails are hazardous for the roads. Regardless of the type of adhesive used, the markers shall not be fixed if the pavement is not surface dry and on new asphalt concrete surfacing until the surfacing has been opened to traffic for al period of not less than 14 hours. The portions of the highway surface, to which the marker is to be bonded by the adhesive, shall be free of dirt, curing compound, grease, oil, moisture, loose or unsound layers, paint and any other material which would adversely affect the bond of the adhesive. The adhesive shall be placed uniformly on the cleaned pavement surface or on the bottom of the marker in a quantity sufficient to result in complete coverage of the area of contact of the marker with no voids present and with a slight excess after the marker has been lightly pressed in place. For epoxy installations, excess adhesive around the edge of the marker, excess adhesive on the pavement and adhesive on the exposed surfaces of the markers shall be immediately removed.

804.7.3 Warranty and durability

The contractor shall obtain from the manufacturer a two-year warranty for satisfactory field performance including stipulated retro-reflectance of the reflecting panel and submit the same to the Engineer, In addition, a two year warranty for satisfactory infield performance of the finished road marker shall also be given by the contractor who carried out the work of fixing of reflective road markers. In case the markers are displaced, damages, get worn out or lose their reflectivity compared to stipulated standards, the contractor would be required to replace all such markers within 15 days of the intimation from the Engineer at his own cost.

804.8 Measurement for Payment

The measurement of reflective road markers shall be in numbers of different types of markers supplied and fixed.

804.9 Rate

The contract unit rate for reflective road markers shall be payment in full compensation for furnishing all labour, material, tools, equipment including incidental costs necessary for carrying out the work at site conforming to the specifications complete as per approved drawings or as directed by the Engineer.

Note: The warranty as specified in clause- 804.7.3 should be in the name of NHIDCL and it must be deposited to the BO.

SECTION 900 – QUALITY CONTROL FOR ROAD WORKS

Clause 901 General

Amend the clause 901.10 as under:

Clause 901.10 For bitumen, cutback, emulsion, mild steel, cement and other similar material where essential tests are to be carried out at the manufacture‟s plant or at laboratories other than the site laboratory, the cost of samples, sampling, testing, and furnishing of the test certificates shall be borne by the Contractor. The frequency of tests regarding bitumen, cutback and emulsion in respect of its quality shall be as per the Table 900-4 of MOST Specification.

SECTION 1000 – MATERIALS FOR STRUCTURES:

Clause 1014 Storage of Materials:

Clause 1014.3 Aggregates

The following shall be added at the end of the Clause: “Aggregates shall be stockpiled in a manner that will avoid segregation, contamination by foreign materials and intermixing of various sizes of aggregates.”

SECTION 3002- RESTORATION OF RAIN CUTS:

Clause 3002.4 Amend this as under:

“The earth works for restoration of rain cuts shall be measured in cum.”

INTEGRITYPACT

BETWEEN

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (NHIDCL)hereinafterreferred toas**"The Principal"**(which expression, unlessrepugnantto the context thereof,shall mean and include its legalrepresentatives,heirsandassigns)

AND

.....hereinafter referredto as **"TheBidder/Contractor"** (whichexpression,unlessrepugnanttothecontextthereof,shallmeanandincludeitslegalrepresentatives,heirsandassigns)

Preamble

ThePrincipalintendstoaward,underlaiddownorganizationalprocedures,contract(s)for **(Nameofthecontract)**

(hereinafterreferredtoasthe'Project'). ThePrincipalnecessarilyrequiresfullcompliancewithallrelevantlawsoftheland,rules,regulations,economic useofresourcesandoffairness/transparencyinitsrelationswithits Bidder(s)and/orContractor(s).

Inordertoachievethesegoals,thePrincipalmayappointanIndependent External Monitor (IEM), whowillmonitor thetender processandthe executionofthecontractforcompliancewiththeIntegrityPactbyallpartiesconcerned,forallworkscoveredintheProject.

Section1-CommitmentsofthePrincipal

(1) ThePrincipalcommitsitselftotakeallmeasuresnecessarytopreventcorruptionandtoobservethefollowingprinciples:-

a. NoemployeeofthePrincipal,personallyorthroughfamilymembersorthroughanyotherchannel,willinconnectionwiththetenderfortheexecutionofacontract,demand,takeapromisefororaccept,forselforthirdperson,anymaterialorimmaterialbenefit, whichthepersonisnot legallyentitledto.

b. ThePrincipalwill,duringthetenderprocesstreatallContractor(s)/Bidder(s) with equity and reason. The Principalwillinparticular,beforeandduring thetender process,providetoallContractor(s)/Bidder(s) thesameinformation and will not provide to anyContractor(s)/Bidder(s), confidential/additional informationthroughwhichtheContractor(s)/Bidder(s)couldobtainan advantage inrelationtothetenderprocessorthecontractexecution.

c. The Principal will exclude from the process all known prejudiced persons.**ThePrincipalshall** obtainbidsfrom**only** those partieswhohavebeenshort-listedorpre qualifiedorthroughaprocessofopenadvertisement/web publishingoranycombinationthereof.

(2) IfthePrincipalobtainsinformationontheconductofanyofitsemployees,Contractor(s) and/or Bidder(s), which isa criminaloffenceundertheIPC/PCAct,oriftherebeasubstantivesuspicioninthisregard,thePrincipalwillinformtheChiefVigilanceOfficerand**subject toitsdiscretion,**can**additionally** initiate disciplinaryactions.

(3) ThePrincipalwillenterintoagreementswith identicalconditionswith allContractor(s)/Bidder(s)**forthedifferentWorkPackagesinthe aforesaidProject**

(4) The Principal will disqualify from the tender process

allContractor(s)/Bidder(s)intherangeofRs50 Croreandabove,who donotsignthisPactorviolateitsprovisions.

Section2-CommitmentsoftheBidder(s)/Contractor(s)

(1) TheBidder(s)/Contractor(s)commit(s)itself/themselvestotakeallmeasuresnecessarytopreventcorruption. Hecommitshimselfto observethefollowingprinciplesduringhisparticipationinthetender processandduringthecontractexecution.

(a)TheBidder(s)/Contractor(s)willnot, directlyorthroughany otherpersonorfirmoffer, promiseorgivetoanyofthe Principal'semployeesinvolvedinthetender processorthe executionofthecontractanymaterialorotherbenefitwhich he/sheisnotlegallyentitledto,inordertoobtaininexchange anyadvantage, ofanykindwhatsoever, duringthetender processorduringtheexecutionofthecontract.

(b) TheBidder(s)/Contractor(s) willnotenterwithotherBidders intoanyundisclosedagreement orunderstanding, whetherformal orinformal. Thisapplies inparticulartoprices,specifications,certifications,subsidiarycontracts, submissionornon-submission of bidsor any other actions to restrictcompetitivenessortointroducecartelizationinthebiddingprocess.

(c)TheBidder(s)/Contractor(s)willnotuseimproperly,forpurposeofcompetitionorpersonalgain, orpassontoothers, anyinformationor documentprovidedbythePrincipalaspartofthebusinessrelationship, regardingplans,technicalproposals andbusiness details, including information contained ortransmittedelectronically.

(d)TheBidder(s)/Contractor(s)offoreignoriginshalldisclosethe nameandaddressoftheAgents/representativesinIndia,if any. Similarlythe Bidder(s)/Contractor(s) of Indian Nationality shallfurnishthenameandaddressoftheforeign principals, if any.Further details as mentioned inthe"GuidelinesonIndianAgentsofForeignSuppliers"shallbe disclosed bythe Bidder(s)/Contractor(s). Further, asmentioned intheGuidelinesallthepaymentsmadetotheIndianagent/representativehavetobeinIndianRupeesonly. Copyofthe"GuidelinesonIndianAgentsofForeignSuppliers"isannexedandmarkedasAnnex-"A".

(e)TheBidder(s)/ Contractor(s)will,whensubmittinghisbid, discloseanyandallpaymentshehasmade,iscommittedtoor intendstomaketoagents,brokersoranyotherintermediaries inconnectionwiththeawardofthecontract.

(2) TheBidder(s)/Contractor(s) willnotinstigatethirdpersonsto commitoffencesoutlinedaboveorbeanaccessorytosuchoffences.

Section3:Disqualificationfromtenderprocessand/orexclusionfrom futurecontracts.

(1) IftheBidder(s)/ Contractor(s),beforeawardingtheProjectorduringexecutionhascommitted atransgressionbyviolatingSection2aboveorinanyotherformsoastoputhisreliabilityorcredibility inquestion, the Principal, atitssolediscretion,isentitled to disqualifytheBidder(s)/Contractor(s)fromthetenderprocessorterminatethecontract,ifalreadyawarded,forthatreason,without prejudicetoanyotherlegalrightsorremediesavailabletothe Principal under the relevant clauses of GCC /SCCof thetender/contract.

(2) If the Contractor(s)/Bidder(s) hascommitted a transgressionthroughaviolationofanyofthetermsunderSection2aboveorin

anyotherformsuchastoputhisreliabilityorcredibility intoquestion, the Principal willalsobeentitled toexclude suchContractor(s)/Bidder(s) from future tenders/contractaward processes.Theimposition andduration oftheexclusionwillbe determined bythePrincipal,keepinginviewtheseverityofthe transgression.Theseveritywillbedeterminedbythecircumstancesofthecase,inparticular,thenumberoftransgressionsand/ortheamountofthedamage.

(3) Ifitisobservedafterpaymentoffinalbillbutbeforetheexpiryofvalidity ofIntegrity Pactthat thecontractorhascommitteda transgression,throughaviolationofanyofthetermsunderSection2aboveoranyotherterm(s)ofthisPact,duringtheexecutionofcontract,thePrincipalwillbeentitledtoexcludethecontractorfromfurther tender/contract award processes.

(4) Theexclusionwillbeimposedforaminimumperiodofsix(6)monthsandamaximumperiodofthree(3)years.

(5) If the Contractor(s)/Bidder(s) can prove that he hasrestored/recoupedthedamagetothePrincipalcausedbyhimand hasinstalledasuitablecorruptionpreventionsystem,thePrincipalmay,atitssolediscretion,revokeorreducetheexclusionperiod beforetheexpiryoftheperiodofsuchexclusion.

Section4:CompensationforDamages

(1) IfthePrincipalhasdisqualifiedtheBidder(s)/Contractor(s)fromthetenderprocess priortotheawardingoftheProjectaccordingto Section 3, the Earnest Money Deposit (BID SECURITY)/BidSecurityfurnished,ifany,alongwiththeoffer, asperterms oftheInvitationof Tender, shall also be forfeited. TheBidder(s)/Contractor(s)understandsandagreesthatthiswillbeinaddition tothe disqualification and exclusion of theContractor (s)/Bidder(s)asmaybeimposedbythePrincipal,intermsofSection3above.

(2) If,atanytimeaftertheawardingoftheProject,thePrincipalhasterminatedthecontractaccordingtoSection3,orifthePrincipalis entitled toterminatethecontract accordingtoSection3,theSecurityDeposit/PerformanceBankGuaranteefurnished bythecontractor,ifany,asperthetermsoftheNIT/Contractshallbeforfeitedwithoutprejudicetoanyotherlegalrightsandremedies availabletothePrincipalundertherelevantclausesofGeneral/ SpecialConditionsofContract.

TheContractor(s)/Bidder(s) beinaddition totheBidder(s)/Contractor(s),as termsofSection3*above*. understandsandagreesthatthiswill disqualification andexclusionofthemaybeimposedbythePrincipalin

Section 5: Previoustransgression

(1) TheBidder(s)/Contractor(s)hereindeclaresthatithascommitted notransgressionsinthelast3yearswithanyotherCompanyin anycountryconformingtotheanticorruptionapproachasdetailed hereinorwithgovernment/anyotherPublicSectorEnterpriseinIndiathatcouldjustifyitsexclusionfromthetenderprocess.

(2) Ifatanypointoftimeduringthetenderprocessoraftertheawarding of the Contract, it is found that theBidder(s)/Contractor(s) hasmadeanincorrect statementonthissubject,hecanbedisqualifiedfromthetenderprocessorif,asthe casemaybe,thattheContract,isalreadyawarded,itwillbeterminatedforsuchreasonandtheBidder(s)/Contractor(s)canbe blacklisted in terms of Section 3above.

Section6: IndependentExternalMonitor/Monitors

(1) ThePrincipalshall,incasewheretheProjectValueisinexcess ofRs50 Crore andabove, appoint competent andcredibleIndependent External Monitor(s) with clearance from Central Vigilance Commission.TheMonitorshallreviewindependently, thecasesreferred toittoassesswhether andtowhatextent thepartiesconcerned comply withtheobligations underthis Integrity Pact.

(2) Incaseofnon-compliance oftheprovisions oftheIntegrityPact,thecomplaint/non-compliance istobelodged bytheaggrieved party with the Nodal Officer only, asshall be appointed bytheMD,NHIDCL.TheNodalOfficershallreferthe complaint/non-compliance soreceivedbyhimtotheaforesaidMonitor.

(3) The Monitor will not be subject toanyinstructions bytherepresentativesof theparties and will perform itsfunctionsneutrally and independently.TheMonitor shall report totheManaging Director, NHIDCL.

(4) The Bidder(s)/Contractor(s) accepts that the Monitor shall have the right to access, without restriction, all Project documentationof the Principal including that provided by the Contractor.The Contractor willalsograntthe Monitor, upon his/herrequest anddemonstrationof avalid interest, unrestricted and unconditional access toits projectdocumentation.TheMonitor isunder contractual obligation to treatthe information and documentsof theBidder (s) /Contractor(s)withconfidentiality.

(5) ThePrincipal willprovide totheMonitor, sufficient information about allmeetings among the parties related totheProject, provided suchmeetings couldhaveanimpactonthecontractual relationsbetweenthePrincipalandtheContractor.

(6) AssoonastheMonitornotes,orbelievestonote,aviolation of this Pact, he will soinform the Principal and request thePrincipaltodiscontinueand/or takecorrective action, ortotake otherrelevant action (s). TheMonitor caninthisregardsubmitnon-binding recommendations. However,beyond this, theMonitor hasnorighttodemandfromthepartiesthattheyactin a specific mannerand/or refrain from action and/or tolerateaction.

