

BORDER ROADS ORGANISATION
Ministry of Defence
CHIEF ENGINEER PROJECT DANTAK

NAME OF WORK: **PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN**

Name of Contractor: _____

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(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

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Headquarters
Chief Engineer
Project Dantak
PIN : 931708
C/O 99 APO

80586/ /E8

Oct 2022

M/s _____

NAME OF WORK : PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARENCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARENCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

Dear Sir (s),

1. A set of tender documents for the above work is forwarded herewith. Please note that tender will be received by the Accepting Officer at the office of the Chief Engineer (P) Dantak C/O 99 APO or at OIC liaison cell located at Supervisor Mess, 19 BRTF, Jaigaon, West Bengal PIN-736182, Ph 8145087696/9970889254 up to 1700 hrs (BST)/1630 hrs (IST) on 14 Oct 2022 and Technical Bid (Part-I) of the tender documents will be opened at 1530 hrs (BST) on the 09 Nov 2022. Tender received after the due date and time will not be considered.
2. Tenderers or their duly authorized representative who have submitted their tenders and who wish to be present at the time of opening of tenders may attend the office of Accepting officer **Chief Engineer (P) Dantak C/O 99 APO** at the above mentioned time.
3. Tender documents may also be downloaded from CPP Portal www.eprocure.gov.in and printout is to be taken on A4 size paper. It is advisable that downloaded tender document preferably to be printed through laser printer only. Submission of photocopy of tender is not permitted. **Earnest money**, Integrity Pact duly signed on each page by the bidder(s) and undertaking given at **Page No. 28** of tender must be delivered to the Chief Engineer Project along with the T Bid and if **Earnest money** and integrity pact is not submitted along with the T Bid, same shall be rejected by the Accepting officer.
4. Tendering procedure shall be single stage-two bid System and tender documents shall be prepared in two parts as under :-

Part-I ('Technical Bid' – 'T' Bid)

Part-II ('Price/commercial' – 'Q' Bid)

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5. **Part-I ('Technical Bid' – 'T' Bid)**

5.1 (a) The tender to be submitted (physically) by the bidder will be comprised of following documents: -

- (i) Blank.
- (ii) Bid security declaration by un-enlisted contractor and enlisted contractors who have submitted/not submitted standing security deposit.
- (iii) Signed copy of all the Eligibility/Qualification documents required as per tender conditions given at **Page No. 03** to **Page No.11** of tender documents.
- (iv) Signed copy of Integrity Pact.
- (v) Signed copy of undertaking by tenderer given at Serial **Page No. 28** of tender.

(b) Following documents will be deemed to be part of the contract during the time of acceptance of contract: -

- (i) Part-I Technical Bid of the tender document
- (ii) Notice Inviting Tender
- (iii) Special Conditions of Contract
- (iv) Particular/Technical Specifications including Drawings, if any
- (v) Any other Amendment/errata to tender document

5.2 **Technical evaluation criteria**

5.2.1 If contractor is not enlisted with BRO or enlisted with BRO but has not submitted Standing Security Deposit, he should have submitted **Earnest money**.

5.2.2 All the pages of T-Bid should have been duly signed by the bidder/authorized representative having valid Power of Attorney.

6. **Eligibility Criteria**:- (A) Tenderers shall meet the following eligibility criteria for qualifying in Technical bid:-

- (a) The tenderer should have working capital and/or credit facilities of at least 10% of the estimated cost of the work (Applicable only for non – enlisted Contractors)

6.1 **Experience**: -

Tenderer should have successfully completed or substantially completed with any Govt agencies/PSU/Municipal Corporation/local Govt bodies

three similar works costing not less than the amount equal to 40% **(i.e Rs 155.41 Lakhs)** of estimated cost of work or two similar works costing not less than the amount equal to 50% **(i.e Rs 194.23 Lakhs)** of estimated cost of work or one similar work costing not less than the amount equal to 80% **(i.e Rs 310.82 Lakhs)** of estimated cost of work in last seven & current financial years.

Similar works means- Surfacing works related to construction of road works

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Notes: -

1. Substantially completed works means those works which are 90% completed on the date of submission (i.e. gross value of work done up to the last date of submission is 90% or more of the original contract price) and continuing satisfactorily.
2. Tenderer shall submit list of work executed in the past 7 years in their letter head duly signed by the proprietor/partner/director of the firm in the proforma contained in Clause 8 .1
3. Completion cost of works shall be brought to common base date of receipt of tender as per following formula: -

Completion cost X (1 +Period in days from date of completion to date of receipt of tender/365 days) X 0.10)

6.2 Available Bid Capacity (ABC)

6.2.1 ABC as per formula given here-in-after should be more than the estimated cost of work given in NIT. Tenderers shall calculate ABC and submit details duly signed on letter head.

Available Bid Capacity = 2.5 x A x N – B

A.- Maximum value of all Civil Engineering works in any one year during the last 5 financial years (Updated to the current price level with enhancement factor as given below) supported with duly certified Balance Sheets/ Certificates from Chartered Accountant.

<u>Year</u>	<u>Multiplying factor</u>
Last first year	1.10
Last second year	1.20
Last third year	1.30
Last fourth year	1.40
Last fifth year	1.50

N- Number of years prescribed for completion of work for which the current bid is invited.

B- Value of the balance ongoing works to be executed in period N.

6.2.2 The tenderers shall indicate actual figures of completion cost of work and value of A without any enhancement as stated above.

6.2.3 The tenderer may be accorded an opportunity to clarify or modify his qualification documents, if necessary, with respect to any rectifiable defects through option of short fall in tender documents to be submitted by the bidder. The tenderer will respond in not more than 07 days of issuance of the clarification letter through shortfall option failing which his tender is liable to be rejected.

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6.3 Vehicles, Equipments and Plants (VEP) :

6.3.1 Tenderer should own or have assured access (through hire/lease/purchase agreement/ other commercial means) to the requisite Equipment, Plants and vehicles in good working condition (complete usage life not more than 7 years except stone crusher) given hereunder: -

S/No	Particulars of Veh/Eqpt/Plant	Nos Reqd	Remarks
(a)	JCB	02	*01 No JCB,
(b)	Tipper/Dumpers	05	*03 Nos Tipper
(c)	Front end Loader	01	
(d)	Static Road Roller (8-10 Ton)	01	
(e)	Vibratory Tandem Road Roller (7 Ton)	01	*01 Vibratory Tandem Road Roller (7 Ton)
(f)	Pneumatic Tandem Road Roller	01	
(g)	Motor Grader	01	
(h)	Hot Mix Plant (Fully Automated) 20/30 or 40/60 TPH or equivalent	01	
(j)	WMM Plant	01	
(k)	Paver Finisher Hydro-Static Sensor Type.	01	*01 Paver Finisher Hydro-Static Sensor Type.
(l)	Self propelled Bitumen Emulsion Pressure Distributor	01	
(m)	Air Compressor 171-190 Cfm or equivalent	01	
(o)	Mechanical Broomer	01	
(p)	Water Truck	01	
(q)	Total Station/Auto Level	01	

Note:*The tenderer must own the critical VEP mentioned at remarks column

6.3.2 Tenderer shall indicate source of requisite Equipment, Plants and Vehicles along with vintage required for execution of work in following format-

- (i) Item
- (ii) Year of Manufacture
- (iii) Source from where to be arranged (Owned/ lease etc.)
- (iv) Location presently deployed.
- (v) Based on known commitments, whether will be available for use in the proposed contract.
- (vi) Copy of documentary support of ownership/assured access to the satisfaction of the Accepting Officer.

Note :- Tenderer should own critical VEP as per specific requirement of the work as decided/specified by the Tender issuing authority in the tender (JCB -01,Tipper/Dumper-03,Front end roller-01,Vibratory Roller-01).

6.4 Performance and other requirements:

- (a) There should not be poor/slow progress in running work. (If yes, submit details and reasons of delay to check that these are not attributable to him or am beyond his control.)
- (b) There are no serious defect observed in works which stand unrectified (If yes submit details and reasons).

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- (c) There are no Cancelled/abandoned contracts in which Govt. unrealized recoveries exist (If yes submit details and reasons).
- (d) He/They have not been blacklisted by any Govt. Deptt (If yes submit details and reasons).
- (e) There are no any Govt. dues, outstanding against the firm (If yes submit details and reasons).
- (f) Tenderer should not be habitual litigant i.e. having more than 3 unsuccessful arbitration/court cases during last years in which his views/claims substantially rejected.
- (g) Proprietor/partners/directors of firm are not involved in anti national/social activities and should have neither been convicted nor should any proceedings be pending in court for such activities.
- (h) Firm should have been considered capable of taking more load in work load return circulated by DGBR. In case the firm is not considered capable for taking more work load due to unsatisfactory performance in the running works, in the prevailing report circulated by DGBR their technical bid shall be rejected.

6.5 Disqualification

6.5.1 Even though the tenderers meet the above criteria, they are liable to be disqualified if they have made misleading or false information in bidding documents submitted.

7. JOINT VENTURE IN BRO WORKS (Except for EPC Tenders)

7.1 Two firms are permitted to bid for the tender based on Joint Venture agreement between them. Joint Venture (JV) shall not comprise more than two firms (called parties of JV). The format of agreement at Annexure 'I'. The JV shall be considered as un-enlisted contractor. The JV shall submit Earnest Money Deposit for all tenders and individual Security deposit as per instructions, in contract is awarded.

7.2. JV shall be allowed for the following works: -

- (a) Road work with estimated cost more than Rs.50 crore.
- (b) Bridge work and via duct with estimated cost more than Rs.20 crores.
- (c) Tunnel Works of any value.
- (d) Runway Work any value.
- (e) PEB structure works of any value
- (f) Solar Power works of any value

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- (g) Works for specialist E/M services with estimated cost more than Rs. 20 crore.
- (h) Consultancy Work for Preparation of DPR for Bridges Tunnels & EPC roads with estimated Cost more than Rs.5 Crore.
- j) Works other than the types at (a) to (h) above with estimated cost more than Rs.50 crore

7.3. No JV shall be allowed for furniture works. No JV shall be allowed to participate if either or both the parties are banned/adversely remarked in WLR of BRO or debarred from tendering by any authority.

7.4. Foreign Companies shall not be permitted to participate in JV except in case of tunnel project. Security clearance of Foreign Companies having foreign citizenship Directors shall be dealt with as prescribed under subsequent para.

7.5. (a) Indian Companies having Director (s) of foreign origin and Indian Companies having Director (s) of Indian origin but residing abroad / having foreign citizenship shall be permitted to participate in JV. However, security clearance in such cases shall be obtained by following procedure laid down by Ministry of Home Affairs vide their letter No 11/20034/2013-1S II dt 30 Jun 2015 and amendment there if vide OM No 11/20034/2013-11 dt 09 Dec 2015. These letters, being classified, are not being shared. The case for security clearance shall be processed to HQ DGBR for taking up matter with concerned authorities.

(b) Case for security clearance shall be processed to HQ DGBR on PRIORITY after opening T-bid (Cover-1). Further processing of tender to open Finance Bid (Cover 2) shall not be held up awaiting receipt of security clearance. However, if the JV requiring security clearance of Director(s) becomes L1, the tender shall be accepted only on receipt of security clearance. For this, the Accepting officer will pursue the security clearance vigorously.

(c) For runway tenders, all other policies issued vide E-in-C's Branch letter No. A/37696/OSDPL/POL/ E2W (PPC) dt 15 May 2015 as amended vide their letter even No dt 14 Mar 2017 pertaining to experience, nature of works executed, requirement of tools, plants and machinery, financial turnover, Available Bid Capacity etc shall be followed.

7.6 A valid agreement shall exist between the parties of JV defining clearly the role, responsibility and scope of work of each party, percentage share of each party along with nomination of leader (lead Party) for the purpose of this work and a confirmation that the parties of the JV are jointly and severally responsible.

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- 7.7 JV as a single unit or each party of the JV shall have Permanent Account Number (PAN) and GSTIN. However, if the contract is awarded to the JV, then PAN & GSTIN shall be obtained by the JV as single unit.
- 7.8 The JV shall have two parties. The lead party of the JV shall meet minimum 60% or the percentage of share in the JV (whichever is higher) of the qualifying criteria pertaining to (a) past experience of completed works, (b) Average Annual Turnover, (c) Bank Solvency/ Financially Sound for engagement and (d) Working Capital. Both the parties combined shall meet minimum 120% of the above qualifying criteria The party other than the lead party shall meet minimum 30% of the above qualifying criteria.
- 7.9 Both the Parties of JV shall jointly possess the required T&P, machinery and engineering/ supervisory staff. T&P can be either on ownership basis or lease hold as stipulated in NIT/ tender documents and documentary proof of the same shall be submitted Other qualification criteria shall be meet fully/ Jointly by both the parties of JV or as a single unit of JV.
- 7.1.0 In the Residual Bid Capacity (in the formula $2.5 \times A \times N - B$, where A= Maximum turnover in last five financial years, N= Period of completion of contracted (tendered) work (in years calculated till two decimal places) and B= Value of balance work in all Govt & Private works), in respect of a JV, values of A and B shall be the sum total of the respective figures of both the parties.
- 7.1.1 Similarly when a Firm/ Contractor working in JV applies for tender (s) in his own capacity (i.e. independently), the part value of A and B of his JV work (s) in proportion to his percentage share in JV shall also be considered against the tender applied in his own capacity and capacity and hence these details shall be submitted by the Firm/ Contractor in his T- bid.
- 7.1.2 JV concluded upto the date of bid submission are permitted to apply. Copy of JV should be uploaded. The Department reserves the right to verify the particulars furnished by the applicant independently. If any information furnished by the applicant JV is found incorrect and / or misleading and/or false representation and/or deliberately suppressed information, at a later stage, the JV and both the parties shall be liable to be debarred from tendering/taking up of any work in BRO.
- 7.1.3 Party/parties will not be allowed to bid for the same tender in their independent capacity as well as under JV. Also, no party will be allowed to bid for the same tender under multiple JVs. In case of violation (party/parties bidding independently as well as under JV for the same tender, party/parties bidding for the same tender under multiple JVs), the bid of the party/parties concerned as well as the bid(s) of the related JV(s) shall not be opened (i.e. shall not be qualified in T bid Cover '1').
- 7.1.4 The lead party shall attend all progress review meetings and shall be answerable to all issues relating to the project.

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7.1.5 For any of the defaults as under of the JV, administrative action shall be taken against both the parties of the JV: -

(a) In case of non-submission of physical original documents of cost of tender, EMD- Barring from bidding for six months.

(b) Due to default in performance of contract etc.- Administrative actions as per existing instructions

7.1.6 Any unrealized recovery from JV shall be recovered proportionately from the parties in proportion to their percentage share in the JV. If it is not possible to recover proportionate share (partly/fully) from one party, it shall be recovered from other party.

8 List & format of eligibility documents to be attached alongwith Part-I of tender documents to prove eligibility: -

8.1 List of works completed/substantially completed in “last seven and current” financial years and ongoing works in following format: -

Name of work & CA No	Brief scope of work	Name & address of employer /client	Accepted contract amount	Date of commencement of work	Original date of completion	Extended date of completion	Actual date of completion /present progress	Cost of completed work	Cost of balance Work	Remarks explaining reasons of delay if any

Note : Works proving eligibility criteria of experience shall be highlighted and performance certificate from client in respect of these works shall be submitted.

8.2 Available Bid Capacity:

For -A :- Balance sheets/certificates from Chartered Accountant indicating annual turnover of Civil Engineering works constructed in last 5 years.

For-B:- Contractors shall submit details of ongoing works as per format stated in Clause 8.1 of above.

Tenderers shall calculate ABC and submit details duly signed.

8.3 Equipments, Plants and Vehicles:

(a) Tenderer shall indicate source of requisite Equipment, Plants and vehicles in good working condition required for execution of work in following format: -

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S/No	Item	Year of manufacture	Source from where to be arranged (Owned/Leased)	Location presently deployed	Whether will be available for use in the present contract

(b) Copy of documentary support of ownership/assured access to the satisfaction of the Accepting officer is required to be enclosed.

8.4. Integrity Pact (IP) (applicable for tender with estimated cost of **Rs. 5.00 Crore and above for all contract works and in tender for procurement services, stores, equipment & plants with estimated cost of **Rs. 1.00 Crore** and above).**

IP duly signed by Accepting Officer/ authorized officer has been uploaded along with this tender as **Annx-II** same shall be signed by bidder(s) on each page and scanned copy shall be submitted as part of Technical bid (cover-1) and original IP duly signed on each page shall be forwarded by post along with tender fee and EMD (if applicable). IP will be an integral part of the Contract and both parties are bound by its provision.

8.5 Performance and other requirements.

8.5.1 Tenderer shall submit undertaking that:-

- (a) There is no poor/slow progress in running works. (If yes, he will submit details and reasons of delay to check that these are not attributable to him or are beyond his control).
- (b) There are no serious defects observed in works which stand un-rectified (If yes, he will submit details and reasons).
- (c) There are no cancelled/abandoned contracts in which Govt. unrealized recoveries exist (If yes, he will submit details and reasons).
- (d) He/They have not been blacklisted by any Govt. Deptt (If yes, he will submit details and reasons).
- (e) There are no any Govt. dues outstanding against the firm (If yes, he will submit details and reasons).
- (f) Proprietor/partners/directors of firm are not involved in anti national/social activities and have neither been convicted nor are any proceedings pending in court for such activities (If yes, he will submit details).

8.5.2 Tenderer shall submit information of all arbitration/court cases decided during last five & current financial years and also presently in progress as per following format: -

- (a) Name and address of employer.
- (b) Cause of dispute.
- (c) Amount involved.
- (d) Brief of Court judgment/arbitration award (if published) otherwise present progress.

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8.6 **Working capital:** -

Copy of Latest balance sheet/income tax return for working capital and/or Banker's certificate for credit facilities. If necessary, Department will make inquiries with the tenderer's Banker.

8.7 Constitution of firm along with copy of partnership deed (in case of partnership firms) and memorandum of articles and association (in case of limited companies).

8.8 In case of unenlisted firms, Copies of Passport of proprietor/partners/directors (if available). Present address & photograph for verification of character and antecedents of proprietor/partners/directors from police authorities.

8.9 Copies of PAN Card of proprietor/partners/directors.

8.10 Lowest bidder if unenlisted firm in BRO (if his offer is decided for acceptance) will be required to fill enlistment form for provisional enlistment.

Notes:-

1 Documents as listed at clause 8.6 to 8.8 above are exempted for tenderers enlisted with BRO in any class.

2 Affidavits shall be submitted on Non-Judicial stamp papers of appropriate values duly attested by the Magistrate/Notary Public.

3 Photocopies of documents shall be attested by Gazetted officer/Public notary and also self attested.

4 **The bidder should meet all the technical evaluation criteria indicated in the bid documents in order that the bid is considered to be technically responsive and the bidder qualifying to have its Financial Bid opened.**

9. **Part-II ('Price/commercial' – 'Q' Bid)**

9.1 Part-II 'Price/commercial Bid' – 'Q' Bid) shall comprise of the following: -

- (i) Schedule- 'A' Notes.
- (ii) Schedule 'A' (to be quoted by Bidder)
- (iii) Schedules 'B', 'C', & 'D'.
- (iv) Tender page

10 **Q bid evaluation**

(i) Arithmetical corrections shall be made as per General condition of contracts **6(A)(A) of IAFW-2249.**

(ii) Commercial bids will be reviewed to ensure that the figures indicated therein are consistent with the details of the corresponding Technical bids.

(iii) For the purpose of evaluation "cost" shall be inclusive of all taxes and duties.

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(iv) Cost of all items of Schedule A shall be totaled and the bidder who has quoted lowest total cost in Schedule A (L-1) shall be considered successful bidder and all other bidders shall be considered unsuccessful. Offer of successful bidder (L-1) shall only be considered for acceptance. If L-1 backs out, re-tendering shall be resorted in a fair and transparent manner. Completion period as indicated in Tender Document have been accepted.

10.1 The **Chief Engineer Project Dantak** will be Accepting Officer here-in-after referred to as such for the purpose of this contract.

10.2 If tenderers desire that any condition or stipulation given in the tender documents is to be modified or deleted, they may submit their comments/suggestions before last working date of clarification as shown in critical date details in subject tender ID for consideration by the Deptt for issue of corrigendum/amendments to tender documents. If Deptt considers comments/ suggestions suitable, corrigendum/amendments to tender documents shall be issued and also uploaded on E- tendering Portal. If Deptt does not consider comments/suggestion suitable, corrigendum/amendments to tender documents shall not be issued/uploaded on E- tendering Portal and tenderers shall quote strictly complying with the various provisions given in the tender documents. Any tender who stipulates any alterations to any of the conditions/provisions laid down in tender documents (including corrigendum/amendments) or which proposes any other conditions of any description whatsoever is liable to be rejected.

10.3 The tenderers are advised to visit the work site to acquaint themselves of working and site conditions, before submitting their tender. The submission of tender by a person implies that he has read this tender forwarding letter, the conditions of contract and has made himself aware of the scope and specifications of the work to be done and of the conditions and other factors, site conditions, taxes & levies prevailing etc which may affect the quotation and execution of the work.

10.4 Tenderer must be very careful to deliver a bonafide tender, failing which the tenders are liable to be rejected. Tenderers are, therefore, advised to ensure that their tender must satisfy each and every condition laid down in the tender documents.

10.5 Your attention is drawn to the Indian Official Secret Act-1923 (**XIX** of 1923) as amended up to date particularly section 5 thereof.

11 **Earnest Money** :-

(a) Earnest money is not required to be attached with tender by the enlisted contractor with BRO (term "enlisted contractor" used in tender documents means "enlisted contractor with BRO") who have submitted standing security but same is required from unenlisted contractor/enlisted contractors with BRO, who have not submitted standing security deposit.

(b) Unenlisted contractors with BRO/enlisted contractors with BRO, who have not submitted standing security deposit will submit the tender accompanied with Earnest Money amounting to **Rs 4,63,530-00 (Rupees Four Lakhs Sixty Three Thousand Five Hundred Thirty only)** in the form of Deposit at call receipt/Term deposit receipt/Special Term deposit receipt issued in favour of Chief Engineer (P) Dantak C/O 99 APO by Nationalised/ Scheduled Bank. Tender not accompanied with earnest money will not be considered for acceptance. The amount of this receipt should be basic amount and not their maturity value. Any deposit lying with the department in any form against any other tender and/or contract shall not be considered for adjustment as the earnest money in the form as indicated here-in

–before or accompanied with any letter/communication containing any request for adjustment of any other deposit as earnest money shall be treated as non bonafied tender.

(c) Earnest money shall be returned to unsuccessful bidder (other than L-1) after opening of price bids and to successful(L-1) bidder after receipt of security deposit.

(d) However, MSME registered firm should be exempted for submission of EMD.

12. **Performance security** :-

12.1 Within 28 days of receipt of the letter of acceptance, the successful contractor shall deliver to the accepting Officer a Performance Security for an amount equivalent to **10% (Amended vide HQ DGBR letter No. 24556/सी.स.म./दन्तक/सामान्य/92/ई8 dated 25 Nov 2021)** of the Contract sum as laid down under condition 19 of IAFW-2249 / Condition 14 A of IAFW -1815 Z (General Conditions of Contract).

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For Accepting Officer

12.2 Failure of the successful contractor to comply with the requirement of sub clause 12.1 shall constitute sufficient grounds for cancellation of award of work and forfeiture of the Earnest Money. In case of BRO enlisted contractor amount equal to the Earnest Money stipulated in the Notice Inviting Tender , shall be notified to the tenderer for depositing the amount through MRO, issue of tender to such tenderers shall remain suspended till the aforesaid amount equal to the earnest Money is deposited in Government Treasury.

12.3 In the event of contract being cancelled, under Condition 52, 53 & 54 of IAFW-2249 or under conditions 26, 27 & 28 of IAFW -1815Z General Conditions of Contracts the Performance Security & retention money as per last RAR shall be forfeited. ALL T&P and material of contractor lying at site shall be confiscated by the Government and shall be absolutely at the disposal of the President of India and no compensation whatsoever shall be allowed by department.

12.4 Form for Bank Guarantee Bond against Performance Security Deposit shall be as per **Annx-III.**

12.5 The period of validity of the Bank Guarantee Bond against Performance Security shall be upto and including the scheduled date of expiry of Defects Liability Period.

13 The Accepting Officer reserves the right to accept a tender submitted by a Public Undertaking, giving a purchase preference over other tender(s) as are admissible under the Government Policy. No claim for any compensation or otherwise shall be admissible to such tenders whose tenders may be rejected on account of the said policy.

14. **The tender shall remain open for acceptance for a period of 120 days from bid submission end date.**

15. On acceptance of tender, the name of authorized representative (s) of the contractors who would be responsible for taking instructions from Engineer-in-Charge or its authorized representative shall be intimated by the contractor within 7 days of issue of Acceptance letters.

16. **Revision/Modification of quoted Price**

(a) In case the tenderer has to revise /modify /withdraw his quoted rates / offer after it is uploaded in e-tendering portal he may do so on before bid submission end date & time in in e-tendering portal only. Any revision/ modification in offer / withdrawal of offer in the form of an open letter after bid submission end date & time and the same shall be considered as revocation of offer and shall not be taken into account, while considering his originally quoted offer.

17. **Revocation of offer**

In the event of lowest tenderer revokes his offer or revise his rates upward (which will be treated as revocation of offer), after bid submission end date and before expiry of original validity period stipulated in tender documents, the earnest money deposited by him shall be forfeited. In case of BRO enlisted contractors, the amount equal to the earnest money stipulated in the Notice Tender, shall be notified to the tenderer for depositing the amount through MRO, failing which the amount shall be recovered from any payment due to such contractor or shall be adjusted from the Standing Security Deposit. In addition, L-1 tenderer revoking offer and his related firms shall not be issued the tender in second or subsequent calls of subject work.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

18. **Tenderers are requested to quote rates both in figure and words against each item of Schedule 'A' and extend the amount in Schedule 'A'.**

19. **All the tender documents (Part-I & Part-II) shall be submitted together at one stage but placed in separate sealed envelopes (supplied by the tenderer) duly marked Part I and Part II as stated above.** All the two envelopes containing Part I and Part II duly sealed shall be put in one large size envelope (cloth lined, outer cover to be supplied by the tenderer). This outer cover shall indicate name of work, name of tenderer, last date and time of receipt of tender prominently.

20. **The tender documents (Part-I and Part-II) should be submitted/should be dropped in Tender Box kept at the office of Accepting Officer HQ CE (P) Dantak, C/O 99 APO before the date and time fixed for receipt of tender.** The tender received after due date and time shall not be considered for acceptance. BRO shall not be responsible for any postal or other delay and shall not take care to ensure the submission of tender at place and time fixed for receipt of tender.

21. Tender shall be opened immediately after time indicated in Para 1 herein before in the presence of the tenderers or their authorized representative whoever wish to be present. Part-I only shall be opened first **on 09 Nov 2022 at 1530 hrs (BST)**. Part II (Priced bid) shall not be opened. Part II (Price bid) envelopes shall be signed by the tender opening officers and some bidders present and shall be put in separate large envelope and sealed by the opening officers. Large envelop shall also be signed by the tender opening officers and some bidders present. This large size envelope containing unopened price bids shall be kept in safe custody of the officer nominated by the Accepting officer for this purpose. Part I (Technical Bid) will be evaluated as per technical evaluation criteria given in the tender documents. Unqualified tenders will also be informed and their Part II (Price Bid) shall be returned unopened separately. The date of opening of price bids will be intimated separately to the qualified firms and the Part II (Priced Bid as sealed in large size envelope) will be opened on the scheduled date in the presence of such tenderers who choose to be present and the amounts quoted by the tenderers shall be read out by the opening officer(s) to the tenderers.

Yours Faithfully

(Signature of the Contractor)

For Accepting Officer

Enclosures: Tender Documents

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

ANNEXURE -I

**Format for Joint Bidding Agreement for Joint Venture
(to be executed on stamp paper of appropriate value)**

THIS JOINT BIDDING AGREEMENT is entered into on this the.....day
of.....20.....

AMONGST

1having its registered office
at,.....

(hereinafter referred to as the 'First Part' which expression shall, unless repugnant to the
context include its successors and permitted assigns)

AND

2 Having its registered Office at.....

(hereinafter referred to as the 'Second Part' which expression shall, unless repugnant to the
context include its successors and permitted assigns)

The above mentioned parties of the FIRST and SECOND PART are collectively referred to
as the

"Parties" and each is individually referred to as a "Party"

WHEREAS,

(A) The BORDER ROADS ORGANIZATION, represented by **Chief Engineer (P) Dantak**
and Having its office at **CE (P) Dantak PIN : 931708, C/o 99 APO** (hereinafter referred to as
the "Authority" which expression shall, unless repugnant to the context or meaning thereof,
include its administrator, successors and assigns) has invited bid by its Tender ID No. CE(P)
DANTAK/02/2021-22 for PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM
THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF
ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL
PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT
MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE,
PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING
TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF
ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE
CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX
CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING
WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN
BHUTAN.

(B) The Parties are interest in jointly bidding for the tender as member of a Joint Venture
and in accordance with the terms and conditions of the tender document in respect of the
work, and

(C) It is necessary condition under the pre-qualifying criteria (PQC) that the parties of the
Joint

Venture shall enter into a Joint Bidding Agreement and furnish a copy there of with the
Application.

NOW IT IS HEREBY AGREED as follows:

1. Definitions and Interpretations

In this Agreement, the capitalized terms shall, unless the context otherwise requires,
have the meaning ascribed thereto under the PQC in the Notice Inviting Tender.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

2. Joint Venture

- (a) The parties do hereby irrevocably constitute a Joint Venture for the purposes of jointly participating in the Bidding Process for the project
- (b) The Parties hereby undertake to participate in the Bidding Process only through this Joint Venture and not individually and/or through any other Joint Venture constituted for this Project, either directly or indirectly.

3. Covenants

The parties hereby undertake that in the event the Joint Venture is declared the selected Bidder and awarded the contract, it shall perform all its obligations as the Contractor in terms of the Contract.

Role of the Parties

The parties hereby undertake to perform the roles and responsibilities as described below:

- (a) Party of the First shall be the Lead member of the Joint Venture and shall have the power of attorney from the other Party for conducting all business for and on behalf of the Joint Venture during the Bidding Process and execution process as well as post execution process.
- (b) Party of the Second Part shall be the Member of the Joint Venture

4. Joint and Several Liability

The parties do hereby undertake to be jointly and severally responsible for all obligations and liabilities relating to the Project and in accordance with the terms and conditions given in the NIT and Tender Documents.