(7) TheMonitorwillsubmitawrittenreporttothe MD, NHIDCLwithin4to6weeksfromthedateofreferenceorintimationtoit and,shouldtheoccasionarise,submitproposalsforcorrective actionsfortheviolationorthebreachesoftheprovisionsoftheagreementnoticedbytheMonitor.

(8) If the Monitor has reported to the MD, NHIDCL,of a substantiated suspicion of an offence under relevant IPC/PC Act, and the MD, NHIDCL,hasnot,withinthereasonabletimetakenvisibleactiontoproceedagainstsuchoffence orreporteditttotheChiefVigilanceOfficer,theMonitormayalsotransmit thisinformationdirectlytotheChiefVigilanceOfficer,NHIDCL / MD.

(9) Theword'Monitor'meansIndependentExternalMonitorand includesbothsingularandpluralforms.

Section7 CriminalContractor(s)/charges against violating Bidder(s) /Subcontractor(s)

IfthePrincipalobtainsknowledgeofconductofaBidder/Contractororany employeeorarepresentativeoranassociateofaBidder/Contractor,whichconstitutesacriminaloffenceundertheIPC/PCAct,orifthePrincipalhassubstantivesuspicioninthisregard,thePrincipalwillforthwithinformthe sametotheChiefVigilanceOfficer,NHIDCL/MD.

Section8-DurationoftheIntegrityPact

ThisPactshallcomeintoforcewhenbothpartieshavelegallysignedit.ThePactshallexpire, incaseoftheContractor(s),3(three) monthsafterthelast payment

undertheContractismadeandincaseoftheunsuccessful Bidder(s), 2 (two) months afterthecontractfortheproject hasbeenawarded.

Ifanyclaims ismade/lodgedduringthistime,thesameshallbebinding andcontinue tobevaliddespitethelapseofthispactasspecifiedabove, unless it is discharged/determined by MD of NHIDCL.

TheBidder(s)/Contractor(s), however, understands andagrees that even upon the completion of the Project and/or the last payment under the Contract having been made, if any transgression/violation of the terms of this Pact comes/is brought to the notice of the Principal, it may, subject to its discretion, blacklist and/or exclude such Bidder(s)/Contractor(s) as provided for in Section 3, without prejudice to any other legal right or remedy so available to the Principal.

Section9-Otherprovisions

(1) ThisAgreement issubject toIndian Law.Placeofperformance andjurisdiction istheRegisteredOfficeofthePrincipal, i.e.NewDelhi.

(2) Changes andsupplements aswellastermination notices needtobemadeinwriting.

(3) If the Bidder/Contractoris a partnership or a consortium, thisAgreement must besigned byallpartnersorconsortiummembers.

(4) Should oneorseveral provisions ofthisAgreement turn outtobeinvalid,theremainder ofthisAgreementshallremainvalidandbinding. Insuchacase,theparties willstrive tocometoanAgreement in accordancetotheiroriginalintentions.

(5) Whereverheorhisasindicatedintheabovesections,thesamemaybe readashe/sheorhis/her, asthecasemaybe.

(For&OnbehalfofthePrincipal) (For&OnbehalfofBidder/Contractor)

(OfficeSeal) (OfficeSeal)

Place _

Date _

Witness1:

(Name&Address)

Witness2:

(Name&Address)

BILL OF QUANTITY

Name of work : Special Repair on NH-6

(SH: Patch repair between ch: 69/00 kmp to ch: 110/00 kmp)

(BASE ON SOR 2016 FOR NATIONAL HIGHWAYS AND STATE ROADS IN MIZORAM)

Sl.No	Sor No	Description of items	Quantity	Unit	Rate (after adjustment) ₹	Amount ₹
		from km 69.000 to km 110.00				
1	3.12	Scarifying Existing Granular Surface to a Depth of 50 mm by Manual Means (Scarifying the existing granular road surface to a depth of 50 mm and disposal of scarified material within all lifts and leads upto 1000 metres.)				
		B/w Ch: 80/00km to 110/00km				
		Area as per Annex - I	1560.87	sqm	45.28	₹ 70,676.19
2	4.8	Water Bound Macadam (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tonnes in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density.)				
		B/w Ch: 80/00km to 110/00km				
		A. By Manual Means				
		(ii) Grading - 2 (53 mm to 22.4 mm)				
		(b) Using Screening Type-B (11.2mm Agg.)				
		Qty as per Annex - I	234.13	cum	4248.11	₹ 9,94,609.99
3	5.1	Prime coat (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate shown in 500-1 using mechanical means.)				
		ii) Medium Porosity				
		Qty as per Annex - II	1560.87	sqm	79.25	₹ 1,23,698.95
4	5.5	Bituminous Concrete (Providing and laying bituminous concrete with 100-120 TPH batch type/ Drum Type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects)				
		Case-I Using Bitumen 60/70 grade				
	(ii)	for Grading-II (10 mm nominal size)				
		Qty as per Annex - II	46.83	cum	15750	₹ 7,37,572.50
	10.12	Land Slide Clearance in soil (Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side)	5000.00	cum	49.06	₹ 2,45,300.00

Sl.No	Sor No	Description of items	Quantity	Unit	Rate (after adjustment) ₹	Amount ₹
		This item is considered as need to need basis and shall be only executed on intimation from NHIDCL PMU-Seling with proper documentation, videography/photography				
	P&M-014	Hiring of Dozer D - 80 - A 12	100.00	Hour	5377.36	₹ 5,37,736.00
		This item is considered as need to need basis and shall be only executed on intimation from NHIDCL PMU-Seling with proper documentation, videography/photography				
5		**Hill Side Drain Clearance** (Removal of earth from the choked hill side drain and disposing it on the valley side manually)	41000.00	m	64.15	₹ 26,30,150.00
6		Construction of Retaining wall of 3.0 m height as per Hill Road Manual IRC SP:48-1998 at km 73.200, 75.250, 76.850, 77.250, 86.200, 88.500, 90.150, 103.850	80.00	m	54826.42	₹ 43,86,113.60
7		Re-Construction of HP Culverts at km 77.300, 76.950, 91.100,93.600 using NP3 Pipe 1.0 m Dia	4.00	Nos	763681.42	₹ 30,54,725.68
8	P&M-014	Hiring of Dozer D - 80 - A 12	200.00	Hours	5377.36	₹ 10,75,472.00
		This item is considered as need to need basis and shall be only executed on intimation from NHIDCL PMU-Seling with proper documentation, videography/photography				
9	1.1	**Loading and unloading of stone boulder/stone aggregates/sand/ kanker/moorum**. (Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip)				
		Aggregates/sand				
			426.68	cum	206.6	₹ 88,152.09
10	1.3	Loading and Unloading of Cement or Steel by Manual Means and stacking.				
		cement	2.11	ton	354.72	₹ 748.46
11	1.4	Loading and Unloading of Bitumen by Manual Means				
		Bitumen	7.70	ton	150.94	₹ 1,162.24
12	1.6	Cost of Haulage Excluding Loading and Unloading				
		(i) Surfaced Road				
		Carriage of Stone aggregate from Chawngtlai quarry				
		Lead =as per Annex-III=				
		45				
		Hence Rate =13.2*45				
		594				
		Qty as per Annex - II =				
		633.51	633.51	t/km	560.38	₹ 3,55,006.33

Sl.No	Sor No	Description of items	Quantity	Unit	Rate (after adjustment) ₹	Amount ₹
13	1.6	Cost of Haulage Excluding Loading and Unloading				
		(i) Surfaced Road				
		Carriage of Sand from R.Tuipui				
		Lead =as per Annex-III=				
		10				
		Hence Rate =13.2*10				
		132				
		Qty as per Annex - II =				
		55.26	55.26	t/km	124.53	₹ 6,881.53
14	1.7	Cost of Haulage Excluding Loading and Unloading				
		(ii) Surface Road				
		Carriage of Cement & Bitumen from Aizawl				
		Lead =as per Annex-III=				
		152				
		Hence Rate =11.3*152				
		1717.6				
		Qty as per Annex - II =				
		9.81	9.81	t/km	1620.38	₹ 15,903.52
A		**Total for km 69.000 to km 110.000:**				**₹ 1,43,23,909.08**
		from km 110.00 to km 150.000				
1		Construction of Hume pipe Culvert for 7.5 m length using NP3 pipe of dia 1.0 m as per Analysis	7.00	Nos	763681.39	₹ 53,45,769.73
2		Repair of Slab Culvert at km 134.700	1	Nos	93489.23	₹ 93,489.23
3		Repair of Slab Culvert at km 139.800	1	Nos	94358.16	₹ 94,358.16
4		Construction of Retaining wall Cantilever Type-I at km 118.900 as per Drawing attached with estimate	1	Nos	687098.25	₹ 6,87,098.25
5		Construction of Retaining wall Cantilever Type-II at km 118.910 as per Drawing attached with estimate	1	Nos	900506.58	₹ 9,00,506.58
6		Construction of Retaining wall Cantilever Type-III at km 118.920 as per Drawing attached with estimate	1	Nos	1113914.90	₹ 11,13,914.90
7		Construction of Retaining wall of 3.0 m height and 10.0 m length as per IRC SP-48-1998 at km 129.800, 117.700, 120.400, 131.000, 136.500	60	m	54826.42	₹ 32,89,585.20
8		Land Slide Clearance in soil (Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side)	5000	cum	49.06	₹ 2,45,300.00
		This item is considered as need to need basis and shall be only executed on intimation from NHIDCL PMU-Seling with proper documentation, videography/photography				
9		Hiring of Dozer D - 80 - A 12	100	Hours	5377.36	₹ 5,37,736.00
		This item is considered as need to need basis and shall be only executed on intimation from NHIDCL PMU-Seling with proper documentation, videography/photography				

Sl.No	Sor No	Description of items	Quantity	Unit	Rate (after adjustment) ₹	Amount ₹
10		Hill Side Drain Clearance (Removal of earth from the	40000	m	64.15	₹ 25,66,000.00
B		**Total for km 110.000 to km 150.000:**				**₹ 1,48,73,758**
C		**Total (A+B)**				**₹ 2,91,97,667**
D		**9% Agency Charges on C**				**₹ 26,27,790**
E		**12% GST on C**				**₹ 35,03,720**
F		**18% GST on D**				**₹ 4,73,002**
G		**Grand Total (C+D+E)**				**₹ 3,58,02,179**

BILL OF QUANTITY

Name of work : Special Repair on NH-6

(SH: Patch repair between ch: 69/00 kmp to ch: 110/00 kmp)

(BASE ON SOR 2016 FOR NATIONAL HIGHWAYS AND STATE ROADS IN MIZORAM)

Sl. No	Sor No	Description of items	Quantity	Unit	Rate (after adjustment) ₹	Amount ₹
		from km 69.000 to km 110.00				
1	3.12	Scarifying Existing Granular Surface to a Depth of 50 mm by Manual Means (Scarifying the existing granular road surface to a depth of 50 mm and disposal of scarified material within all lifts and leads upto 1000 metres.)				
		B/w Ch: 80/00km to 110/00km				
		Area as per Annex - I	1560.87	sqm	45.28	₹ 70,676.19
2	4.8	Water Bound Macadam (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tonnes in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density.)				
		B/w Ch: 80/00km to 110/00km				
		A. By Manual Means				
		(ii) Grading - 2 (53 mm to 22.4 mm)				
		(b) Using Screening Type-B (11.2mm Agg.)				
		Qty as per Annex - I	234.13	cum	4248.11	₹ 9,94,609.99
3	5.1	Prime coat (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate shown in 500-1 using mechanical means.)				
		ii) Medium Porosity				
		Qty as per Annex - II	1560.87	sqm	79.25	₹ 1,23,698.95
4	5.5	Bituminous Concrete (Providing and laying bituminous concrete with 100-120 TPH batch type/ Drum Type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects)				
		Case-I Using Bitumen 60/70 grade				
	(ii)	for Grading-II (10 mm nominal size)				
		Qty as per Annex - II	46.83	cum	15750	₹ 7,37,572.50
	10.12	Land Slide Clearance in soil (Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side)	5000.00	cum	49.06	₹ 2,45,300.00

Sl. No	Sor No	Description of items	Quantity	Unit	Rate (after adjustment) ₹	Amount ₹
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5		**Hill Side Drain Clearance** (Removal of earth from the choked hill side drain and disposing it on the valley side manually)	41000.00	m	64.15	₹ 26,30,150.00
6		Construction of Retaining wall of 3.0 m height as per Hill Road Manual IRC SP:48-1998 at km 73.200, 75.250, 76.850, 77.250, 86.200, 88.500, 90.150, 103.850	80.00	m	54826.42	₹ 43,86,113.60
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9	1.1	**Loading and unloading of stone boulder/stone aggregates/sand/ kanker/moorum.** (Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip)				
		Aggregates/sand				
			426.68	cum	206.6	₹ 88,152.09
10	1.3	Loading and Unloading of Cement or Steel by Manual Means and stacking.				
		cement	2.11	ton	354.72	₹ 748.46
11	1.4	Loading and Unloading of Bitumen by Manual Means				
		Bitumen	7.70	ton	150.94	₹ 1,162.24
12	1.6	Cost of Haulage Excluding Loading and Unloading				
		(i) Surfaced Road				
		Carriage of Stone aggregate from Chawngtlai quarry				
		Lead =as per Annex-III=				
		45				
		Hence Rate =13.2*45				
		594				
		Qty as per Annex - II =				
		633.51	633.51	t/km	560.38	₹ 3,55,006.33

Sl. No	Sor No	Description of items	Quantity	Unit	Rate (after adjustment) ₹	Amount ₹
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		(i) Surfaced Road				
		Carriage of Sand from R.Tuipui				
		Lead =as per Annex-III=				
		10				
		Hence Rate =13.2*10				
		132				
		Qty as per Annex - II =				
		55.26	55.26	t/km	124.53	₹ 6,881.53
14	1.7	Cost of Haulage Excluding Loading and Unloading				
		(ii) Surface Road				
		Carriage of Cement & Bitumen from Aizawl				
		Lead =as per Annex-III=				
		152				
		Hence Rate =11.3*152				
		1717.6				
		Qty as per Annex - II =				
		9.81	9.81	t/km	1620.38	₹ 15,903.52
A		**Total for km 69.000 to km 110.000:**				**₹ 1,43,23,909.08**
		from km 110.00 to km 150.000				
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4		Construction of Retaining wall Cantilever Type-I at km 118.900 as per Drawing attached with estimate	1	Nos	687098.25	₹ 6,87,098.25
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8		Land Slide Clearance in soil (Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side)	5000	cum	49.06	₹ 2,45,300.00
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9		Hiring of Dozer D - 80 - A 12	100	Hours	5377.36	₹ 5,37,736.00
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10		Hill Side Drain Clearance (Removal of earth from	40000	m	64.15	₹ 25,66,000.00

Sl. No	Sor No	Description of items	Quantity	Unit	Rate (after adjustment) ₹	Amount ₹
B		Total for km 110.000 to km 150.000:				₹ 1,48,73,758
C		Total (A+B)				₹ 2,91,97,667
D		9% Agency Charges on C				₹ 26,27,790
E		12% GST on C				₹ 35,03,720
F		18% GST on D				₹ 4,73,002
G		Grand Total (C+D+E)				₹ 3,58,02,179

BILL OF QUANTITY

Name of work : Patch Repair on NH-6

(SH: Patch repair between ch: 69/00 kmp to ch: 110/00 kmp)

(BASE ON SOR 2016 FOR NATIONAL HIGHWAYS AND STATE ROADS IN MIZORAM)

Sl. No	Sor No	Description of items	Quantity	Unit	Rate (after adjustment) ₹	Amount ₹
1	3.12	Scarifying Existing Granular Surface to a Depth of 50 mm by Manual Means (Scarifying the existing granular road surface to a depth of 50 mm and disposal of scarified material within all lifts and leads upto 1000 metres.)				
		B/w Ch: 80/00km to 110/00km				
		Area as per Annex - I	1560.87	sqm	45.28	70676.19
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		B/w Ch: 80/00km to 110/00km				
		A. By Manual Means				
		(ii) Grading - 2 (53 mm to 22.4 mm)				
		(b) Using Screening Type-B (11.2mm Agg.)				
		Qty as per Annex - I	234.13	cum	4248.11	994609.99
3	5.1	Prime coat (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate shown in 500-1 using mechanical means.)				
		ii) Medium Porosity				
		Qty as per Annex - II	1560.87	sqm	79.25	123698.95
4	5.5	Bituminous Concrete (Providing and laying bituminous concrete with 100-120 TPH batch type/ Drum Type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects)				
		Case-I Using Bitumen 60/70 grade				
	(ii)	for Grading-II (10 mm nominal size)				
		Qty as per Annex - II	46.83	cum	15750	737572.50

Sl. No	Sor No	Description of items	Quantity	Unit	Rate (after adjustment) ₹	Amount ₹
	10.12	Land Slide Clearance in soil (Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side)	5000.00	cum	49.06	245300.00
		This item is considered as need to need basis and shall be only executed on intimation from NHIDCL PMU-Seling with proper documentation, videography/photography				
	P&M-014	Hiring of Dozer D - 80 - A 12	100.00	Hour	5377.36	537736.00
		This item is considered as need to need basis and shall be only executed on intimation from NHIDCL PMU-Seling with proper documentation, videography/photography				
5		**Hill Side Drain Clearance** (Removal of earth from the choked hill side drain and disposing it on the valley side manually)	41000.00	m	64.15	2630150.00
6		Construction of Retaining wall of 3.0 m height as per Hill Road Manual IRC SP:48-1998 at km 73.200, 75.250, 76.850, 77.250, 86.200, 88.500, 90.150, 103.850	80.00	m	54826.42	4386113.60
7		Re-Construction of HP Culverts at km 77.300, 76.950, 91.100,93.600 using NP3 Pipe 1.0 m Dia	4.00	Nos	763681.42	3054725.68
8	P&M-014	Hiring of Dozer D - 80 - A 12	200.00	Hours	5377.36	1075472.00
		This item is considered as need to need basis and shall be only executed on intimation from NHIDCL PMU-Seling with proper documentation, videography/photography				**13856054.92**
9	1.1	**Loading and unloading of stone boulder/stone aggregates/sand/ kanker/moorum.** (Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip)				
		Aggregates/sand				
			426.68	cum	206.6	88152.09
10	1.3	Loading and Unloading of Cement or Steel by Manual Means and stacking.				
		cement	2.11	ton	354.72	748.46
11	1.4	Loading and Unloading of Bitumen by Manual Means				
		Bitumen	7.70	ton	150.94	1162.24
12	1.6	Cost of Haulage Excluding Loading and Unloading				
		(i) Surfaced Road				
		Carriage of Stone aggregate from Chawngtlai quarry				
		Lead =as per Annex-III=				
		45				
		Hence Rate =13.2*45				
		594				
		Qty as per Annex - II =				
		633.51	633.51	t/km	560.38	355006.33

Sl. No	Sor No	Description of items	Quantity	Unit	Rate (after adjustment) ₹	Amount ₹
13	1.6	Cost of Haulage Excluding Loading and Unloading				
		(i) Surfaced Road				
		Carriage of Sand from R.Tuipui				
		Lead =as per Annex-III=				
		10				
		Hence Rate =13.2*10				
		132				
		Qty as per Annex - II =				
		55.26	55.26	t/km	124.53	6881.53
14	1.7	Cost of Haulage Excluding Loading and Unloading				
		(ii) Surface Road				
		Carriage of Cement & Bitumen from Aizawl				
		Lead =as per Annex-III=				
		152				
		Hence Rate =11.3*152				
		1717.6				
		Qty as per Annex - II =				
		9.81	9.81	t/km	1620.38	15903.52
		Total:				**467854**
A		**G.Total:**				**14323909**
B		**Agency Charges @ 9% on A**				**₹ 12,89,152**
C		**GST @12% on A**				**₹ 17,18,869**
D		**Total D=A+B+C**				**₹ 1,73,31,930**

Name of work : Patch Repair on NH-6
(SH: Patch repair between ch: 69/00 kmp to ch: 110/00 kmp)

(BASE ON SOR 2016 FOR NATIONAL HIGHWAYS AND STATE ROADS IN MIZORAM)

Sl. No	Sor No	Description of items	No	Length	Width	Height	Quantity	Unit
1	3.12	Scarifying Existing Granular Surface to a Depth of 50 mm by Manual Means (Scarifying the existing granular road surface to a depth of 50 mm and disposal of scarified material within all lifts and leads upto 1000 metres.) B/w Ch: 80/00km to 110/00km Area as per Annex - I					1560.87	sqm
2	4.8	Water Bound Macadam (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tonnes in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density.) B/w Ch: 80/00km to 110/00km A. By Manual Means (ii) Grading - 2 (53 mm to 22.4 mm) (b) Using Screening Type-B (11.2mm Agg.) Qty as per Annex - I		1560.87		0.15	234.13	cum
3	5.1	Prime coat (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate shown in 500-1 using mechanical means.) ii) Medium Porosity Qty as per Annex - II					1560.87	sqm
4	5.5 (ii)	Bituminous Concrete (Providing and laying bituminous concrete with 100-120 TPH batch type/ drum type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects) Case-I Using Bitumen 60/70 grade for Grading-II (10 mm nominal size) Qty as per Annex - II		1560.87	0.03		46.83	cum

Sl. No	Sor No	Description of items	No	Length	Width	Height	Quantity	Unit
	10.12	Land Slide Clearance in soil (Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side)					5000.00	cum
	P&M-014	Hiring of Dozer D - 80 - A 12					100.00	Hour
5	10.14	**Hill Side Drain Clearance** (Removal of earth from the choked hill side drain and disposing it on the valley side manually)					41000.00	m
6		Construction of Retaining wall Type-I at km 73.200, 75.250, 76.850, 77.250, 86.200, 88.500, 90.150, 103.850		80.00		3	80.00	m
7		Re-Construction of HP Culverts at km 77.300, 76.950, 91.100,93.600 using NP3 Pipe 1.0 m Dia	4		7		4.00	Nos
8	P&M-014	Hiring of Dozer D - 80 - A 12	hour					200
9	1.1	**Loading and unloading of stone boulder/stone aggregates/sand/ kanker/moorum.** (Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip) **Aggregates/sand**					426.68	cum
10	1.3	Loading and Unloading of Cement or Steel by Manual Means and stacking. cement					2.11	ton
11	1.4	Loading and Unloading of Bitumen by Manual Means Bitumen					7.70	ton
12	1.6	Cost of Haulage Excluding Loading and Unloading (i) Surfaced Road Carriage of Stone aggregate from Chawngtlai quarry Lead =as per Annex-III= 45 Hence Rate =13.2*45 594 Qty as per Annex - II = 633.51	km ton				633.51	t/km
13	1.6	Cost of Haulage Excluding Loading and Unloading (i) Surfaced Road Carriage of Sand from R.Tuipui Lead =as per Annex-III=						
		10 Hence Rate =13.2*10 132 Qty as per Annex - II = 55.26	km ton				55.26	t/km

Sl. No	Sor No	Description of items	No	Length	Width	Height	Quantity	Unit
14	1.7	Cost of Haulage Excluding Loading and Unloading (ii) Surface Road Carriage of Cement & Bitumen from Aizawl Lead =as per Annex-III= 152	km					
		Hence Rate =11.3*152 1717.6 Qty as per Annex - II = 9.81	ton				9.81	t/km

Name of work : Patch Repair on NH-6 (SH: Patch repair between ch: 69/00 kmp to ch: 110/00 kmp)

Sl.No	Chainages			No	Length	Width	Area sqm	Thickness	Volume cum
1	81.00	to	82.00	1	2.00	1.00	2.00	0.15	0.30
				1	2.50	2.00	5.00	0.15	0.75
				1	3.00	2.00	6.00	0.15	0.90
				1	2.00	1.50	3.00	0.15	0.45
				1	2.00	1.40	2.80	0.15	0.42
2	82.00	to	83.00	1	3.00	1.20	3.60	0.15	0.54
				1	4.50	1.00	4.50	0.15	0.68
3	83.00	to	84.00	1	2.50	1.00	2.50	0.15	0.38
				1	2.00	1.00	2.00	0.15	0.30
				1	2.00	1.50	3.00	0.15	0.45
				1	3.00	1.00	3.00	0.15	0.45
				1	4.00	3.00	12.00	0.15	1.80
				1	8.00	3.75	30.00	0.15	4.50
4	84.00	to	85.00	1	2.00	1.00	2.00	0.15	0.30
				1	1.50	1.00	1.50	0.15	0.23
				1	3.20	2.00	6.40	0.15	0.96
				1	2.00	1.00	2.00	0.15	0.30
5	85.00	to	86.00	1	1.35	1.00	1.35	0.15	0.20
				1	4.00	1.10	4.40	0.15	0.66
6	86.00	to	87.00	1	8.00	3.75	30.00	0.15	4.50
				1	5.00	2.00	10.00	0.15	1.50
				1	5.00	2.50	12.50	0.15	1.88
7	87.00	to	88.00	1	1.00	1.00	1.00	0.15	0.15
				1	4.00	1.30	5.20	0.15	0.78
				1	3.00	2.40	7.20	0.15	1.08
				1	15.00	3.00	45.00	0.15	6.75
				1	20.00	3.50	70.00	0.15	10.50
				1	12.00	1.50	18.00	0.15	2.70
8	88.00	to	89.00	1	8.50	2.20	18.70	0.15	2.81
				1	5.50	1.80	9.90	0.15	1.49
				1	6.00	2.20	13.20	0.15	1.98
				1	4.50	2.00	9.00	0.15	1.35
				1	2.60	2.00	5.20	0.15	0.78
				1	6.00	3.00	18.00	0.15	2.70
9	89.00	to	90.00	1	4.00	2.50	10.00	0.15	1.50
				1	3.00	2.00	6.00	0.15	0.90
				1	4.50	3.00	13.50	0.15	2.03
				1	6.00	3.00	18.00	0.15	2.70
				1	3.00	2.00	6.00	0.15	0.90
				1	2.60	1.60	4.16	0.15	0.62
				1	2.50	2.00	5.00	0.15	0.75
				1	3.00	1.50	4.50	0.15	0.68
				1	6.00	2.30	13.80	0.15	2.07
				1	7.00	2.00	14.00	0.15	2.10
10	90.00	to	91.00	1	2.60	1.50	3.90	0.15	0.59
				1	2.50	1.20	3.00	0.15	0.45
				1	1.60	1.00	1.60	0.15	0.24

Pot hole measurement

Name of work : Patch Repair on NH-6 (SH: Patch repair between ch: 69/00 kmp to ch: 110/00 kmp)