Field of expertise

The parties do hereby declare that the field of expertise of the parties are as under: -

First party

Second Party

Share of Works in the Project

The parties agree that the proportion of the Contract to be allocated among the parties shall be as follows:-

First party

Second Party

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

5. Representation of the Parties

Each Party represents to the other Party as of the date of this Agreement that:

- (a) Such Party is duly organised, validly existing all in good standing under the laws of its incorporation and has all requisite power and authority to enter into this Agreement;
- (b) The execution, delivery and performance by such party of this Agreement has been authorized by all necessary and appropriate corporate or governmental action and a copy of the extract of the charter documents and board resolution/power of attorney in favour of the person executing this Agreement for the delegation of power and authority to execute this Agreement on behalf of the Joint Venture party is annexed to this Agreement, and will not, to the best of its knowledge: -
 - (i) Require any consent or approval not already obtained;
 - (ii) Violate any applicable law presently in effect and having applicability to it,
 - (iii) Violate the memorandum and articles of association, by-laws or Other applicable organizational documents thereof,
 - (iv) Violate any clearance, permit, concession, grant, license or other governmental authorization, approval, judgment, order or decree or any mortgage agreement, indenture or any other instrument to which such Party is a Party or by which such Party or any of its properties or assets are bound or that is otherwise applicable to such Party; or
 - (v) Create or impose any liens, mortgages, pledges, claims, security interest, charges or encumbrances or obligations to create a lien, charge, pledge, security, interest, encumbrances or, mortgage in or on the property of such Party, except for encumbrances that would not, individually or in the aggregate, have a material adverse effect on the financial condition or prospects or business of such Party so as to prevent such Party from fulfilling its obligations under this Agreement.
- (c) This Agreement is the legal and binding obligation of such Party, enforceable in accordance with its terms against it; and
- (d) There is no litigation pending or, to the best of such Party's knowledge, threatened to which it or any of its Affiliates is a Party that presently affects or which would have a material adverse effect on the financial condition or prospects or business of such party in the fulfillment of its obligations under this Agreement.

6. Termination

This Agreement shall be effective from the date hereof and shall continue in full force and effect until completion of Defect Liability Period under and in accordance with the Contract, in case the Project is awarded to the Joint Venture. However, in case the Joint Venture does not pre-qualify for the Project or does not get selected for award of the Project, the agreement will stand terminated in case the Applicant does not pre-qualify or upon return of the Bid Security by the Authority to the Bidder, as the case, may be.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

7. Miscellaneous

(a) This Joint Bidding Agreement shall be governed by Laws of India.

(b) The Parties acknowledge and accept that this Agreement shall not be amended by the Parties without the prior written consent of the Authority.

IN WITNESS WHEREOF THE PARTIES ABOVE NAMED HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN

SIGNED, SEALED AND DELIVERED

SIGNED, SEALED AND DELIVERED

For and on behalf of

LEAD member by:

SECOND PART

(Signature)
(Name)
(Designation)
(Address)

(Signature)
(Name)
(Designation)
(Address)

WITNESS

In the presence of:

1.

2.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

ANNEXURE -II

To be signed by the bidder and same signatory competent/authorized to sign the relevant Contract on behalf of BRO

INTEGRITY PACT

This Integrity Pact is made aton this day of..... 2022

BETWEEN

President of India represented through **Chief Engineer Border Roads Organisation, Ministry of Defence, CE (P) Dantak PIN : 931708, C/O 99 APO.**

'Principal/Owner', which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

AND

.....
.....

(Name and Address of the Bidder/Contractor)

(Hereinafter referred to as the through
(Details of duly authorized signatory)

"Bidder/Contractor" and which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

Preamble

WHEREAS the Principal / Owner has floated the Tender (NIT NO. **CE (P) DTK/ 02/2022-23** (hereinafter referred to as "Tender/Bid") and intends to award, under laid down, organizational procedure, contract for

.....
NAME OF WORK: - PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

hereinafter referred to as the "Contract".

AND WHEREAS the Principal)/Owner values full compliance with all relevant laws of the land, rules, regulations. Economic use of resources and of fairness/transparency in its relation with its Bidder(s) and Contractor(s).

AND WHEREAS to meet the purpose aforesaid both the parties have agreed to enter into this Integrity Agreement (hereinafter referred to as "Integrity Pact" or "Pact"), the terms and conditions of which shall also be read as integral part and parcel of the Tender/Bid documents and Contract between the parties.

NOW, THEREFORE, in consideration of mutual covenants contained in this Pact, the parties hereby agree as follows and this Pact witnesses as under:

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

1. **Commitment of the Principal/Owner**

(a) The Principal/Owner commits itself to take all measures necessary to prevent corruption and to observe the following principles:

(i) No employee of the Principal/owner, personally or through any of his/her family members, will in connection with the Tender, or the execution of the Contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to. “

(ii) The Principal/Owner will, during the Tender process, treat all Bidder(s) with equity and reason. The Principal/Owner will, in particular, before and during the Tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional

(iii) The Principal/Owner shall endeavor to exclude from the Tender process any person, whose conduct in the past has been of biased nature.

(b) If the Principal/Owner obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal code (IPC)/Prevention of Corruption Act, 1988 (PC Act) or is in violation of the principles herein mentioned or if there be a substantive suspicion in this regard, the Principal/owner will inform the Chief Vigilance Officer and in addition can also initiate disciplinary actions as per its internal laid down policies and procedures.

2. **Commitment of the Bidder (s)/Contractor(s)**

(a) It is required that each Bidder/Contractor (including their respective officers, employees and agents) adhere to the highest ethical standards, and report to the Government / Department all suspected acts of fraud or corruption or Coercion or Collusion of which it has knowledge or becomes aware, during the tendering process and throughout the negotiation or award of a contract,

(b) The Bidder(s)/Contractor (s) commits himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the Tender process and during the Contract execution:

(i) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal/Owner's employees involved in the Tender process or execution of the Contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the Tender process or during the execution of the Contract.

(ii) The Bidder(s)/Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to cartelize in the bidding process.

(iii) The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act. Further the Bidder(s)/ Contract(s) will not use improperly, (for the purpose of competition or personal gain), or pass on to others, any information or documents provided by the Principal/Owner as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

(iv) The Bidder(s)/Contractor(s) of foreign origin shall disclose the names and addresses of agents/ representatives in India, if any. Similarly Bidder(s)/Contractor(s) of Indian Nationality shall disclose names and addresses of foreign agents/representatives, if any. Either the Indian agent on behalf of the foreign principal or the foreign principal directly could bid in a tender but not both. Further, in cases where an agent participate in a tender on behalf of one manufacturer, he shall not be allowed to quote on behalf of another manufacturer along with the first manufacturer in a subsequent/parallel tender for the same item.

(v) The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract.

(c) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

(d) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm indulge in fraudulent practice means a willful misrepresentation or omission of facts or submission of fake/forged documents in order to induce public official to act in reliance thereof, with the purpose of obtaining unjust advantage by or causing damage to justified interest of others and/or to influence the procurement process to the detriment of the Government interests.

(e) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm use Coercive Practices (means the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force directly or indirectly, where potential or actual injury may befall upon a person, his/ her reputation or property to influence their participation in the tendering process).

3. Consequences of Breach

Without prejudice to any rights that may be available to the Principal/owner under law or the Contractor its established policies and laid down procedures, the Principal/Owner shall have the following rights in case of breach of this Integrity Pact by the Bidder(s)/Contractor(s) and the Bidder/ Contractor accepts and undertakes to respect and uphold the Principal/Owner's absolute right:

(a) If the Bidder(s)/Contractor(s), either before award or during execution of Contract has committed a transgression through a violation of Para 2 above or in any other form, such as to put his reliability or credibility in question, the Principal/Owner after giving 14 days notice to the contractor shall have powers to disqualify the Bidder(s)/Contractor(s) from the Tender process or terminate/determine the Contract, if already executed or exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Principal/Owner. Such exclusion may be forever or for a limited period as decided by the Principal/owner.

(b) Forfeiture of EMD /Performance Guarantee/Security Deposit: If the Principal/Owner has disqualified the Bidder(s) from the Tender process prior to the award of the Contract or terminated/determined the Contract or has accrued the right to terminate/determine the Contract according to para 3(a), the Principal/owner apart from exercising any legal rights that may have accrued to the Principal/Owner, may in

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

its considered opinion forfeit the entire amount of Earnest Money Deposit / Performance Guarantee / Security Deposit of the Bidder/Contractor.

(c) Criminal Liability: If the Principal/Owner obtains knowledge of conduct of a Bidder or Contractor, or of an employee or a representative or an associate of a Bidder or Contractor which constitutes corruption within the meaning of IPC Act, or if the Principal/Owner has substantive suspicion in this regard, the Principal/owner will inform the same to law enforcing agencies for further investigation.

4. Previous Transgression

(a) The Bidder declares that no previous transgressions occurred in the last 5 years with any other Company in any country confirming to the anticorruption approach or with Central Government or State Government or any other Central/State Public Sector Enterprises in India that could justify his exclusion from the Tender process.

5. Previous Transgression

(a) The Bidder declares that no previous transgressions occurred in the last 5 years with any other Company in any country confirming to the anticorruption approach or with Central Government or State Government or any other Central/State Public Sector Enterprises in India that could justify his exclusion from the Tender process.

(b) If the Bidder makes incorrect statement on this subject, he can be disqualified from the Tender process or action can be taken for banning of business dealings/ holiday listing of the Bidder/Contractor as deemed fit by the Principal/ Owner.

(c) If the Bidder/Contractor can prove that he has resorted / recouped the damage caused by him and has installed a suitable corruption prevention system, (he Principal/Owner may, at its own discretion, revoke the exclusion prematurely.

6. Equal Treatment of all Bidders/Contractors/Subcontractors

(a) The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this integrity Pact. The Bidder/Contractor shall be responsible for any violation(s) of the principles laid down in this agreement/P act by any of its Subcontractors/sub-vendors.

(b) The Principal/Owner will enter into Pacts on identical terms as this one with all Bidders and Contractors.

(c) The Principal/owner will disqualify Bidders, who do not submit, the any signed Pact between the Principal/owner and the bidder, along with the Tender or violate its provisions at any stage of the Tender process, from the Tender process.

7. Duration of the Pact

This Pact begins when both the parties have legally signed it. It expires for the Contractor/Vendor after the final payment under the contract has been made or till the continuation of defect liability period, whichever is more and for all other bidders, till the Contract has been awarded.

If any claim is made/lodged during the time, the same shall be binding and continue to be valid despite the lapse of this Pacts as specified above, unless it is discharged/determined by the Competent Authority, BRO.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

8. Other Provisions

- a. This Pact is subject to Indian Law, place of performance and jurisdiction is the Headquarters of the formation of the Principal/Owner, who has floated the Tender.
- b. Changes and supplements need to be made in writing. Side agreements have not been made.
- c. If the Contractor is a partnership or a consortium, this Pact must be signed by all the partners or by one or more partner holding power of attorney signed by all partners and consortium members. In case of a Company, the Pact must be signed by a representative duly authorized by board resolution.
- d. Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- e. It is agreed term and condition that any dispute or difference arising between the parties with regard to the terms of this Integrity Agreement / Pact, any action taken by the Owner/Principal in accordance with this Integrity Agreement/ Pact or interpretation thereof shall not be subject to arbitration.

9. Legal and Prior Rights

All rights and remedies of the parties hereto shall be in addition to all the other legal rights and remedies belonging to such parties under the Contract and/or law and the same shall be deemed to be cumulative and not alternative to such legal rights and remedies aforesaid. For the sake of brevity, both the Parties agree that this Integrity Pact will have precedence over the Tender/Contact documents with regard any of the provisions covered under this Integrity Pact.

10. Independent Monitors

- a. That the MoD has appointed following Independent Monitors for this Pact:-
 - (i) **Shri Sudhir Bhargava, IAS Retd, E Mail :- bhargav4@nic.in**
 - (ii) **Shri Vikram Srivastava , IPS Retd , E Mail:-vikramsrivastava1973@gamil.com**
 - (iii) **Shri Rakesh Kurrel, Dir(Contracts), Email:-ddgepcncontract@bro.gov.in**

Any complaint with regard to violation of IP, whenever received, will be referred to the Independent Monitors for their comments / enquiry.

- b. The task of the Monitor is to review independently and objectively, any complaint received with regard to violation of Integrity Pact and offer comments or carry out enquiry as deemed fit.
- c. That the Monitor is not subject to any instructions by the representatives of the parties and would perform his functions neutrally and independently.
- d. That the, Bidder/Contractor accepts that if the Monitor needs to access any records then the Monitor shall have the right to access without restriction to all project documentation of the Principal / owner including that provided by the Bidder/Contractor. The Bidder/Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation including minutes of meeting. The same is applicable to Sub - Contractors and Associates. The Monitor is under obligation to treat the information and documents of the principal/owner and Bidder/Contractor/ Sub- Contractors/ Associates with confidentiality.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

e. That if the Monitor has reported to the Principal/Owner a substantiated suspicion of an offence under relevant Anti Corruption Laws of India and the Principal/owner has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Department, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

f. The word 'Monitor' would include singular and plural.

(For and on behalf of Bidder/Contractor)

(For and on behalf of Principal/Owner)

WITNESSES:

1.....
(Signature, name and address)

2.....
(Signature, name and address)

Dated:

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

INTEGRITY PACT

To,

The Chief Engineer
HQ Project Dantak
Accepting Officer

Sub: Submission of **PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINATORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN**

Dear Sir,

I/We acknowledge that BRO is committed to follow the principles thereof as enumerated in the integrity Pact enclosed with the tender/bid document.

I/We agree that the Notice Inviting Tender (NIT) is an invitation to offer made on the condition that I/We will sign the integrity Pact, which is an integral part of tender document, failing which I/We will stand disqualified from the tendering process. I/We acknowledge that **THE MAKING OF THE BID SHALL BE REGARDED AS AN UNCONDITIONAL AND ABSOLUTE ACCEPTANCE** of the conditions of the NIT.

I/We confirm acceptance and compliance with the Integrity Pact in letter and spirit and further agree that execution of the said integrity Pact shall be separate and distinct from the main contract, which will come into existence when tender/bid is finally accepted by BRO. I/We acknowledge and accept the validity of the Integrity Pact, which shall be in line with para 15 of the enclosed Integrity Pact

I/We acknowledge that in the event of my/our failure to sign and accept the Integrity Pact, while submitting the tender/bid, BRO shall have unqualified, absolute and unfettered right to disqualify the tender/bidder and reject the tender/bid in accordance with terms and conditions of the tender/ bid.

Yours faithfully

(Duly authorized signatory of the Bidder)

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

INTEGRITY PACT

To,

Sub: PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINATORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

Dear Sir,

It is hereby declared that BRO is committed to follow the principle of transparency, equity and competitiveness in public procurement.

The subject Notice Inviting Tender (NIT) is an invitation to offer made on the condition that the Bidder will sign the integrity Pact which is an integral part of tender/bid documents, falling which the tender/bidder will stand disqualified from the tendering process and the bid of the bidder would be summarily rejected.

This declaration shall form part and parcel of the Integrity Pact and signing of the same shall be deemed as acceptance and signing of the Integrity Pact on behalf of the BRO.

Yours faithfully

Chief Engineer
Project Dantak

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

ANNEXURE -III
PERFORMANCE GUARANTEE BOND

1. In consideration of the President of India (hereinafter called "the government") having agreed to **exempt**..... (hereinafter called "the said Contractor's) from the demand. under the terms and conditions of an Agreement dated.....Made between.....
.....and.....for.....
(hereinafter called "the said Agreement") of Security deposit for the due fulfilment by the said contractors of the terms and conditions contained in the said Agreement on production of a Bank Guarantee for Rs(Rupees.....only) we.....
.....bank Ltd (hereinafter referred as the Bank) do hereby undertake to pay to the Government an amount not exceeding. RsAgainst any loss or damage caused to or would be caused to or suffered by the Government, by reason of any breach by the said contractor(s) of any the terms or conditions contained in the said Agreement.

2. We..... Bank Ltd. Do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the Government, stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Government by reason of any breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement or by reason of the contractor's (s) failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee shall be restricted to an amount not exceeding Rs..
.....

3. We..... Bank Ltd. Further agree that guarantee.: herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Government under or by the virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till... ..(Office/ Department). Ministry of..... Certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges the guarantee. Unless a demand or claim under this guarantee is made to us in writing on a before thewe shall be discharged from all liability: under this guarantee thereafter.

4. We..... Bank Ltd. Further agree with the Government that the Government shall have the fullest liberty without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said Contractor(s) from time to time: or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said contractor(s) or for any forbearance act or omission on the part of Government or any indulgence by the Government to the said contractor(s) or any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

5. We..... Bank Ltd. lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Government in writing.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

UNDERTAKING BY AUTHORISED SIGNATORY

I, the undersigned do hereby under take that our firm M/s _____

agree to abide by Terms and Conditions of subject Tender for **PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARENCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARENCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN** from Page No. 01 to 224 is advertised on the www.epublish.gov.in and it shall be binding on us and may be accepted at any time before the expiration of stipulated tender conditions.

(Signed by an Authorized Officer of the firm)

Title of Officer

Name of Firm

Date

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

[In lieu of IAFW-1779-A (to be use in conjunction with General Conditions
Of Contract based on and IAFW-2249) (1989 Print)]

CHIEF ENGINEER PROJECT DANTAK

http : //www.gref.gov.in
http : //www.bro.gov.in
E-mail : brodtk@gmail.com
Tele : **009752 - 351082/351086/351088**
Fax : **009752 – 351285**

Headquarters
Chief Engineer
Project Dantak
PIN : 931708
C/O 99 APO

80586/ /E8

Oct 2022

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

Dear Sir (s),

Messrs/Mr _____ of _____ is/are hereby authorised to tender for the above work. The tender is to be delivered at the Office of the Chief Engineer, Project DANTAK, PIN 931708, C/O 99 APO or at OIC liaison cell located at Supervisor Mess 19 BRTF, Jaigaon, West Bengal, PIN-736182, Ph **8145087696/9970889254** at **1700 hrs (BST)/1630 hrs(IST) on 07 Nov 2022** addressed to Headquarters, Chief Engineer, Project Dantak, PIN – 931708, C/o 99 APO for PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN to be opened on **09 Nov 2022 at 1530 hrs (BST).**

All documents must be returned whether or not a tender has been submitted.

Any correction concerning this tender should be addressed as indicated at the top of this sheet, quoting the reference as given.

**THE PRESIDENT OF INDIA DOES NOT BIND HIMSELF
TO ACCEPT THE LOWEST TENDER OR ANY TENDER**

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

BORDER ROADS ORGANISATION
CHIEF ENGINEER PROJECT DANTAK
NOTICE INVITING TENDER- 02/2022-23

1. A sealed tender is invited for “**PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINATORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN**”

2. Tender documents may be downloaded from central public procurement portal site <http://eprocure.gov.in/eprocure/app>, BRO website www.bro.gov.in and CAB website www.cab.org.bt as per the schedule as given in **CRITICAL DATE SHEET** as under and printout is to be taken on A4 size paper. It is advisable that the downloaded tender document to be printed through laser printer preferably. Submission of photocopy of tender is not permitted.

CRITICAL DATE SHEET

01	Publishing date & time on CPPP website	14 Oct 2022 at 1600 Hrs
02	Bid document download start date	14 Oct 2022 at 1630 Hrs
03	Clarification start date & time (Pre Bid queries)	14 Oct 2022 at 1630 Hrs
04	Clarification end date & time	04 Nov 2022 at 1100 Hrs
05	Bid submission start date & time	15 Oct 2022 at 1100 Hrs
06	Bid submission end date & time	07 Nov 2022 at 1700Hrs
07	Opening date & time of Technical bid	09 Nov 2022 at 1530Hrs
08	Opening date of Financial bid	Will be intimated later

3. The estimated cost of work is **Rs 388.53 Lakhs (Rupees Three Crore Eighty Eight Lakh Fifty Three Thousand only)** approximately or as subsequently amended in tender documents and uploaded in central public procurement portal site <http://eprocure.gov.in/eprocure/app>, BRO website www.bro.gov.in and CAB website www.cab.org.bt. This estimate, however, is not a guarantee and is merely given as a rough guide, and if work costs more or less, tenderer shall have no claim on that account of what so ever nature.

4. The tender shall be based on Specifications, **General Conditions of Contracts IAFW-2249 and item rate contract form based on IAFW 1779-A with Schedule "A"** (List of works) to be priced by tenderers.

5. Not more than one tender shall be submitted by one contractor or contractors having business relationship. Under no circumstances will a father or his son(s) or other close relations who have business relationship with one another (i.e. when one or more partner(s)/director(s) are common), be allowed to tender for the same contract as separate competitors. A breach of this condition will render the tenders of both the parties liable to rejection.

6. The work is to be completed within **180 days** or as subsequently amended in tender documents or uploaded on central public procurement portal site <http://eprocure.gov.in/eprocure/app>, BRO website www.bro.gov.in and CAB website www.cab.org.bt in accordance with the phasing, if any, indicated in the tender from the date of handing over the site, which will be generally within one month from the date of issue of Acceptance letter.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

NOTICE INVITING TENDER (CONTD)

7. Tender (in full) either downloaded from CPP Portal website will be received at HQ CE (P) Dantak, C/o 99 APO or at OIC liaison cell located at Supervisor Mess 19 BRTF, Jaigaon, West Bengal, PIN-736182, Ph 8145087696/9970889254 at **1700 hrs (BST)/1630 hrs(IST) on 07 Nov 2022**. Part - I un-priced bid will be opened on **09 Nov 2022 at 1530 hrs (BST)** Tender received after due date shall not be considered for opening and no reason for delay or claim whatsoever shall be entertained.
8. **The Chief Engineer (P) Dantak, C/O 99 APO will be Accepting Officer** hereinafter, referred to as such for the purpose of this contract.
9. Intending tenderers are advised to visit central public procurement portal site <http://eprocure.gov.in/eprocure/app>, BRO website www.bro.gov.in and CAB website www.cab.org.bt three days prior to date of opening of tender for any corrigendum/addendum/amendment.
10. Earnest money is not required to be attached with tender by the valid enlisted contractors with BRO who have submitted standing security deposit and MSME registered firms as per Rule 170 (i) of GFR 2017 but it is required from other contractors and to be attached with Technical Bid for **Rs 4,63,530-00 (Rupees Four Lakhs Sixty Three Thousand Five Hundred Thirty only)** in the shape of Call Deposit Receipt/Term Deposit Receipt/Special Term Deposit Receipt /Bank Guarantee in favour of Chief Engineer Project Dantak C/o 99 APO obtained from any Nationalized /Schedule Bank having maturity/validity period 90 days more than validity period of his offer.
11. **Successful Bidder (L-1) shall deposit to Accepting Officer a Performance Security for an amount of 10% of contract sum (Amended vide HQ DGBR letter No. 24556/सी.स.म./दन्तक/सामान्य/92/ई8 dated 25 Nov 2021) in the shape of Bank Guarantee or FDR within 28 days of issue of LoA.**
12. Copies of drawings (if applicable) and other documents pertaining to the work (signed for the purpose of identification by the Accepting Officer or his accredited representative) and sample of materials and stores to be supplied by the contractor will be opened for inspection at the following locations:-
- Chief Engineer (P) Dantak, C/o 99 APO**
13. The tenderer are advised to visit the site by making prior appointment with Commander, 19 Border Roads Task Force, C/o 99 APO sufficiently in advance (Telephone No of Commander, 19 BRTF at **009755- 252201**). A tenderer shall be deemed to have full knowledge of all relevant documents, local conditions, sites etc. For further details tenderer may contact telephonically if required, SW, Project DANTAK at **009752 – 351082/351086** during office hours.
14. A tenderer shall be deemed to have full knowledge of all relevant documents, samples, site etc whether he has inspected them or not.
15. Any qualification documents/tender which stipulates any alterations to any of the conditions laid down or proposes any other conditions of any description what so ever, is liable to be rejected.
16. The Accepting Officer reserves his right to accept a tender submitted by a public undertaking, giving a price preference over other tender (s) which may be lower, as are admissible under the Govt. policy. No claim for any compensation or otherwise shall be admissible from such tenderer (s) whose tenders may be rejected on account of the said policy.
17. **The submission of tender by a tenderer implies that he had read this notice and conditions of contract and has made himself aware of the scope and specifications of the work to be done and of the conditions rates at which stores, tools and plants etc will be issued to him, local conditions and other factors bearing on the execution of the work**
18. The Pre-Contract Integrity Pact has been signed by Accepting Officer or by the Officer specifically designated by him and scanned copy uploaded as part of NIT along with tender documents. Integrity Pact duly signed on each page by the bidder(s) shall be submitted as part of technical bid (Cover-I).

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

NOTICE INVITING TENDER (CONTD)

19. The hard copy of original instruments in respect of earnest money, under taking regarding acceptance of tender conditions, Enlistment letter if firm is enlisted in BRO, EPFO, Registration letter, GST Registration and any other document required to be submitted with respect to various conditions mentioned in the tender documents should be attached with tender documents
20. Blank.
21. Blank.
22. Blank.
23. In case of rejection of technical bid, contractor may appeal to next higher engineer authority i.e. HQ DGBR on email bro-e8@nic.in with copy to the Accepting Officer i.e. CE on email bro-dtk@nic.in against rejection within 05 days from the date of publishing of result of technical bid qualification on CPP Portal whose decision shall be final and binding. If the appeal is not made within this period, the bidder shall forfeit his right of appeal against rejection of his technical bid. Any appeal received after 05 days of such publication of result shall not be entertained under any circumstances. The next higher engineering authority shall preferably try to resolve the issue within 05 days of such representation. However, contractor/bidder shall not be entitled for any compensation whatsoever on account of rejection of technical bid.
24. For any further particulars, you may refer central public procurement portal site <http://eprocure.gov.in/eprocure/app>, BRO website www.bro.gov.in and CAB website www.cab.org.bt.
25. Blank.
26. In the event of lowest tenderer revoking his offer or revising his rates upward (which will be treated as revocation of offer), after opening of tenders, the earnest money deposited by him shall be forfeited. In case of BRO enlisted contractors, the amount equal to the earnest money stipulated in the Notice of tender, shall be notified to the tenderer for depositing the amount through MRO, failing which the amount shall be recovered from payment due to such Contractor or shall be adjusted from the Standing Security Deposit. In addition, such tenderer and his related firm shall not be issued the tender in second or subsequent calls.
27. Important- Above particulars may change due to Administrative or any other reasons and shall be available in central public procurement portal site <http://eprocure.gov.in/eprocure/app>, BRO website www.bro.gov.in and CAB website www.cab.org.bt Therefore, bidders/contractors are requested to visit central public procurement portal site <http://eprocure.gov.in/eprocure/app>, BRO website www.bro.gov.in and CAB website www.cab.org.bt frequently and at least once again 03 (three) days prior to bid submission date as per critical date sheet, for any changes in above particulars.
28. Blank
29. The tender shall remain open for acceptance for a period of **120 days** from bid submission end date.
30. The tender may be accepted as whole.
31. This notice of tender shall form part of the contract.

No.80586/ /E8

Headquarter
Cheif Engineer
Project Dantak
PIN : 931 708
C/O 99 APO

EE (Civ)
For Accepting Officer
Dated : Oct 2022

NAME OF WORK:	<u>PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINATORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN</u>
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GENERAL CONDITION OF CONTRACTS
IAFW -2249
FOR
ITEM RATE CONTRACTS (IAFW-1779 A)

1. A copy of General Conditions of Contract (IAFW-2249: Print 1989) with Errata 1 to 20 and Amendments Nos. 1 to 48 is in my/our possession. I/we has/have read and understood the provisions contained in the aforesaid GENERAL CONDITIONS OF CONTRACTS before submission of this tender and I/we agree that I/we shall abide by the terms and conditions thereof.
2. It is hereby further agreed and declared by me/us that the GENERAL CONDITIONS OF CONTRACT, including Condition No. 70 thereof pertaining to the settlement of disputes by Arbitration (IAFW-2249) and Condition No 71 pertaining to appointment of Dispute resolution Board shall form part of this tender documents.
3. Wherever the phrases Commander Works Engineer (CWE) and Garrison Engineer (GE) have been used in the General Conditions of Contract (IAFW-2249) the same are considered as Task Force Commander (TFC) and OC Contract respectively as applicable in Border Roads Organisation..

Note: - Copy of General Condition of Contracts IAFW-2249 can be referred in the office of HQ CE (P) Danntak/HQ 19 BRTF (GREF), if required.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

SPECIAL CONDITIONS

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINATORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

1. GENERAL

The following Special Conditions shall be read in conjunction with General Conditions of contracts **IAFW-2249**, including amendments thereto, and whereas variation exists the Special Conditions shall take precedence over the aforesaid General Conditions.

The Special Conditions given in succeeding paragraphs shall be read in conjunction with Schedule A, technical specifications and General Conditions of Contracts IAFW-2249. In case of any discrepancies in the various provisions of the contract, the following order of precedence shall be observed:-

- (a) Description given in Schedule 'A'.
- (b) Particular/Technical Specifications.
- (c) Drawings and sketches.
- (d) Ministry of Road Transport & Highways (MoRTH) specifications for Road and bridge works published by Indian Roads Congress New Delhi (Vth Revision).
- (e) Special conditions.
- (f) General conditions of contracts.

2. INSPECTION OF SITES

The contractor is particularly advised to inspect the site (s) of work by making prior appointment with the **Chief Engineer Project Dantak, C/o 99 APO/Commander 19 BRTF, C/o 99 APO** so as to acquaint himself with regard to the nature and conditions of site, nature and means of local communication, working hours, conditions of access and all other cognate matters concerning the execution and completion of the work. Any paths, tracks, approaches etc, required for the movement of plants, equipments, machines and vehicles etc to the work site and plate form, bund etc required for the execution of work will be responsibility of the contractor and rates quoted must include these aspects also where required. The tenderer shall be deemed to have inspected the site and made himself familiar with various factors which may affect his quotation where he actually inspects the site or not. No extra charges consequent on misunderstanding or otherwise will be allowed.

3. LAND FOR OFFICES ETC

The contractor shall have to make his/her own arrangements for the land as may be required by him/her for housing of staff and labour and for erection of store sheds, offices, godowns etc., required by him/her for this work. The contractor must ensure that the staff, labour, plant, equipments, machines, vehicles, stores etc., employed or collected in connection with the work are so located that there is no hindrance to free flow of traffic on the roads/highway. Suitable cautionary and warning signs and other measures are to be installed/provided by the contractor at his own cost for the safety of traffic.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

4. MINIMUM FAIR WAGES PAYMENT TO LABOUR

(a) The contractor shall pay wages not less than the minimum fair wages fixed from time to time by the Central Govt/State Govt/Local Authorities. He shall have no claim whatsoever, if on account of any local regulations and/or otherwise, he is required to pay wages in excess of the wages so fixed.

(b) The contractor shall observe the laws/regulations applicable in the area regarding the employment of labour, payment of wages and other cognate matters relating to the conditions.

(a) In case local labourers are not available, the contractor may have to obtain written permit from the appropriate authority of State Govt. to import labour from outside the state.

(d). The contractor shall ensure compliance to all the labour wages laws and benefit rules for the labour employed by him.

(e) The contractor shall maintain muster roll of labourer engaged in the work along with wages being paid to labourer (trade wise). The muster roll shall be available at site for inspection by Engineer-in-Charge or any authorized Govt. Officials.

5. ROYALTIES. The Contractor shall make his own arrangement for procuring materials required under the contract and he shall ensure that the royalty for the material procured by him under this CA has been correctly paid to the concerned authority. Any claim of royalty by the concerned department on the material procured under this CA shall be settled with concerned authority directly by Contractor. Further the contractor should ensure that the supply of material is not arranged illegally. An undertaking to this account will be given by contractor before payment of RAR/Final bill

SPECIMEN COPY OF UNDERTAKING

I / We, M/s _____ hereby declare that I /We have supplied the following materials against CA No. CE (P) Dantak/ / 2022-23 during the period from _____ to _____.