Sl.No	Chainages			No	Length	Width	Area sqm	Thickness	Volume cum
				1	2.00	1.30	2.60	0.15	0.39
11	91.00	to	92.00	1	2.50	1.30	3.25	0.15	0.49
				1	3.00	2.00	6.00	0.15	0.90
				1	3.00	1.00	3.00	0.15	0.45
12	92.00	to	93.00	1	8.00	2.30	18.40	0.15	2.76
				1	9.00	2.20	19.80	0.15	2.97
				1	10.00	2.50	25.00	0.15	3.75
13	93.00	to	94.00	1	4.00	2.20	8.80	0.15	1.32
				1	2.50	3.00	7.50	0.15	1.13
14	94.00	to	95.00	1	5.00	3.70	18.50	0.15	2.78
				1	2.60	1.60	4.16	0.15	0.62
15	95.00	to	96.00	1	2.50	1.60	4.00	0.15	0.60
				1	10.00	3.70	37.00	0.15	5.55
				1	9.00	3.00	27.00	0.15	4.05
B		Apron Protection wall :		1	1.50	0.25			
C	96.00	Masonry wall U/S side :		1	0.00	0.00			
D									
17	97.00	to	98.00	1	1.50	1.00	1.50	0.15	0.23
				1	4.50	2.50	11.25	0.15	1.69
				1	2.00	1.60	3.20	0.15	0.48
18	98.00	to	99.00	1	3.00	2.40	7.20	0.15	1.08
				1	2.00	1.50	3.00	0.15	0.45
				1	10.00	3.70	37.00	0.15	5.55
				1	12.00	3.00	36.00	0.15	5.40
				1	8.00	2.60	20.80	0.15	3.12
19	99.00	to	100.00	1	12.00	3.00	36.00	0.15	5.40
				1	10.00	3.70	37.00	0.15	5.55
				1	8.00	3.00	24.00	0.15	3.60
				1	12.00	2.50	30.00	0.15	4.50
				1	2.00	1.40	2.80	0.15	0.42
20	100.00	to	101.00	1	5.00	2.50	12.50	0.15	1.88
				1	3.00	2.20	6.60	0.15	0.99
21	101.00	to	102.00	1	2.20	1.70	3.74	0.15	0.56
				1	3.00	2.00	6.00	0.15	0.90
				1	3.10	1.50	4.65	0.15	0.70
				1	11.00	3.75	41.25	0.15	6.19
				1	2.40	1.70	4.08	0.15	0.61
				1	2.00	1.00	2.00	0.15	0.30
				1	5.50	2.00	11.00	0.15	1.65
				1	12.00	3.00	36.00	0.15	5.40
				1	15.00	3.75	56.25	0.15	8.44
				1	14.00	3.75	52.50	0.15	7.88
				1	4.00	2.00	8.00	0.15	1.20
				1	5.20	2.00	10.40	0.15	1.56
22	102.00	to	103.00	1	2.00	1.50	3.00	0.15	0.45
				1	3.00	1.50	4.50	0.15	0.68

Pot hole measurement

Name of work : Patch Repair on NH-6 (SH: Patch repair between ch: 69/00 kmp to ch: 110/00 kmp)

Sl.No	Chainages			No	Length	Width	Area sqm	Thickness	Volume cum
				1	3.50	1.50	5.25	0.15	0.79
23	104.00	to	105.00	1	2.20	1.40	3.08	0.15	0.46
				1	3.50	2.00	7.00	0.15	1.05
				1	10.00	3.75	37.50	0.15	5.63
				1	8.00	2.80	22.40	0.15	3.36
				1	6.00	3.00	18.00	0.15	2.70
				1	5.50	2.00	11.00	0.15	1.65
24	105.00	to	106.00	1	6.50	2.00	13.00	0.15	1.95
				1	12.00	3.00	36.00	0.15	5.40
				1	2.40	1.00	2.40	0.15	0.36
				1	3.00	2.00	6.00	0.15	0.90
25	106.00	to	107.00	1	6.00	2.00	12.00	0.15	1.80
				1	13.00	3.00	39.00	0.15	5.85
				1	6.00	3.00	18.00	0.15	2.70
				1	5.00	2.50	12.50	0.15	1.88
				1	12.00	3.70	44.40	0.15	6.66
				1	10.00	3.50	35.00	0.15	5.25
				1	5.00	2.50	12.50	0.15	1.88
26	107.00	to	108.00	1	2.00	1.00	2.00	0.15	0.30
				1	1.00	1.00	1.00	0.15	0.15
27	108.00	to	109.00	1	2.00	1.50	3.00	0.15	0.45
				1	14.00	3.00	42.00	0.15	6.30
				1	2.50	1.50	3.75	0.15	0.56
				1	2.00	1.60	3.20	0.15	0.48
						Sqm :	**1560.87**		234.13

Pot hole measurement

Name of work : Patch Repair on NH-6 (SH: Patch repair between ch: 69/00 kmp to ch: 110/00 kmp)

QUANTITY CALCULATION

Description	Requirement for	Aggregates	Stone Chip	Sand	Cement	Bitumen	Quantity	unit	*Aggregates (m^3)*	*Stone chip (m^3)*	*Sand*	*Cement*	Bitumen tonne
1	2	4	5	6	7	8	9	10	*12*	*13*	*14*	*15*	*16*
WBM Gr-II	360.00 m^3	435.60 m^3	115.20 m^3				234.13	m^3	283.30	74.92			
Prime Coat	3500.00 m^2					4.900 ton	1560.87	m^2					2.19
BC	191.00 m^3		156.75 m^3	122.5 m^3	8.62 t	22.5 ton	46.83	m^3	0.00	38.43	30.03	2.11	5.52
						Total requirement of Materials :			**283.30**	**113.35**	**30.03**	**2.11**	**7.70**
						Ton / unit quantity :			**1.54**	**1.74**	**1.84**		
						Total weight (in ton) :			**436.28**	**197.23**	**55.26**	**2.11**	**7.70**

Name of work : Patch Repair on NH-6 (SH: Patch repair between ch: 69/00 kmp to ch: 110/00 kmp)

CALCULATION OF AVERAGE LEAD

(i) For carriage of Stone Aggregate from Chawngtlai quarry

Distance from work site to Chawngtlai quarry on NH-6 (km)	Stretch Particular		Length (km)	Average length	Initial lead	Total lead	Weight age	Total
	Start (kmp)	End (kmp)						
L_0	**L_1**	**L_2**	**$L = L_1 - L_2$**	**$L_{av} = L/2$**	**$L_{in} = L_0 + Lav$**	**$L_{tt} = L_{in} + L_{av}$**	**w**	**$= L_{tt} \times w$**
15.00	80.000	110.000	30.000	15.000	30.000	45.000	30.000	1350.000
		TOTAL =	30.000				30.000	1350.000

Hence average effective lead (km) = $\frac{1350.000}{30.000}$ = **45.000**

(ii) For carriage of Cement & Bitumen from Aizawl

Distance from work site to Zuangtui	Stretch Particular		Length (km)	Average length	Initial lead	Total lead	Weight age	Total
	Start (kmp)	End (kmp)						
L_0	**L_1**	**L_2**	**$L = L_1 - L_2$**	**$L_{av} = L/2$**	**$L_{in} = L_0 + Lav$**	**$L_{tt} = L_{in} + L_{av}$**	**w**	**$= L_{tt} \times w$**
122.00	80.000	110.000	30.000	15.000	137.000	152.000	30.000	4560.000
		TOTAL =	30.000				30.000	4560.000

Hence average effective lead (km) = $\frac{4560.000}{30.000}$ = **152.000**

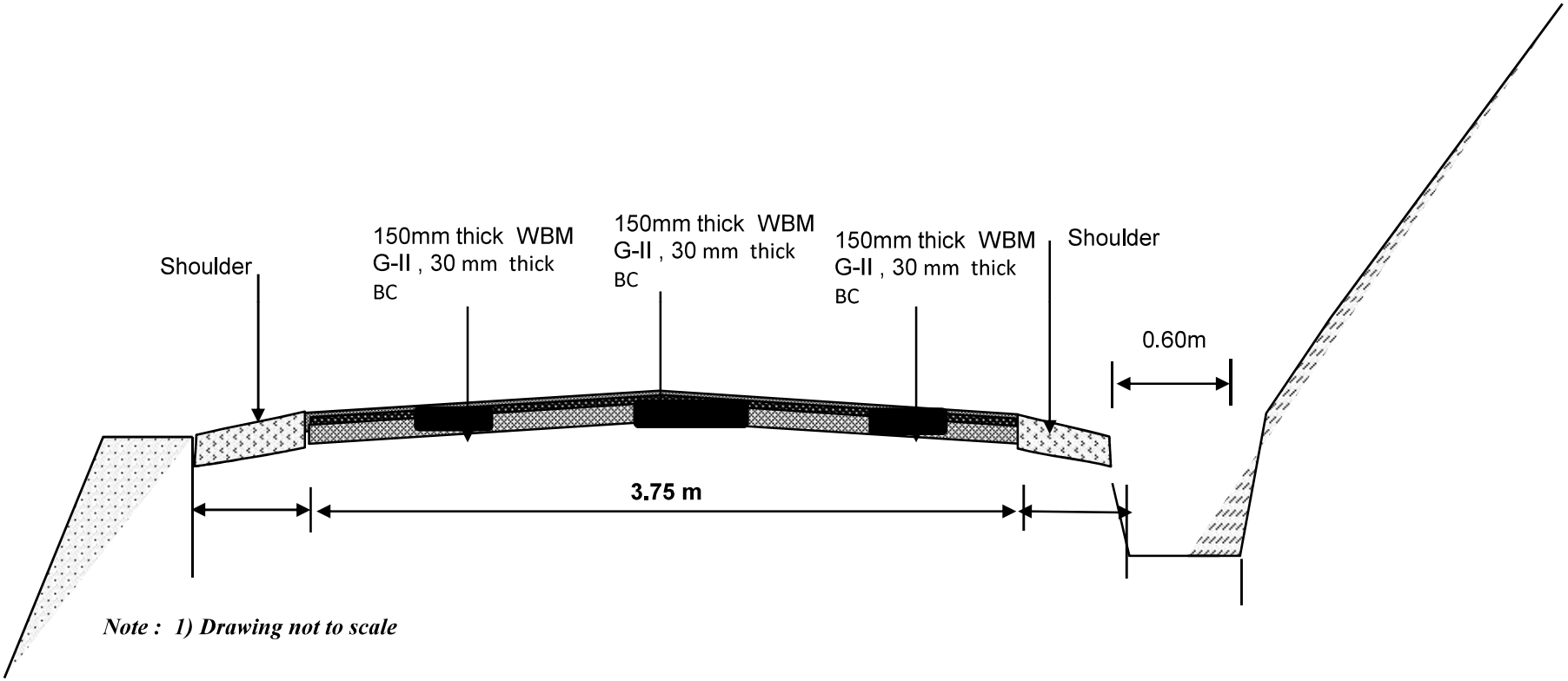
(iii) For carriage of Sand from R.Tuipui

Distance from work site to R.Tuipui	Stretch Particular		Length (km)	Average length	Initial lead	Total lead	Weight age	Total
	Start (kmp)	End (kmp)						
L_0	**L_1**	**L_2**	**$L = L_1 - L_2$**	**$L_{av} = L/2$**	**$L_{in} = L_0 + Lav$**	**$L_{tt} = L_{in} + L_{av}$**	**w**	**$= L_{tt} \times w$**
20.00	110.000	80.000	-30.000	-15.000	5.000	-10.000	-30.00	300.000
		TOTAL =	-30.000				-30.00	300.000

Hence average effective lead (km) = $\frac{300.000}{-30.000}$ = **-10.000**

Name of work : Patch Repair on NH-6 (SH: Patch repair between ch: 69/00 kmp to ch: 110/00 kmp)

TYPICAL CROSS SECTIONAL DRAWING OF BITUMINOUS PAVEMENT



Note : 1) Drawing not to scale

Name of work : Patch Repair on NH-6 (SH: Patch repair between ch: 69/00 kmp to ch: 110/00 kmp)

INDEX MAP SHOWING LEAD CHART OF STONE AGGREGATES

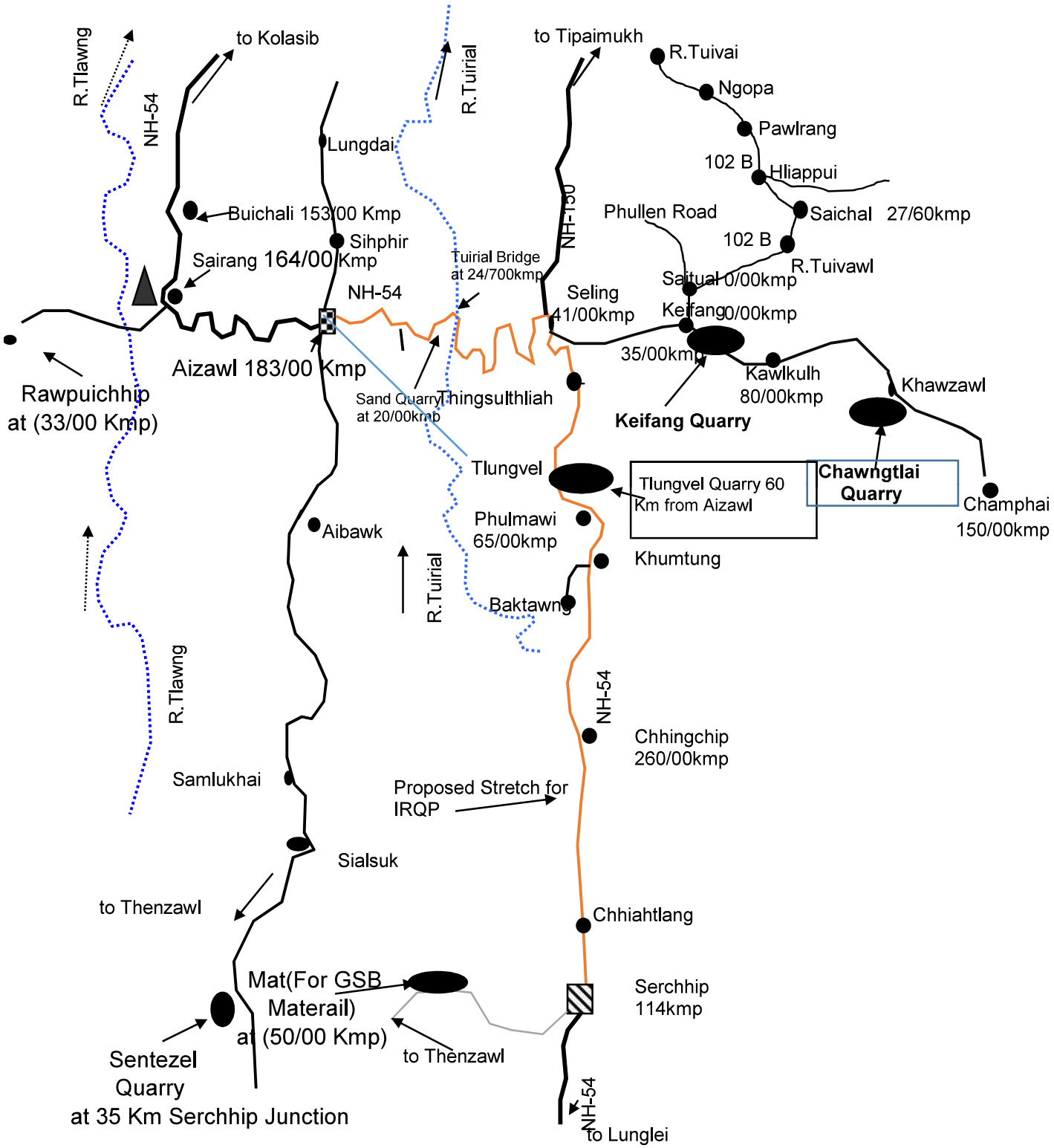
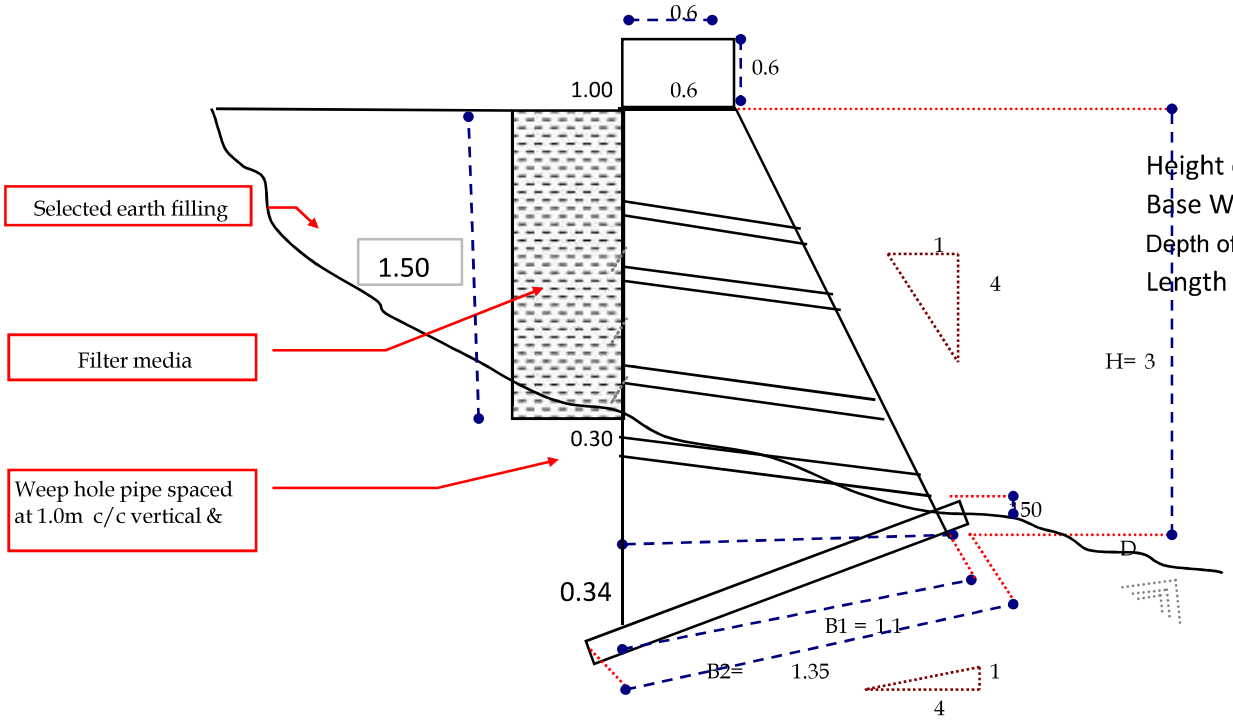


Photo of Pot holes between ch: 69/00 kmp to 110/00 kmp on NH-6

(Sh: Construction of Retaining walls - Type -I)

RETAINING WALL TYPE-I : L = 10.0 m H = 3.0 m

Analysis of Cost for Construction of Stone Masonry Retaining wall as per Hill Road Manual Specification



Height of Retaining wall H =	3.0 m
Base Width B = 0.25H+0.6 =	1.35 m
Depth of trench D=0.25H+0.3 =	.64 m
Length of wall L =	10.00 m

Sl.No	Ref to SOR	Description	Unit	Nos	Length	Width	Depth	Quantity	Rate in Rs	Amount in Rs
1	12.1	Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.	Cum	1	10.00	1.35	1.07	14.43		
	I	**Ordinary Soil**								
	A	**Manual means**								
	(i)	upto 3m depth	Cum	60%				8.66	571.28	4945.51
	II	**Ordinary rock (not requiring blasting)**								
	A	**Manual means**								
	(i)	upto 3m depth	Cum	40%				5.77	813.32	4693.86
2	12.4	**PCC 1:3:6 in Foundation** (Plain cement concrete 1:3:6 nominal mix in foundation with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.)	Cum	1	10.00	1.35	0.15	2.03	8763.25	17745.57
3	12.7	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing andTechnical Specification								
	(b)	**Random Rubble Masonry**								
		Triangular portion	Cum	1	10.00	1.10	0.17	0.93		
		Rwall	Cum	1	10.00	0.85	3.00	25.50		
		Parapets	Cum	4	2.00	0.60	0.60	2.88		
							Total :	29.31	7260.08	212779.31

Sl.No	Ref to SOR	Description	Unit	Nos	Length	Width	Depth	Quantity	Rate in Rs	Amount in Rs
4	13.3	Plastering with cement mortar (1:3) on brick/masonry work in sub-structure as per Technical Specifications								
		Parapets								
		top		4	2.00	0.60		4.80		
		sides		8	0.60	0.60		2.88		
		face		8	2.00	0.60		9.60		
			Sqm					17.28	223.91	3869.12
5	13.9	Backfilling behind the abutment, wing wall and return walls complete as per drawing and Technical specification								
	A	**Granular Material**	Cum	1	10.00	0.65	1.50	9.75	2538.92	24754.48
6	1.1 & 1.3	***Carriage of Materials***								
		Calculation of Materials	Quantity	Cement ton	Agg cum	Sand cum	M.Stone cum	Boulder cum		
		PCC :	2.03	0.47	1.82	0.91				
		Stone Masonry :	29.31	14.95		30.77	34.00			
		Plastering:	17.28	8.81		18.14				
		Backfilling :	9.75					9.75		
		Total :		24.23	1.82	49.83	34.00	9.75		
		Wts. :		24.23	2.66	91.68	70.71	15.11		
		Loading & Unloading								
	1.3	Cement	24.23						368.44	8925.77
	1.1	Aggregates	1.82						214.60	391.11
		Sand	49.83						214.60	10693.16
		Masonry stone	34.00						214.60	7295.78
		Granular Materials	9.75						214.60	2092.33

Sl.No	Ref to SOR	Description	Unit	Nos	Length	Width	Depth	Quantity	Rate in Rs	Amount in Rs
7	1.6	Cost of Haulage Excluding Loading and Unloading								
		i) Surface road :								
		Cement	24.23		Khawzawl to work Site			20.00	12.93	6267.03
		Aggregates	2.66		Chawngtlai Quarry to work Site			32.00	12.93	1101.35
		Sand	91.68		R.Tuipui to work Site			24.00	12.93	28461.97
		Masonry stone	70.71		Chawngtlai Quarry to work Site			32.00	12.93	29269.48
		Granular Materials	15.11		Chawngtlai Quarry to work Site			32.00	12.93	6255.21

Total = Rs. 3,69,541.05

***For 1.00 m length* = Rs. 36,954.10**

***For 1.00 m length (after adjustment of VAT)*= 34862.36**

Photos of proposed Retaining wall on NH-6

BILL OF QUANTITY

Name of work : Maintenance & Repair of NH-6 from km 110.00 to km 150.00

(BASE ON SOR 2016 FOR NATIONAL HIGHWAYS AND STATE ROADS IN MIZORAM)

Sl.No	Description of items	Quantity	Unit	Rate after Adjustment of VAT	Amount
1	Construction of Hume pipe Culvert for 7.5 m length using NP3 pipe of dia 1.0 m as per Analysis	7.00	Nos	763681.39	5345769.73
2	Repair of Slab Culvert at km 134.700	1	Nos	93489.23	93489.23
3	Repair of Slab Culvert at km 139.800	1	Nos	94358.16	94358.16
4	Construction of Retaining wall Cantilever Type-I at km 118.900 as per Drawing attached with estimate	1	Nos	687098.25	687098.25
5	Construction of Retaining wall Cantilever Type-II at km 118.910 as per Drawing attached with estimate	1	Nos	900506.58	900506.58
6	Construction of Retaining wall Cantilever Type-III at km 118.920 as per Drawing attached with estimate	1	Nos	1113914.9	1113914.9
7	Construction of Retaining wall of 3.0 m height and 10.0 m length as per IRC SP-48-1998 at km 129.800, 117.700, 120.400, 131.000, 136.500	60	m	54826.42	3289585.2
8	Land Slide Clearance in soil (Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side)	5000	cum	49.06	245300
	This item is considered as need to need basis and shall be only executed on intimation from NHIDCL PMU-Seling with proper documentation, videography/photography				
9	Hiring of Dozer D - 80 - A 12	100	Hours	5377.36	537736
	This item is considered as need to need basis and shall be only executed on intimation from NHIDCL PMU-Seling with proper documentation, videography/photography				
10	Hill Side Drain Clearance (Removal of earth from the choked hill side drain and disposing it on the valley side manually)	40000	m	64.15	2566000
A			**Total**		**1,48,73,758**
B			**Agency Charges (9% on A)**		**13,38,638**
C			**GST (12% of A)**		**17,84,851**
D			**Total (A+B+C)**		**1,79,97,247**

Name of work : Maintenance & Repair of NH-6 from km 110.00 to km 150.00

(BASE ON SOR 2016 FOR NATIONAL HIGHWAYS AND STATE ROADS IN MIZORAM)

Sl.No	SOR/Ref.	Description of items	No	Length	Width	Height	Quantity
1		Construction of Hume pipe Culvert for 7.5 m length using NP3 pipe of dia 1.0 m as per Analysis	7	7.5			7.00
2		Repair of Slab Culvert at km 134.700	1	7.5			1
3		Repair of Slab Culvert at km 139.800	1	7.5			1
4		Construction of Retaining wall Cantilever Type-I at km 118.900	1	10		5.7	1
5		Construction of Retaining wall Cantilever Type-II at km 118.910	1	10		7.9	1
6		Construction of Retaining wall Cantilever Type-III at km 118.920	1	10		10.1	1
7		Construction of Retaining wall of 3.0 m height and 10.0 m length as per IRC SP-48-1998 at km 129.800, 117.700, 120.400, 131.000, 136.500	6	10		3	60
8		Land Slide Clearance in soil (Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side)					5000
9		Hiring of Dozer D - 80 - A 12					100
10		Hill Side Drain Clearance (Removal of earth from the choked hill side drain and disposing it on the valley side manually)					40000

Unit
Nos
Nos
Nos
Nos
Nos
Nos
m
cum
Hours
m

Name of works: Repair & Rehabilitation of existing single lane pavement from km 110.00 to km 150.00 on NH-6 (Khawzawl to Champhai) in the State of Mizoram (Length=40.00kms)

(Sh. : Construction of Hume Pipe Culverts between km 110.00 to km 150.00)

Analysis of Cost for Construction of Hume Pipe Culvert for 7.5m length

Length of head wall = 4.00 m Wing wall = 4.0 + 4.0 = 8.00 m Height of head wall & wing wall = 3.50 m

Sl. No	Sor No	Description of item	No.	Length (m)	Width (m)	Height (m)	Unit	Quantity	Rate (Rs. P)	Amount (Rs. P)
1	12.1	Excavation for Structures (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.)								
	ii	Ordinary rock (not requiring blasting)								
	A	Manual Means (i) Depth upto 3 m								
		Head wall :	1	4.00	1.48	3.65		21.608		
		Wing wall :	1	8.00	1.48	3.65		43.216		
		U/S wall :	1	1.80	1.23	2.65		5.867		
		Catch pit :	1	1.80	1.20	2.15		4.644		
		Culvert Bed :	1	4.79	1.50	2.38		17.100		
							m3	92.435	813.32	75178.96
2	9.1	PCC 1:3:6 in Foundation (Plain cement concrete 1:3:6 mix with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.)								
		Head wall bed :	1	4.00	1.48	0.15		0.888		
		Wing wall bed :	1	8.00	1.48	0.15		1.776		
		U/S wall bed :	1	1.80	1.23	0.15		0.332		
		Catch Pit floor :	1	1.80	1.20	0.15		0.324		
		Apron protection wall :	4	1.50	0.75	0.20		0.900		
		Pipe bed at wall :	1	1.10	1.50	0.55		0.908		
			1	1.16	1.50	0.55		0.957		
		* Deduct embedded pipe :	-1	1.10		0.21		-0.231		
			-1	1.16		0.21		-0.244		
							m3	5.610	7741.21	43428.19

Sl. No	Sor No	Description of item	No.	Length (m)	Width (m)	Height (m)	Unit	Quantity	Rate (Rs. P)	Amount (Rs. P)
3	13.4	Stone masonry work in cement mortar for substructure complete as per drawing and Technical Specifications								
	B	Coursed rubble masonry (first sort)								
		Head wall :	1	4.00	$\frac{0.60 + 1.48}{2}$	3.50		14.560		
		Deduct pipe :	-1	1.03	3.14	0.55 x 0.55		-0.978		
		Deduct pipe bed pcc :	-1	1.16	(0.55 x 1.5) - (0.21)			-0.713		
		Wing wall :	1	8.00	$\frac{0.60 + 1.48}{2}$	3.50		29.120		
		U/S wall :	1	1.80	$\frac{0.60 + 1.23}{2}$	2.50		4.118		
		Deduct pipe :	-1	0.96	3.14	0.55 x 0.55		-0.912		
		Deduct pipe bed pcc :	-1	1.10	(0.55 x 1.5) - (0.21)			-0.677		
		Catch pit sides :	3	1.20	0.30	2.00		2.160		
		Apron Protection wall :	4	1.50	0.25	0.30		0.450		
							m3	47.127	7633.42	359740.23
4	9.1	Bedding for pipe PCC 1:3:6 in Foundation (Plain cement concrete 1:3:6 mix with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.)								
			1	4.79	1.50	0.55		3.952		
		* Deduct embedded pipe :	-1	4.79		0.21		-1.006		
							m3	2.946	7741.21	22805.60
5	9.4	Laying Reinforced Cement Concrete Pipe NP 3 /prestressed concrete pipe on first class bedding in single row . (Laying Reinforced cement concrete pipe NP3 /prestrssed concrete pipe for culverts on first class bedding of granular material in single row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets .)								
	A	1000 mm dia	1	7.50			m	7.500	12616.21	94621.59