<u>Srl No.</u>	<u>Materials</u>	<u>Gross Quantity supplied</u>
(a)		
(b)		
(c)		

It is further certified that the royalty for the above quantity of materials at the applicable rates have been paid by us to the concerned department of the Govt.

(M/s _____)

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

6. BLASTING ROCKS

(a) The contractor shall be responsible for the safe custody and storage of blasting materials in accordance with the rules on the subject. Written authority of the Engineer-in-Charge/OC Contract shall be obtained before any blasting operations are commenced.

(b) The contractor shall ensure that the charges in blasting are not excessive and that the charged bore holes are properly protected before firing and that proper precautions are taken for the safety of men and property.

(c) Blasting should be generally avoided. In case it is unavoidable less charge controlled blasting may be resorted with the prior permission of the Engineer-in-Charge/OC Contract. The contractor shall be bound to abide by the instructions of the Engineer-in-Charge/OC Contract regarding the necessity of blasting and the type, number size and pattern of holes to be drilled and also the type, amount and method of firing of explosive to be used. The Engineer-in-Charge/OC Contract shall reserve the right to restrict the number of charge to be fired at a time so that the hillside is not adversely affected. The contractor shall fire the charges only at such time as approved by the Engineer-in-Charge/OC Contract and shall have no claim, whatsoever, on account of any delay and extra cost due to carrying out the instructions of the Engineer-in-Charge/OC Contract and / or taking the safety precautions directed by him.

7. MOVEMENT OF CONTRACTOR VEHICLES

7.1. Minimum classification of existing bridges on the roads are Class 70 R bridges, contractor should not bring any heavier vehicle/plnt/equipment as such vehicle/plant/equipment shall not be allowed on the bridges. The contractor's vehicle may be required to ply in convoys as per directions given by the concerned Civil/Military authorities. No extra payment/time will be admissible on this account.

7.2. In case the condition of these bridges warrant further downwards load classification due to any unforeseen circumstances, the same will be done by OC Contract whose decision shall be final and binding. In case of any such eventuality, the contractor may have to unload his heavy load carried at locations, indicated to suit the load classification indicated by the OC Contract. Any such heavy load carriage thus necessitated across such indicated bridge(s) shall have to be done by the contractor without any additional payment and no claim whatsoever on this account will be entertained.

8. SECURITY RESTRICTIONS

8.1 Contractor intention is invited to condition 25 of IAFW-2249 contractor shall employ only Indian National/Bhutanese after verifying their antecedents and loyalty. The contractor shall on demand by the Engineer-in-Charge / OC Contract, submit list of his agents, employees and work people concerned and shall satisfy the Engineer-in-Charge / OC Contract as to the bonafide credential of such people.

8.2 The contractor and his workmen shall observe all the rules promulgated by the authority controlling the area in which work is to be carried out e.g. prohibition of smoking, lighting, fire precautions, search of persons on entry and exit, keeping to specified routes and restricted hours of work etc. Thorough search of all persons and transport may be conducted by the departmental authorities at the site of works at any time and any number of times for security reasons Necessary Permits are to be obtained from Civil Authorities by the contractor, for himself, his staff and labour. Nothing shall be paid extra on this account. During currency of the contract, if anybody is suspected to have any connection with anti-national elements/activities, he will immediately be removed and contractor shall have no claim whatsoever on this account.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

8.3 Necessary assistance will be extended to the contractor by the department for providing passes/permits to the contractor, his representative and workmen to enter the state.

9. FREE ACCESS TO SITES AND LOOKING AFTER OF WORKS

The contractor shall give all reasonable facilities to this department personal for the inspection of the works being executed under this contract. He will also provide free access to the works if being executed by this department or other agencies and if such works are located near the sites covered under this contract. Responsibility of all the works covered in this contract will lie on the contractor and these works will be fully completed and accordingly handed over to this department.

10. TAXES ETC

The tendered amount shall inter-alia be deemed to be inclusive of all taxes, viz work Contract Tax, terminal taxes, toll taxes, Royalty, octroi, **GST**, sale tax/VAT, Service Tax, or any other taxes and the like levies payable under the respective existing country/states etc. No claim on account of any taxes will be payable to contractor whatsoever except as provided in sub Para 11 (b) here-in-after.

10.1 **GST/Sales Tax are not applicable for Project Dantak.** For any query regarding **exemption of GST** on import of goods and services **from India to Bhutan**, kindly refer to the following websites for detail information.

- (aa) www.cbec.gov.in/htdocs-cbec/gst/index.
- (ab) www.cbec.gov.in/resources/htdocs-cbec/gst/notfctn-42-igst-rate-english.pdf.
- (ac) www.cbec.gov.in/resources/htdocs-cbec/gst/notfctn-300CGST-rate-english.pdf.

10.2 **For Indian Supplier only.** As supply to Project Dantak located outside India, no GST is applicable. Indian Supplier / Bidder shall attach undertaking certificate as per the following format mandatorily :-

UNDERTAKING CERTIFICATE

“It is certified that the goods / materials given in the CA No _____ of HQ CE (P) Dantak will be supplied by me / our firm as export and for use in Bhutan. It is declared that no GST cost has been included by me in the rates quoted in above mentioned enquiry”.

Signature with date :
Name of the bidder :
Name of firm with address :

Certificate on account of GST as per Rule No 16 (1) of IGST Act 2017 will be issued on receipt of stores as format of certificate is as given under:-

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

GST : ZERO RATED SUPPLY CERTIFICATE

1. It is certified that the goods supplied by your firm against CA No_____ for the cost of Rs. _____/- (Rupees _____only) is a zero rated Supply as per **GST Rule No 16 (1) of IGST Act 2017** as the goods were supplied as an export and to be used in Bhutan by this Project.
2. It is further certified that no amount was paid to your firm by this Project on account of GST

Consignee Unit

Indian firms may refer to rule 16 of IGST Act 2017 and Notification No. 42/2017-Integrated Tax (Rate) Ministry of Finance dated 27 Oct 2017.

11. RE-IMBURSEMENT/REFUND ON VARIATION IN "TAXES DIRECTLY RELATED TO CONTRACT VALUE"(As per latest policy dated 24228/DGBR/Policy Instr/2017/100/E8 dated 25 Aug 2017)

(a) The rates quoted by the contractor shall be deemed to be inclusive of all taxes, (including GST on materials, GST on Work Contracts, turnover tax, Labour Welfare cess /tax Ecological and Environment cess etc), duties, Royalties, Octroi & other levies payable under the respective statutes. No re-imburement /refund for variation in rates of taxes, duties royalties, Octroi & other levies, and / or imposition / abolition of any new/existing taxes, duties, royalties, Octroi & other levies shall be made except as provided in sub Para (b) here-in-below:-

(b) (i) The taxes which are levied by Govt. at certain percentage rates of Contract Sum / Amount shall be termed as "taxes directly related to contract value" such as GST on works contracts, turnover tax, Labour Welfare Cess /Tax and like but excluding Income Tax. The tendered rates shall be deemed to be inclusive of all "taxes directly related to contract value" with existing percentage rates as prevailing on last due date for receipt of tenders. Any increase in percentage rates of 'taxes directly related to contract value" with reference to prevailing rates on last due date for receipt of tenders shall be reimbursed to the contractor and any decrease in percentage rates of 'taxes directly related to contract value" with reference to prevailing rates on last due date for receipt of tenders shall be refunded by the contractor to the Govt. / deducted by the Govt. from any payment due to the contractor. Similarly imposition of any new "taxes directly related to contract value" after the last due date for receipt of tenders shall be reimbursed to the contractor and abolition of any "taxes directly related to contract value" prevailing on last due date for receipt of tenders shall be refunded by the contractor to the Govt. /deducted by the Govt. from the payments due to the contractor.

(b) (ii) The contractor shall, within a reasonable time of his becoming aware of variation in percentage rates and/or imposition of any "taxes directly related to contract value" give written notice thereof to the OC Contract stating that the same is given pursuant to this Special Condition, together with all information relating thereto which he may be in a position to supply. The contractors shall submit the other documentary poof /information as the OC may require.

(b) (iii) The contractor shall, for the purpose of this condition keep such books of account and other documents as are necessary and shall allow inspection of the same by a duly authorized representative of Govt., and shall further, at the request of the OC furnish, verified in such a manner as the OC Contract may require, any documents so kept and such other information as the OC may require.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

(b) (iv) Reimbursement for increase in percentage rates /imposition of “taxes directly related to contract value” shall be made only if the contractor necessarily & properly pays additional “taxes directly related to contract value” to the Govt. without getting the same adjusted, against any other tax liability or without getting the same refunded from the concerned Govt. Authority and submits documentary proof for the same as the OC may require”.

12. SECURITY OF DOCUMENTS

The contractor shall not communicate any classified information regarding works/organisation either to the sub contractor or others without prior approval of the Engineer-in-Charge. Any violation on this aspect will be forfeit the right of the contractor to claim any amount due to the contractor whatsoever held with organisation.

13. FOREIGN EXCHANGE/IMPORT LICENCE

No foreign exchange and/or import license will be arranged by the Department in the connection of work under this contract.

14. CONTRACTOR’S VEHICLES/PLANT AND EQUIPMENT AT SITE

(a) The contractor shall furnish to the Engineer-in-Charge a distribution return of his plant/equipment on the site of works, stating the following particulars: -

- i) Particulars of Plant/equipment i.e. Make, Manufacture’s No, Model No, if any, Registration No, if any, capacity, yearn of manufacture, year of purchase etc.
- ii) Total quantity on site of work.
- iii) Location indicating quantity at the site of work.

(b) For the purpose of this condition, plant/equipment shall include vehicles, trucks, Cranes, Heavy Lifting Equipment, Welding Machine, Gas cutter and lorries but not the workmen’s tools and/or any manually operated tools/equipment.

(c) The Engineer-in-Charge shall record the particulars supplied by the contractor as aforesaid, in the works diary and send a return to OC Contract for record in his office.

(d) The first return shall be submitted immediately after any plant or equipment is brought to the site. Thereafter every week changes in the return shall be furnished in the following form: -

S/No	Particulars of plant/ equipment	Total No at site of work	Location	Remarks

Addition Since.....

Reduction Since.....

(e) A complete return showing the upto-date position of plant/equipment at site shall be submitted on 15th of every month till the works are completed and the site cleared.

(f) The contractor’s attention is invited to condition 34 of General Conditions of Contracts according to which no tool, plant/equipment shall be removed off the site without written approval of the OC Contract.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

15. FIXING OF PERMANENT AND TEMPORARY BENCH MARKS:

Pmt Bench Mark be fixed at any nearby safe location or considered from any existing Permanent Building. RL be transferred and TBM be fixed at an interval of appx 200 mtr along the existing alignment at safe place. These temp Bench Marks should remain intact till completion of the work.

16. TOTAL STATION EQUIPMENT:

The total station eqpt with its accessories be provided by the contractor and will remain at site till completion of job.

17. MOBILISATION ADVANCE (Amended vide HQ DGBR letter No. 24556/सी.स.म./दन्तक/सामान्य/92/ई8 dated 25 Nov 2021): -

(a) Mobilisation advance shall be restricted to 10% of Contract Agreement amount.

(b) Applicable in cases, where the total amount of Mobilization Advance does not Exceed Rs. 500 lakhs.

"Mobilization Advance against non-Revokable Bank Guarantee.

(i) Interest bearing mobilization advance restricted to 10% of Contract Agreement amount shall be given to the Contractor if he so desires and on his specific written request, on production of non-revokable Bank Guarantee(s) for the corresponding amount on an approved form of scheduled Bank. The Bank Gurantee(s) shall indemnify the Govt. Against non-refund of mobilisation advance and also against default on Contractors part in performance of the contract. The rate of interest shall be 10% per annum simple interest.

(ii) The mobilisation advance shall be paid to the Contractor within 30 days of acceptance of the Bank Guarantee(s) furnished by him, by Accepting Officer. The amount of mobilisation advance together with interest shall be recovered from the payments made to the Contractor against "Advance on account", under condition 64 of IAFW-2249, General Conditions of Contracts.

(iii) The amount of mobilisation advance shall be recovered in suitable number of equal monthly/** fortnightly instalments as stipulated here after. The first instalment of recovery shall be effected from the 'Advance on Account' payment made immediately following the payment of mobilisation advance and the last instalment of recovery shall be effected during the (third/fourth) *** month preceding the month in which the due date of completion stipulated in the first work order falls.

** Delete whichever is inapplicable.

***Specify "third month" in respect of contract having a period of completion of 24 months or less and "fourth month" in respect of contracts having a period of completion exceeding 24 months.

(iv) The Contractor shall furnish a number of Bank Guarantees equal to number of installations for recovery, each to match the quantum of recovery to be effected from the 'Advance on Account'. In case, recovery is not possible to be effected from any particular 'Advance on Account' for reasons of non-submission of claim for payment of 'Advance on Account' any other reason whatsoever, the recovery due shall be made by encashing the Bank Guarantee.

(Signature of the Contractor)

EE (C)

SW

For Accepting Officer

SPECIAL CONDITIONS (CONTD)

(c) Applicable in cases where the Total amount of Mobilisation Advance Exceeds Rs. 500 lakhs.

"Mobilization Advance against non-Revokable Bank Guarantee.

(i) Interest bearing mobilisation advance restricted to 10% of Contract Agreement amount shall be given to the Contractor if he so desires and on his specific written request, in two installments, on production of non-revokable Bank Guarantee(s) on an approved from a schedule Bank. The Bank Guarantee (s) shall indemnify the Government against non-refund of mobilisation advance and also against default on Contractor's part in performance of the Contract. The rate of interest shall be 10% per annum simple interest.

(ii) The first installment of mobilisation advance shall be Rs.500 lakhs and shall be paid to the Contractor within 30 days of acceptance of the Bank Guarantee(s) for Rs.500 lakhs furnished by him, by the Accepting Officer. The second installment of balance mobilization advance shall be paid to the Contractor after 6 months of payment of the first installment provided Bank Guarantee(s) for the corresponding amount has/have been furnished by the Contractor, at least one month in advance and accepted by the Accepting Officer.

(iii) The total amount of mobilisation advance together with interest shall be recovered from the payments made to the Contractor against "Advances on Account", under Condition 64 of IAFW-2249, MES General Conditions of Contracts.

(iv) The amount of mobilisation advance shall be recovered in monthly**/fortnightly installments as stipulated hereinafter.

** Delete whichever is inapplicable.

(aa) Against the first installment of mobilisation advance of Rs.500 lakhs, the first installment of recovery shall be effected from the 'Advance on account' payment made immediately following the payment of mobilisation advance of Rs.500 lakhs and the last installment of recovery shall be effected during the third/fourth month *** preceding the month in which the due date of completion stipulated in first Work Order falls. The various installments of recovery shall be equal amounts.

*** Specify third months in respect of contract having a period of completion of 24 months or less and fourth month in respect of contracts having a period of completion exceeding 24 months.

(bb) Against the second installment of mobilisation advance, the first installment or recovery shall be effected from the 'Advance on Account' payment made immediately following the payment of mobilisation advance of second installment and the last installment of recovery shall be effected during the third/fourth month** preceding the month in which the due date of completion stipulated in first Work Order falls. The various installments of recovery shall be equal amounts. The recovery in installments of this mobilisation advance shall be of in addition to the recovery in installments of the mobilisation advance of first installment.

** Specify third months in respect of contract having a period of completion of 24 months or less and fourth month in respect of contracts having a period of completion exceeding 24 months.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

(v) The Contractor may furnish one Bank Guarantee or a number of Bank Guarantee (s) equal to number of installments for recovery, each to match the quantum of recovery to be effected from the 'Advance on account'. In case recovery is not possible to be effected from any particular 'Advance on Account' for reasons of non-submission of Claim for payment of 'Advance on Account' or for any other reasons whatsoever, the recovery due shall be made by encashing the Bank Guarantee."

(d) Advance Mobilisation Guarantee format will be followed as updated format Form DPM-16 prescribed by MoD in defence procurement Manual (present format enclosed at annexure I to special conditions). The authenticity of such BGs shall also be invariably verified from the issuing bank, confidentially and independently by the organization.

(e) There shall be a 15% interest charged on delayed recoveries either due to the late submission of bill by the contractor or any other reason besides the reason giving rise to the encashment of Bank Guarantee as stated above.

(f) Utilization certificate from the contractor for the mobilization advance

18. Blank

19. **FOSSILS**

19.1 All fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest found on the site shall be placed under the care and authority of the Employer. The contractor shall take reasonable precautions to prevent Contractor's Personnel or other persons from removing or damaging any these findings.

19.2 The Contractor shall, upon discovery of any such finding, promptly give notice to the Engineer-in-Charge/OC Contract, who shall issue instructions for dealing with it. If the Contractor suffers delay and/or incurs Cost from complying with the instructions, the Contractor shall give a further notice the Engineer- in-Charge/ OC Contract describing in detail the delay sustained by him and cost measured by him for following the instructions of the Engineer-in-Charge/OC Contract in dealing with the fossils along with all supporting documents/proof, within 7 days of the occurrence. The Contractor then be certified for the following: -

(a) An extension of time for any such delay, if completion is or will be delayed due to such act in following the instructions of the Engineer-in-Charge/OC Contract.

(b) Payment of any such cost, which shall be included in the Contract Price.

19.3 After receiving this further notice, the Engineer-in-Charge/OC Contract shall examine the case with facts and figures and disagreements if any will be communicated to the contractor.

19.4 In case of any disputes, the matter shall be referred to the Accepting Officer whose decision shall be final and binding.

20. **TIME AND PROGRESS CHART**

(a) The time and progress chart to be prepared as per the General Condition of Contract shall consist of detailed network analysis and a time schedule. The critical path network will be drawn jointly by the OC Contract and the Contractor soon after acceptance of the Tender. The time scheduling of the activities including a network for the preliminary arrangements for mobilization of resources e.g. manpower, plants and machineries will be done by the Contractor, so as to complete the work within stipulated time.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

(b) On completion of the time schedule a firm calendar date schedule will be prepared and submitted by the contractor to the OC Contract who will approve if after due scrutiny. The schedule will be submitted in quadruplicate within six weeks from the date of handing over the site.

(c) During the currency of work, the Contractor is expected to adhere to the time schedule and this adherence will be a part of the contractor's performance under the contract. During the execution of the work, the Contractor is expected to participate in the review and updating the network undertaken by OC Contract. These reviews may be undertaken at the discretion of the OC Contract either as periodical appraisal measure or when the quantum of work ordered on the Contractor is substantially changed through deviation order or amendments. Any revision of the schedule as a result of the review will be submitted by the Contractor to the OC Contract within a week who will approve it after due scrutiny. The Contractor will adhere to the revised schedule thereafter. In case of the contractor's not agreeing to the revised schedule the same will be referred to the Accepting Officer whose decision will be final, conclusive and binding. OC's approval to the revised schedule resulting in a completion date beyond the stipulated date(s) of completion shall not automatically amount to grant of extension of time. Extension of time shall be considered and decided by the appropriate authority mentioned in condition 11 of General Conditions of Contracts and separately regulated.

(d) The Contractor is expected to mobilize and employ sufficient resources to achieve the detailed time schedule within the broad framework of the accepted methods of working and safety.

(e) No additional payment will be made to the contractor for any multiple shift work or other incentive methods contemplated by him in his work schedule even though the time schedule is approved by the department.

21. PERMIT FROM LOCAL AUTHORITIES FOR PLYING VEHICLES

Contractor shall make his own arrangements for obtaining necessary permit from local authorities for plying his equipments for the work in accordance with the rules and regulations of the land.

22. ELECTRICITY AND WATER SUPPLY

No electricity or water will be supplied by the department. The contractor shall make his own arrangement for execution of the work.

23. RATE QUOTED

(a) Unit rate shall be deemed to include the provisions for all materials, stores, labour, process, operations and requirements detailed in particular specifications irrespective of whether these appear as specific items or not in the Schedule A.

(b) The rate quoted shall also include transportation of equipment upto work site including loading/unloading.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

SPECIAL CONDITIONS CONTD

24. APPOINTMENT OF ARBITRATOR IN CASE OF CONTRACT AGREEMENTS TO BE EXECUTED BETWEEN BRO AND GOVT OF INDIA UNDERTAKINGS/ ENTERPRISES.

In the event of any dispute or difference between the parties hereto, such dispute of difference shall be resolved amicably by mutual consultation or through the good offices of empowered agencies of the Government. In the event of any such dispute or differences relating to the interpretation and application of the provisions of contracts where such resolution is not possible then the unresolved dispute or differences shall be referred by either party to the Arbitration of one of the Arbitrators in the department of Public Enterprises to be nominated by the Secretary to the Government of India In charge of the Bureau of Public Enterprises, and in such case the **Arbitration and Conciliation Act** shall not be applicable to the arbitration under this clause. The award of the Arbitrator shall be binding upon both the parties in the dispute. Provided, however, any party, aggrieved by such award, may make a further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law & Justice, Govt. of India. Upon such reference the dispute shall be decided by the Law Secretary or the Special Secretary/Additional Secretary when so authorized by the Law Secretary, whose decision shall bind the parties finally and conclusively. The parties to the dispute will share equally the cost of arbitration as intimated by the Arbitrator.

25. MEASUREMENT

Measurements pertaining to the work completed under this contract will be recorded and signed in the measurement book (IAFW-2261) by the Junior Engineer after taking in to account that the required laboratory tests have been done as per the limits stipulated and as per the frequencies laid down in the "Particular Specifications" of this contract agreement and MORTH Specifications for Road and Bridge Works (Latest revision) and connected documents thereof and test results are found satisfactory and proper records are maintained.

- (a) The measurement recorded by the Junior Engineer shall be 100% checked and signed by the Engineer-in-Charge.
- (b) 25% test check will be carried out by OC Contract on each day of measurement by the Engineer-in-Charge.
- (c) 5% test check will be carried out by the Cdr Task Force before making payment to the Contractor.
- (d) The measurements should also be signed by the contractor as token of acceptance of the measurement.
- (e) In case of discrepancies in arriving out work done details, the decision of the Accepting Officer will be final and binding for both the parties.

26. ACCEPTANCE OF WORK DONE

The Engineer-In-Charge shall exercise control over the quality of materials and work done by carrying out tests for the specified properties as per frequencies given in particular specifications and specifications of MORTH (Ministry of Road Transports and Highways) for Roads And Bridge (latest revision).

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

27. -BLANK-

28. -BLANK-

29. **RECORD/CONSUMPTION OF MAJOR CONSTRUCTION STORES / MATERIALS**

(a) (i) For the purpose of keeping a record of Major Construction Stores like **Cement, Bitumen, Bitumen Emulsion, Antistripping Agent, Warm Mix Additives Steel and filler materials** consumed in works, the contractor shall maintain a pucca bound register in the form approved by the Engineer-in-Charge/OC Contract showing daily quantity used in works. The register shall be signed daily by the contractor's representative and the Engineer-in-Charge/OC Contract in token of their verification of its correctness. The check will not, however, absolve the contractor of his responsibility to justify the consumption of bitumen at the time of finalization of his work.

(ii) The register shall be kept at site in the safe custody of the contractor during progress of the work and shall, on demand, be produced for verification of inspecting officers.

(b) (i) The quantity of materials such as paints, water proofing compound and the like as directed by the Engineer-in-Charge (the quantity of which cannot be checked after incorporation in the works), shall be recorded in the register and signed by the contractor and the Engineer-in-Charge as a check to ensure that the required quantity has been brought to site for incorporation in the work.

(ii) Materials brought to site shall be stored as directed by the Engineer-in-Charge in Measurement Book and shall be suitably marked for identification.

(iii) The contractor shall, on demand produce the OC original receipted vouchers in respect of the supplies. Vouchers so produced shall be verified and stamped by Engineer-in-Charge indicating contract number. The contractor shall ensure that the materials are brought to site in original sealed containers/packing, bearing manufacturer's marking except in the case of the requirement of materials(s) being less than smallest packing.

(iv) Contractor shall produce original vouchers from the manufactures and/ or their authorized agents for the full quantity of the following materials, as applicable as a prerequisite before submitting for payment for any advances on account of the work done and/or materials collected in accordance with condition 64 of General Condition of Contracts IAFW-2249.

(a) Cement / Lime.

(b) Steel items.

(c) Bitumen.

(d) Paint

(e) LDO

30. **PAYMENT**

Payment to the parties will be made in INR in the following manner: -

(a) No advance payment will be made to the contractor against any material if not properly safeguarded against loss / damage due to natural calamities / theft. (Condition 64 of IAFW-2249 shall be deemed amended to this extent).

(Signature of the Contractor)

EE (C)

SW

For Accepting Officer

SPECIAL CONDITIONS (CONTD)

- (b) No payment shall be made for any rejected work
- (c) Taxes (Income tax, GST, Labour Cess etc) shall be deducted at source from the payment due to contractors as per prevailing laws / statutory orders and TDS certificate shall be issued to the contractor.
- (d) All payments will be made by e-payment / account payee cheque.

31. CO-OPERATION WITH OTHER AGENCIES

The contractor shall permit free access and generally afforded reasonable facilities to other agencies or departmentally workmen engaged by the Govt to carry out their part of the work, is any, under separate arrangements.

32. SUPPLY OF COLOUR RECORD PHOTOGRAPHS, ALBUMS AND VIDEO CDs

Contractor shall provide/supply of colour record photographs, Album and video CDs at various stages/facts of the work without any extra cost as per clause 121 of MoRT&H specification for road and bridge works (Fifth Revision).

33. FIELD LABORATORY : To maintain proper quality control at site, contractor shall establish adequately equipped field laboratory without any extra cost. The following minimum testing equipments shall be provided in field laboratory:-

- (a) Electrically operated, thermostatically controlled oven range upto 200⁰C sensitivity 1⁰C.
- (b) Balance 20 kg capacity self indicating type.
- (c) Water bath-electrically operated and thermostatically controlled with adjustable shelves, sensitivity 1⁰C.
- (d) Thermometers:-
 - (i) Mercury in glass –range upto 250⁰C.
 - (i) Mercury in Steel –range upto 300⁰C with 30 Cm stem
- (e) Gas Stove or electric hot plate.
- (f) Set of Sieves with lid & pan : 450 mm dia - 63mm to 75 micron.
- (g) First aid box.
- (h) AIV & Los Angeles Abrasion test apparatus.
- (j) Flakiness and Elongation test gauges.
- (k) Core cutter apparatus 10 cm dia, 10/15 cm height, complete with dolly, rammer etc.
- (l) Dry bulk density test apparatus complete.
- (m) Standard measures of 30,15,3 litres capacity along with tamping rods.
- (n) Standard weights.
- (o) Centrifuge type bitumen extractor complete with petrol/benzene.
- (p) Marshall Stability test apparatus with complete accessories.
- (q) Field density bottle along with cutting tray, Chisel, hammer and standard sand.
- (r) 3 mtr straight edge.
- (s) Camber board.
- (t) Core cutting machine with 10 cm dia diamond cutting edge.
- (u) Equipment for measuring density of WMM. DBM & AC by sand replacement method.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

34. TRAFFIC MOVEMENT

Contractor shall ensure that no hindrance to traffic movement shall occur during execution of work. However, if the traffic movement is disrupted due to land slide or any other unforeseen reason, then contractor shall make all efforts to restore traffic movement within time as directed by the OC Contract/Engineer-in-Charge. If contractor is unable or unwilling to restore traffic movement, Engineer-in-Charge may take action as per condition 8 of IAFW-2249. Contractor shall immediately intimate regarding closure of the road to Engineer-in-Charge and local administrative authorities.

35. VENUE OF ARBITRATION: Place of arbitration hearing shall be fixed by sole Arbitrator.

36. DEFECT LIABILITY PERIOD (Refer Condition 46 of IAFW 2249).

Defect Liability period shall be **thirty six calendar months** irrespective of what is specified in Condition 46 of IAFW 2249. Performance Guarantee of **10% of contract sum (Amended vide HQ DGBR letter No. 24556/सी.स.म./दन्तक/सामान्य/92/ई8 dated 25 Nov 2021)** as submitted in terms of Condition 19 of IAFW-2249 shall be retained till expiry of defect liability period and shall be refunded to the contractor after the expiration of defect liability period provided always that the contractor shall first have been paid the final bill and have rendered a No-demand certificate (IAFA-451) in terms of condition 68 of IAFW-2249.

38. CONCILIATION

1. Conciliation shall be conducted as laid down u/s 61 to 81 of Arbitration and Conciliation Act 1996 (Part III) unless specified otherwise here-in-after.

38.1.1 The scope of conciliation shall be restricted to the following types of disputes with financial limits as indicated therein: -

- (a) Disputes relating to levy of compensation for delay in completion, actual amount of compensation.
- (b) Disputes relating to technical examination of works.
- (c) Disputes relating to interpretation of the provisions of the contract with reference to their application to parties.
- (d) Disputes relating to non return of Schedule 'B' stores over-issued to contractor.
- (e) Disputes relating to assessment of loss/damage occurred in executed work only (and not for contractor's material & V/E/P) due to natural calamities.
- (f) Any other disputes having fair chances of being resolved by conciliation and considered fit to be conciliated by the parties.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

38.2 COMMENCEMENT OF CONCILIATION PROCEEDINGS

38.2.1 The party initiating conciliation shall send to the other party a written invitation to conciliate, briefly identifying the subject of the dispute.

38.2.2 Conciliation proceedings shall commence when the other party accepts in writing the invitation to conciliate.

38.3 Number of Conciliators

38.31 There shall be a sole conciliator.

38.4 Appointment of Conciliator

38.4.1 All disputes brought out in Para 1.1.1 (a) to (f) above shall be referred to the Sole Conciliator viz Serving Officer not below the rank of Superintending Engineer having degree in Engineering or equivalent to be appointed by the concerned ADGBR or in his absence the Officer Officiating as ADGBR specifically delegated by the ADGBR in writing.

38.5 STATUS OF EFFECT OF SETTLEMENT AGREEMENT

38.5.1 The settlement agreement signed by the parties as a result of conciliation proceedings shall have the same status and effect as it is an arbitral award on agreed terms.

39. DISPUTE RESOLUTION BOARD (DRB) APPLICABLE FOR CONTRACTS OF VALUE MORE THAN Rs.10 crore.

(a) During execution of this works or after completion or after determination/cancellation/termination of the contract all disputes between the parties to contract arising out of the contract (except those for which decision of Accepting Officer or any other officer is expressed to be final and binding). Including any disagreement by either party with any action, inaction, opinion, instruction, certificate or valuation by the Accepting Officer or his nominee, the matter in dispute shall, in the first place be referred to the Dispute Resolution Board (DRB). In case of disagreement with the decision of such DRB, any party may invoke arbitration clause.

(b) The constitution of the DRB shall be a three member body as under:-

(a) Chairman : DDG of the concerned ADGBR. Where DDG is not posted in the ADGBR, any other senior level Col/Director posted in ADGBR shall be nominated by ADGBR at his sole discretion.