Sl. No	Sor No	Description of item	No.	Length (m)	Width (m)	Height (m)	Unit	Quantity	Rate (Rs. P)	Amount (Rs. P)
6	13.9	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification								
	A	Granular material								
		Head wall :	1	4.00	(0.88 + 0.00) / 2	3.50		6.125		
		Deduct pipe :	-1	0.45	3.14	0.55 x 0.55		-0.423		
		Wing wall :	1	8.00	(0.88 + 0.00) / 2	3.50		12.250		
		U/S Wall :	1	1.80	(0.63 + 0.00) / 2	2.50		1.418		
		Deduct pipe :	-1	0.27	3.14	0.55 x 0.55		-0.256		
							m3	19.113	2538.92	48526.40
7	12.3	Backfilling in Foundation Trenches as per drawing and technical specification.								
		Sand filling	1	4.79	1.50	2.38		17.100		
		Deduct Pipe :	-1	4.79	3.14	0.55 x 0.55		-4.550		
		Deduct pipe bedding :	-1	4.79	(0.55 x 1.5) - (0.21)			-2.946		
							m3	9.605	2139.12	20546.26
8	13.4	Stone masonry in cement mortar 1:3 for parapet complete as per drawing and technical specifications Clauses 700 and 1208.4								
		B. Course rubble masonry 1:3								
		Parapets :	6	1.50	0.60	0.60	m3	3.240	7633.42	24732.28
9	13.3	Plastering with cement mortar (1:3) on brick work in sub-structure as per Technical specifications								
		Parapets top :	6	0.75	0.30			1.350		
		back :	6	0.75	0.45			2.025		
		sides :	12		(0.45 + 0.30) / 2	0.45		2.025		
		front :	6	0.75	0.47			2.115		
							m2	7.515	223.91	1682.66
10	13.5B	Providing PCC M20 architectural coping on the top of retaining wall complete as per drawing and technical specification clause 615,710 and 1204.3.11								
		Between parapet walls		3.00	0.60	0.025	m3	0.045	11028.77	496.29
								Construction cost =		*6,91,758.48*

Sl. No	Sor No	Description of item	No.	Length (m)	Width (m)	Height (m)	Unit	Quantity	Rate (Rs. P)	Amount (Rs. P)
11	1.1	Loading and unloading by manual means								
		i) Loading of masonry stone					m3	63.14	214.60	13,549.72
		i) Loading of aggregates					m3	31.15	214.60	6,684.73
		ii) Loading of sand					m3	21.79	214.60	4,676.09
12	1.3	Loading and unloading of cement by manual means								
		i) Loading of cement					ton	7.60	368.44	2,800.16
13	1.5	Loading and unloading of hume pipes								
		(i) A. Loading of 1000/1200mm dia HP by mechanical means					ton	5.63	643.79	3,621.34
14	1.6	Haulage of materials by tipper excluding cost of loading, unloading and stacking								
		(i) Surfaced road		Lead						
		a) Sand		24.00 Kms			ton/km	40.00	12.93	12417.29
		b) Aggregates		32.00 Kms			ton/km	54.00	12.93	22351.13
		c) Cement		20.00 Kms			ton/km	7.60	12.93	1966.07
		d) Masonry stone		32.00 Kms			ton/km	110.00	12.93	45530.07
		e) Hume pipe		57.00 Kms			ton/km	5.63	12.93	4147.18
		(iii) Katcha Track		Lead						
		a) Sand		0.00 Kms			ton/km			
		b) Aggregates		0.00 Kms			ton/km			
		c) Cement		0.00 Kms			ton/km			
		d) Masonry stone		0.00 Kms			ton/km			
		e) Hume pipe		0.00 Kms			ton/km			
									Carriage cost =	*117743.80*
									Grand Total =	**809502.27**
									For 1.00 m length =	**107933.64**

* embedded pipe area = (3.14 x 0.55 x 0.55 x $126^{o}/360^{o}$) - 1/2 x 0.98 x 0.25 = 0.21 m2

Notes : 1. Material quantity workout sheet attached

2. Detail drawing enclosed.

3. IRC: SP:48 Hill Roads Manual.

Name of works: Repair & Rehabilitation of existing single lane pavement from km 110.00 to km 150.00 on NH-6 (Khawzawl to Champhai) in the State of Mizoram (Length=40.00kms)

(Sh. : Construction of Hume Pipe Culverts between km 110.00 to km 150.00)

QUANTITY CALCULATION FOR MATERIALS UNDER CARRIAGE ITEM

Hume Pipe Culvert

Ref Item no	Description	Requirement for	Masonry stone	Cement	Aggregate	Sand	Hume Pipe	Total requirement from estimate	Individual requirement for whole length of road				
									M.Stone	Cement	Aggregate	Sand	H. Pipe
			m3	ton	m3	m3	m		m3	ton	m3	m3	m
1	2	3	4	5	6	7	8	9	10	11	12	13	14
									=9/3x4	=9/3x5	=9/3x6	=9/3x7	=9/3x8
1/9.1	PCC M10	1 m3		0.250	0.960	0.480		5.610 m3		1.40	5.39	2.69	
2/12.7	Masonry works 1:3 for walls	1 m3	1.260	0.102		0.347		47.127 m3	59.38	4.82		16.33	
3/9.2	Bedding for pipe	1 m3		0.250	0.960	0.480		2.946 m3		0.74	2.83	1.41	
4/9.4(B)	Laying of NP3 pipe	7.5 m		0.030		0.040	7.500	7.500 m		0.03		0.04	7.50
5/13.9 (A)	Back filling in wall	10 m3			12.000			19.113 m3			22.94		
6/12.7	Masonry works 1:3 for parapet	1 m3	1.160	0.168		0.347		3.240 m3	3.76	0.55	0.00	1.12	
7/13.3	Plastering with cement mortar (1:3) for parapet	10 m2		0.091		0.252		7.515 m2		0.07		0.19	
8/9.15	Architectural coping	1 m		0.020	0.050	0.030		0.045 m		0.0009	0.0023	0.0014	
Total requirement for the whole length of the road =									**63.14**	**7.60**	**31.15**	**21.79**	**7.50**
Unit Weight as per IS : 875 (Part I)									1.74		1.74	1.84	0.75t/m
Total weight									**110.00**	**7.60**	**54.00**	**40.00**	**5.63**
									ton	ton	ton	ton	ton

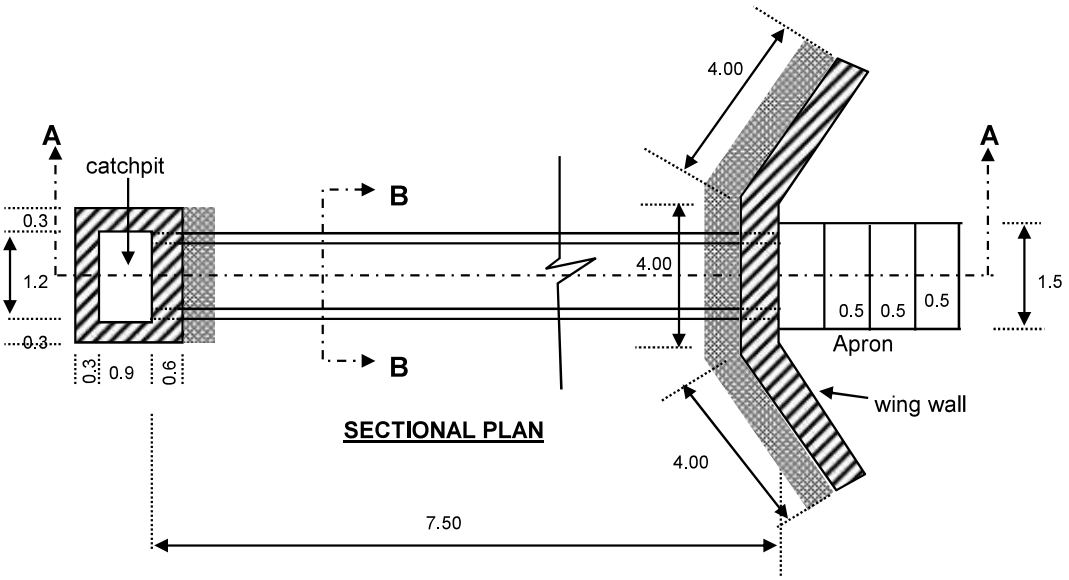
(Unit requirements for the items are as per Standard Data book)

Name of works: Repair & Rehabilitation of existing single lane pavement from km 110.00 to km 150.00 on NH-6 (Khawzawl to Champhai) in the State of Mizoram (Length=40.00kms)

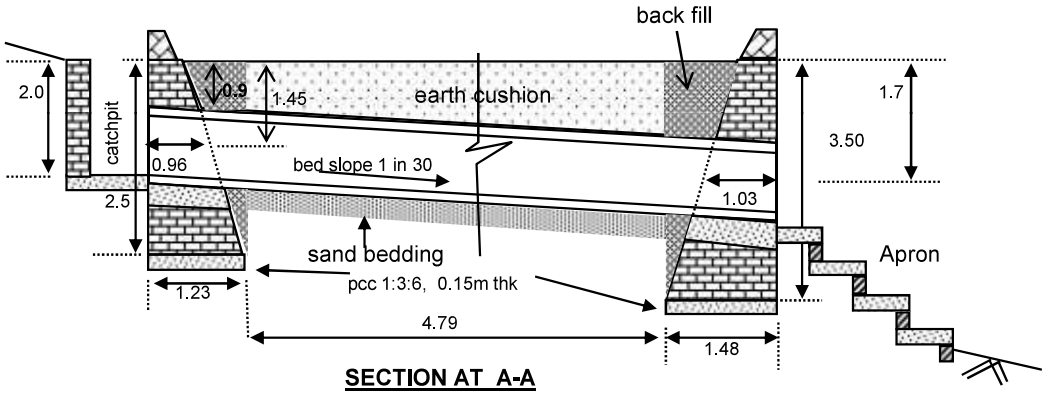
(Sh. : Construction of Hume Pipe Culverts between km 110.00 to km 150.00)

Hume Pipe Culvert -

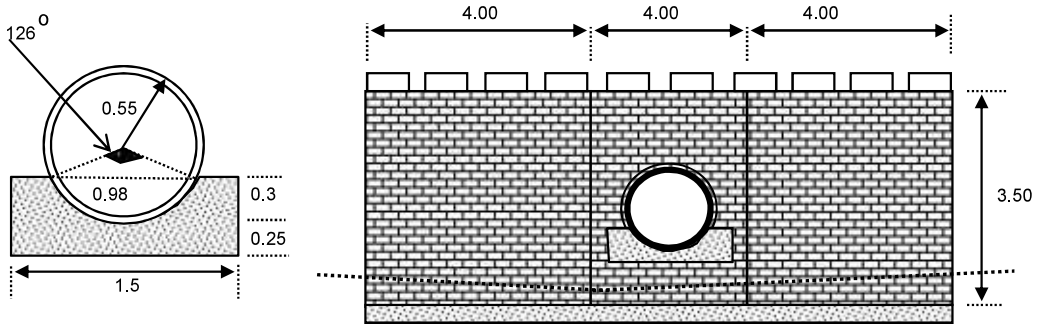
Notes : 1. All dimensions are in metre
2. Drawing not to scale



SECTIONAL PLAN



SECTION AT A-A



SECTION AT B-B **ELEVATION**

REF :- IRC SP:48 HILL ROADS MANUAL & IRC SP:20 RURAL ROADS MANUAL

Name of works: Repair & Rehabilitation of existing single lane pavement from km 110.00 to km 150.00 on NH-6 (Khawzawl to Champhai) in the State of Mizoram (Length=40.00kms)

CALCULATION OF AVERAGE LEAD

(i) For carriage of cement from Khawzawl

Distance from 0.00 kmp to, Khawzawl	Stretch Particular		Length (km)	Average length	Initial lead	Total lead	Weightage	Total
	Start (kmp)	End (kmp)						
L_0	L_1	L_2	$L = L_1 - L_2$	$L_{av} = L/2$	$L_{in} = L_0$	$L_{tt} = L_{in} + L_{av}$	w	$= L_{tt} \times w$
0.00	110.000	150.000	40.000	20.000	0.000	20.000	40.000	800.000
		TOTAL =	40.000				40.000	800.000

Hence average effective lead (km) = $\frac{800.000}{40.000}$ = **20.000**

Surfaced Road = **20.000**

(ii) For carriage of Stone Aggregate from Chawngtlai Quarry

Distance from Chawngtlai Quarry to worksite	Stretch Particular		Length (km)	Average length	Initial lead	Total lead	Weigh tage	Total
	Start (kmp)	End (kmp)						
L_0	L_1	L_2	$L = L_1 - L_2$	$L_{av} = L/2$	$L_{in} = L_0$	$L_{tt} = L_{in} + L_{av}$	w	$= L_{tt} \times w$
12.000	110.000	150.000	40.000	20.000	12.000	32.000	40.000	1280.000
		TOTAL =	40.000				40.000	1280.000

Hence average effective lead (km) = $\frac{1280.000}{40.000}$ = **32.000**

Surfaced Road = **32.000**

(iii) For carriage of Sand from R.Tuipui

Distance from R.Tuirial to worksite	Stretch Particular		Length (km)	Average length	Initial lead	Total lead	Weigh tage	Total
	Start (kmp)	End (kmp)						
L_0	L_1	L_2	$L = L_1 - L_2$	$L_{av} = L/2$	$L_{in} = L_0$	$L_{tt} = L_{in} + L_{av}$	w	$= L_{tt} \times w$
4.000	110.000	150.000	40.000	20.000	4.000	24.000	40.000	960.000
		TOTAL =	40.000				40.000	960.000

Hence average effective lead (km) = $\frac{960.000}{40.000}$ = **24.000**

Surfaced Road = **24.000**

Typical Design of Culvert Opening required as per IRC:SP-13
Hume Pipe Culvert (1.0m Diameter

Designing the flow as open Channel flow

L	=	The distance from the critical point to the culvert in Km	1	Km
H	=	The fall in level from the critical point to the culvert in m	500	m
tc	=	Time of concentration in hours=$(0.87xL^3/H)^{0.385}$	0.0866187	hours
A	=	Area in hectares	50	hecter
F	=	Rainfall in cm	13.7	cm
T	=	Duration in hours	5	hours
I	=	Intensity=F/2x(1+1/T)	5.7083333	
Ic	=	Critical intensity=Ix(2/(tc+1))	10.506599	
P	=	Coefficient of run-off for the catchment area	0.1	
Q	=	0.028xPxAxIc	1.4709239	Cumecs
V	=	Velocity of flow within culvert(Manning's Formula)=$(R^{2/3}xS^{1/2})/n$		

Where,
V= Velocity in m/s considered uniform through out the section
R= Hydraulic mean Depth
S=Bed slope of culvert
n=Rigosity coefficient

Taking wetted perimeter as 75% of pipe(using 1.00m dia pipe) Pw=	2.355
Bed slope of culvert as 1 in 30=	0.0333333
A= Cross section area of pipe=	0.785
R=A/Pw=	0.3333333
Mannings coefficient of rugosity=	0.015
Therefore, V=	5.8945151
Ac= Area of culvert opening required=Q/V	0.2495411
Apc=Area of cul;vert openning of 1.00m dia pipe taking 75%=	0.58875

Hence culvert opening is adequate

Photos of proposed culverts on NH-6 between 110.00 kmp to 150.00 kmp

Photos

NAME OF WORK:ESTIMATE FOR REPAIR SLAB CULVERT ON NH-6 IN THE STATE OF MIZORAM

(REPAIR OF SLAB CULVERT AT CH 139.800 KM ON NH-6)

Sl. No	Sor. No	Description of item	No.	Length (m)	Width (m)	Height (m)	Unit	Quantity	Rate (Rs. P)	Amount (Rs. P)
1	2.4	Dismantling of Structures (Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 metres)								
	(i)	Lime /Cement Concrete								
	I	By Manual Means								
	B	Cement Concrete Grade M-15 & M-20								
		Slab	4	1.00	1.50	0.25		1.500		
		Abutment cap	2	4.00	0.30	0.20		0.480		
		Dirtwall	2	2.60	0.40	0.45		0.936		
						Total	m3	2.916	844.00	2461.10
2	12.8	Plain cement concrete in open foundation complete as per drawing and technical specifications								
	A	PCC grade M15								
		Culvert bed :	1	7.00	1.50	0.25		2.625		
		Catch Pit :	1	1.50	1.00	0.15		0.225		
						Total	m3	2.850	9626.00	27434.10
3	13.5	Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications								
	F	RCC M25 grade								
	(p)	Height upto 5m								
		Case-I : Using concrete Mixer								
		Slab :	4	1.00	1.50	0.25		1.500		
		Abutment cap :	2	4.00	0.30	0.20		0.480		
		Dirt wall :	2	2.60	0.40	0.45		0.936		
						Total	m3	2.916	12268.00	35773.49

4	13.6	Supplying, fitting and placing HYSD bar reinforcement in super structure complete as per drawing and technical specifications								
		Slab, Abutment cap & Dirt wall :			@ 100kg/cum		Kg	291.60		
					Add 5% for bends, end anchorages, etc.		Kg	14.58		
		Total					Kg	306.18		
							ton	0.306	112258.00	34350.95
								Construction cost =		***1,00,019.64***

Grand Total = Rs. 1,00,019.64

NAME OF WORK:ESTIMATE FOR REPAIR SLAB CULVERT ON NH-6 IN THE STATE OF MIZORAM

(REPAIR OF SLAB CULVERT AT CH 139.800 KM ON NH-6)

QUANTITY CALCULATION FOR MATERIALS UNDER CARRIAGE ITEM

Ref Item no	Description	Requirement for	Masonry stone	Cement	Aggregate	Sand	Steel	Total requirement from estimate	Individual requirement for whole length of road				
									M.Stone	Cement	Aggregate	Sand	Steel
			m3	ton	m3	m3	ton		m3	ton	m3	m3	ton
1	2	3	4	5	6	7	8	9	10	11	12	13	14
									= (9) / (3) x (4)	= (9) / (3) x (5)	= (9) / (3) x (6)	= (9) / (3) x (7)	= (9) / (3) x (8)
2/11.4	Pcc M15	1 m3		0.275	0.800	0.480		2.850 m3		0.78	2.28	1.37	
4/13.1	Rcc M25	1 m3		0.400	0.900	0.450		2.916 m3		1.17	2.62	1.31	
5/13.2	HYSD Bar	1 ton					1.050	0.306 ton					0.32
Total requirement for the whole length of the road =										**1.95**	**4.90**	**2.68**	**0.32**
Unit Weight as per IS : 875 (Part I)									1.74		1.74	1.84	
Total weight										**1.95**	**9.00**	**5.00**	**0.32**
										ton	ton	ton	ton

NAME OF WORK:ESTIMATE FOR REPAIR SLAB CULVERT ON NH-6 IN THE STATE OF MIZORAM

(REPAIR OF SLAB CULVERT AT CH 134.700 KM ON NH-6)

Sl. No	Sor. No	Description of item	No.	Length (m)	Width (m)	Height (m)	Unit	Quantity	Rate (Rs. P)	Amount (Rs. P)
1	2.4	Dismantling of Structures (Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 metres)								
	(i)	Lime /Cement Concrete								
	I	By Manual Means								
	B	Cement Concrete Grade M-15 & M-20								
		Slab	4	1.00	1.50	0.25		1.500		
		Abutment cap	2	4.00	0.30	0.20		0.480		
		Dartwall	2	2.50	0.40	0.45		0.900		
						Total	m3	2.880	844.00	2430.72
2	12.8	Plain cement concrete in open foundation complete as per drawing and technical specifications								
	A	PCC grade M15								
		Culvert bed :	1	7.00	1.50	0.25		2.625		
		Catch Pit :	1	1.50	1.00	0.15		0.225		
						Total	m3	2.850	9626.00	27434.10
3	13.5	Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications								
	F	RCC M25 grade								
	(p)	Height upto 5m								
		Case-I : Using concrete Mixer								
		Slab :	4	1.00	1.50	0.25		1.500		
		Abutment cap :	2	4.00	0.30	0.20		0.480		
		Dirt wall :	2	2.50	0.40	0.45		0.900		
						Total	m3	2.880	12268.00	35331.84

4	13.6	Supplying, fitting and placing HYSD bar reinforcement in super structure complete as per drawing and technical specifications								
		Slab, Abutment cap & Dirt wall :			@ 100kg/cum		Kg	288.00		
					Add 5% for bends, end anchorages, etc.		Kg	14.40		
		Total					Kg	302.40		
							ton	0.302	112258.00	33901.92
								Construction cost =		***99,098.58***

Grand Total = Rs. 99,098.58

NAME OF WORK:ESTIMATE FOR REPAIR SLAB CULVERT ON NH-6 IN THE STATE OF MIZORAM

(REPAIR OF SLAB CULVERT AT CH 134.700 KM ON NH-6)

QUANTITY CALCULATION FOR MATERIALS UNDER CARRIAGE ITEM

Ref Item no	Description	Requirement for	Masonry stone	Cement	Aggregate	Sand	Steel	Total requirement from estimate	Individual requirement for whole length of road				
									M.Stone	Cement	Aggregate	Sand	Steel
			m3	ton	m3	m3	ton		m3	ton	m3	m3	ton
1	2	3	4	5	6	7	8	9	10	11	12	13	14
									= (9) / (3) x (4)	= (9) / (3) x (5)	= (9) / (3) x (6)	= (9) / (3) x (7)	= (9) / (3) x (8)
2/11.4	Pcc M15	1 m3		0.275	0.800	0.480		2.850 m3		0.78	2.28	1.37	
4/13.1	Rcc M25	1 m3		0.400	0.900	0.450		2.880 m3		1.15	2.59	1.30	
5/13.2	HYSD Bar	1 ton					1.050	0.302 ton					0.32
Total requirement for the whole length of the road =										**1.94**	**4.87**	**2.66**	**0.32**
Unit Weight as per IS : 875 (Part I)									1.74		1.74	1.84	
Total weight										**1.94**	**8.00**	**5.00**	**0.32**
										ton	ton	ton	ton

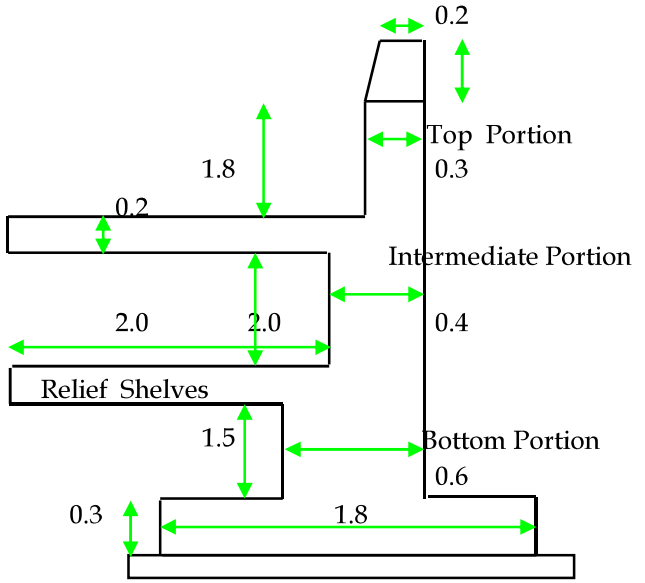
REPAIR AND REHABILITATION OF EXISTING PAVEMENT FROM KM 110.00 TO KM 150.00 ON NH-6 (KHAWZAWL TO

Name of Road :NH-06 (KHAWZAWL TO CHAMPHAI)

Length of road : 40+00 Km (from Km 110+00 to Km 150+00)

COST ESTIMATE FOR CANTILEVER RETAINING WALL WITH RELIEF SHELVES (TYPE-I)

Length of footing =	1.8	m
Height of footing =	0.3	m
Botton stem thickness =	0.6	m
Height of bottom stem =	1.5	m
Length of Relief Shelves =	2	m
Thickness of Relief Shelves =	0.2	m
Nos of Relief Sheves =	2	Nos
Intermediate stem thickness =	0.4	m
Height of Intermediate stem =	2	m
Nos of Intermediate stem =	1	Nos
Top stem thickness =	0.3	m
Height of Top stem =	1.8	m
Thickness of Backfilling (Granular Material) =	0.3	m
Height of wall =	**5.7**	**m**
Length of wall =	10	m



Item No.	Items of Work	Unit	Nos	Length	Width	Height	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1/3.11	**Excavation for Structures** (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.)								
	I - Ordinary Soil (Manual means) upto 3m depth	cum.	1	10.00	2.60	0.55	14.30	#REF!	#REF!
	II - Ordinary rock (not requiring blasting) (Manual means) upto 3m depth	cum.	1	10.00	2.10	0.45	9.45	#REF!	#REF!
2/12.8-A	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications (PCC Grade M15)	cum	1	10.00	2.10	0.15	3.15	#REF!	#REF!
3/12.8 -A	Plain/Reinforced cement concrete in substructure complete as per drawing and technical specifications (for Parapet walls) (PCC Grade M15)	cum	5	1.00	0.25	0.45	0.56	#REF!	#REF!

4/12.8 -C	Provide M20 plain/Reinforced cement concrete retaining wall complete as per Drawings and Technical Specification Clause 1500,1700 & 2100.								
	Footing	cum	1	10.00	1.80	0.30	5.40		
	Botton stem	cum	1	10.00	0.60	1.50	9.00		
	Relief Sheves	cum	2	10.00	2.00	0.20	8.00		
	Intermediate stem	cum	1	10.00	0.40	2.00	8.00		
	Top stem	cum	1	10.00	0.30	1.80	5.40		
	Total	cum					35.80	10579.98	378763.28
5/12.40	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and technical specifications	MT	1				1.79	109501.33	196007.38
6/13.9	Backfilling behind the abutment, wing wall and return walls complete as per drawing and Technical specification(Granular Material)	cum	3	10.00	0.30	1.50	13.50	2533.74	34205.49
								Construction cost =	**#REF!**

	Carriage of Materials								
7/1.1	Loading and unloading by manual means	**Unit of reqd**		**Total quantity**					
	For M15 grade concrete								
	a) Sand	Cum	0.450	3.713			1.671	214.160	357.781
	b) Aggregates	Cum	0.900	3.713			3.341	214.160	715.562
	c) Cement	Ton	0.280	3.713			1.040	367.690	382.214
	For M20 grade concrete								
	a) Sand	Cum	0.450	35.800			16.110	214.160	3450.118
	b) Aggregates	Cum	0.900	35.800			32.220	214.160	6900.235
	c) Cement	Ton	0.344	35.800			12.315	367.690	4528.176
	d) Steel	Ton	1.050	1.790			1.880	367.690	691.073
	Back filling material	Cum	1.200	13.500			16.200	214.160	3469.392
8/1.6	Cost of Haulage Excluding Loading and Unloading		Lead		Unit Weight				
(i)	Surfaced Road								
	a) Cement	T/Km	20.00	Kms			13.355	11.05	2951.389
	b) Steel	T/Km	20.00	Kms			1.880	11.05	415.370
	c) Stone Aggregates	T/Km	32.00	Kms	1.74		90.065	12.91	37207.477
	d) Sand	T/Km	24.00	Kms	1.84		32.716	12.91	10136.834
								Carriage cost =	**71205.62**
								Cost for 10.00m =	***#REF!***
								Cost per meter =	***#REF!***
								Say =	***#REF!***