(a) Member 1 }
(b) Member 2 } Col/Director rank Officers of ADGBR or of any other
CE (Project) be nominated by ADGBR

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

- (c) The name of Chairman and members shall be notified by the Accepting Officer within one month of the date of acceptance of Contract.
- (d) Once the DRB is constituted the members and Chairman shall disclose in writing their neutrality and impartiality about any personal interest in the work.
- (e) The dispute shall be referred to the Chairman of DRB by the concerned party after giving notice to the other party for invoking of this clause.
- (f) The DRB shall decide the dispute in accordance with the terms of the Contract, principle of natural justice, equity and fair play.
- (g) The DRB may fix oral hearing at a place, date and time as decided by the Chairman.
- (h) The requisite administrative support to the DRB shall be provided by the Accepting Officer.
- (i) All the contract documents pertaining to the case shall be provided by the Accepting Office for reference by the DRB.
- (j) DRB shall give its decision on the disputes within three months of notice from any party invoking the DRB clause. This period can be extended by one month with the consent of the parties.
- (k) All the decisions given by the DRB shall be by majority and such decisions shall be communicated in writing by Chairman to the parties.
- (l) If the decision of the DRB is not to the satisfaction of either party or if the DRB fails to give decision within the laid down time either party shall indicate his reservations on the decision to Accepting Officer within 30 days of such decision and to refer that dispute for arbitration.
- (m) It shall be mandatory for the party invoking arbitration on any particular dispute to have first exhausted the remedy provided under the DRB clause for that particular dispute.
- (n) The mandate of the DRB shall terminate on completion of one year from the date of completion/determination/cancellation/termination of the contract.
- (o) If any member or Chairman of the DRB is unable to function due to any reason whatsoever, or he resigns his appointment, concerned ADGBR shall fill the vacancy so caused within 125 days of happening of such vacancy.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

- (p) Any dispute referred to the DRB and having been decided by the DRB and not objected to by either party within 30 days shall attain finality and shall not be referable to arbitration.
- (q) Accepting Officer shall ensure implementation of the decisions of the DRB dwhich attain finality, i.e. except those which are objected by him or by contractor within 30 days as per Para 2 above.
- (r) Findings and decision of DRB shall be admissible as evidence, to the extent permissible as per law, in the subsequent Arbitration and/ or litigation.
- (s) DRB Chairman/member shall not in any case, be liable to be called as witness or to produce any evidence in any Arbitration or departmental proceedings of any kind.
- (t) During execution of work the disputes may be referred to the DRB as per the requirement of each party after having exhausted the decision making process provided in the contracts. In case of completion of work or after determination/cancellation/termination of the contract all the disputes including payment/non-payment/delay in final bill shall be simultaneously referred to the DRB within six months of completion/determination/cancellation/termination of contract.
- (u) The department case before the DRB shall be presented by Accepting Officer himself and/ or Dir (Contract) of CE Project assisted by Task Force Commander and his SW, OC RCC/BCC and any other officer and legal counsel nominated by Accepting Officer. The Contractor may present his case by himself and/ or by his nominated reps & authorized legal/technical counsel.

40. ARBITRATION (REFER CLAUSE 70 OF CONDITION OF CONTRACT OF IAFW-2249)

All disputes or differences arising as aforementioned, other than those for which the decision of the Accepting Officer or any other person is by the contract expressed to be final and binding shall be referred to sole arbitrator under condition No 70 of General Conditions of contract IAFW-2249 after written notice by either party of the contract to the other of them. In addition to above Arbitration and conciliation (Amendment) Act 2015 will also prevail.

41. LEGAL JURISDICTION: Legal jurisdiction for this contract agreement shall be “**Courts at Siliguri/Kolkata in the State of West Bengal**”.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

42. HIRING CHARGES OF LAND: Payment of rent for road side land if any where crusher and HMP plants will be installed based on the requirement of Daily works will be payable by Contractor and this will not be reimbursable by the Deptt.

43. CONTRACT LABOUR (R&A) ACT 1970

The contractor shall get himself registered with Asst Labour Commisiioner, Siliguri as required under contract labour (Regulation and Abolition) Act 1970. If he does not fall within the purview of said act, he shall obtain a no objection certificate from ALC, Jalpaiguri to above effect. A copy of the certificate of registration or the no objection certificate (as the case may be) shall be submitted by him to the Accepting Officer within 15 days of the award of the work. In the event of his non-compliance, the contractor shall be liable for punitive action under CL (R&A) Act 1970.

44. LOSS OR DAMAGE ON ACCOUNT OF ENEMY ACTION

(a) If as a result of enemy action, the contractor suffers any loss or damage, the Government shall reimburse to the contractor such loss or damages, to the extend and in the manner herein after provided:-

(i) The loss suffered by him on account of any damage or distruction of his equipment (as defined in condition 11 (2) above), the amount of losses assessed by the Accepting Officer of the contract on this account shall be final and binding.

(ii) Compensation paid by him under any law for the time being in force to any workmen employed by him for any injury caused to him or the workmen's legal successor for loss of the workmen's life.

(b) No requirement shall be made nor shall any compensation be payable under the above provisions unless the contractor had taken Air Defence Precautions ordered in writing by OC concerned or in the absence of such orders, reasonable precautions. No re-imburement shall be made nor shall any compensation be payable for any equipments not laying on the site of work at the time of enemy action.

45. REGISTRATION FEE/TRADE TAX/INCOME TAX ETC.

Tendered rates/amount shall also be deemed to include the payment of all taxes like Registration fee, Trade Tax, Income Tax and other taxes/levies to be paid to the Govt of India/Royal Govt of Bhutan already in force and as may be modified from time to time. The contractor may ascertain full details on this respect from the concerned department(s).

1

46. ADJUSTMENT OF TAX CONSEQUENT UPON AMENDMENT TO CONSTITUTION

The tendered rate shall also be inclusive of all statute levies and State / Union Territory / shall tax on works contract payable under the respective statutes pursuant to the constitution stipulated by the tenderers regarding sales tax on works contracts will not be considered and such tender will be liable for reject

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

47. ESCALATION:- No claim of reimbursement in increase of labour wages, cost of POL and materials is admissible under this contract including extended period, if any.

48. INCOME TAX:- Indian Income Tax @ 2% and BCT (@ 3% for Indian Contractors and @ 2% for Bhutanee Contractors) will be deducted at source as applicable.

49. DEDUCTION OF TAX AT SOURCE:- Indian Income tax and BCT shall be deducted at source as applicable

50. REGISTRATION:- Contractor is required to get his firm registered with GST and Asst Labour Commissioner of the area under Contract Labour (R&A) Act and Building and other construction workers Act. A Copy of valid registration certificate issued will be submitted to OC Contract while processing RARs / Bills.

51. MANDATORY REQUIREMENT FOR MAKING PAYMENTS: E-PAYMENT THROUGH NEFT/RTGS/ECS/EBS (THIS SUPERSEDES CONDITION 66 OF GENERAL CONDITIONS OF CONTRACT OF IAFW-2249.

51.1 All payment will be made through E-payment and hence tenderers must furnish NEFT Form duly signed by the Bank Authorities.

Appendix-A to special conditions No 51

NEFT / RTGS MANDATE FORM

1.	Name of Firm / contractor as per account in the Bank	
2.	Beneficiary's Account Number (As appearing on the Cheque Book)	
3.	Name of Bank where a/c is held	
4.	Name of Branch	
5.	Address of Branch	
6.	Telephone No. of Branch	
7.	IFSC Code of Branch	
8.	9-digit MICR Code Number of the Bank & Branch	
9.	E-mail ID of Contractor	

Note:- Please attach a blank cancelled cheque for verification of the above particulars.

I, hereby, declare that the particulars given above are correct and complete. If the transaction is delayed or not effected due to incomplete or incorrect information of the bank details, I will not hold the payment releasing authority responsible for it.

Dated:

Signature of the Contractor (Seal)

CERTIFICATE BY BANK

Certified that the particulars furnished above are correct as per our records.

Seal of Bank

(Signature of the branch manager of the Bank)

Dated :

(Signature of the Contractor)

EE (C)

SW

For Accepting Officer

SPECIAL CONDITIONS (CONTD)

Annexure-I to special conditions

FORMAT FOR BANK GUARANTEE FOR ADVANCE PAYMENT

From:
Bank _____

To
The President of India
Sir,

1. With reference to contract Agreement No _____ concluded between the president of India, hereinafter referred to as "The Government" and M/S _____ hereinafter referred to as the "the contractor" for _____ as detailed in the above contract agreement hereinafter referred to as "the said contract" and in consideration of the Government having agreed to make an advance payment in accordance with the terms of the said contract to the said contractor, we the _____ bank, hereinafter call 'the Bank' hereby irrevocably undertake and guarantee to you that if the said contractor would fail to provide works in accordance with the terms & conditions of the said contract for any reason whatsoever or fail to perform the said contract in any respect or should whole or part of the said on account payments at any time become repayable to you for any reason whatsoever, we shall, on demand and without demur pay to you all and any sum up to a maximum of Rs. _____ (Rupees _____ only) paid as advance to the Contractor in accordance with the provisions contained in clause _____ of the said contract.

2. We further agree that the Government shall be the sole judge as to whether the contract has failed to provide works in accordance with the terms & conditions of the said contract or has failed to perform the said contract in any respect or the whole or part of the advance payment made to contractor has become repayable to the Government and to the extent and monetary consequences thereof by the Government.

3 We further hereby undertake to pay the amount due and payable under this Guarantee without any demur merely on a demand from the Government stating the amount claimed. Any such demand made on the Bank shall be conclusive and binding upon us as regards the amounts due and payable by us under this Guarantee and without demur, However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs _____ Rupees _____ only).

4. We further agree that the Guarantee herein contained shall remain in full force and effect for a period upto _____ (03 months+due date of recovery of advance) unless the Government in his sole discretion discharges the Guarantee earlier.

5. We further agree that any change in the constitution of the Bank or the constitution of the contractor shall not discharge our liability hereunder

6. We further agree that the Government shall have that fullest liberty without affecting in any way our obligations hereunder with or without our consent or knowledge to vary any of the terms and conditions of the said contract or extend the time of development/delivery from time to time or to post pone for any time or from time to time any of the powers exercisable by the Government against the contractor and either to forebear or enforce any of the terms and conditions relating to the said contract and we shall not be relieved from our liability by reason of any such variation or any indulgence or for bearance shown or any act omission on the Government or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of so relieving us.

7. We lastly undertake not to revoke the Guarantee during the currency of the above said contract except with the prior consent of the Government in writing.

Yours faithfully,

Place: _____

Date : _____

For _____ Bank
(Authorised Attorney)
Seal of Bank

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

PARTICULAR SPECIFICATIONS

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINATORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

SCOPE OF WORK : The scope of work shall consist of Surfacing works. All materials to be used, all methods adopted and all works performed shall be strictly in accordance with the requirements of the specifications mentioned herein.

GENERAL

The specifications contained in Ministry of Road Transport and Highways "Specifications for Road and Bridge Works (Fifth Revision)" published by Indian Road Congress during Apr 2013 (hereinafter referred to as MoRT&H Specifications) shall generally be followed.

1. SURFACING WORKS

1.1 CONTROL OF ALIGNMENT, LEVEL AND SURFACE REGULARITY

1.1.1 General

All works performed shall conform to the lines, grades, cross sections and dimensions shown on the drawings or as directed by the Engineer-in-Charge/OC Contract, subject to the permitted tolerances described herein-after.

1.1.2 Horizontal Alignment

Horizontal alignments shall be reckoned with respect to the centre line of the carriageway as shown on the drawings. The edges of the carriageway as constructed shall be correct within a tolerance of ± 10 mm there from. The corresponding tolerance for edges of the roadway and lower layers of pavement shall be ± 25 mm.

1.1.3 Surface Levels

- i) The levels of the subgrade and different pavement courses as constructed, shall not vary from those calculated with reference to the longitudinal and cross-profile of the road shown on the drawings or as directed by the Engineer-in-Charge/OC Contract beyond the tolerances mentioned in Table 900-1 MoRT&H specifications for road and bridge works (Fifth Revision).

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

PARTICULAR SPECIFICATIONS(Contd..)
Table 900-1. Tolerances in surface levels

1.	Subgrade	± 20 mm
2.	Sub-base	
	(a) Flexible pavement	± 10 mm
	(b) Concrete pavement	± 6 mm
3.	Base-course for flexible pavement	
	(a) Bituminous Base/Binder course	± 6 mm
	(b) Granular	
	(i) Machine laid	± 10 mm
	(ii) Manually laid	± 15 mm
4.	Wearing course for flexible pavement	
	(a) Machine laid	± 6 mm
	(b) Manually laid	± 10 mm

ii) Provided, however, that the negative tolerance for wearing course shall not be permitted in conjunction with the positive tolerance for base course, if the thickness of the former is thereby reduced by more than the following limits :-

- (a) 4 mm for bituminous wearing course of thickness 40 mm or more.
- (b) 3 mm for bituminous wearing course of thickness less than 40 mm.

iii) For checking compliance with the above requirement for subgrade, sub-base and base courses, measurements of the surface levels shall be taken on a grid of points placed at 6.25 m longitudinally and 3.5 m transversely. For any 10 consecutive measurements taken longitudinally or transversely, not more than one measurement shall be permitted to exceed the tolerance as above, this one measurement being not in excess of 5 mm above the permitted tolerance.

iv) For checking the compliance with the above requirement for bituminous wearing courses and concrete pavements, measurements of the surface levels shall be taken on a grid of points space at 6.25 mm along the length and at 0.5 mm from the edges and at the centre of the pavement. In any length of pavement, compliance shall be deemed to be met for the final road surface, only if the tolerance given above is satisfied for any point on the surface.

1.1.4 Surface Regularity of Pavement Courses

i) The longitudinal profile shall be checked with a 3 metre long straight edge/moving straight-edge as desired by the Engineer-in-Charge/OC Contract at the middle of each traffic lane along a line parallel to the centre line of the road.

ii) The maximum permitted number of surface irregularities shall be as per Table 900-2 MoRT&H specifications for road and bridge works (Fifth Revision).

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EE (C)
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For Accepting Officer

PARTICULAR SPECIFICATIONS(Contd..)

Surfaces of carriageways and paved shoulders					Surfaces of layby, service areas and all bituminous base courses			
Irregularity	4 mm		7 mm		4 mm		7 mm	
Length (m)	300	75	300	75	300	75	300	75
National Highways/ Expressways	15	9	2	1	40	18	4	2
Roads of lower category	40	18	4	2	60	27	6	3

iii) The maximum allowable difference between the road surface and underside of a 3 m straight-edge when placed parallel with, or at right angles to the centre line of the road at points decided by the Engineer-in-Charge/OC Contract shall be:

For pavement surface (bituminous and cement concrete)	3 mm
for DBM/bituminous base courses	6 mm
for granular sub base/base course	8 mm
for sub-bases under concrete pavements	10 mm
for subgrade	15 mm

1.1.5 Rectification

Where the surface regularity of subgrade and the various pavement courses fall outside the specified tolerances in Clause 902.4 of MoRT&H specifications for road and bridge works (Fifth Revision), the Contractor shall be liable to rectify these in the manner described below and to the satisfaction of the Engineer-in-Charge/OC Contract.

- (i) **Subgrade** : Where the surface is high, it shall be trimmed and suitably compacted. Where the same is low, the deficiency shall be corrected by scarifying the lower layer and adding fresh material and recompacting to the required density. The degree of compaction and the type of material to be used shall conform to the requirements of Clauses 305 of MoRT&H Specifications for road and Bridge works (Fifth Revision).
- (ii) **GSB/SUB BASE** : Same as at (i) above, except that the degree of compaction and the type of material to be used shall conform to the requirements of Clauses 401 of MoRT&H Specifications for road and Bridge works (Fifth Revision).
- (iii) **WMM/Base** : Where the surface is high or low, the top 75 mm shall be scarified, reshaped with added materials as necessary and recompacted as per Clause 406 of MoRT&H Specifications for road and Bridge works (Fifth Revision).

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

PARTICULAR SPECIFICATIONS(Contd..)

- (iv) **Bituminous Constructions** : For bituminous construction other than wearing course, where the surface is low, the deficiency shall be corrected by adding fresh materials over a suitable tack coat, if needed, and recompacting as per specifications. Where the surface is high, the extra thickness in the affected layer shall be removed and replaced with fresh material and compacted to specifications.

For wearing course, where the surface is high or low, the full depth of the layer shall be removed and replaced with fresh material and compacted to specifications. In all cases where the removal and replacement of a bituminous layer is involved, the area treated shall not be less than 5 m in length and not less than 3.50 m in width.

2.2 WET MIX MACADAM

2.2.1 Scope: This work shall consist of laying and compacting clean, crushed, graded aggregate and granular material, premixed with water, to a dense mass of compacted thickness on a prepared subgrade/sub-base/base or existing pavement as the case may be in accordance with the requirements of these specifications. The material shall be laid in three layers as necessary to lines, grades and cross-sections shown on the approved drawings or as directed by the Engineer-in-Charge/OC Contract.

2.2.2 Materials

2.2.2.1 Aggregates

2.2.2.1.1 Physical requirements: Coarse aggregates shall be crushed stone. If crushed gravel/shingle is used, not less than 90 % by weight of the gravel/shingle pieces retained on 4.75 mm sieve shall have at least two fractured faces. The aggregates shall conform to the physical requirements set forth in Table 400-12 of MoRT&H Specifications for Road and Bridge Works (Fifth Revision).

2.2.2.1.2 If the water absorption value of the coarse aggregate is greater than 2%, the soundness test shall be carried out on the material delivered to site as per IS : 2386 (Part-5).

Table 400-12 : Physical Requirements of Coarse aggregates for Wet Mix Macadam for sub-base/Base Course

S./No.	Test	Test Method	Requirements
1.	Los Angeles Abrasion value or	IS : 2386 (Part-4)	40 % (Max)
	* Aggregate impact value	IS : 2386 (Part-4) or IS : 5640	30 % (Max)
2.	Combined Flakiness and Elongation indices (Total)	IS : 2386 (Part-I)	30 % (Max)

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

PARTICULAR SPECIFICATIONS(Contd..)

* To determine this combined proportion, the flaky stone from a representative sample should first be separated out. Flakiness index is weight of flaky stone metal divided by weight of stone sample. Only the elongated particles be separated out from the remaining (non- flaky) stone metal. Elongation index is weight of elongated particles divided by total non-flaky particles. The value of flakiness index and elongation index so found are added up.

2.2.2.1.3 Grading requirements : The aggregates shall conform to the following grading as per Table 400-13 of MoRT&H Specifications for Road and Bridge Works (Fifth Revision):-

IS Sieve Designation	% age bu weight passing the IS Sieve
53.00 mm	100
45.00 mm	95-100
26.50 mm	-
22.40 mm	60-80
11.20 mm	40-60
4.75 mm	25-40
2.36 mm	15-30
600.00 micron	8-22
75.00 micron	0-5

Material finer than 425 micron shall have Plasticity Index (PI) not exceeding 6.

The final gradation approved within these limits shall be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve or vice versa.

2.2.3 Job Mix Frmula : The contractor shall submit to the Engineer-in-Charge/OC Contract for approval at least 21 days before the start of the work, the job mix formula shall be approved by the Commander Contract, the job mix formula proposed to be used for use in the work and shall give the following details :

- (a) Source and location of all materials.
- (b) Proportions of all materials expressed as follows where each is Applicable
 - (i) Coarse/fine aggregate as percentage by weight of total aggregate.
 - (ii) Water as percentage by weight of total mix.
- (c) A single definite percentage passing each sieve for the mixed aggregate.

2.2.4 Construction Operations

2.2.4.1 Preparation of base : The surface of the sub-base/base to receive the Wet Mix Macadam course shall be prepared to the specified grade and camber and cleaned of dust, dirt and other extraneous material. Any ruts or soft yielding places shall be corrected in an approved manner and rolled until firm surface is obtained.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

PARTICULAR SPECIFICATIONS(Contd..)

2.2.4.2 Where the WMM is to be laid on an existing metalled road, damaged area including depressions and potholes shall be repaired and made good with the suitable material. The existing surface shall be scarified and re-shaped to the required grade and camber before spreading the coarse aggregate for WMM.

2.2.4.3 As far as possible, laying WMM course over existing bituminous layer may be avoided since it will cause problems of internal drainage of the pavement at the interface of two courses. It is desirable to completely pick out the existing thin bituminous wearing course where WMM is proposed to be laid over it.

2.2.4.4 Provision of lateral confinement of aggregates : While constructing wet mix macadam, arrangement shall be made for the lateral confinement of wet mix. This shall be done by laying materials in adjoining shoulders along with that of wet mix macadam layer and following the sequence of operations described in Clause 404.3.3 of MoRT&H Specifications for Road and Bridge Works (Fifth Revision).

2.2.4.5 Preparation of Mix : Wet Mix Macadam shall be prepared in an approved mixing plant of suitable capacity for controlled addition of water and forced/positive mixing arrangement like pugmill or pan type mixer of concrete batching plant. The plant shall have the following features:-

- i) For feeding aggregates-three/four bin feeders with variable speed motor.
- ii) Vibrating Screen for removal of oversize aggregates.
- iii) Conveyor Belt.
- iv) Controlled system for addition of water.
- v) Forced/positive mixing arrangement like pug-mill or pan type mixer.
- vi) Centralised control panel for sequential operation of various devices and precise process control
- vii) Safety devices.

Optimum moisture for mixing shall be determined in accordance with IS : 2720 (part-8) after replacing the aggregate fraction retained on 22.40 mm sieve with material of 4.75 mm to 22.40 mm size. While adding water, due allowance should be made for evaporation losses. However, at the time of compaction, water in the wet mix should not vary from the optimum value by more than agreed limits. The mixed material should be uniformly wet and no segregation should be permitted.

2.2.4.6 Spreading of Mix : Immediately after mixing, the aggregates shall be spread uniformly and evenly upon the prepared sub-grade/sub-base/base in required quantities. In no case shall these be dumped in heaps directly on the areas where these are to be laid nor shall their hauling over a partly completed stretch be permitted. The mix be spread by a paver finisher. The paver finisher shall be self-propelled of adequate capacity with following features :

- (i) Loading hoppers and suitable distribution system, so as to provide a smooth uninterrupted material flow for different layer thickness from the tipper to the screen
- (ii) Hydraulically operated telescopic screed for paving width upto 8.5 m and fixed screed beyond this. The screed shall have tamping and vibrating arrangement for initial compaction to the layer.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

PARTICULAR SPECIFICATIONS(Contd..)

(iii) Automatic leveling control system with electronic sensing device to maintain matthickness and cross slope of mat during laying procedure.

2.2.4.7 The surface of the aggregate shall be carefully checked with templates and all high or low spots remedied by removing or adding aggregate as may be required. The layer may be tested by depth blocks during construction. No segregation of larger and fine particles should be allowed. The aggregates as spread should be of uniform gradation with no pockets of fine materials.

2.2.4.8 Compaction : After the mix has been laid to the required thickness, grade crossfall/camber the same shall be uniformly compacted, to the full depth with suitable roller. If the thickness of single compacted layer does not exceed 100 mm, a smooth wheel roller of 80 to 100 kN weight may be used. For a compacted single layer upto 200 mm, the compaction shall be done with the help of vibratory roller of minimum static weight 80 to 100 kN with an arrangement for adjusting the frequency and amplitude. An appropriate frequency and amplitude may be selected. The speed of the roller shall not exceed 5 Km/h.

2.2.4.9 In portions having unidirectional cross fall/superelevation, rolling shall commence from the lower edge and progress gradually towards the upper edge. Thereafter, roller should progress parallel to the centre line of the road, uniformly overlapping each preceding track by at least one third width until the entire surface has been rolled. Alternate trips of the roller shall be terminated in stops at least 1 m away from any preceding stop.

2.2.4.10 In portions in camber, rolling should begin at the edge with the roller running forward and backward until the edges have been firmly compacted. The roller shall then progress gradually towards the centre parallel to the centre line of the road uniformly overlapping each of the preceding track by at least one third width until the entire surface has been rolled.

2.2.4.11 Any displacement occurring as a result of reversing of the direction of a roller or from any other cause shall be corrected at once as specified and/or removed and made good.

2.2.4.12 Along forms, kerbs, walls or other places not accessible to the roller, the mixture shall be thoroughly compacted with mechanical tampers or a plate compactor. Skin patching of an area without scarifying the surface to permit proper bonding of the added materials shall not be permitted.

2.2.4.13 Rolling should not be done when the subgrade is soft or yielding or when it causes a wave-like motion in the sub-base/base course or subgrade. If irregularities develop during rolling which exceed 12 mm when tested with a 3 metre straight edge, the surface should be loosened and premixed materials added or removed as required before rolling again so as to achieve a uniform surface conforming to the desired grade and crossfall. In no case shall the use of unmixed materials be permitted to make up the depressions.

2.2.4.14 Rolling shall be continued till the density achieved is at least 98% of the maximum dry density for the materials as determined by the method outlined in IS : 2720 (Part-8).

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

PARTICULAR SPECIFICATIONS(Contd..)

2.2.4.15 After completion, the surface of any finished layer shall be well-closed, free from movement under compaction equipment or any compaction planes, ridges, cracks and loose materials. All loose, segregated or otherwise defective areas shall be made good to the full thickness of the layer and re-compacted.

2.2.5 Setting and drying : After final compaction of wet mix macadam course, the road shall be allowed to dry for 24 hours.

2.2.6 Opening to Traffic : No vehicular traffic shall be allowed on the finished wet mix macadam surface. Construction equipment may be allowed with the approval of the Engineer-in-Charge/OC Contract.

2.2.7 Surface Finish and Quality Control of Work:

2.2.8 Surface Evenness : The surface finish of construction shall conform to the requirement of Clause 902 of MoRT&H Specifications for Road & Bridge Works (Fifth Revision)

2.2.9 Quality control : Control on the quality of materials and works shall be exercised by the Engineer-in-Charge/OC Contract in accordance with Section 900 of MoRT&H Specifications for Road & Bridge Works (Fifth Revision).

2.2.10 Rectification of Surface Irregularity : Where the surface irregularity of the wet mix macadam course exceeds the permissible tolerances or where the course is otherwise defective due to subgrade soil getting mixed with the aggregates, the full thickness of the layer shall be scarified over the affected area, re-shaped with added premixed material or removed and replaced with fresh premixed material as applicable and re-compacted in accordance with Clause 406.3 of MoRT&H Specifications for Road & Bridge Works (Fifth Revision). The area treated in the aforesaid manner shall not be less than 5 m long and 2 m wide. In no case shall depressions be filled up with unmixed and upgraded materials or fines.

2.2.11 Arrangement for Traffic : During the period of construction, arrangements for traffic shall be done as per Clause 112 of MoRT&H Specifications for Road & Bridge Works (Fifth Revision).

2.2.12 Rate

2.2.12.1 The contract unit rate for the work shall be payment in full for carrying out the required operations including all components for :-

- i) Making arrangement for traffic as per Clause 112 of MoRT&H Specifications for Road & Bridge Works (Fifth Revision) except for initial treatment to verges, shoulders and construction of diversions.
- ii) Supplying all materials to be incorporated in the work including, all royalties, fees, rents where necessary and all leads and lifts;
- iii) All labour, tools, equipments, and incidentals to complete the work to the specifications.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

PARTICULAR SPECIFICATIONS(Contd..)

- iv) Carrying out the work in part widths of the road where directed, and
- v) Carrying out all tests for quality control.

2.2.13 Measurement for Payment:-

2.2.13.1 The work shall be measured as finished work in position in “**Cubic meter**” as specified in Bill of quantity” of Bid Documents. Suitable arrangement shall be made by the contractor to facilitate measurement by the unit specified.

2.2.13.2 Contractor shall arrange labour and other tools required for taking the measurements. Contractor shall not be entitled for any extra payment on this account. In case the contractor or his accredited representative fails to report for taking joint measurements at the appointed date and time, as intimated by the Engineer-in-Charge/OC Contract in writing, the measurements shall be taken by the Engineer-in-Charge/OC Contract ex-parte without presence of contractor or his accredited representative and measurement thus taken shall be final and binding on the contractor.

2.2.14 Quality Control Tests and their minimum frequency for Wet Mix Macadam in accordance with Table 900-3 of MoRT&H Specifications for road & bridge works (Fifth Edition)

TABLE 900-3.

S/No	Type of Material	Test	Frequency (Min)
(a)	Wet Mix Macadam	i) Aggregate Impact Value	One test per 1000 m ³ of Aggregate
		ii) Grading of aggregate	One test per 200 m ³
		iii) Combined Flakiness and Elongation Index	One test per 500 m ³ of aggregate
		iv) Atterberg limits of portion of aggregate passing 425 micron sieve	One test per 200 m ³ of aggregate
		v) Density of Compacted Layer	One set of three tests per 1000 m ²

2.3 PRIME COAT OVER GRANULAR BASE

2.3.1 The work shall consists of application of a single coat flow viscosity liquid bituminous material to a porous granular surface preparatory to the superimposition of bituminous treatment or mix.

2.3.2 Choice of primer : The primer shall be cationic bitumen emulsion SS1 grade conforming to IS : 8887 of a type and grade as specified in the contract or as directed by the Engineer-in-Charge/OC Contract.

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Type of surface	Rate of Spray (kg/sqm)
WMM	0.750

2.3.3 Weather and Seasonal Limitations : Primer shall not be applied during a dust storm or when the weather is foggy, rainy or windy or when the temperature in the shade is less than 10°C. Surfaces which are to receive emulsions primer should be damp, but no free or standing water shall be present. Surface can be just wet by very light sprinkling of water.

2.3.4 Equipment : The primer shall be applied by a self-propelled or towed bitumen pressure sprayer equipped for spraying the material uniformly at specified rates and temperatures. Hand spraying shall not be allowed except in small areas, inaccessible to the distributor, or in narrow strips where primer shall be sprayed with a pressure hand sprayer, or as directed by the OC Contract/Engineer In-Charge .

2.3.5 Preparation of road surface : The granular surface to be primed shall be prepared in accordance with Clause 502.4.2 of MoRT&H specifications (Fifth Revision).

2.3.6 Application of Bituminous Primer : The bituminous primer shall be sprayed uniformly at the specified rate. The method for application of the primer will depend on the type of equipment to be used, size of nozzles, pressure at the spray bar and speed of forward movement. The Contractor shall demonstrate at a spraying trial, that the equipment and method to be used is capable of producing a uniform spray, within the tolerances specified.

2.3.7 Curing : Curing quality control of work, arrangement for traffic, measurement for payment etc shall be in conformity with Clause 502.4.4 to 502.8 of MoRT&H specifications (Fifth Revision).

2.3.8 Measurement for Payment :

2.3.8.1 Measurement for Payment: Prime coat **shall not be measured for payment** as its cost is included in cost of Dense Bituminous Macadam

2.3.8.2 Contractor shall arrange labour and other tools required for taking the measurements. Contractor shall not be entitled for any extra payment on this account. In case the contractor or his accredited representative fails to report for taking joint measurements at the appointed date and time, as intimated by the Engineer-in-Charge/OC Contract in writing, the measurements shall be taken by the Engineer-in-Charge/OC Contract ex-parte without presence of contractor or his accredited representative and measurement thus taken shall be final and binding on the contractor.

2.3.8.3 Quality Control Tests and their minimum frequency for Prime Coat in accordance with Table 900-4 of MoRT&H Specifications for road & bridge works (Fifth Edition).

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TABLE 900-4.

S/No	Type of Material	Test	Frequency (Min)
(a)	Primer Coat	i) Quality of binder	Number of samples per lot and test as per IS: 73, IS: 217 and IS: 8887 as applicable.
		ii) Binder temperature for application	At regular close intervals
		iii) Rate of spread of Binder	Three tests per day.

2.4 TACK COAT

2.4.1 The work shall consists of the application of a single coat of low viscosity liquid bituminous material to existing bituminous or primed granular surface preparatory to the superimposition of a bituminous mix when specified in the contract or as instructed by the OC Contract/Engineer-in-Charge.

2.4.2 Binder : The binder used for tack coat shall be bitumen emulsion complying with IS 8887 or suitable low viscosity paving bitumen of VG-10 grade conforming to IS:73. The type and grade of binder for tack coat shall be specified in the Contract or as directed by the OC Contract/Engineer-in-Charge.

2.4.3 Equipment : The tack coat shall be applied by a self-propelled or towed bitumen pressure sprayer, equipped for spraying the material uniformly at a specified rate. Hand spraying shall not be permitted except in small areas, inaccessible to the distributor, or narrow strips, shall be sprayed with a pressure hand sprayer, or as directed by the OC Contract/Engineer-in-Charge.

2.4.4 Preparation of Base : The surface on which the tack coat is to be applied shall be clean and free from dust, dirt, and any extraneous material, and be otherwise prepared in accordance with the requirements of Clause 501.8 of MoRT&H specifications (Fifth revision). The granular or stabilized surfaces shall be primed as per Clause 502 of MoRT&H specifications (Fifth revision). Immediately before the application of the tack coat, the surface shall be swept clean with a mechanical broom, and high pressure air jet, or by other means as directed by the OC Contract/Engineer-in-Charge.

2.4.5 Application of Tack Coat : The application of tack coat shall be at the rate specified in the Contract, and shall be applied uniformly in accordance with Clause 503.4.3 of MoRT&H specifications (Fifth Revision). Curing, quality control, arrangement of traffic and measurement for payment shall be in accordance with Clause 503 of MoRT&H specifications. Rate of application of tack coat as per Table 500-5 of MoRT&H specifications is as under :-

Type of surface	Rate of Spray of Binder in kg/Sqm
Bituminous surface	0.25
Granular surface treated with primer	0.25

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2.4.6 Measurement for payment : Tack coat shall be measured in terms of surface area of application in **square metres**.

2.4.7 Rate : The contract unit rate for tack coat shall be payment in full for carrying out the required operations including full compensation for all components listed in clause 401.7 (i) to (v) of MoRT&H specifications for road and bridge works (Fifth Revision) and as applicable to the works specified in these specifications.

2.4.8 Quality Control Tests and their minimum frequency for Tack Coat in accordance with Table 900-4 of MoRT&H Specifications for road & bridge works (Fifth Edition)

TABLE 900 - 4

S/No	Type of Material	Test	Frequency (Min)
(a)	Tack Coat	i) Quality of binder	Number of samples per lot and test as per IS: 73, IS: 217 and IS: 8887 as applicable.
		ii) Binder temperature for application	At regular close intervals
		iii) Rate of spread of Binder	Three tests per day.

2.5 DENSE BITUMINOUS MACADAM OF 60 MM CONSOLIDATED THICKNESS

2.5.1 Scope of Work The work consists of providing, laying, spreading and compaction of Dense Bituminous Macadam compacted thickness with HMP mix, including cleaning of road surface (bituminous and non bituminous), applying of primer and tack coat, laying by paver finisher and rolling to specified thickness for surfacing works as directed by Engineer-In-Charge/OC Contract as per clause 505 of MoRT&H Specifications for Road and Bridge Works-Fifth Revision.

2.5.2 Material

2.5.2.1. Bitumen The bitumen shall be viscosity graded paving bitumen complying with Indian Standard Specification, IS:73, modified bitumen complying with Clause 501.2.1 of MoRT&H Specifications for road and bridge works (Fifth Revision) or as otherwise specified in the contract. Bitumen VG-30 will be used.

2.5.2.2 Coarse Aggregates

The coarse aggregate shall consist of crushed rock crushed gravel or other hard material retained on 2.36 mm sieve. It shall be clean, hard, durable and cubical shape, free from dust and soft organic and other deleterious substances. Here the contractor's selected source of aggregates has poor affinity to bitumen, the contractor shall produce test results that with the use of anti stripping agent, the stripping value is improved to satisfy the specification requirements. The Engineer-in-Charge/OC Contract may approve such a source and as a condition for the approval of the source, the bitumen shall be treated with an approved anti stripping agent, as per the manufacturers recommendations, at the cost of the contractor. The aggregate shall satisfy the requirements specified in Table 500-8 of MoRT&H Specifications for road and bridge works (Fifth Revision).

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Where crushed gravel is proposed for use as aggregate, not less than 90 % by weight of the crushed material retained on the 4.75 mm sieve shall have at least two fractured faces.

2.5.2.3 Fine Aggregate

Fine aggregate shall consist of crushed or naturally occurring mineral material, or a combination of two, passing 2.36 mm sieve and retained on 75 micron sieve. It shall be clean, hard, durable, dry and free from dust, and soft organic and other deleterious substances. Natural sand shall not be used in the binder course.

2.5.2.4 Filler

Filler shall consist of finely divided mineral matter such as rock dust, hydrated lime or cement approved by the Engineer In-Chrg/OC Contract. The filler shall be graded within the limits indicated in Table 500-9 of MoRT&H Specifications for road and bridge works (Fifth Revision).

TABLE 500 - 9

IS Sieve (mm)	Cumulative %age passing by weight of total aggregate
0.60	100%
0.30	90 – 100%
0.075	85 – 100%

The filler shall be free from organic impurities and have a plasticity index not greater than 4. The Plasticity Index requirement shall not apply if filler is cement or lime. Where the aggregates fail to meet the requirements of the water sensitivity test in Table 500-8 of MoRT&H Specifications for road and bridge works (Fifth Revision), then 2 percent by total weight of aggregate, of hydrated lime shall be used and percentage of fine aggregate reduced accordingly.

2.5.3 Aggregate Grading and Binder Content

2.5.3.1 The combined grading of the coarse aggregates and fine aggregates and filler when tested in accordance with IS-2386 Part I (Wet sieving method) the combined aggregate grading for the particular mixture shall fall within the limit as per table 500-10 (MoRT&H Specifications, Fifth revision) shown as under for grading 2. To avoid gap grading, the combined aggregate gradation shall not vary from the lower limit on one sieve to higher limit on the adjacent sieve.

Table 500-10: Composition of Dense Graded Bituminous Macadam

Grading	2
Nominal Aggregate Size *	26.50 mm
Layer Thickness	50-75 mm
IS Sieve Designation	Percentage by weight passing
37.50	100
26.50 mm	90-100
19 mm	71-95
13.2 mm	56-80
4.75 mm	38-54
2.36	28-42
0.3 mm	7-21
0.075 mm	2-8
Bitumen content, percent by weight of total mixture – Min 4.5 % **	

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Notes:-

(*) Nominal maximum particle size is the largest specified sieve size upon which any of the aggregate is retained.

(**) Bitumen Content corresponds to specific gravity of the Aggregate being 2.7. In case aggregates have specific gravity more than 2.7, the minimum bitumen content can be reduced proportionately. Further, for regions where highest daily mean air temperature is 30°C or lower and lowest daily mean air temperature is (-) 10°C or lower, the bitumen content may be increased by 0.50 percent subject to the approval of OC Contract/Engineer-in-Charge/OC Contract-In-Charge.

2.5.3.2 Bitumen content indicated in Table 500-10 is the minimum quantity. The quantity shall be determined in accordance with Clause 505.3 of MoRT&H specifications for road & bridge works (Fifth revision).

2.5.3.3 The aggregate for Dense Bituminous Macadam shall satisfy the physical requirement set forth as per table No 500-8 (MoRT&H specifications, Fifth revision) as under:-

Property	Test	Test method	Requirements
Cleanliness	Grain size analysis	IS : 2386 Part I	Max 5% passing 0.075 mm sieve
Particle shape	Flakiness and Elongation Index (Combined)	IS : 2386 Part I	Max 35%
Strength (*)	Los Angeles Abrasion value	IS : 2386 Part IV	Max 35%
	Aggregate Impact Value	IS : 2386 Part IV	Max 27%
Durability	Soundness		
	(a) Sodium Sulphate	IS : 2386 Part V	Max 12%
	(b) Magnesium Sulphate	IS : 2386 Part V	Max 18%
Water absorption	Water absorption	IS : 2386 Part III	Max 2%
Stripping	Coating and Stripping of bitumen aggregate	IS : 6241	Minimum retained coating 95%
Water Sensitivity (**)	Retained Tensile strength	AASHTO 283	Min 80%

(*) Aggregate may satisfy requirement of either of these two tests.

(**) If the minimum retained tensile strength falls below 80 percent, use of antistripping agent is recommended to meet the minimum requirement.

2.5.4 Anti Stripping Agent

Where the proposed aggregate fails to pass the stripping test, then an approved anti stripping agent (Appendix 4 of MoRT&H specifications for road and bridge works (fifth

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revision) for details) may be added to the binder in accordance with the manufacturer's instructions. The effectiveness of the proposed anti-stripping agent must be demonstrated by the Contractor, before approval by the Engineer-in-Charge/OC Contract-in-Charge.

2.5.5 Warm Mix Additives

An approved Warm Mix Additives may be used for the work as per the provisions of IRC:SP:101-2014 and as per the directions of Engineer-in-Charge/OC Contract-in-Charge. Mixing, Laying and Rolling temperature for WMA will be as per Table 1 of IRC:SP:101-2014 as under :-

Bitumen Grade	Mix Temperature (°C)	Laying Temperature (°C)	Rolling Temperature (°C)
VG-30	130 max	115 min	90 min
VG-10	120 max	110 min	80 min

In case of special conditions including but not limited to long hauls, cold paving conditions etc. the recommendations of the WMA technology supplier shall be followed.

2.5.6 Mix Design

The bitumen content required shall be determined following the Marshall mix design procedure contained in Bituminous Institute Manual MS-2. The fines to Bitumen (F/B) ratio by weight of total mix shall range from 0.60 to 1.20.

2.5.7 Requirements for the Mix

Apart from conformity with the grading and quality requirements for individual ingredients, the mixture shall meet the requirements set out in Table 500-11 of MoRT&H specifications for road & bridge works (Fifth Revision) as under :-

Properties	Viscosity Grade Paving bitumen	Modified Bitumen		Test Method
		Hot Climate	Cold Climate	
Compction Level	75 Blows on each face of the specimen			
Minimum Stability (kN at 600 C)	9.0	12.0	10.0	AASHTO T245
Marshall flow 9mm)	2-4	2.5-4	3.5-5	AASHTO T245
Mrshall Quotient (Stability/Flow)	2-5	2.5-5		MS-2 and ASTM D2041
% air voids	3-5			
% voids Filled with Bitumen (VFB)	65-75			
Coating of Aggregate Particle	95% minimum			
Tensile Strength ratio	80% minimum			
% Voids in Mineral aggregate (VMA)	Minimum percent voids in mineral aggregate (VMA) are set out in Table 500-13			

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2.5.8 Binder Content

2.5.8.1 The binder content shall be optimized to achieve the requirements of the mix set out I Table 500-11 of MoRT&H Specifications for road and bridge works (Fifth Revision). The binder content shall be selected to obtain 4 percent air voids in the mix design. The Marshall method for determining the optimum binder content shall be adopted as described in the Bituminous Institute Manual MS-2.

2.5.8.2 Where maximum size of the aggregate is more than 26.5 mm, the modified Marshall method using 150 mm diameter specimen described in MS-2 and ASTM D 5581 shall be used. This method requires modified equipment and procedures. When the modified Marshall test is used, the specified minimum stability values in Table 500-12 of MoRT&H Specifications for road and bridge works (Fifth Revision) shall be multiplied by 2.25 and the minimum flow shall be 3 mm.

Nominal Maximum Particle Size (mm)	Minimum VMA Percent Related to Design Percentage Air Voids		
	3.0	4.0	5.0
26.50	11.0	12.0	13.0
37.50	10.0	11.0	12.0

Note : Interpolate minimum voids in the mineral aggregate (VMA) for designed percentage air voids values between those listed.

2.5.9 Job Mix Formula

2.5.9.1 The contractor shall submit to the Engineer-in-Charge/OC Contract for approval at least 21 days before the start of the work, the job mix formula shall be approved by the Commander Contract, the job mix formula proposed for use in the works, together with the following details:

- (i) Source and location of all materials.
- (ii) Proportions of all materials expressed as follows:-
 - (a) Binder type (VG-30) and percentage by weight of total mix.
 - (b) Coarse aggregate/fine aggregate/mineral filler as percentage by weight of total aggregate including mineral filler.
- (iii) A single definite percentage passing each sieve for the mixed aggregate.
- (iv) The individual gradings of the individual aggregate fraction and the proportion of each in the combined grading.
- (v) The results of mix design such as maximum specific gravity of loose mix (Gmm), compacted specimen densities, Marshall stability flow, flow air voids, VMA, VFB and related graphs and test results of AASHTO T 283 Moisture susceptibility test.
- (vi) Where the mixer is a batch mixer, the individual weights of each type of aggregate and binder per batch.

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- (vii) Test results of physical characteristics of aggregates to be used.
- (viii) Mixing temperature and compacting temperature.

2.5.9.2 While establishing the job mix formula, the contractor shall ensure that it is based on a correct and truly representative sample of the materials that will actually be used in the work and that the mix and its different ingredients satisfy the physical and strength requirements of these specifications.

2.5.9.3 Approval of the job mix formula shall be based on independent testing by the Engineer-in-Charge/OC Contract for which samples of all ingredients of the mix shall be furnished by the contractor as required by the Engineer-in-Charge/OC Contract.

2.5.9.4 The approved job mix formula shall remain effective unless and until a revised job mix formula is approved by OC Contract/Commander Contract. Should a change in the source of materials be proposed, a new job mix formula shall be forwarded by the contractor to the Engineer-in-Charge/OC Contract for approval before the placing of the material.

2.5.10 Permissible Variation in Job Mix Formula

Once the laboratory job mix formula is approved, the Contractor shall carry out plant trial to establish that the plant can produce a uniform mix conforming to the approved job mix formula. The permissible variation of the individual percentage of the various ingredients in the actual mix from the job mix formula to be used shall be within the limits as specified in Table 500-13 and shall remain within the gradation band. These variations are intended to apply to individual specimens taken for quality control tests in accordance with section 900 of MoRT&H Specifications for road and bridge works (Fifth Revision).

Table 500-13 Permissible Variations in the Actual Mix from the Job Mix Formula

Aggregate passing 19 mm sieve or larger	±8%
Aggregate passing 13.2 mm, 9.50 mm	±7%
Aggregate passing 4.75 mm	±6%
Aggregate passing 2.36 mm, 1.18 mm, 0.60 mm	±5%
Aggregate passing 0.30 mm, 0.15 mm	±4%
Aggregate passing 0.075 mm	±2%
Binder content	±0.30%
Mixing temperature	±10°C

2.5.11 Laying

2.5.11.1 Once the plant trials have been successfully completed and approved, the Contractor shall carry out laying trials, to demonstrate that the proposed mix can be successfully laid and compacted all in accordance with Clause 501 of MoRT&H Specifications for road and bridge works (Fifth Revision). The laying trial shall be carried out on a suitable area which is not form part of the works. The area of the laying trials shall be a minimum of 100 sqm of construction similar to that of the project road, and it shall be in all respects, particularly compaction, the same as the project construction, on which the bituminous material is to be laid.

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2.5.11.2 The contractor shall previously inform the Engineer-in-Charge/OC Contract of the proposed method for laying and compacting the material. The plant trials shall then establish if the proposed laying plant, compaction plant, and methodology is capable of producing satisfactory results. The density of the finished paving layer shall be determined by taking cores, no sooner than 24 hours after laying, or by other approved method. The compacted layer of Dense Graded Bituminous Macadam (DBM) shall have a minimum field density equal to or more than 92% of the density based on theoretical maximum specific gravity (Gmm) obtained on the day of compaction in accordance with ASTM D 2041.

2.5.11.3 Once the laying trials have been approved, the same plant and methodology shall be applied to the laying of the material on the project, and no variation of either shall be acceptable, unless approved in writing by the Engineer-in-Charge/OC Contract, who may at his discretion require further laying trials.

2.5.12 Construction Operations

2.5.12.1 Weather and Seasonal Limitations Laying shall be suspended:-

- (a) In presence of standing water on the surface.
- (b) When rain is imminent, and during rains, fog or dust storm.
- (c) When the base/binder course is damp.
- (d) When the air temperature on the surface on which it is to be laid is less than 10°C for mixes with conventional bitumen and is less than 15°C for mixes with modified bitumen.
- (e) When the wind speed at any temperature exceeds the 40 km per hour at 2 m height.

2.5.13 Preparation of the Base

The base on which Dense Graded Bituminous Material is to be laid shall be prepared in accordance with Clause 501 and 902 of MoRT&H Specifications for road and bridge works (Fifth Revision) as appropriate, or as directed by the Engineer-in-Charge/OC Contract-in-Charge.

2.5.14 Prime Coat

Where the material on which the Dense Bituminous Macadam is to be laid is other than a bitumen bound layer, a prime coat shall be applied @ 0.75 kg/sqm, as specified in accordance with the provisions of Clause 502 of MoRT&H Specifications for road and bridge works (Fifth Revision) or as directed by the Engineer-in-Charge/OC Contract.

2.5.15 Tack Coat

Where the material on which the Dense Bituminous Macadam is to be laid is either bitumen bound layer or primed granular layer, tack coat shall be applied @ 0.25kg/sqm, as specified in accordance with the provisions of Clause 503 of MoRT&H Specifications for road and bridge works (Fifth Revision) or as directed by the Engineer-in-Charge/OC Contract.

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2.5.16 Mixing and Transportation of the Mix

The provisions as specified in Clauses 501.3 and 501.4 of MoRT&H specifications for road and bridge works (Fifth Revision) shall apply.

2.5.17 Mixing

2.5.17.1 Pre-mixed bituminous materials shall be prepared in a Hot Mix Plant of adequate capacity and capable of yielding a mix of proper and uniform quality with thoroughly coated aggregates. Appropriate mixing temperature are given as under as per Table 500-2 :-

Table 500-2 :-

Bitumen Viscosity Grade	Bitumen Temperature	Aggregate Temperature	Mixed Material Temperature	Laying Temperature	* Rolling Temperature
VG-30	150-165	150-170	150-165	140 Min	90 Min

- Rolling must be completed before the material cools to these minimum temperatures.

2.5.17.2 The difference in temperature between the binder and aggregate shall at no time exceed 14°C. In order to ensure uniform quality of the mix and better coating of aggregates, the hot mix plant shall be calibrated from time to time. The essential features of the mix plants are given in Annexure A of IRC:27. If a continuous type mixing plant is used, the contractor must demonstrate by laboratory analysis that the cold feed combined grading is within the grading limits specified for that bituminous bond material. In case of a designed job mix, the bitumen and filler content shall be derived using this combined grading.

2.5.18 Transportation Bituminous materials shall be transported in clean insulated and covered vehicles. An Bituminous release agent, such as sop or lime water, may be applied to the interior of the vehicle to prevent sticking and to facilitate discharge of the material.

2.5.19 Spreading

2.5.19.1 Prior to spreading the mix, the base shall be prepared by carrying out the required operations as per Clause 501.8 depending upon the site conditions. Except in areas where paver cannot get access, bituminous materials shall be spread, leveled and tamped by an approved self propelled paving machine equipped with an electronic sensing device. The essential features of the paver finisher shall conform to Annexure A of IRC:27. As soon as possible after arrival at site, the materials shall be supplied continuously to the paver and laid without delay. The rate of delivery of the material to the paver shall be regulated to enable the paver to operate continuously. The travel rate of paver , and its method of operations, material across the screed, free from dragging,tearing and segregation of the material. In areas with restricted space (such as confined space, foot ways, of irregular shape and varying thickness, approaches to expansion joints etc) where paver cannot be used, the material shall be spread, raked and leveled with suitable hand tools trained staff.

2.5.19.2 The minimum thickness of the material laid in each paver pass shall be in accordance with the minimum values given in the relevant parts of these specifications. When laying binder course or wearing course approaching an expansion joint of a bridge,

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machine laying shall stop 300 mm short of the joints. The remainder of the pavement up to the joint, and the corresponding area beyond it, shall be laid by hand, and the joint or joint cavity shall be kept clear of surfacing material.

2.5.19.3 . Bituminous material with a temperature greater than 145°C shall not be laid or deposited on bridge deck water-proofing systems, unless precautions against heat damage have been approved by the Engineer-in-Charge/OC Contract..

2.5.20 Rolling

The General Provisions of Clauses 501.6 and 501.7 of MoRT&H specifications for Road and Bridge works (Fifth Revision) shall apply.

Compaction

2.5.20.1 Bituminous materials shall be laid and compacted in layers, which enable the specified thickness, surface level, regularity requirements and compaction to be achieved.

2.5.20.2 Compaction of bituminous materials shall commence as soon as possible after laying. Compaction shall be substantially completed before the temperature falls below the minimum specified in para 29.9.7.1 above. Rolling of the longitudinal joints shall be done immediately behind the paving operation. After this, rolling shall commence at the edges and progress towards the center longitudinally, except that on super-elevated and unidirectionally cambered portions, it shall progress from the lower to the upper edge parallel to the centerline of the pavement. Rolling shall continue until all roller marks have been removed from the surface. All deficiencies in the surface after laying shall be made good by the attendants behind the paver, before initial rolling is commenced. The initial or break down rolling shall be done with 8–10 tones static weight smooth wheeled rollers. The intermediate rolling shall be done with 8–10 Tones static weight or vibratory roller or with a pneumatic tyre roller of 12–15 tones weight with a tyre pressure of 0.56 Mpa. The contractor shall demonstrate the efficiency of the equipment proposed to be used by carrying compaction trials. The procedure for site trials shall be submitted to the for approval. The finish rolling shall be done with 6–8 tone smooth wheeled tandem rollers. Rolling shall continue until the specified compaction is achieved.

2.5.20.3 Where compaction is to be determined by density of cores the requirement to prove the performance of rollers shall apply in order to demonstrate that the specified density can be achieved. In such cases the contractor shall specify the plant, and the method by which he intends to achieve the specified level of compaction and finish at temperatures above the minimum specified rolling temperature. Laying trials shall then demonstrate the acceptability of the plant and method used. Bituminous materials shall be rolled in a longitudinal direction with the driven rolls nearest the paver. The roller shall first compact material adjacent to joints and then work from the lower to the upper side of the layer, overlapping on successive passes by at least one third of the width of the rear roll or, in the case of a pneumatic tyred roller, at least the nominal width of 300 mm.

2.5.20.4 In portions with super elevated and unidirectional camber, after the edge has been rolled, the roller shall progress from the lower to the upper edge. Rollers should move at a speed of not more than 5 Km per hour. The roller shall not be permitted to stand on pavement which has not been fully compacted, and necessary precautions shall be taken to prevent dropping of oil, grease, petrol/diesel or other foreign matter on the pavement either

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when the rollers are operating or standing. The wheels of rollers shall be in good working order, to prevent the mix from adhering to the wheels. Only sufficient moisture to prevent adhesion between the wheels of rollers and the mix should be used. Surplus water shall not be allowed to stand on the partially compacted pavement.

2.5.21 Joints Where joints are made, the materials shall be fully compacted and the joints made flush in one of the following ways :-

2.5.21.1 All joints shall be cut vertical to the full thickness of the previously laid mix. All loosened material shall be discarded and the vertical face coated with a suitable viscosity grade hot bitumen, or cold applied emulsified bitumen. While spreading the material along the joint, the material spread shall overlap 25 mm to 50 mm on the previously laid mix beyond the vertical face of the joint. The thickness of the loose overlap material should be approximately a quarter more than the final compacted thickness. The overlapped mix shall be dragged back to the hot lane so that the roller can press the small excess into the hot side of the joint to obtain a high joint density.

2.5.21.2 By using two or more pavers operating in echelon, where this is practicable and in sufficient proximity for adjacent widths to be fully compacted by continuous rolling.

2.5.21.3 All longitudinal joints shall be offset at least 300 mm from parallel joints in the layer beneath or as directed, and in a lay out approved by the . Joints in wearing course shall coincide with either the lane edge or the lane marking, whichever is appropriate. Longitudinal joints shall not be situated in wheel track zones.

2.5.21.4 For transverse joints method (i) above shall apply. Transverse joints in the successive and adjoining layers have a minimum offset of 2 m.

2.5.22 Opening to Traffic

2.5.22.1 It shall be ensured that the traffic is not allowed without the approval of the Engineer-in-Charge/OC Contract in writing, on the surface until the dense bituminous layer has cooled to the ambient temperature.

2.5.23 Surface Finish and Quality Control of Work

The surface finish of the completed construction shall conform to the requirement of Clause 902 of MoRT&H Specifications (Fifth Revision). For Control of the quality of materials and the works carried out, the relevant provisions of section 900 shall apply.

2.5.24 Arrangement For Traffic

During the period of construction, arrangements for traffic shall be made in accordance with the provisions of Clause 112.

2.5.25 Measurement for Payment.

Dense Graded Bituminous Macadam shall be measured as finished work in **square meters for compacted thickness** by any standard means to be decided by the Engineer-in-Charge/OC Contract.

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2.5.26 RATE

The contract unit rate of Dense Graded Bituminous Macadam shall be payment in full for carrying out all the required operations as specified and shall include, to all components listed in Clause 501.8.8.2 of MoRT&H Specifications for road and bridge works (Fifth Revision). The rate shall include the provision of bitumen at 4.5 percent by weight of the total mixture for grading 2.

2.5.27 Quality Control Tests and their minimum frequency for DBM in accordance with Table 900-4 of MoRT&H Specifications for road & bridge works (Fifth Edition)

TABLE 900-4.

S/No	Type of Material	Test	Frequency (Min)
(a)	Dense Bituminous Macadam	i) Quality of binder	Number of samples per lot and tests as per IS:73 or IRC:SP:53, IS:15462
		ii) Aggregate Impact Value/Los Angeles Abrasion Value	One test per 350 cum of aggregate for each source and whenever there is change in the quality of aggregate.
		iii) Flakiness Index and Elongation Index	One test per 350 cum of aggregate for each source and whenever there is change in the quality of aggregate.
		iv) Soundness (Magnesium and Sodium Sulphate)	One test for each source and whenever there is change in the quality of aggregate.
		v) Water absorption of aggregates	-do-
		vi) Sand equivalent test	-do-
	Dense Bituminous Macadam	vii) Plasticity Index	-do-
		viii) Polished stone value	-do-
		ix) Percentage of fractured faces	One test per 350 cum of aggregate when crushed gravel is used.
		x) Mix Grading	One test for individual constituent and mixed aggregate from dryer for each 400 tonnes of mix subject to minimum of two tests per day per plant
		xi) Stability and voids analysis of mix including theoretical maximum specific of loose mix	Three tests for stability, flow value, density and void contents for each 400 tonnes of mix subject to minimum of two tests per day per plant
		xii) Moisture Susceptibility of mix (AASHTO T283)	One test for each mix type whenever there is change in the quality of source of coarse or fine aggregate.

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S/No	Type of Material	Test	Frequency (Min)
		xiii) Temperature of binder in boiler, aggregate in dryer and mix at the time of laying and compaction	At regular intervals
		xiv) Binder Content	One set for each 400 tonnes of mix subject to minimum of two tests per day per plant
		xv) Rate of spread of mix materials	After every 5 th truck load
		xvi) Density of compacted layer	One test per 700 sqm area.

2.6. BITUMINOUS CONCRETE 40 MM COMPACTED THICKNESS

2.6.1 SCOPE : The work consists of providing; laying, spreading and compaction of Bituminous Concrete 40 mm thick compacted including rolling to required density, cleaning & scrubbing of previous base course, laying of Tack Coat in accordance with the requirements of specifications as given in succeeding Paras. The work also includes preparation of Mix in HMP of adequate capacity to be established by the contractor and transportation of Mix to the laying site duly spread by pavers, and compacted to the specified thickness for surfacing works as directed by Engineer-In-Charge/OC Contract. The work to be executed as per clause 507 of MoRT&H Specifications for Road and Bridge Works-Fifth Revision.

2.6.2 Materials

2.6.2.1 Bitumen The bitumen shall be viscosity graded paving bitumen complying with Indian Standard Specification, IS:73, modified bitumen complying with Clause 501.2.1 of MoRT&H Specifications for road and bridge works (Fifth Revision) or as otherwise specified in the contract. Bitumen VG-30 will be used.

2.6.2.2 Coarse Aggregates The Coarse aggregates shall consist of crushed rock or other hard material retained on 2.36 mm sieve. It shall be clean, hard, durable and cubical in shape, free from dust and soft organic and other deleterious substances. The aggregate shall satisfy the physical requirements specified in table No 500-16. Before approval of the source, the aggregates shall be tested for stripping. Where the Contractor's selected source of aggregates have poor affinity for bitumen, as a condition for the approval of that source, the bitumen shall be treated with approved anti-stripping agents, as per the manufacturer's recommendations, without additional payment.

Table 500-16: Physical Requirement for Coarse Aggregate for Bituminous Concrete

Property	Test	Specification	Method of Test
Cleanliness (dust)	Grain size analysis	Max 5% passing 0.075 mm sieve	IS : 2386 Part I
Particle shape	Flakiness and Elongation Index (Combined)	Max 35%	IS : 2386 Part I

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Property	Test	Specification	Method of Test
Strength	Los Angels Abrasion value	Max 30%	IS : 2386 Part IV
	Aggregate Impact Value	Max 24%	
Durability	Soundness		
	(a) Sodium Sulphate	Max 12%	IS : 2386 Part V
	(b) Magnesium Sulphate	Max 18%	IS : 2386 Part V
Polishing	Polished Stone Value	Min 55	BS:812-114
Water absorption	Water absorption	Max 2%	IS : 2386 Part III
Stripping	Coating and Stripping of Bitumen Aggregate Mix	Minimum retained coating 95%	IS : 6241
Water Sensitivity	Retained Tensile strength *	Min 80%	AASHTO 283

- If the minimum retained tensile test strength falls below 80 percent, use of Anti Stripping Agent is recommended to meet the requirement.

2.6.3 Fine Aggregate

Fine aggregate shall consists of crushed or naturally occurring mineral material, or a combination of the two passing the 2.36 mm sieve and retained on the 75 micron sieve. They shall be clean, hard, durable, dry and free from dust and soft or friable matter, organic or other deleterious matter.

2.6.4 Filler

Filter shall consist of finely divided mineral matter such as rock dust, hydrated lime or cement approved by the Engineer-in Charge/OC Contract. The filler shall be graded within the limits shown in table No 500-9 of MoRT&H specifications (Fifth Revision) as under:-

IS Sieve (mm)	Cumulative per cent passing by weight of total aggregate
0.6	100
0.3	95-100
0.075	85-100

The filler shall be free from organic impurities and have a Plasticity Index not greater than 4. The plasticity index requirement shall not apply if filter is cement or lime. When the aggregates fail to meet the requirements of the water sensitivity test in Table 500-8 of MoRT&H specifications for road and bridge works (Fifth Revision), then 2 percent by total weight of aggregate of hydrated lime shall be used and percentage of fine aggregate reduced accordingly.