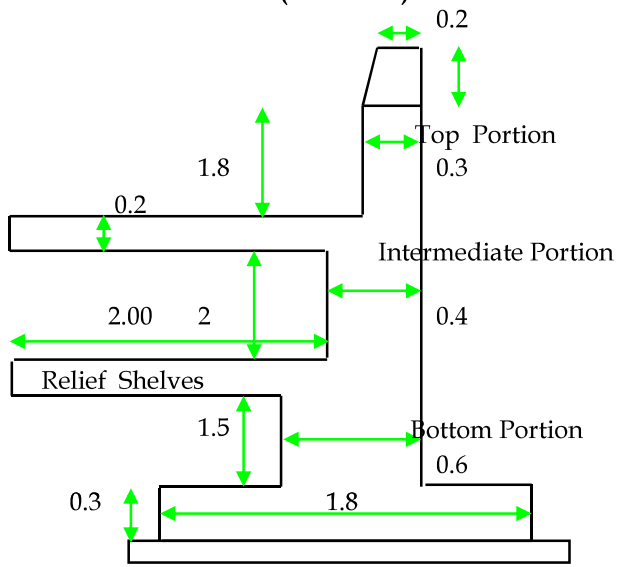
REPAIR AND REHABILITATION OF EXISTING PAVEMENT FROM KM 110.00 TO KM 150.00 ON NH-6 (KHAWZAWL TO

Name of Road :NH-06 (KHAWZAWL TO CHAMPHAI)

Length of road : 40+00 Km (from Km 110+00 to Km 150+00)

COST ESTIMATE FOR CANTILEVER RETAINING WALL WITH RELIEF SHELVES (TYPE-II)

Length of footing =	1.80 m
Height of footing =	0.30 m
Botton stem thickness =	0.60 m
Height of bottom stem =	1.50 m
Length of Relief Shelves =	2.00 m
Thickness of Relief Shelves =	0.20 m
Nos of Relief Sheves =	3.00 Nos
Intermediate stem thickness =	0.40 m
Height of Intermediate stem =	2.00 m
Nos of Intermediate stem =	2.00 Nos
Top stem thickness =	0.30 m
Height of Top stem =	1.80 m
Thickness of Backfilling (Granular Material) =	0.30 m
Height of wall =	**7.90 m**
Length of wall =	10.00 m



Item No.	Items of Work	Unit	Nos	Length	Width	Height	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1/3.11	**Excavation for Structures** (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.)								
	I - Ordinary Soil (Manual means) upto 3m depth	cum.	1	10.00	2.60	0.55	14.30	#REF!	#REF!
	II - Ordinary rock (not requiring blasting) (Manual means) upto 3m depth	cum.	1	10.00	2.10	0.45	9.45	#REF!	#REF!
2/12.8-A	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications (PCC Grade M15)	cum	1	10.00	2.10	0.15	3.15	#REF!	#REF!
3/12.8 -A	Plain/Reinforced cement concrete in substructure complete as per drawing and technical specifications (for Parapet walls) (PCC Grade M15)	cum	5	1.00	0.25	0.45	0.56	#REF!	#REF!

4/12.8 -C	Provide M20 plain/Reinforced cement concrete retaining wall complete as per Drawings and Technical Specification Clause 1500,1700 & 2100.								
	Footing	cum	1	10.00	1.80	0.30	5.40		
	Botton stem	cum	1	10.00	0.60	1.50	9.00		
	Relief Sheves	cum	3	10.00	2.00	0.20	12.00		
	Intermediate stem	cum	2	10.00	0.40	2.00	16.00		
	Top stem	cum	1	10.00	0.30	1.80	5.40		
	Total	cum					47.80	10579.98	505723.04
5/12.40	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and technical specifications	MT	1				2.39	109501.33	261708.18
6/13.9	Backfilling behind the abutment, wing wall and return walls complete as per drawing and Technical specification(Granular Material)	cum	4	10.00	0.30	1.50	18.00	2533.74	45607.32
								Construction cost =	**#REF!**

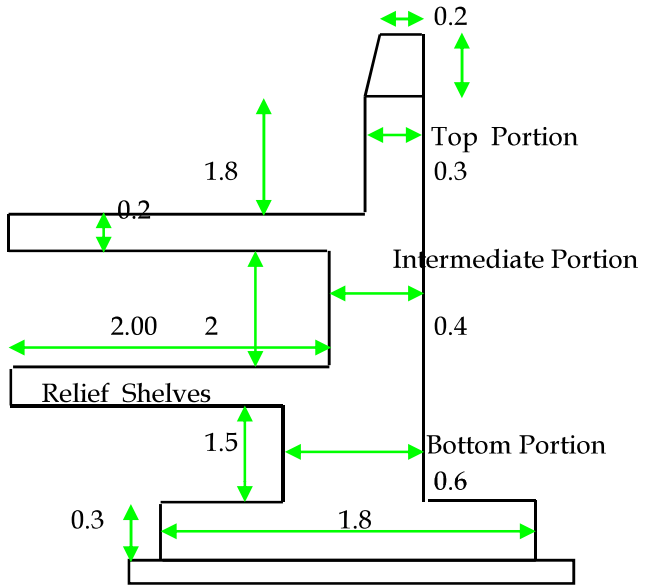
	Carriage of Materials								
7/1.1	Loading and unloading by manual means	**Unit of reqd**		**Total quantity**					
	For M15 grade concrete								
	a) Sand	Cum	0.450	3.713			1.671	214.160	357.781
	b) Aggregates	Cum	0.900	3.713			3.341	214.160	715.562
	c) Cement	Ton	0.280	3.713			1.040	367.690	382.214
	For M20 grade concrete								
	a) Sand	Cum	0.450	47.800			21.510	214.160	4606.582
	b) Aggregates	Cum	0.900	47.800			43.020	214.160	9213.163
	c) Cement	Ton	0.344	47.800			16.443	367.690	6046.000
	d) Steel	Ton	1.050	2.390			2.510	367.690	922.718
	Back filling material	Cum	1.200	18.000			21.600	214.160	4625.856
8/1.6	Cost of Haulage Excluding Loading and Unloading		Lead		Unit Weight				
(i)	Surfaced Road								
	a) Cement	T/Km	20.00	Kms			17.483	11.05	3863.677
	b) Steel	T/Km	20.00	Kms			2.510	11.05	554.600
	c) Stone Aggregates	T/Km	32.00	Kms	1.74		118.253	12.91	48852.504
	d) Sand	T/Km	24.00	Kms	1.84		42.652	12.91	13215.404
								Carriage cost =	**93356.06**
								Cost for 10.00m =	***#REF!***
								Cost per meter =	***#REF!***
								Say =	***#REF!***

REPAIR AND REHABILITATION OF EXISTING PAVEMENT FROM KM 110.00 TO KM 150.00 ON NH-6 (KHAWZAWL TO CHAMPHAI)

Name of Road :NH-06 (KHAWZAWL TO CHAMPHAI)

COST ESTIMATE FOR CANTILEVER RETAINING WALL WITH RELIEF SHELVES (TYPE-III)

Length of footing	=	1.80 m
Height of footing	=	0.30 m
Botton stem thickness	=	0.60 m
Height of bottom stem	=	1.50 m
Length of Relief Shelves	=	2.00 m
Thickness of Relief Shelves	=	0.20 m
Nos of Relief Sheves	=	4.00 Nos
Intermediate stem thickness	=	0.40 m
Height of Intermediate stem	=	2.00 m
Nos of Intermediate stem	=	3.00 Nos
Top stem thickness	=	0.30 m
Height of Top stem	=	1.80 m
Thickness of Backfilling (Granular Material)	=	0.30 m
Height of wall	=	**10.10 m**
Length of wall	=	10.00 m

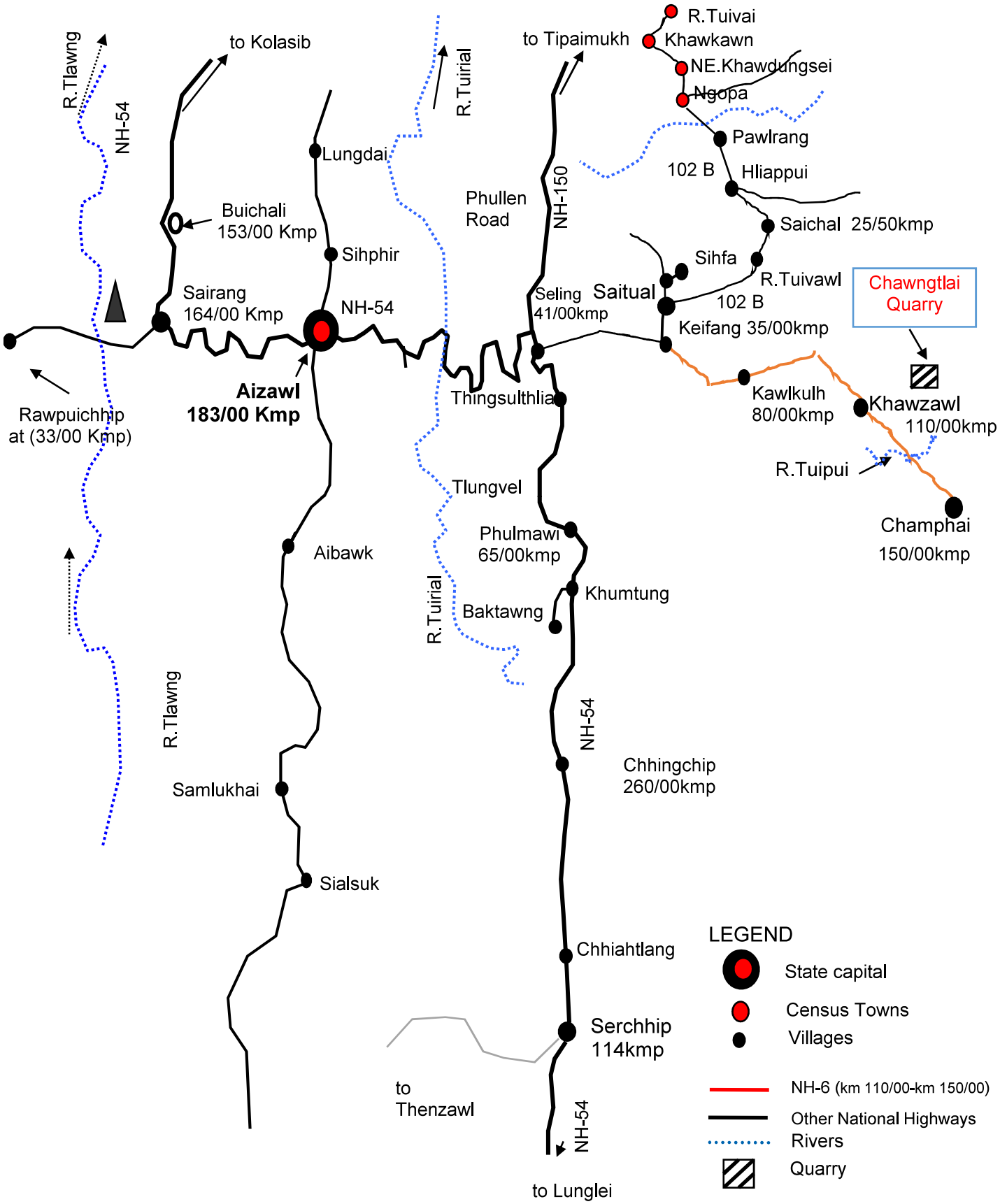


Item No.	Items of Work	Unit	Nos	Length	Width	Height	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1/3.11	**Excavation for Structures** (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.)								
	I - Ordinary Soil (Manual means) upto 3m depth	cum.	1	10.00	2.60	0.55	14.30	#REF!	#REF!
	II - Ordinary rock (not requiring blasting) (Manual means) upto 3m depth	cum.	1	10.00	2.10	0.45	9.45	#REF!	#REF!
2/12.8-A	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications (PCC Grade M15)	cum	1	10.00	2.10	0.15	3.15	#REF!	#REF!
3/12.8 -A	Plain/Reinforced cement concrete in substructure complete as per drawing and technical specifications (for Parapet walls) (PCC Grade M15)	cum	5	1.00	0.25	0.45	0.56	#REF!	#REF!

4/12.8 -C	Provide M20 plain/Reinforced cement concrete retaining wall complete as per Drawings and Technical Specification Clause 1500,1700 & 2100.								
	Footing	cum	1	10.00	1.80	0.30	5.40		
	Botton stem	cum	1	10.00	0.60	1.50	9.00		
	Relief Sheves	cum	4	10.00	2.00	0.20	16.00		
	Intermediate stem	cum	3	10.00	0.40	2.00	24.00		
	Top stem	cum	1	10.00	0.30	1.80	5.40		
	Total	cum					59.80	10579.98	632682.80
5/12.40	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and technical specifications	MT	1				2.99	109501.33	327408.98
6/13.9	Backfilling behind the abutment, wing wall and return walls complete as per drawing and Technical specification(Granular Material)	cum	5	10.00	0.30	1.50	22.50	2533.74	57009.15
								Construction cost =	**#REF!**

	Carriage of Materials								
7/1.1	Loading and unloading by manual means	**Unit of reqd**		**Total quantity**					
	For M15 grade concrete								
	a) Sand	Cum	0.450	3.713			1.671	214.160	357.781
	b) Aggregates	Cum	0.900	3.713			3.341	214.160	715.562
	c) Cement	Ton	0.280	3.713			1.040	367.690	382.214
	For M20 grade concrete								
	a) Sand	Cum	0.450	59.800			26.910	214.160	5763.046
	b) Aggregates	Cum	0.900	59.800			53.820	214.160	11526.091
	c) Cement	Ton	0.344	59.800			20.571	367.690	7563.825
	d) Steel	Ton	1.050	2.990			3.140	367.690	1154.363
	Back filling material	Cum	1.200	22.500			27.000	214.160	5782.320
8/1.6	Cost of Haulage Excluding Loading and Unloading		Lead		Unit Weight				
(i)	Surfaced Road								
	a) Cement	T/Km	20.00	Kms			21.611	11.05	4775.965
	b) Steel	T/Km	20.00	Kms			3.140	11.05	693.830
	c) Stone Aggregates	T/Km	32.00	Kms	1.74		146.441	12.91	60497.530
	d) Sand	T/Km	24.00	Kms	1.84		52.588	12.91	16293.974
								Carriage cost =	**115506.50**
								Cost for 10.00m =	***#REF!***
								Cost per meter =	***#REF!***
								Say =	***#REF!***

Quarry Chart



Photos of proposed Retaining wall on NH-6