2.6.5 Aggregate Grading and Binder Content

When tested in accordance with IS:2386 Part 1 (Wet grading method), the combined grading of the coarse and fine aggregates and filler shall fall within the limits shown in Table 500-17.

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Grading	2
Nominal Aggregate size*	13.2 mm
Layer thickness	30 - 40 mm
IS Sieve Designation	Percentage by weight passing
19 mm	100
13.2 mm	90-100
9.50 mm	70-88
4.75 mm	53-71
2.36 mm	42-58
1.18 mm	34-48
0.6 mm	26-38
0.3 mm	18-28
0.15 mm	12-20
0.075 mm	4-10
Bitumen content, percent by mass of total mix – Min 5.4 % *	

- Corresponds to specific gravity of aggregate being 2.7. In case aggregate have specific gravity more than 2.7, the minimum bitumen content can be reduced proportionately. Further the region where highest daily mean air temperature is 30°C or lower and lowest daily air temperature is - 10°C or lower, the bitumen content may be increased by 0.50 percent.

2.6.6 Anti Stripping Agent

Where the proposed aggregate fails to pass the stripping test, then an approved anti stripping agent (Appendix 4 of MoRT&H specifications for road and bridge works (fifth revision) for details) may be added to the binder in accordance with the manufacturer's instructions. The effectiveness of the proposed anti-stripping agent must be demonstrated by the Contractor, before approval by the Engineer-in-Charge/OC Contract-in-Charge.

2.7. Mix Design

2.7.1 Requirement For The Mix : Apart from conformity with the grading and quality requirements for individual ingredients, the mixture shall meet the requirements set out in Table 500-11 of MoRT&H Specifications Fifth revision as under.

Properties	Viscosity Grade Paving bitumen	Modified Bitumen		Test Method
		Hot Climate	Cold Climate	
Compaction Level	75 Blows on each face of the specimen			
Minimum Stability (kN at 600 C)	9.0	12.0	10.0	AASHTO T245
Marshall flow (mm)	2-4	2.5-4	3.5-5	AASHTO T245
Marshall Quotient (Stability/Flow)	2-5	2.5-5		MS-2 and ASTM D2041
% air voids	3-5			
% voids Filled with Bitumen (VFB)	65-75			

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Properties	Viscosity Grade Paving bitumen	Modified Bitumen		Test Method
		Hot Climate	Cold Climate	
Coating of Aggregate Particle		95% minimum		
Tensile Strength ratio		80% minimum		
% Voids in Mineral aggregate (VMA)	Minimum percent voids in mineral aggregate (VMA) are set out in Table 500-13			

2.7.2 Binder Content

The binder content shall be optimized to achieve the requirements of the mix set out in Table 500-11 of MoRT&H Specifications (Fifth revision). The binder content shall be selected to obtain 4 percent air voids in the mix design. The Marshall method for determining the optimum binder content shall be adopted as described in the Asphalt Institute Manual MS-2.

Where maximum size of the aggregate is more than 26.50 mm, the modified marshal method using 150 mm diameter specimen described in MS-2 and ASTM D 5581 shall be used. This method requires modified equipment and procedures. When the modified Marshall test is used, the specified minimum stability values in Table 500-12 shall be multiplied by 2.25 and the minimum flow shall be 3 mm.

Nominal Maximum Particle Size (mm) *	Minimum VMA Percent Related to Design Percentage Air Voids		
	3.0	4.0	5.0
26.50	11.0	12.0	13.0
37.50	10.0	11.0	12.0

Note: Interpolate minimum voids in the mineral aggregate (VMA) for designed percentage air voids values between those listed.

2.7.3 Job Mix Formula

This shall be as per Clause 507.3.3 of MoRT&H Specifications (Fifth Revision). The contractor shall submit to the Engineer-in-Charge/OC Contract for approval at least 21 days before the start of the work of the job mix formula proposed for use in the work together with the following details :-

- (i) Source and location of all materials.
- (ii) Proportions of all materials expressed as follows:-
 - (a) Binder type (VG-30), and percentage by weight of total mixture.
 - (b) Coarse aggregate/fine aggregate/mineral filler as percentage by weight of total aggregate including mineral filler.
- (iii) A single definite percentage passing each sieve for the mixed aggregate.

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- (iv) The individual grading of the individual aggregate fraction, and the proportions of each in the combined grading.
- (v) The results of mix design such as maximum specific gravity of loose mix (Gmm), compacted specimen densities, Marshall stability, flow, air voids, VMA, VFB and related graphs and test results of AASHTO T 283 Moisture susceptibility test.
- (vi) Where the mixture is a batch mixture, the individual weights of each type of aggregate, and binder per batch.
- (vii) Test results of physical characteristics of aggregate to be used.
- (viii) Mixing temperature and compacting temperature.

While establishing the job mix formula, the contractor shall ensure that it is based on a correct and truly representative samples of the material that will actually be used in the work and that the mixture and its different ingredients satisfy the physical and strength requirement of these specifications.

Approval of the Job Mix Formula shall be based on independent testing by the Engineer-in-Charge/OC Contract for which samples of all ingredients of the mix shall be furnished by the Contractor as required by the Engineer-in-Charge/OC Contract.

The approval of the job mix formula shall remain effective unless and until a revised job mix formula is approved. Should a change in the source of materials be proposed, a new job mix formula shall be forwarded by the contractor to the Engineer-in-Charge/OC Contract for approval before the placing of the material.

2.7.4 Plant Trials-Permissible Variation in Job Mix Formula

Once the laboratory job mix formula is approved, the Contractor shall carry out plant trials to establish that the plant can produce a uniform mix conforming to the approved job mix formula. The permissible variations of the individual percentages of the various ingredients in the actual mix from the job mix formula to be used shall be within the limits as specified in Table 500-18 and shall remain within the gradation band. These variations are intended to apply to individual specimens taken for quality control tests in accordance with Section 900 of MoRT&H specifications Fifth revision.

Table 500-18: Permissible Variations in Plant Mix from the Job Mix Formula

Description	Permissible Variation
Aggregate Passing 19 mm sieve or larger	+/- 7%
Aggregate Passing 13.2 mm,9.5 mm	+/- 6%
Aggregate Passing 4.75 mm	+/- 5%
Aggregate Passing 2.36 mm,1.18mm,0.60mm	+/- 4%
Aggregate Passing 0.30mm, 0.15 mm	+/- 3%
Aggregate Passing 0.075 mm	+/- 1.5%
Binder Content	+/- 0.3%
Mixing Temperature	+/- 10°C

2.7.5 Laying Trials

Once the plant trials have been successfully completed and approved, the contractor shall carry out laying trials, to demonstrate that the proposed mix can be successfully laid, and compacted all in accordance with Clause 501 of MoRT&H Specifications (Fifth

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Revision). The laying trial shall be carried out on a suitable area which is not to form part of the works. The area of laying trials shall be a minimum of 100 sqm of construction similar to that of the project road, and it shall be in all respects, particularly compaction, the same as the project construction, on which the bituminous material is to be laid.

The contractor shall previously inform the Engineer-in-Charge/OC Contract of the proposed method for laying and compacting the material. The plant trials shall then establish if the proposed laying plant, compaction plant, and methodology is capable of producing satisfactory results. The density of the finished paving layer shall be determined by taking cores no sooner than 24 hrs after laying or by other approved method. The compacted layers of Asphaltic Concrete (AC) shall have a minimum field density equal to more than 92% of the average theoretical maximum specific gravity (g/mm) obtained on the day of compaction in accordance with ASTM D 2041.

Once the laying trials have been approved, the same plants and methodology shall be applied to the laying of the material on the project, and no variation of either shall be acceptable, unless approved in writing by the Engineer-in-Charge/OC Contract who may at his discretion require further laying trials.

2.8 Construction Operation

2.8.1 Weather and Seasonal Limitations. Laying shall be suspended:-

- (i) In presence of standing water on the surface.
- (ii) When rain is imminent and during rains, fog or dust storm.
- (iii) When the base/binder course is damp.
- (iv) When the air temperature on the surface on which it is to be laid is less than 10°C for mixes with conventional bitumen and is less than 15°C for mixes with modified bitumen.
- (v) When the wind speed at any temperature exceeds the 40 km per hour at 2 m height.

2.8.2 Preparation of Base

The surface on which the Asphaltic Concrete is to be laid shall be prepared in accordance with Clauses 501 and 902 of MoRT&H Specifications (Fifth revision) as appropriate, or as directed by the Engineer-in-Charge. The surface shall be thoroughly swept clean by mechanical broom and dust removed by compressed air. In locations where a mechanical broom cannot get access, other approved methods shall be used as directed by the Engineer-in-Charge/OC Contract.

2.8.3 Tack Coat

Where the material on which the Bituminous Concrete is to be laid is either bitumen bound layer, tack coat shall be applied @ 0.25kg/sqm, as specified in accordance with the provisions of Clause 503 of MoRT&H Specifications for road and bridge works (Fifth Revision) or as directed by the Engineer-in-Charge/OC Contract.

2.8.4. Mixing and Transportation of Mix

Mixing : Pre-mixed bituminous materials shall be prepared in a Hot Mix Plant (weight batch) type of adequate capacity and capable of yielding a mix of proper and uniform quality

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with thoroughly coated aggregates. The mixing temperature shall be as under. The difference in temperature between the binder and aggregate shall at no time exceed 14°C. In order to ensure uniform quality of the mix and better coating of aggregates, the hot mix plant shall be calibrated from time to time.

Bitumen Viscosity Grade	Bitumen Temperature (°C)	Aggregate Temperature (°C)	Mixed Material Temperature (°C)	Laying Temperature (°C)	Rolling Temperature (°C) *
VG-30	150-165	150-170	150-165	140 Min	90 Min
VG-10	140-160	140-165	140-160	130 Min	80 Min

- Rolling must be completed before the material cools to these minimum temperatures.

If a continuous type mixing plant is used, the contractor must demonstrate by laboratory analysis that the cold feed combined grading is within the grading limits specified for that bituminous bound material. In the case of a designed job mix, the bitumen and filler content shall be derived using this combined grading.

2.8.5. Transportation: Bituminous material shall be transported in clean insulated and covered vehicles. An asphalt release agent, such as soap or lime water, may be applied to the interior of the vehicle to prevent sticking and to facilitate discharge of the material.

2.8.6 Spreading

Prior to spreading the mix, the base shall be prepared by carrying out the required operations as per Clause 501.8 depending upon the site conditions. Except in areas where paver cannot get access, bituminous materials shall be spread, leveled and tamped by an approved self propelled paving machine equipped with an electronic sensing device. The essential features of the paver finisher shall conform to Annexure A of IRC:27. As soon as possible after arrival at site, the materials shall be supplied continuously to the paver and laid without delay. The rate of delivery of the material to the paver shall be regulated to enable the paver to operate continuously. The travel rate of the paver and its method of operations shall be adjusted to ensure an even and uniform flow of bituminous material across the screed, free from dragging, tearing and segregation of the material. In areas with restricted space (such as confined space, foot ways, of irregular shape and varying thickness, approaches to expansion joints etc) where paver cannot be used, the material shall be spread, raked and leveled with suitable hand tools trained staff.

The minimum thickness of the material laid in each paver pass shall be in accordance with the minimum values given in the relevant parts of these specifications. When laying binder course or wearing course approaching an expansion joint of a bridge, machine laying shall stop 300 mm short of the joints. The remainder of the pavement up to the joint, and the corresponding area beyond it, shall be laid by hand, and the joint or joint cavity shall be kept clear of surfacing material.

Bituminous material with a temperature greater than 145°C shall not be laid or deposited on bridge deck water-proofing systems, unless precautions against heat damage have been approved by the Engineer-in-Charge/OC Contract .

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2.8.7 Compaction

Bituminous materials shall be laid and compacted in layers, which enable the specified thickness, surface level, regularity requirements and compaction to be achieved.

Compaction of bituminous materials shall commence as soon as possible after laying. Compaction shall be substantially completed before the temperature falls below the minimum specified in Para 4.4.4 above. Rolling of the longitudinal joints shall be done immediately behind the paving operation. After this, rolling shall commence at the edges and progress towards the center longitudinally, except that on super-elevated and in directionally cambered portions, it shall progress from the lower to the upper edge parallel to the centerline of the pavement. Rolling shall continue until all roller marks have been removed from the surface. All deficiencies in the surface after laying shall be made good by the attendants behind the paver, before initial rolling is commenced. The initial or break down rolling shall be done with 8–10 tones static weight smooth wheeled rollers. The intermediate rolling shall be done with 8–10 Tones static weight or vibratory roller or with a pneumatic tyre roller of 12–15 tones weight with a tyre pressure of 0.56 Mpa. The contractor shall demonstrate the efficiency of the equipment proposed to be used by carrying compaction trials. The procedure for site trials shall be submitted to the for approval. The finish rolling shall be done with 6–8 tone smooth wheeled tandem rollers. Rolling shall continue until the specified compaction is achieved.

Where compaction is to be determined by density of cores the requirement to prove the performance of rollers shall apply in order to demonstrate that the specified density can be achieved. In such cases the contractor shall specify the plant, and the method by which he intends to achieve the specified level of compaction and finish at temperatures above the minimum specified rolling temperature. Laying trials shall then demonstrate the acceptability of the plant and method used.

Bituminous materials shall be rolled in a longitudinal direction with the driven rolls nearest the paver. The roller shall first compact material adjacent to joints and then work from the lower to the upper side of the layer, overlapping on successive passes by at least one third of the width of the rear roll or, in the case of a pneumatic tyred roller, at least the nominal width of 300 mm. In portions with super elevated and uni-directional camber, after the edge has been rolled, the roller shall progress from the lower to the upper edge. Rollers should move at a speed of not more than 5 Km per hour. The roller shall not be permitted to stand on pavement which has not been fully compacted, and necessary precautions shall be taken to prevent dropping of oil, grease, petrol/diesel or other foreign matter on the pavement either when the rollers are operating or standing. The wheels of rollers shall be in good working order, to prevent the mix from adhering to the wheels. Only sufficient moisture to prevent adhesion between the wheels of rollers and the mix should be used. Surplus water shall not be allowed to stand on the partially compacted pavement.

2.8.8 Joints. Where joints are made, the materials shall be fully compacted and the joints made flush in one of the following ways:-

- (i) All joints shall be cut vertical to the full thickness of the previously laid mix. All loosened material shall be discarded and the vertical face coated with a suitable viscosity grade hot bitumen, or cold applied emulsified bitumen. While spreading the material along the joint, the material spread shall overlap 25 mm to 50 mm on the previously laid mix beyond the vertical face of the joint. The thickness of the loose overlap material should be approximately a quarter more than the final compacted thickness. The overlapped mix shall be dragged back to the hot lane so that the roller can press the small excess into the hot side of the joint to obtain a high joint density.

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(ii) By using two or more pavers operating in echelon, where this is practicable and in sufficient proximity for adjacent widths to be fully compacted by continuous rolling.

(iii) All longitudinal joints shall be offset at least 300 mm from parallel joints in the layer beneath or as directed, and in a lay out approved by the . Joints in wearing course shall coincide with either the lane edge or the lane marking, whichever is appropriate. Longitudinal joints shall not be situated in wheel track zones.

(iv) For transverse joints method (i) above shall apply. Transverse joints in the successive and adjoining layers have a minimum offset of 2 m.

2.8.9 Opening to Traffic

It Shall be ensured that the traffic is not allowed until the bituminous concrete layer has cooled to the ambient temperature.

2.8.10 Surface Finish and Quality Control of Work

The surface finish of the completed construction shall conform to the requirement of Clause 902 of MoRT&H Specifications (Fifth Revision). For Control of the quality of materials and the works carried out, the relevant provisions of section 900 shall apply. The levels of the pavement courses as constructed shall not vary from those calculated with reference to the longitudinal and cross profile of the road shown on the drawings or as directed by the Engineer-in-Charge and OC Contract beyond the tolerance mentioned in Table 900-1.

Table 900-1: Tolerance in surface levels

1	Wearing course for flexible pavement (a) Machine laid (b) Manually laid	± 6 mm ± 10 mm
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Provided, however that the negative tolerance for wearing course shall not be permitted in conjunction with the positive tolerance for base course, if the thickness of the former is thereby reduced by more than the following limits:

- 4 mm for bituminous wearing course of thickness 40 mm or more.
- 3 mm for bituminous wearing course of thickness less than 40 mm.

For checking the compliance with the above requirement for bituminous wearing courses and concrete pavements, measurements of the surface levels shall be taken on a grid of points spaced at 6.25 m along the length and at 0.5 m from the edges and at the centre of the pavement. In any length of pavement, compliance shall be deemed to be met for the final road surface, only if the tolerance given above is satisfied for any point on the surface.

2.8.11 Surface Regularity of Pavement Courses

The longitudinal profile shall be checked with a 3 mtr long straight edge/moving straight edge as directed by the Engineer-in-Charge /OC Contract at the middle of the each traffic lane along a line parallel to the centre line of the road. The maximum permitted number of surface irregularity shall be as per table 900-2.

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Table 900-2: maximum permitted number of surface irregularities

Irregularity	Surface of carriage way and paved shoulders			
	4 mm		7 mm	
Length (m)	300	75	300	75
Number of surface Irregularities on National Highway	15	9	2	1
Number of surface Irregularities on Roads of lower category	40	18	4	2

The maximum allowable difference between the road surface and under side of a 3 m straight edge when placed parallel with, or at right angles to the centre line of the road at points decided by the Engineer-in-Charge shall be ;

For pavement surface (bituminous and cement concrete)	3 mm
For bituminous base courses	6 mm
For granular sub base/base courses	8 mm

2.8.12 Arrangement for Traffic

During the period of execution, arrangements for traffic shall be made in accordance with the provisions of Clause 112 of MoRT&H Specifications.

2.8.13 Measurement for Payment. Bituminous concrete shall be measured as finished work in **square meter** for 40 mm compacted thickness by any standard means to be decided by the Engineer-in Charge/OC Contract. The work shall be measured by area in Square meters at the specified thickness as specified in Schedule-'A' of tender documents.

2.8.14 Rate

The contract unit rate for the work shall be paid in full for carrying out the required operations including full compensation for:-

- (i) Making arrangement for traffic to Clause 112 of MoRT&H Specifications except for initial treatment to verge, shoulders and construction of diversions;
- (ii) Cleaning of the surface.
- (iii) Providing all materials to be incorporated in the work including arrangement for stock yards all royalties, fees, rents where necessary and all leads and lifts.
- (iv) Mixing, transporting, laying and compacting the mix as specified including all wastage in cutting joints.
- (v) All labour, tools, equipments, plant including installation of Hot Mix Plant, power supply units and all machinery, incidental to complete the work to these specifications.
- (vi) Carrying out the work in part widths of the road where directed.
- (vii) Carrying out all tests for control of quality.
- (viii) The rates include for all testing, mix design transporting and testing of samples, and cores and tests as directed by the Engineer-in-Charge/OC Contract-in-Charge.
- (ix) The contractor shall make all required facilities for carrying out different tests at the work site. If there is not a project specific laboratory, the Contractor must arrange to carry out all necessary testing at an outside laboratory, approved by the E-I-C and all costs incurred are deemed to be included in the rate quoted for the items or work.

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In case the test results are not produced by the contractor, quality control tests as per the frequency mentioned in the contract will be conducted by the department and the cost of testing charges as per the rates fixed by HQ CE (P) Dantak will be deducted from the contractor.

(ix) The cost of all plant and laying trials as specified to prove the mixing and laying method shall be deemed to be included in the Contractor's rates.

2.8.15 Quality Control Tests and their minimum frequency for AC in accordance with Table 900-4 of MoRT&H Specifications for road & bridge works (Fifth Edition)

TABLE 900-4.

S/No	Type of Material	Test	Frequency (Min)
(a)	Bituminous Concrete	i) Quality of binder	Number of samples per lot and tests as per IS:73 or IRC:SP:53, IS:15462
		ii) Aggregate Impact Value/Los Angeles Abrasion Value	One test per 350 cum of aggregate for each source and whenever there is change in the quality of aggregate.
		iii) Flakiness Index and Elongation Index	One test per 350 cum of aggregate for each source and whenever there is change in the quality of aggregate.
		iv) Soundness (Magnesium and Sodium Sulphate)	One test for each source and whenever there is change in the quality of aggregate.
		v) Water absorption of aggregates	-do-
		vi) Sand equivalent test	-do-
		vii) Plasticity Index	-do-
		viii) Polished stone value	-do-
		ix) Percentage of fractured faces	One test per 350 cum of aggregate when crushed gravel is used.
		x) Mix Grading	One test for individual constituent and mixed aggregate from dryer for each 400 tonnes of mix subject to minimum of two tests per day per plant
		xi) Stability and voids analysis of mix including theoretical maximum specific of loose mix	Three tests for stability, flow value, density and void contents for each 400 tonnes of mix subject to minimum of two tests per day per plant
		xii) Moisture Susceptibility of mix (AASHTO T283)	One test for each mix type whenever there is change in the quality of source of coarse or fine aggregate.

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		xiii) Temperature of binder in boiler, aggregate in dryer and mix at the time of laying and compaction	At regular intervals
		xiv) Binder Content	One set for each 400 tonnes of mix subject to minimum of two tests per day per plant
		xv) Rate of spread of mix materials	After every 5 th truck load
		xvi) Density of compacted layer	One test per 700 sqm area.

2.8.16 MARKING OF CENTRE AND EDGE LINE

2.8.16.1 Scope

The work shall consists of providing road markings of specified width (Centre line 100 mm and edge line 150 mm), layout and design using paint of the required specifications as given in the Contract and as per guidelines contained in IRC: 35-1997 and BTS 33:2017.

2.8.16.2 Materials

Road marking shall be hot applied thermoplastic compound, as specified in the item and the material shall meet the requirements as specified below.

2.8.16.3 Hot applied Thermoplastic Road marking

2.8.16.4 Thermoplastic Material

2.8.16.5 General

The thermoplastic material shall be homogeneously composed of aggregate, pigment, resins and glass reflectorizing beads. The colour of the compound shall be white or yellow (IS Colour No 356) as specified in the drawings or as directed by the Engineer-in-Charge/OC Contract.

2.8.16.6 Requirements:

(i) **Composition:** The pigment, beads, and aggregate shall be uniformly dispersed in the resin. The material shall be free from all skins, dirt and foreign objects and shall comply with requirements indicated in Table No 800-9 of MoRT&H Specifications for Road & Bridge Works (Fifth Revision) below:-

PROPORTIONS OF CONSTITUENTS OF MARKING MATERIAL

(Percentage by weight)		
Component	White	Yellow
Binder	18.0 min.	18.0 min.
Glass beads	30-30	30-30
Titanium Dioxide	10.0 min.	-
Calcium Carbonate and Inert Fillers	42.0 max.	See note below
Yellow Pigments	-	See note below

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Note: Amount of yellow pigment, calcium carbonate and inert fillers shall be at the option of the manufacturer, provided all other requirements of this specification are met.

(ii) **Properties:** The properties of thermoplastics material, when tested in accordance with ASTM D36/BS-3262- (Part I), shall be as below:-

(a) **Luminance:**

White : Daylight luminance at 45° - 65% min. as per ASHTO M 249.

Yellow: Daylight luminance at 45° - 45 % min. as per AASHTO M 249.

(b) **Drying time:** When applied at a temperature specified by the manufacturer and to the required thickness, the material shall set to bear traffic in not more than 15 minutes.

(c) **Skid resistance:** not less than 45 as per BS 6044.

(d) **Cracking resistance at low temperature:** The material shall show no cracks on application to concrete blocks.

(e) **Softening point:** 102.5° + 9.5° C as per ASTM D 36.

(f) **Yellowness Index** (for white thermoplastic paint) : not more than 0.12 as per AASHTO M- 249.

(iii) **Storage life:** The material shall meet the requirements of these Specifications for a period of one year. The thermoplastic material must also melt uniformly with no evidence of skins of un-melted particles for the one year storage period. Any material not meeting the above requirements shall be replaced by the manufacturer/supplier/Contractor.

(iv) **Reflectorisation:** Shall be achieved by incorporation of beads, the grading and other properties of the beads shall be as specified in Clause 803.4.2 of MoRT&H Specifications for Road & Bridge Works (Fifth Revision)

v) **Marking:** Each container of the thermoplastic material shall be clearly and indelibly marked with the following information:

(a) The name, trade mark or other means of identification of manufacturer.

(b) Batch number

(c) Date of manufacture

(d) Colour (white or yellow)

(e) Maximum application temperature and maximum safe heating temperature.

(vi) **Sampling and testing:** The thermoplastic material shall be sampled and tested in accordance with the appropriate ASTM/BS method. **The Contractor shall furnish to the Engineer-in-Charge a copy of certified test reports from the manufacturers of the thermoplastic material showing results of all tests specified herein and shall certify that the material meets all requirements of this Specification.**

2.8.16.7 Reflectorizing Glass Beads

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2.8.16.8 General: The specification covers two types of glass beads to be used for the production of reflectorised pavement markings. Type 1 beads are those which are a constituent of the basic thermoplastic compound vide Table 800-9 and Type 2 beads are those which are to be sprayed on the surface vide Clause 803.6.4 of MoRT&H Specifications for Road & Bridge Works (Fifth Revision)

2.8.16.9 The glass beads shall be transparent, colourless and free from milkiness, dark particles and excessive air inclusions. These shall conform to the requirement spelt out in Clause 803.4.2.3 of MoRT&H Specifications for Road & Bridge Works (Fifth Revision)

2.8.16.10 Specific requirements

a) **Gradation:** The glass beads shall meet the gradation requirements for two types as given in Table 800-10 of MoRT&H Specifications for Road & Bridge Works (Fifth Revision) as below:-

GRADATION REQUIREMENTS FOR GLASS BEADS

Sieve size	Per cent retained	
	Type 1	Type 2
1.18 mm	0 to 3	
850 micron	5 to 20	0 to 5
600 micron	-	5 to 20
425 micron	65 to 95	-
300 micron	-	30 to 75
180 micron	0 to 10	10 to 30
Below 180 micron	-	0 to 15

b) **Roundness:** The glass beads shall have a minimum of 70 per cent true spheres.

c) **Refractive index:** The glass beads shall have a minimum refractive index of 1.50.

d) **Free flowing properties:** The glass beads shall be free of hard lumps and clusters and shall dispense readily under any conditions suitable for paint striping. They shall pass the free flow –test.

2.8.16.11 Test Methods: The specific requirements shall be tested with the following method:

(i) **Free Flow Test :** Spread 100 grams of beads evenly in a 100 mm diameter glass dish. Place the dish in a 250 mm inside diameter dessicator which is filled within 25 mm of the top of a desiccator plate with sulphuric acid water solution (specific gravity 1.10). Cover the dessicator and let it stand for 4 hours at 20 to 29°C. Remove sample from dessicator, transfer beads to a pan and inspect for lumps or clusters. Then pour beads into a clean, dry glass funnel having a 100 mm stem and 6 mm orifice. If necessary, initiate flow by lightly tapping the funnel. The glass spheres shall be essentially free of lumps and clusters and shall flow freely through the funnel.

(ii) The requirements of gradation, roundness and refractive index of glass beads and the amount of glass beads in the compound shall be tested as per BS: 6088 and BS: 3262 (Part I).

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(iii) The Contractor shall furnish to the Engineer-in-Charge a copy of certified test reports from the manufacturer of glass beads obtained from a reputed laboratory showing result of all tests specified herein and shall certify that the material meets all requirements of this Specification. However, if so required, these tests may be carried out as directed by the Engineer-in-Charge/OC Contract.

2.8.16.12 Application properties of thermoplastic material

2.8.16.13 The thermoplastic material shall readily get screeded/extruded at temperatures specified by the manufacturers for respective method of application to produce a line of specified thickness of 2.5 mm which shall be continuous and uniform in shape having clear and sharp edges.

2.8.16.14 The material upon heating to application temperatures shall not exude fumes, which are toxic, obnoxious or injurious to persons or property.

2.8.16.15 Preparation

(i) The material shall be melted in accordance with the manufacturer's instructions in a heater fitted with a mechanical stirrer to give a smooth consistency to the thermoplastic material to avoid local overheating. The temperature of the mass shall be within the range specified by the manufacturer, and shall on no account be allowed to exceed the maximum temperature stated by the manufacturer. The molten material should be used as expeditiously as possible and for thermoplastic material which has natural binders or is otherwise sensitive to prolonged heating, the material shall not be maintained in a molten condition for more than 4 hours.

(ii) After transfer to the laying equipment, the material shall be maintained within the temperature range specified by the manufacturer for achieving the desired consistency for laying.

2.8.16.16 Properties of finished road marking

The finished lines shall be free from ruggedness on sides and ends and be parallel to the general alignment of the carriageway. The upper surface of the lines shall be level, uniform and free from streaks.

(a) The strip shall not be slippery when wet.

(b) The marking shall not lift from the pavement in freezing weather.

(c) After application and proper drying, the strip shall show no appreciable deformation or discolouration under traffic and under road temperatures upto 60° C.

(d) The marking shall not deteriorate by contact with sodium chloride, calcium chloride or oil drippings from traffic.

(e) The stripe or marking shall maintain its original dimensions and position. Cold ductility of the material shall be such as to permit normal movement with the road surface without chopping or cracking.

(f) The colour of yellow marking shall conform to IS Colour No. 356 as given in IS: 164.

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2.8.16.17 Measurement for Payment

The painted marking shall be measured in “**Square Meter**” of actual area marked (excluding the gaps, if any).

2.8.16.18 Rate

The Contract unit rate for road markings shall be payment in full compensation for furnishing all labour, materials, tools equipment, including all incidental costs necessary for carrying out the work at the site conforming to these Specifications complete as per the approved drawing (s) or as directed by the Engineer-in-Charge/OC Contract and all other incidental costs necessary to complete the work to these specifications.

2.8.17 ROAD DELINATORS

2.8.17.1 Scope

The work shall cover supplying and fixing roadway indicators, hazard markers and object markers. Roadway indicators shall be properly installed to indicate the horizontal alignment and vertical profile of the roadway so as to outline the vehicle path for safe driving. Hazard markers shall be installed immediately ahead of obstruction of vehicular path such as just before a narrow bridge. Object markers shall be erected where obstruction within the roadway starts such as chennelising island in approaches to intersections.

2.8.17.2 The design, materials to be used and the location of the road delineators (roadway indicators, hazard markers and object markers) shall conform to Recommended Practice for Road Delineators, IRC:79, and to relevant drawings or as otherwise directed by the Engineer. The steel drums such as empty bitumen drums shall not be used as they could pose safety hazards, The delineators shall be retro-reflectorised as shown on the drawings or as directed by the Engineer. The reflectors on the delineators shall be of retro-reflective sheeting with encapsulated lens and with the visibility of 300m under clear weather conditions, when illuminated by the upper beam o the car headlights.

2.8.17.3. Installation

The delineators shall be so installed that their posts do not change their orientation and the reflectorised faces are always perpendicular to the direction of travel.

2.8.17.4. Measurement for Payments.

The measurement shall be made in number of delineators supplied and fixed at site.

2.8.17.5. Rates

The Contract unit rates of delineators shall be payment in full compensation for furnishing all labour, materials, tools equipment including incidental costs necessary to complete the work to these Specifications.

2.8.18. REFLECTIVE PAVEMENT MARKERS (ROAD STUDS)

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2.8.18.1 Scope

The work shall cover the providing and fixing 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 night-time visibility, as specified in the Contract.

2.8.18.2. Material

2.8.18.3 Plastic body or RPM/road stud shall be moulded from ASA (Acrylic Styrene Acrylonitrile) or HIPS (Hi-impact Polystyrene) or Acrylonitrile Butadiene Styrene (ABS) or any other suitable material approved the Engineer. The markers shall support a load of 13,635 Kg tested in accordance with ASTM D 4280.

2.8.18.4. 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 moulded of methyl methacrylate conforming to ASTM D 788 or equivalent.

2.8.18.5 Design

The slope or retro-reflecting surface shall preferably be $35 \pm 5^\circ$ to base and the area of each retro-reflecting surface shall not be less than 13.0 sq.cm.

2.8.18.6 Optical Performance

2.8.18.7 Unidirectional 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 Tables 800-13 or 800-14 as appropriate.

2.8.18.8 Omni-directional Studs

Each omni-directional stud shall have C.I.L. of not less than 2 mcd/lx.

Table 800-13 : Minimum C.I.L. Values for Category 'A' Studs

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

Table 800-14 : Minimum C.I.L. Values for Category 'B' Studs

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

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Note :

- 1) The entrance angle of 0° U corresponds to the normal aspect of the reflectors when the reflecting road stud is installed in horizontal road surface.
- 2) The stud incorporating one or more corner cube reflectors shall be included in Category 'A'. The stud incorporating one or more b-convex reflectors shall be included in Category 'B'.

2.8.18.9 Tests

2.8.18.10 Co-efficient 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.

2.8.18.11 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 Tables 800-13 or 800-14 provided that

- i) the value is not less than 80 percent of the specified minimum, and
- ii) the average of the left and right measurements for the specific angle is greater than the specified minimum.

3.1 JUNGLE CLEARANCE

3.1.1 The scope of this work includes cutting down trees not exceeding 30 cm girth measured at 1 meter above ground level and clearing away shrubs, brushwood, under growth and grubbing up roots in areas having annual rain fall more than 200 cm and as per Clause No 201.1 of MoRT&H specifications for road and bridge works (Fifth Revision).

3.1.2 Measurements for Payment

Jungle Clearance shall be measured in "**Square Meter**" and the payment will be made to the contractor accordingly.

3.2 Rate

The rate shall include all labour, equipments tools and incidentals required for the completion of work.

3.3. EXCAVATION FOR ROADWAY AND DRAINS

3.3.1 This work shall consist of excavation, removal and disposal of materials necessary for the construction of roadway, side drains and waterways in accordance with requirements of these specifications and the lines, grades and cross-sections shown in the drawings or as indicated by the Engineer-in-Charge/OC Contract. It shall include the hauling and stacking

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of or hauling to sites of embankment and subgrade construction, suitable cut materials as required, as also the disposal of unsuitable cut materials in specified manner, with all leads and lifts, reuse of cut materials as may be deemed fit, trimming and finishing of the road to specified dimensions or as directed by the Engineer-in-Charge/OC Contract.

3.3.2 Classification of Excavated Material

3.3.2.1 Classification: All materials involved in excavation shall be classified by the Engineer-in-Charge/OC Contract in the following manner as per Clause 301.2 of MoRT&H specifications for road and bridge works (Fifth Revision)

(a) Soil/SMB

This shall comprise topsoil, turf, sand, silt, loam, clay, mud, peat, black cotton soil, soft shale or loose moorum, a mixture of these and similar material which yields to the ordinary application of pick, spade and/or shovel, rake or other ordinary digging equipment. Removal of gravel or any other modular material having dimension in any one direction not exceeding 75 mm shall be deemed to be covered under this category.

(b) Soft Rock (not requiring blasting). This shall include:

- (i) Rock types such as laterites, shales and conglomerates, varieties of limestone and sandstone etc., which may be quarried or split with crow bars, also including any rock which in dry state may be hard, requiring blasting but which, when wet, becomes soft and manageable by means other than blasting;
- (ii) Macadam surfaces such as water bound and bitumen bound; soling of roads, cement concrete pavement, cobble stone etc compacted moorum or stabilized soil requiring use of pick axe or shovel or both.
- (iii) Lime concrete, stone masonry and brick work in lime/cement mortar below ground level, reinforced cement concrete which may be broken up with crow bars or picks and stone masonry in cement mortar below ground level; and
- (iv) Boulders which do not require blasting found lying loose on the surface or embedded in river bed, soil, talus, slope wash and terrace material of dissimilar origin.

(c) Hard Rock (requiring blasting). This shall comprise:

- (i) Any rock or cement concrete for the excavation of which the use of mechanical plant and/or blasting is required.
- (iii) Reinforced cement concrete below ground level and in bridge
- (iv) /ROB/RUB/flyover piers and abutments.
- (v) Boulders requiring blasting.

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(d) Hard Rock (Using controlled blasting): Hard rock requiring blasting as described under (c) but where controlled blasting to be carried out in locations where built-up area, huts and are situated at within 200 m of the blast site.

(e) Hard Rock (blasting prohibited): Hard rock requiring blasting as described under (d) but where blasting is prohibited for any reason like people living within 20 m of blast sites etc and excavation has to be carried out by chiseling, wedging or any other agreed method.

3.3.2.2 Authority for classification: The classification of excavation shall be decided by the Engineer-in-Charge/OC Contract and his decision shall be final and binding on the Contractor. Merely the use of explosives in excavation will not be considered as a reason for higher classification unless blasting is clearly necessary in the opinion of the Engineer-in-Charge/OC Contract.

3.3.3 Construction Operations

3.3.3.1. Setting out: After the site has been cleared as per Clause 201 of MoRT&H Specifications for road and Bridge works (Fifth Revision), the limits of excavation shall be set out true to the lines, curves, slopes, grades and sections as shown on the drawings or as directed by the Engineer-in-Charge/OC Contract. Clause 109 shall be applicable for the setting out operations.

3.3.3.2. Stripping and storing topsoil: When so directed by the Engineer-in-Charge/OC Contract, the topsoil existing over the sites of excavation shall be stripped to specified depths and stockpiled at designated locations for re-use in covering embankment slopes, cut slopes, berms and other disturbed areas where re-vegetation is desired in accordance with Clauses 305.3.3. Prior to stripping the topsoil, all trees, shrubs etc. shall be removed along with their roots, with approval of the Engineer-in-Charge/OC Contract.

3.3.3.3 All excavations shall be carried out in conformity with the directions laid here-in-under and in a manner approved by the Engineer-in-Charge/OC Contract. The work shall be so done that the suitable materials available from excavation are satisfactorily utilized as deemed fit or as approved by the Engineer-in-Charge/OC Contract.

3.3.3.4. While planning or executing excavations, the Contractor shall take all adequate precautions against soil erosion, water pollution etc. as per Clause 306 of MoRT&H Specifications for road and Bridge works (Fifth Revision), and take appropriate drainage measures to keep the site free of water in accordance with Clause 311 of MoRT&H Specifications for road and Bridge works (Fifth Revision).

3.3.3.5 The excavations shall conform to the lines, grades, side slopes and levels shown on the drawings or as directed by the Engineer-in-Charge/OC Contract. The Contractor shall not excavate outside the limits of excavation. Subject to the permitted tolerances, any excess depth/width excavated beyond the specified levels/dimensions on the drawings shall be made good at the cost of the Contractor with suitable materials of characteristics similar to that removed and compacted to the requirements of Clause 305 of MoRT&H Specifications for road and Bridge works (Fifth Revision).

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3.3.3.6 All debris and loose material on the slopes of cuttings shall be removed. No backfilling shall be allowed to obtain required slopes excepting that when boulders or soft materials are encountered in cut slopes, these shall be excavated to approved depth on instructions of the Engineer-in-Charge/OC Contract and the resulting cavities filled with suitable material and thoroughly compacted in an approved manner.

3.3.3.7 After excavation, the sides of excavated area shall be trimmed and the area contoured to minimize erosion and ponding, allowing for natural drainage to take place.

3.3.4 Methods, tools and equipment: Only such methods, tools and equipment as approved by the Engineer-in-Charge/OC Contract shall be adopted/used in the work. If so desired by the Engineer-in-Charge/OC Contract, the Contractor shall demonstrate the efficacy of the type of equipment to be used before the commencement of work.

3.3.5 Excavation of road shoulders/verge/median for widening of pavement or providing treated shoulders: In works involving widening of existing pavements or providing paved shoulders, the existing shoulder/verge/median shall be removed to its full width and upto top of the subgrade. The subgrade materials within 500 mm from the bottom of the pavement for the widened portion or paved shoulders shall be loosened and re-compacted as per Clause 305. Any unsuitable material found in this portion shall be removed and replaced with the suitable material. While doing so, care shall be taken to see that no portion of the existing pavement designated for retention is loosened or disturbed. If the existing pavement gets disturbed or loosened, it shall be dismantled and cut to a regular shape with sides vertical and the disturbed/loosened portion removed completely and relaid as directed by the Engineer-in-Charge/OC Contract, at the cost of the Contractor.

3.3.6 Dewatering: If water is met with in the excavations due to springs, seepage, rain or other causes, it shall be removed by suitable diversions, pumping or bailing out and the excavation kept dry whenever so required or directed by the Engineer-in-Charge/OC Contract. Care shall be taken to discharge the drained water into suitable outlets as not to cause damage to the works, crops or any other property. Due to any negligence on the part of the Contractor, if any such damage is caused, it shall be the sole responsibility of the Contractor to repair/restore to the original condition at his own cost or compensate for the damage.

3.3.7 Use and Disposal of excavated materials: All the excavated materials will be the property of the Accepting Officer. The material obtained from the excavation of roadway, shoulders, verges, drains, cross-drainage works etc., shall be used for filling up of (i) roadway embankment, (ii) the existing pits in the right-of-way and (iii) for landscaping of the road as directed by the Engineer-in-Charge/OC Contract, including leveling and spreading with all lifts and lead as specified and no extra payment shall be made for the same. **Further all excess excavated materials shall be disposed at specified site identified by the Engineer-in-Charge/OC Contract.**

3.3.7.1 All hard materials such as hard moorum, rubble, etc., not intended for use as above shall be stacked neatly on specified land as directed by the Engineer-in-Charge/OC Contract.

3.3.7.2 Unsuitable and surplus material not intended for use within the lead specified above shall also, if necessary, be transported with all lifts and lead as specified or disposed of or used as directed by the Engineer-in-Charge/OC Contract.

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3.3.8 Backfilling: Backfilling of masonry/concrete/hume pipe drain excavation shall be done with approved material with all leads and lifts after concrete/masonry/hume pipe is fully set and carried out in such a way as not to cause undue thrust on any part of the structure and/or not to cause differential settlement. All space between the drain walls and the side of the excavation shall be backfilled to the original surface making due allowance for settlement, in layers not exceeding 150 mm compacted thickness to the required density, using suitable compaction equipment such as trench compactor, mechanical tamper, rammer or plate compactor as directed by the Engineer-in-Charge/OC Contract.

3.3.9 Plying of Construction Traffic: Construction traffic shall not use the cut formation and finished subgrade without the prior permission of the Engineer-in-Charge/OC Contract. Any damage arising out of such use shall be made good by the Contractor at his own cost.

3.3.10 Preservation of Property: The Contractor shall undertake all reasonable precautions for the protection and preservation of any or all existing roadside trees, drains, sewers or other sub-surface drains, pipes, conduits and any other structures under or above ground, which may be affected by construction operations and which, in the opinion of the Engineer-in-Charge/OC Contract, shall be continued in use without any change. Safety measures taken by the Contractor in this respect, shall be got approved from the Engineer-in-Charge/OC Contract. However, if any of these objects is damaged by reason of the Contractor's negligence, it shall be replaced or restored to the original condition at his cost. If the Contractor fails to do so, within the required time as directed by the Engineer-in-Charge/OC Contract or if, in the opinion of the Engineer-in-Charge/OC Contract, the actions initiated by the Contractor to replace/restore the damaged objects are not satisfactory, the Engineer-in-Charge/OC Contract shall arrange the replacement/restoration directly through any other agency at the risk and cost of the Contractor after issuing a prior notice to the effect.

3.3.11. Finishing Operations

3.3.11.1 Finishing operations shall include the work of properly shaping and dressing all excavated surfaces.

3.3.11.2 When completed, no point on the slopes shall vary from the designated slopes by more than 150 mm measured at right angles to the slope, except where excavation is in rock (ordinary or hard) where no point shall vary more than 300 mm from the designated slope. In no case shall any portion of the slope encroach on the roadway.

3.3.11.3 The finished cut formation shall satisfy the surface tolerances described in Clause 902 of MoRT&H Specifications for road and Bridge works (Fifth Revision).

3.3.11.4 Where directed, the topsoil removed and conserved (Clauses 301.3.2 and 305.3.3) of MoRT&H Specifications for road and Bridge works (Fifth Revision) shall be spread over cut slopes, shoulders and other disturbed areas. Slopes may be roughened and moistened slightly, prior to the application of topsoil, in order to provide satisfactory bond. The depth of topsoil shall be sufficient to sustain plant growth, the usual thickness being from 75 mm to 100 mm.

3.3.12 Measurements for Payment

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3.3.12.1 Excavation for roadway shall be measured by taking cross-sections at suitable intervals before the excavation starts (after clearing and grubbing/stripping etc as the case may be) and after its completion and computing the volumes in “Cum” by the method of average end areas for each class of material encountered. Where it is not feasible to compute volumes by this method because of erratic location of isolated deposits, the volumes shall be computed by other accepted methods.

3.3.12.2 At the option of the Engineer-in-Charge/OC Contract, the Contractor shall leave depth indicators during excavations of such shape and size and in such positions as directed so as to indicate the original ground level as accurately as possible. The Contractor shall see that these remain intact till the final measurements are taken.

3.3.12.3 For rock excavation, the overburden shall be removed first so that necessary cross-sections could be taken for measurement. Where cross sectional measurements could not be taken due to irregular configuration or where the rock is admixed with other classes of materials, the volumes shall be computed on the basis of measurement or stacks of excavated rubble allowing a deduction of 35% therefrom. When volume is calculated on the basis of measurement of stacks of the excavated materials other than rock, deduction of 16% of stacked volume shall be allowed.

3.3.13 Rates

3.3.13.1 The Contract unit rates for the items of roadway and drain excavation shall be payment in full for carrying out the operations required for the individual items including full compensation for:

- (i) Setting out;
- (ii) Transporting the excavated materials for use or disposal with all leads and lifts by giving suitable credit towards the cost of re-usable materials and salvage value of unusable material.
- (iii) Trimming bottoms and slopes of excavation;
- (iv) Dewatering;
- (v) Keeping the work free of water as per Clause 311 of MoRT&H Specifications for road and Bridge works (Fifth Revision);
- (vi) Arranging disposal sites and
- (vii) All labour, materials, tools, equipment, safety measures, testing and incidentals necessary to complete the work to Specifications.

3.4 PREPARATION OF SUBGRADE IN SOIL MIXED WITH BOULDER, SOFT ROCK AND HARD ROCK 400 MM DEPTH

3.4.1 Scope

The work shall consist of preparation of sub-grade in Soil Mixed with Boulder, Soft Rock and Hard Rock upto a depth of 400 mm.

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3.4.2 Construction Method

The work shall consists of excavating upto 40 cm average depth by any means, filling with small stone metal out of excavated materials, dressing excavated earth to required camber or super elevation and consolidating with power roller including watering & disposal of surplus earth within a lead of 50 mtr.

3.4.3 Measurements for Payment

The measurement of preparation of subgrade in Soil Mixed with Boulders, Soft Rock and Hard Rock will be in “cubic meter”.

3.4.4 Rate

The Contract unit rate for preparation of subgrade shall be payment in full for carrying out the required operations including full compensation for finishing all labour, materials, tools, equipment and all other incidental costs necessary to complete the work to these Specifications including disposal of material to dumping area as approved by Engineer-in-Charge/OC Contract.

3.5 Compaction Requirement

The Contractor shall obtain representative samples from each of the identified borrow areas and have these tested at the site laboratory following a testing programme approved by the Engineer. It shall be ensured that the subgrade material when compacted to the density requirements as in Table 300-2 shall yield the design CBR value of the subgrade.

TABLE 300-2. Compaction Requirements For Embankment And Subgrade

S/No	Type of work/material	Relative compaction as percentage of max, laboratory dry density as per IS 2720 (Part 8)
1.	Subgrade and earthen shoulders	Not less than 97%
2.	Embankment	Not less than 95%
3.	Expansive Clays a) Subgrade and 500 mm portion just below the subgrade b) Remaining portion of embankment	Not allowed 90-95%

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 7) or (Part 8), appropriate for each of the fit! materials he intends to use.

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(ii) A graph of density plotted against moisture content from which each of the values in (i) above of maximum dry density and optimum moisture content were determined.

The maximum dry density and optimum moisture content approved by the Engineer shall form the basis for compaction.

3.5.1 Compaction Ground supporting Embankment/Subgrade

Where necessary, the original ground shall be levelled to facilitate placement of first layer of embankment, scarified, mixed with water and then compacted by rolling so as to achieve minimum dry density as given in Table 300-2.

In case where the difference between the subgrade level (top of the subgrade on which pavement rests) and ground level is less than 0.5 m and the ground does not have 97 per cent relative compaction with respect to the dry density (as given in Table 300-2), the ground shall be loosened upto a level 0.5 m below the subgrade level, watered and compacted in layers in accordance with Clauses 305.3.5 and 305.3.6 of MoRT&H Specifications for road & bridge works (Fifth Edition) to achieve dry density not less than 97 per cent relative compaction as given in Table 300-2

Where so directed by Engineer, any unsuitable material occurring in the embankment foundation(500 mm portion just below the sub-grade) shall be removed, suitably disposed and replaced by approved materials laid in layers to the required degree of compaction

3.5.1.1 Compaction :

Only the compaction equipment approved by the Engineer shall be employed to compact the different material types encountered during construction. Static three-wheeled roller, self propelled single drum vibratory roller, tandem vibratory roller, pneumatic tyre roller, pad foot roller etc., of suitable size and grades of materials required to be compacted either individually or in suitable combinations.

The compaction shall be done with the help of self propelled single drum vibratory roller or pad foot vibratory roller of 80 to 100 kN static weight or heavy pneumatic tyre roller of adequate capacity capable of achieving required compaction. The Contractor shall demonstrate the efficacy of the equipment he intends to use by carrying out compaction trials. The procedure to be adopted for these site trials shall first be submitted to the Engineer for approval.

Each layer of the material shall be thoroughly compacted to the densities specified in Table 300-2. Subsequent layers shall be placed only after the finished layer has been tested according to Clause 903.2.2 of MoRT&H Specifications for road & bridge works (Fifth Edition) and accepted by the Engineer-in Charge/ OC Contract. The Engineer may permit measurement, of field dry density by a nuclear moisture/density gauge used in accordance with agreed procedure and provided the gauge is calibrated to give results identical to that obtained from tests in accordance with IS: 2720 (Part 28), A record of the same shall be maintained by the Contractor.

When density measurements reveal any soft areas in the embankment/subgrade/earthen shoulders, further compaction shall be carried out as directed by the Engineer-in-charge/OC

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Contract. If inspite of that the specified compaction is not achieved, the material in the soft areas shall be removed and replaced by approved material, compacted using appropriate mechanical means such as light weight vibratory roller, double drum walk behind roller, vibratory plate compactor, trench compactor or vibratory tamper to the density requirements and satisfaction of the Engineer -in Charge/OC Contract.

3.5.1.2 Measurement for payment : Consolidation of subgrade shall be measured in terms of surface area of application in **square meter**.

3.6 GRANULAR SUB-BASE 225 MM COMPACTED THICKNESS (IN TWO LAYERS OF 125 MM & 100 MM)

3.6.1 General Requirement.

The scope of the work shall consists of providing, laying and compaction of Granular Sub Base in two layers of 125 mm and 100 mm thickness. This work shall consist of laying and compacting well-graded material on prepared subgrade in accordance with the requirements of these Specifications. The material shall be laid in one or more layers as sub-base or lower sub-base and upper sub-base (termed as sub-base hereinafter) as necessary according to lines, grades and cross-sections shown on the drawings or as directed by the Engineer-in-Charge/OC Contract.

3.6.2 Materials

3.6.2.1 The materials to be used for the work shall be natural sand, crushed gavel, crushed stone, crushed slag or combination thereof depending upon the grading required.

Use of materials like brick metal, Kankar and crushed concrete shall be permitted in lower sub-base. The materials shall be free from organic or other deleterious constituents and shall conform to the grading given in Table 400-1 and physical requirements as per Table 400-2 of MoRT&H Specifications for Road & Bridge Works (Fifth Revision).

Table 400-1: Grading for Granular Sub-Base Materials

IS Sieve Designation	Per cent by weight passing the IS sieve
	Grading I
75.0 mm	100
53.0 mm	80-100
26.5 mm	55-90
9.50 mm	35-65
4.75 mm	25-55
2.36 mm	20-40
0.425 mm	10-25
0.075 mm	<5

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Table 400-2: Physical Requirements for Materials for Granular Sub-Base

Aggregate Impact Value (AIV)	IS:2386 (Part4) or IS:5640	40 Maximum
Liquid Limit	IS:2720 (Part 5)	Maximum 25
Plasticity Index	IS:2720 (Part 5)	Maximum 6
CBR at 98% dry density (at IS:2720-Part8)	IS:2720 (Part 5)	Minimum 30 unless otherwise specified in the Contract

3.6.2.2 If the water absorption of the aggregates determined as per IS:2386 (Part3) is greater than 2 percent, the aggregates shall be tested for Wet Aggregate Impact Value (AIV) (IS:5640). Soft aggregates like Kankar, Brick ballast and laterite shall also be tested for Wet AIV (IS:5640).

3.6.3 Construction Operations

3.6.3.1 Preparation of subgrade

Immediately prior to the laying of sub-base, the subgrade already finished to Clause 301 or 305 of MoRT&H Specifications for Road & Bridge Works (Fifth Revision) as applicable shall be prepared by removing all vegetation and other extraneous matter, lightly sprinkled with water, if necessary and rolled with two passes of 80-100 KN smooth wheeled roller.

3.6.3.2 Spreading and compacting

3.6.3.2.1 The sub-base material of grading specified in the contract and water shall be mixed mechanically by a suitable mixer equipped with provision for controlled addition of water and mechanical mixing so as to ensure homogeneous and uniform mix. The required water content shall be determined in accordance with IS:2720 (Part 8). The mix shall be spread on the prepared subgrade with the help of a motor grader of adequate capacity, its blade having hydraulic controls suitable for initial adjustment and for maintaining the required slope and grade during the operation or other means as approved by the Engineer-in-Charge/OC Contract.

3.6.3.2.2 Moisture content of the mix shall be checked in accordance with IS: 2720 (Part 2) and suitably adjusted so that, at the time of compaction, it is from 1 to 2 % below the optimum moisture content.

3.6.3.2.3 Immediately after spreading the mix, rolling shall be done by an approved roller. If the thickness of the compacted layer does not exceed 100 mm, a smooth wheeled roller of 80 to 100 kN weight may be used. For a compacted single layer upto 200 mm, the compaction shall be done with the help of a vibratory roller of minimum 80 to 100 kN static weight capable of achieving the required compaction. Rolling shall commence at the lower edge and proceed towards the upper edge longitudinally for portions having unidirectional crossfall or on super-elevation. For carriageway having

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crossfall on both sides, rolling shall commence at the edges and progress towards the crown.

3.6.3.2.4 Each pass of the roller shall uniformly overlap not less than one-third of the track made in the preceding pass. During rolling, the grade and cross fall (camber) shall be checked and any high spots or depressions, which become apparent, corrected by removing or adding fresh material. The speed of the roller shall not exceed 5 km per hour.

3.6.3.2.5 Rolling shall be continued till the density achieved is at least 98 per cent of the maximum dry density for the material determined as per IS: 2720 (Part 8). The surface of any layer of material on completion of compaction shall be well closed, free from movement under compaction equipment and from compaction planes, ridges, cracks or loose material. All loose, segregated or otherwise defective areas shall be made good to the full thickness of layer and re-compacted.

3.6.3.2.6 Surface Finish and Quality Control of Work

3.6.3.2.7 The surface finish of construction shall conform to the requirements of Clause 902 of MoRT&H Specifications for Road and Bridge Works (Fifth Revision). Control on the quality of materials and works shall be exercised by the Engineer-in-Charge/OC Contract in accordance with Section 900 of MoRT&H Specifications for Road and Bridge Works (Fifth Revision).

3.6.3.2.8 Arrangements for Traffic During the period of construction, arrangement of traffic shall be provided and maintained in accordance with Clause 112 of MoRT&H Specifications for Road and Bridge Works (Fifth Revision).

3.6.3.2.9 Measurements for Payment

1.5.6.1 Granular sub-base shall be measured as finished work in position in “**Cubic Meter**”.

1.5.6.2 The protection of edges of granular sub-base as shown in the drawing/as directed by the Engineer-in-Charge/OC Contract shall be considered incidental to the work of providing granular sub-base and as such no extra payment shall be made for the same.

3.6.3.2.10 Rate

The Contract unit rate for granular sub-base shall be payment in full for carrying out the required operations including full compensation for:

- (i) Making arrangements for traffic to Clause 112 of MoRT&H Specifications for Road and Bridge Works (Fifth Revision) except for initial treatment to verges, shoulders and construction of diversions;
- (ii) Supplying all materials to be incorporated in the work including all royalties, fees, rents where applicable with all leads and lifts;
- (iii) All labour, tools equipment and incidentals to complete the work to the Specifications;

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- (iv) Carrying out the work in part widths of road where directed; and
- (viii) Carrying out the required tests for quality control.

3.6.4 Quality Control Tests and their minimum frequency for Granular Sub-Bases in accordance with Table 900-3 of MoRT&H Specifications for road & bridge works (Fifth Edition)

TABLE 900-3.

S/No	Type of Material	Test	Frequency (Min)
(a)	Granular	i) Gradation	One test per 400 m ³
		ii) Atterberg limits	One test per 400 m ³
		iii) Moisture Content Prior to compaction	One test per 400 m ²
		iv) Density of Compacted layer	One test per 1000 m ²
		v) Deleterious Constituents	As required
		vi) C.B.R.	As required

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3.7 PREMIX CARPET 25 MM THICK

3.7.1 SCOPE: This work shall consist of preparation, laying and compaction of an open graded premix surfacing material of 25 mm thickness composed of small sized aggregate premixed with bituminous binder on a previously prepared base, in accordance with the requirements specified as under to serve as a wearing course.

MATERIALS

3.7.2 BITUMEN

The bitumen (VG-30/Emulsion) to be used shall be viscosity graded paving bitumen complying with Indian Standard Specification for paving bitumen IS:73 or as specified in the Contract. The type and grade of bitumen to be used would depend upon climatic conditions and the traffic and is given in Table No 500-1 as under:-

Lowest Daily Mean Air Temperature, °C.	Highest Daily Mean Air Temperature, °C.		
	Less than 20°C	20°C to 30°C	More than 30°C
More Than -10°C	VG-10	VG-20	VG-30
-10°C or lower	VG-10	VG-10	VG-20

3.7.3 COARSE AGGREGATES: The Coarse aggregates shall consist of crushed rock or other hard material retained on 2.36 mm sieve. It shall be clean, hard, durable and cubical in shape, free from dust and soft organic and other deleterious substances. The aggregate shall satisfy the physical requirements specified in table No 500-6. Before approval of the source, the aggregates shall be tested for stripping. Where the Contractor's selected source of aggregates have poor affinity for bitumen, as a condition for the approval of that source, the bitumen shall be treated with approved anti-stripping agents, as per the manufacturer's recommendations, without additional payment.

Table 500-06: Physical Requirement for Coarse Aggregate for Premix Carpet

Property	Test	Specification	Method of Test
Cleanliness	Grain size analysis	Max 5% passing 0.075 mm sieve	IS : 2386 Part I
Particle shape	Flakiness and Elongation Index (Combined)	Max 35%	IS : 2386 Part I
Strength	Los Angeles Abrasion value	Max 40%	IS : 2386 Part IV
	Aggregate Impact Value	Max 30%	
Durability	Soundness		
	(a) Sodium Sulphate	Max 12%	IS : 2386 Part V
	(b) Magnesium Sulphate	Max 18%	IS : 2386 Part V
Polishing	Polished Stone Value	Min 55	BS:812-114
Water absorption	Water absorption	Max 1%	IS : 2386 Part III

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Stripping	Coating and Stripping of Bitumen Aggregate Mix	Minimum retained coating 95%	IS : 6241
Water Sensitivity	Retained Tensile strength *	Min 80%	AASHTO 283

- If the minimum retained tensile strength falls below 80 percent, use of anti stripping agent is recommended to meet the minimum requirements.

3.7.4. Aggregate gradation

The coarse and fine aggregate shall be so graded or combined as to conform to one or the other gradings given in Table 500-19 as specified the contract

IS Sieve Designation(mm)	Cumulative Percent by weight of total Aggregate Passing	
	Type A	Type B
13.2mm	-	100
11.2mm	100	88-100
5.6mm	52-88	31-52
2.8mm	14-38	5-25
0.90mm	0-5	0-5

Proportioning of Material

As per Schedule A and as directed by OC Contract /Engineer-in Charge.

3.7.5. CONSTRUCTION OPERATION

3.7.5.1 WEATHER AND SEASONAL LIMITATIONS. Laying shall be suspended:-

- In presence of standing water on the surface.
- When rain is imminent and during rains, fog or dust storm.
- When the base/binder course is damp.
- When the air temperature on the surface on which it is to be laid is less than 10°C for mixes with conventional bitumen and is less than 15°C for mixes with modified bitumen.
- When the wind speed at any temperature exceeds the 40 km per hour at 2 m height.

3.7.5.2 PREPARATION OF SURFACE

3.7.5.2.1 The underlying surface on which the bituminous surface is to be laid shall be prepared, shaped and conditioned to the specified lines, grade and cross-section in accordance with Clause 501 of MoRT&H Specifications for road & bridge works (Fifth revision) as appropriate, or as directed by the Engineer-in-Charge/OC Contract. The surface shall be thoroughly swept clean by mechanical broom and dust removed by compressed air. In locations where a mechanical broom cannot get access, other approved methods shall be used as directed by the Engineer-in-Charge/OC Contract.

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3.7.6 Measurement for Payment:-

3.7.6.1 The work shall be measured as finished work in position in **“Square meter”** as specified in Bill of quantity” of Bid Documents. Suitable arrangement shall be made by the contractor to facilitate measurement by the unit specified.

3.7.6.2 Contractor shall arrange labour and other tools required for taking the measurements. Contractor shall not be entitled for any extra payment on this account. In case the contractor or his accredited representative fails to report for taking joint measurements at the appointed date and time, as intimated by the Engineer-in-Charge/OC Contract in writing, the measurements shall be taken by the Engineer-in-Charge/OC Contract ex-parte without presence of contractor or his accredited representative and measurement thus taken shall be final and binding on the contractor.

3.7.6.3 Quality Control Tests and their minimum frequency for Wet Mix Macadam in accordance with Table 900-3 of MoRT&H Specifications for road & bridge works (Fifth Edition)

TABLE 900-4.

S/No	Type of Material	Test	Frequency (Min)
(a)	Open-graded Premix Surfacing/ Closing Graded premix Surfacing	i) Quality of binder	Number of samples per lot and tests as per 1S:73. IS:217and IS:8887 as applicable.
		ii) Aggregate Impact value/Los Angeles Abrasion Value	One test per 200 m ³
		iii) Combined Flakiness and Elongation Index	One test per 100 m ³ of aggregate
		iv) Stripping Value	One test of each source and whenever there is change in the quality of Aggregate
		v) Water absorption of aggregates	One test of each source and whenever there is change in the quality of Aggregate
		Water sensitivity of mix	One test of each source
		v) Grading of aggregates	Two tests per day

3.8 TACK COAT

3.8.1 Binder: The work shall consist of the application of a single coat of low viscosity liquid bituminous material to existing bituminous surface preparatory to the superimposition of a bituminous mix, when specified in the Contract or as instructed by the Engineer-in-Charge. The work shall be carried ut on a previously prepared surface in accordance with Clause 501.8 of MoRT&H Specifications for road & bridge works (Fifth revision). The binder used for tack coat shall be bitumen emulsion complying with IS 8887. The type and grade of binder for tack coat shall be specified in the Contract or as directed by the Engineer-in-Charge/OC

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Contract. The normal range of spraying temperature for a bituminous emulsion shall be 20° C to 70° C and for cut back 50° C to 80° C. The method of application of the tack coat and the type of method of application of the tack coat will depend on the type of equipment to be used, size or nozzles, pressure at the spray bar, and speed of forward movement. The Contractor shall demonstrate at a spraying trial, that the equipment and method to be used is capable for producing a uniform spray, within the tolerance specified.

3.8.2 PREPARATION OF PREMIX

3.8.2.1. Hot Mix Plant of appropriate capacity and type shall be used for the preparation of the mix material. The Hot Mix Plant shall have separate dryer arrangement for heating aggregate.

3.8.2.2. The temperature of the binder and aggregate at the time of mixing, laying and compaction shall be in conformity with the temperature given in table 500-2 of MoRT&H specifications for road and bridge works (fifth revision). The difference in temperature between the binder and aggregate shall at no time exceed 14°C. Mixing shall be thorough to ensure that a homogeneous mix is obtained in which all particles of the aggregates are coated uniformly.

3.8.2.3. The mix shall be immediately transported from the mixer to the point of use in suitable vehicles or hand barrows. The vehicles employed for transport shall be clean and the mix being transported covered in transit if so directed by the Engineer-in-Charge.

3.9 ANTI STRIPPING AGENT

Where the proposed aggregate fails to pass the stripping test, then an approved anti stripping agent (Appendix 4 of MoRT&H specifications for road and bridge works (fifth revision) for details) may be added to the binder in accordance with the manufacturer's instructions. The effectiveness of the proposed anti-stripping agent must be demonstrated by the Contractor, before approval by the Engineer-in-Charge.

3.10. WARM MIX ADDITIVES

An approved Warm Mix Additives may be used for the work as per the provisions of IRC:SP:101-2014 and as per the directions of Engineer-in-Charge. Mixing, Laying and Rolling temperature for WMA will be as per Table 1 of IRC:SP:101-2014 as under:-

Bitumen Grade	Mix Temperature (°C)	Laying Temperature (°C)	Rolling Temperature (°C)
VG-30	130 max	115 min	90 min
VG-10	120 max	110 min	80 min

In case of special conditions including but not limited to long hauls, cold paving conditions etc. the recommendations of the WMA technology supplier shall be followed.

3.11 SPREADING AND ROLLING

3.11.1. The pre mixed material shall be spread on a previously prepared base to Clause 501 of MoRT&H specifications for road and bridge works (fifth edition) by a paver unless specified otherwise in the contract to the desired thickness, grades and crossfall (camber). The cross-fall should be checked by means of camber boards and irregularities leveled out.

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Excessive use of blades or rakes should be avoided. As soon as sufficient length of bituminous material has been laid, rolling shall commence with 8-10 tonnes rollers, smooth wheel tandem type or other approved equipment. Rolling shall begin at the edge and progress towards the centre longitudinally, except that on superelevated and uni-directional cambered portions, it shall progress from the lower to upper vedge parallel to the centre line of the pavement.

3.11.2. When the roller has passed over the whole area once, any high spots or depressions, which become apparent, shall be corrected by removing or adding premixed materials. Rolling shall then be continued until the entire surface has been rolled and all the roller marks eliminated. In each pass of the roller, the preceding track shall be overlapped uniformly by at least one-third width. The roller wheels shall be kept damp to prevent the premix from adhering to the wheels. In no case shall fuel/lubricating oil be used for this purpose. Excess use of water for this purpose shall also be avoided.

3.11.3. Rollers shall not stand on newly laid material. Rolling operations shall be completed in every respect before the temperature of the mix falls below the rolling temperature indicated in Table 500-2.

3.11.3.1 **Measurement for Payment:** Tack coat **shall not be measured for payment** as its cost is included in cost of Premixed consolidated carpet.

3.12. SEAL COAT

3.12.1 A seal coat conforming to Clause 511 of MoRT&H specifications for road and bridge works (fifth revision) of the type specified in the contract shall be applied to the surface immediately after laying the surface. Seal coat specified below:-

Premixed seal coat comprising of a thin application of fine aggregate premixed with bituminous binder.

3.12.1.1 PREPARATION OF SURFACE

The Seal coat shall be applied immediately after laying the bituminous course which is required to be sealed. Before application of seal coaty materials, the surface shall be cleaned free of any dust or other extraneous matter.

3.12.1.2. OPENING TO TRAFFIC

In the case of Type B seal coat, traffic may be allowed soon after final rolling when the pre-mixed material has cooled down to the surrounding temperature. In special circumstances, however, the Engineer-in-Charge may open the road to traffic immediately after rolling, but in such cases traffic shall be rigorously limited to 20 km per hour until the following day.

3.12.1.3 SURFACE FINISH AND QUALITY CONTROL OF WORK

3.12.1.3.1 The surface of construction shall conform to the requirements of Clause 902 of MoRT&H specifications for road and bridge works (fifth revision).

3.12.1.3.2. For Control on the quality of materials and the works carried out, the relevant provisions of section 900 of MoRT&H specifications for road and bridge works (fifth revision) shall apply.

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3.13. ARRANGEMENT FOR TRAFFIC

During the period of construction, arrangements for traffic shall be made in accordance with the provisions of Clause 112 of MoRT&H specifications for road and bridge works (fifth revision).

3.14. MEASUREMENT FOR PAYMENT

The work shall be measured as finished work, for the area instructed to be covered, in square metres at the specified thickness as specified in Schedule-'A' of tender documents.

3.15. RATE

The contract unit rate for the work shall be paid in full for carrying out the required operations including full compensation for:-

- (i) Making arrangement for traffic to Clause 112 of MoRT&H Specifications except for initial treatment to verge, shoulders and construction of diversions;
- (ii) Cleaning of the surface.
- (iii) Providing all materials to be incorporated in the work including arrangement for stock yards all royalties, fees, rents where necessary and all leads and lifts;
- (iv) Mixing, transporting, laying and compacting the mix as specified including all wastage in cutting joints.
- (v) All labour, tools, equipments, plant including installation of Hot Mix Plant, power supply units and all machinery, incidental to complete the work to these specifications;
- (vi) Carrying out the work in part widths of the road where directed.
- (vii) Carrying out all tests for control of quality.
- (viii) The rate shall cover the provision of bitumen at the application rate specified in the contract, with the provision that the variation in actual percentage of bitumen used shall be assessed and the payment adjusted accordingly as per contract.
- (ix) The rates include for all testing, mix design transporting and testing of samples, and cores and tests as directed by the Engineer-in-Charge. The contractor shall make all required facilities for carrying out different tests at the work site. If there is not a project specific laboratory, the Contractor must arrange to carry out all necessary testing at an outside laboratory, approved by the Engineer-In-Charge/OC Contract and all costs incurred are deemed to be included in the rate quoted for the items or work. In case the test results are not produced by the contractor, quality control tests as per the frequency mentioned in the contract will be conducted by the department and the cost of testing charges as per the rates fixed by HQ CE (P) Dantak will be deducted from the contractor.
- (x) The cost of all plant and laying trials as specified to prove the mixing and laying method shall be deemed to be included in the Contractor's rates.

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3.16. FREQUENCY OF TESTS

Frequency of tests to be carried out as per Table 900-4 of MoRT&H specifications for road and bridge works (Fifth Revision) are as under:-

Ser No	Description of test	Frequency
(i)	Quality of Binder	Number of samples per lot and tests as per IS:73, IS:217 and IS 8887 as applicable.
(ii)	Aggregate Impact Value of Los Angeles Abrasion Value	One test per 200 cum of each source and whenever there is change in the quality of aggregate.
(iii)	Combined Flakiness and Elongation Indices	One test per 150 cum of aggregate for each source and whenever there is change in the quality of aggregates.
(iv)	Stripping Value	One test of each source and whenever there is change in the quality of aggregates.
(v)	Water absorption of aggregates	One test of each source and whenever there is change in the quality of aggregates.
(vi)	Water Sensitivity of mix	One test of each source and whenever there is change in the quality of aggregates.
(vii)	Grading of aggregates	Two tests per day.
(viii)	Soundness(Magnesium Sulphate/Sodium Sulphate)	One test for each source and whenever there is change in the quality of aggregates.
(ix)	Polished Stone Value	One test of each source and whenever there is change in the quality of aggregates.
(x)	Temperature of binder at application	At regular interval.
(xi)	Binder Content	Two tests per day per plant.
(xii)	Percentage of fractured faces	One test per 100 cum of aggregate.

3.16.1 Compaction Requirement

The Contractor shall obtain representative samples from each of the identified borrow areas and have these tested at the site laboratory following a testing programme approved by the Engineer. It shall be ensured that the subgrade material when compacted to the density requirements as in Table 300-2 shall yield the design CBR value of the subgrade.

3.17 Miscellaneous

The specification of any item not covered in the above technical specification, the Indian Standard Specification applicable for the Border Roads Organisation shall be followed.

3.18. DRAWING OF SURFACING WORKS (CROSS SECTION)

Drawings of Surfacing works such as Cross section can be seen in the office of Chief Engineer Project Dantak for reference purpose. However, actual drawings for execution of Surfacing works will be provided by OC Contract. Contractor shall execute work as per drawing provided by OC Contract.

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PART-II PRICED BID

SCHEDULE - "A" NOTES

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINATORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

1. Quantity shown in Schedule 'A' is approximate and is inserted as guide only. These shall, however not be varied beyond the limits laid down in condition 7 of IAFW-2249 General Condition of contracts. **The contract will be accepted as a whole as per the discretion of the Accepting Officer.**
2. The rates and amount in Schedule 'A' are to be filled in by the tenderer. The rates shall be filled both in figures as well as in words. In case of variation between the rates quoted in figure and words, the rates in words shall take precedence.
3. **Period of Completion** :- The entire works of Schedule 'A' under this contract shall be completed within **180** days in accordance with the phasing, if any, indicated in the tender from the date of placing of work order, which will be usually within two week from the date of issue of Acceptance letter.
4. Any drawings mentioned in the tender documents/particular specifications but it is inadvertently not included in the list of drawings, shall also be deemed to form part of the contract and Tenderer may see such drawings/details in the office of Accepting Officer/concerned OC Contracts and shall be supplied by Deptt.
5. The layout of work as indicated in site plan/layout plan is tentative and may be varied where necessary at the discretion of the OC Contact. The contractor shall not be entitled for any claim on account of any such variation.
6. The rates to be quoted by the tenderer in the schedule 'A' shall be deemed to include for the provision of all labour and materials, loading and unloading of materials and transportation if required, tools, plant, equipment and tackle, process, operations and specific requirements details in the schedule in the particular specification and elsewhere in this tender documents and for the full, entire and final completion of the work in accordance with the provisions of these tender documents.
7. The rate quoted by the contractor shall be deemed to be inclusive of all Taxes (including Sales Tax/VAT on materials, Sales, Tax/VAT on works contracts, Turnover Tax, Service Tax, etc), duties, Royalties, Octroi, State Entry Tax & other levies payable under the respective statutes. No re-imburement/refund for variation in rates of taxes, duties royalties, Octroi, State Entry tax & other levies, and or imposition/abolition of any new/existing taxes, duties, royalties, octroi, state entry Tax & other levies shall be made except as provided in Special Condition.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

SCHEDULE – ‘A’ NOTES (CONTD.....)

8. The rate to be quoted by the tenderer in respect of these work shall be deemed to include for all minor details of construction which are obviously and fairly intended and which may not have been specifically mentioned in the tender documents but which are essential for satisfactory execution and completion of work. In case of difference of opinion between the OC Contract and the Contractor as to what constitutes a minor details of construction, the decision of Accepting Officer shall be final and binding.
9. Rates to be quoted by the contractors shall be deemed to include for all items of work as described, specified in particular specification and on drawing.
10. The rates to be quoted by the contractor for various items shall include for “material and labour”/”Supply and fix” connecting’ Jointing, Testing and Commissioning complete unless otherwise specifically mentioned therein.
11. The amount of contract is not firm but shall be treated as the contract sum as referred to in condition 1 (n) of IAFW-2249.
12. Work shall be executed on locations as shown in site plan or as directed by the OC Contract/Engineer-in-Charge.
13. Measurements of work done shall be as per units of items given in Schedule ‘A’ and this mode of measurement shall take as per Clause 113 of MoRT&H Specification for road & Bridge works (Fifth Revision). The rate be quoted considering Clause 114 of MoRT&H Specification road & Bridge works (Fifth Revision)
14. Unit RM, mm, Cum or Cm, Sqm, Kg and quintal or Qtl wherever mentioned in the tender documents denotes the unit, Running Metre, Millimetre, Cubic Metre, Square Metre, Kilogram and Quintal respectively.
15. The works under this contract will be carried out within the working hours as per directions of Accepting Officer or the officer so detailed by him for administration of this contract.
16. The security will be arranged by the contactor for his personnel and equipment during the execution of work. No compensation will be paid by BRO on account of any loss/damage to personnel, property, veh/eqpt/plant of contactor during execution of work or on any account.
17. Site for execution of work shall be handed over on the date of commencement of the work as indicated in the work order No 01. In case it is not possible for the department to handover the entire site on the date of commencement and certain portion of the site is handed over later on then contactor shall make his planning/deployment of resources accordingly and no claims of whatsoever nature on the account shall be entertained.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

S/No	Description of Works	A/U	Qty	Rate per Unit to be quoted by the Bidder		Amount	
				Figures	Words	Figures	Words
A. Providing & Laying of WMM 10 cm thick, DBM 6 cm thick, BC 4 cm thick, Tack Coat, Road marking with thermoplastic paint and providing & fixing of Road stud & Delinetors for construction of Internal Roads at Motanga Industrial Park							
01.	Providing and laying wet mix macadam graded aggregate base course to required degree of compaction with proper formation of cross fall by using well graded crushed aggregates premixed with OMC using suitable mixer, motor grader as per material gradation and a aggregates quality specified (WMM 10 Cm thick Layer)	Cum	5378.12				
02.	Providing and Laying Dense Bituminous Macadam (DBM) to required degree of compaction based on mixture design (job mix formula) approved by the supervising engineer including preparation of surface with road broom, application of prime coat @ 0.75 kg/sq.m by mechanized method using asphalt plant, paver, steel roller, tyre roller etc. complete. DBM 6.0 Cm	Sqm	25709.30				
Total of srl page No. 210							

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

S/No	Description of Works	A/U	Qty	Rate per Unit to be quoted by the Bidder		Amount	
				Figures	Words	Figures	Words
03.	Providing and Laying Asphalt/ Bituminous Concrete to required degree of compaction based on the job mixture design approved by the supervising engineer using asphalt plant, paver, steel roller, tyre roller etc. as per material gradation and aggregate quality specified. (BC 4 Cm)	Sqm	25709.30				
04	Providing and applying tack coat with bitumen 80/100 using bitumen pressure distributor @ 2.5 Kg/10 Sqm on prepared bituminous/granular surface cleaned with mechanical broom, all complete as per clause 503 of MoRT&H specifications.	Sqm	51418.60				
	Total of srl page No. 211						

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

S/No	Description of Works	A/U	Qty	Rate per Unit to be quoted by the Bidder		Amount	
				Figures	Words	Figures	Words
05.	Providing and apply Road marking with hot applied thermoplastic compound with reflectorizing glass beads on Bituminuous surface as per IRC:35 and technical specifications. The finished surface to be level and free from streaks and holes	Sqm	116.00				
06	Providing and fixing of road stud 100 x 100mm, diecast nin aluminium, resistant to corrosive effect of salt and grit, fitted with lens reflectors, installed in concrete or asphaltic surface by drilling hole 30mm upto a depth of 60mm and bedded in a suitable bituminous grout or epoxy mortar all as per BS 873 (Part 4) 1973	Nos	984				
Total of srl page No. 212							

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

S/No	Description of Works	A/U	Qty	Rate per Unit to be quoted by the Bidder		Amount	
				Figures	Words	Figures	Words
07.	Supply and installation of delineators (600mm) (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15cm wide strips, fitted with 80x100 mm rectangular or 75mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC:79 and the drawings all complete as per clause 806 of MoRTH specification	Nos	221.00				
	Total of srl page No. 213						

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

S/No	Description of Works	A/U	Qty	Rate per Unit to be quoted by the Bidder		Amount	
				Figures	Words	Figures	Words
	B. Construction of Internal Roads from Primary Roads at Landfill plot at Motanga Industrial Park including jungle clearance, preparation of subgrade, providing & laying of GSB, WMM, Premix consolidated carpet surfacing including Tack coat, Seal coat and road marking with thermo plastic paint.						
01.	Clearing jungle including uprooting of vegetation & trees of girth < 300 mm & disposal within 50m of the site	Sqm	1042.50				
02	Excavation of road formation/trace/box cutting, with excavator including separate deposition of soil, rocks and stones within 50m for reuse All types of soil	Cum	555.75				
03	Preparation of sub grade with proper camber by excavating earth to depth equal to pavement thickness, consolidation with roller, disposal of surplus earth up to 50m All kinds of soil	Cum	281.25				
04	Consolidation of subgrade with roller, and making good the undulation with earth and re-rolling the subgrade	Sqm	562.50				
	Total of srl page No. 214						

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

S/No	Description of Works	A/U	Qty	Rate per Unit to be quoted by the Bidder		Amount	
				Figures	Words	Figures	Words
05.	Providing and laying Granular sub-base course (GSB) to required degree of compaction with proper formation of cross fall using motor for laying and compacted to required density as per material gradation and aggregate quality specified (125 mm thick & 100 mm thick layers).	Cum	129.38				
06	Providing and laying wet mix macadam graded aggregate base course to required degree of compaction with proper formation of cross fall by using well graded crushed aggregates premixed with OMC using suitable mixer, motor grader as per material gradation and a aggregates quality specified (75 mm thick double layers)	Cum	84.38				
	Total of srl page No. 215						

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

S/No	Description of Works	A/U	Qty	Rate per Unit to be quoted by the Bidder		Amount	
				Figures	Words	Figures	Words
07	Premix consolidated carpet surfacing including a tack coat @ 0.75 kg bitumen emulsion per sq.m of road surface 25mm thick with 6.0 cu.m of aggregate 10mm nominal size per 100 sq.m using 96 kg of emulsion of approved quality per cu.m of stone aggregate (Mechanized)	Sqm	562.50				
08	Providing seal coat of premixed sand with bitumen emulsion Using 5.3 kg of emulsion and 0.045 cu.m coarse sand per 10 sq.m of road surface complete	Sqm	562.50				
09	Providing and applying the road marking with hot applied thermoplastic compound with reflectorising glass beads on Bituminous surface as per IRC:35 and technical specifications. The finished surface to be level and free from streaks and holes	Sqm	25.31				
	Total of srl page No. 216						

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARENCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARENCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

S/No	Description of Works	A/U	Qty	Rate per Unit to be quoted by the Bidder		Amount	
				Figures	Words	Figures	Words
	C. Construction of Access Roads at Landfill plot at Motanga Industrial Park including jungle clearence, preparation of subgrade, providing & laying of GSB, WMM, Premix consolidated carpet surfacing including Tack coat, Seal coat and road marking with thermo plastic paint.						
01.	Clearing jungle including uprooting of vegetation & trees of girth < 300 mm & disposal within 50m of the site	Sqm	2641.00				
02	Excavation of road formation/trace/box cutting, with excavator including separate deposition of soil, rocks and stones within 50m for reuse All types of soil	Cum	1407.90				
03	Preparation of sub grade with proper camber by excavating earth to depth equal to pavement thickness, consolidation with roller, disposal of surplus earth up to 50m All kinds of soil	Cum	712.50				
04	Consolidation of subgrade with roller, and making good the undulation with earth and re-rolling the subgrade	Sqm	1425.00				
	Total of srl page No. 217						

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

S/No	Description of Works	A/U	Qty	Rate per Unit to be quoted by the Bidder		Amount	
				Figures	Words	Figures	Words
05.	Providing and laying Granular sub-base course (GSB) to required degree of compaction with proper formation of cross fall using motor for laying and compacted to required density as per material gradation and aggregate quality specified (125 mm thick & 100 mm thick layers)	Cum	327.75				
06	Providing and laying wet mix macadam graded aggregate base course to required degree of compaction with proper formation of cross fall by using well graded crushed aggregates premixed with OMC using suitable mixer, motor grader as per material gradation and a aggregates quality specified (75 mm thick double layers).	Cum	213.75				
	Total of srl page No. 218						

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARENCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARENCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

S/No	Description of Works	A/U	Qty	Rate per Unit to be quoted by the Bidder		Amount	
				Figures	Words	Figures	Words
07	Premix consolidated carpet surfacing including a tack coat @ 0.75 kg bitumen emulsion per sq.m of road surface 25mm thick with 6.0 cu.m of aggregate 10mm nominal size per 100 sq.m using 96 kg of emulsion of approved quality per cu.m of stone aggregate (Mechanized)	Sqm	1425.00				
08	Providing seal coat of premixed sand with bitumen emulsion Using 5.3 kg of emulsion and 0.045 cu.m coarse sand per 10 sq.m of road surface complete	Sqm	1425.00				
09	Providing and applying the road marking with hot applied thermoplastic compound with reflectorising glass beads on Bituminous surface as per IRC:35 and technical specifications. The finished surface to be level and free from streaks and holes	Sqm	64.125				
	Total of srl page No. 219						

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

(a)	Total brought forward from srl page No.210	Rs.	
(b)	Total brought forward from srl page No.211	Rs.	
(c)	Total brought forward from srl page No.212	Rs.	
(d)	Total brought forward from srl page No.213	Rs.	
(e)	Total brought forward from srl page No.214	Rs.	
(f)	Total brought forward from srl page No.215	Rs.	
(g)	Total brought forward from srl page No.216	Rs.	
(h)	Total brought forward from srl page No.217	Rs.	
(i)	Total brought forward from srl page No.218	Rs.	
(j)	Total brought forward from srl page No.219	Rs.	
Grand Total		Rs	

(Rupees _____)

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SCHEDULE 'C'

LIST OF TOOLS AND PLANT (OTHER THAN TRANSPORT) WHICH WILL BE HIRED TO THE CONTRACTOR)

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

S/ No	Quantity/ Particulars	Details of crew supplied	Hire charges per unit per working day	Stand by charges per unit per OFF day	Place of issue by name	Remarks
NIL						

SCHEDULE 'D'

TRANSPORT TO BE HIRED TO THE CONTRACTOR

PROVIDING & LAYING OF WMM 10 CM THICK, DBM 6 CM THICK, BC 4 CM THICK, TACK COAT, ROAD MARKING WITH THERMO PLASTIC PAINT AND PROVIDING & FIXING OF ROAD STUD & DELINETORS FOR CONSTRUCTION OF INTERNAL ROADS AT MOTANGA INDUSTRIAL PARK, CONSTRUCTION OF INTERNAL ROADS FROM PRIMARY ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT, CONSTRUCTION OF ACCESS ROADS AT LANDFILL PLOT AT MOTANGA INDUSTRIAL PARK INCLUDING JUNGLE CLEARANCE, PREPARATION OF SUBGRADE, PROVIDING & LAYING OF GSB, WMM, PREMIX CONSOLIDATED CARPET SURFACING INCLUDING TACK COAT, SEAL COAT AND ROAD MARKING WITH THERMO PLASTIC PAINT IN BHUTAN UNDER 63 RCC/19 BRTF/PROJECT DANTAK IN EASTERN BHUTAN

S/No	Quantity/Particulars	Rate per unit per working day	Place of issue	Remarks
NIL				

(Signature of the Contractor)

EE(C)
SSW
For Accepting Officer

ACCEPTANCE

_____alterations have been made in this documents and as evidence that these alterations were made before the execution of this contract agreement, they have been initialed by the contractor and Shri_____, HQ CE (P) DANTAK. The said Officer(s) is/are hereby authorised to sign and initial on my behalf the documents, forming part of the contract on my behalf.

The above tender was accepted by me on.....day of 2022, on behalf of the President of India for the contract sum of Rs _____ (Rupees

_____Only) at the item rates quoted in Schedule 'A' in favour of _____

Signature

Brig
Chief Engineer
Project Dantak
Accepting Officer

For and on behalf of the President of India

Signed this ____ day of _____ 2022

EE(C)
SW
For Accepting Officer

(Signature of the Contractor)

TENDER

To

The President of India
Through the Chief Engineer
Project DANTAK* (*Referred to also as Accepting Officer elsewhere in the tender documents).

Having examined and perused the following documents forming part of tender documents :-

1. Particular/technical specifications.
2. Ministry of Road Transport & Highways (MoRTH) specifications for Road and Bridge works (Fifth Revision) published by Indian Road Congress New Delhi.
3. Detailed specifications/other tender documents.
4. Schedule 'A', 'B', 'C' & 'D' attached here to
5. Special Conditions of the Contract
6. General Conditions of Contracts IAFW-2249 (1989 Print) including amendments 1 to 48 and errata No 1 to 20.
7. All other documents forming part of tender documents

Should this tender be accepted, I/We agree:-

To execute all the works referred to in the said documents upon the terms and conditions contained or referred to therein at the item rates continued in the aforesaid Schedule 'A' or at such other rates to be fixed under the provision of condition **62** of IAFW-2249 and to carry out such deviations as may be ordered vide condition **7** of General Condition of Contracts up to a maximum of **10 percent** and further agree to refer all disputes as required by condition **70 & 71** of the General Conditions of the contract (IAFW-2249) to the Sole Arbitration of an serving Engineer Officer to be appointed by **the Director General Border Roads, New Delhi or in his absence, by the officer officiating as Director General Border Roads**, whose decision shall be final, conclusive and binding. However, in case of disputes with **PSC** and or **PSU** the same will be referred to a Sole Arbitrator to be appointed by Secretary, Bureau of Public Sector Enterprises (refer Special condition **24** of tender documents).

Signature of Contractor

in the capacity of _____ duly

Witness:

authorized to sign the tender for and on behalf

(Name in Block letters)

of M/s _____

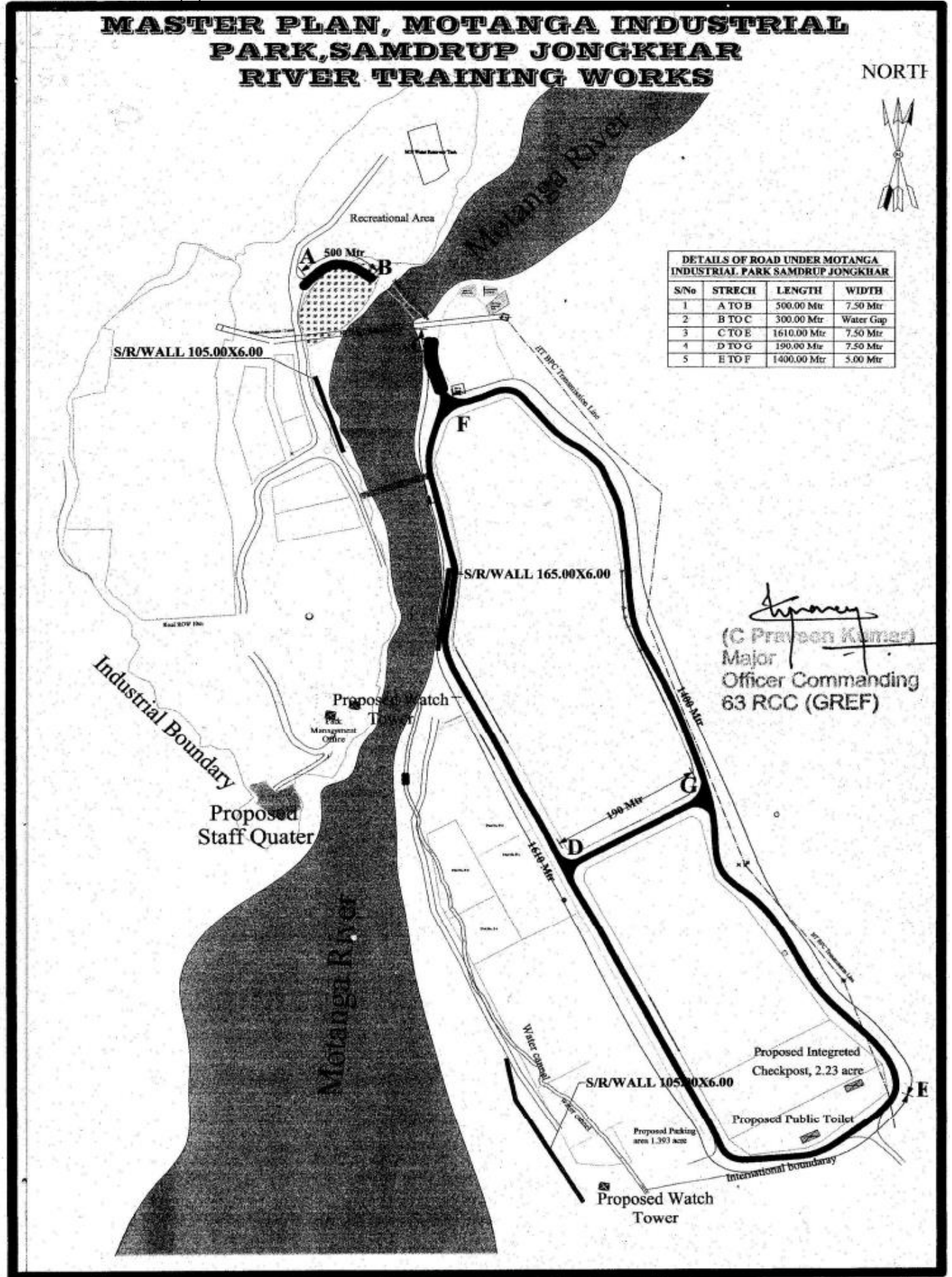
Address-----

(In Block letters)

Postal address: - _____

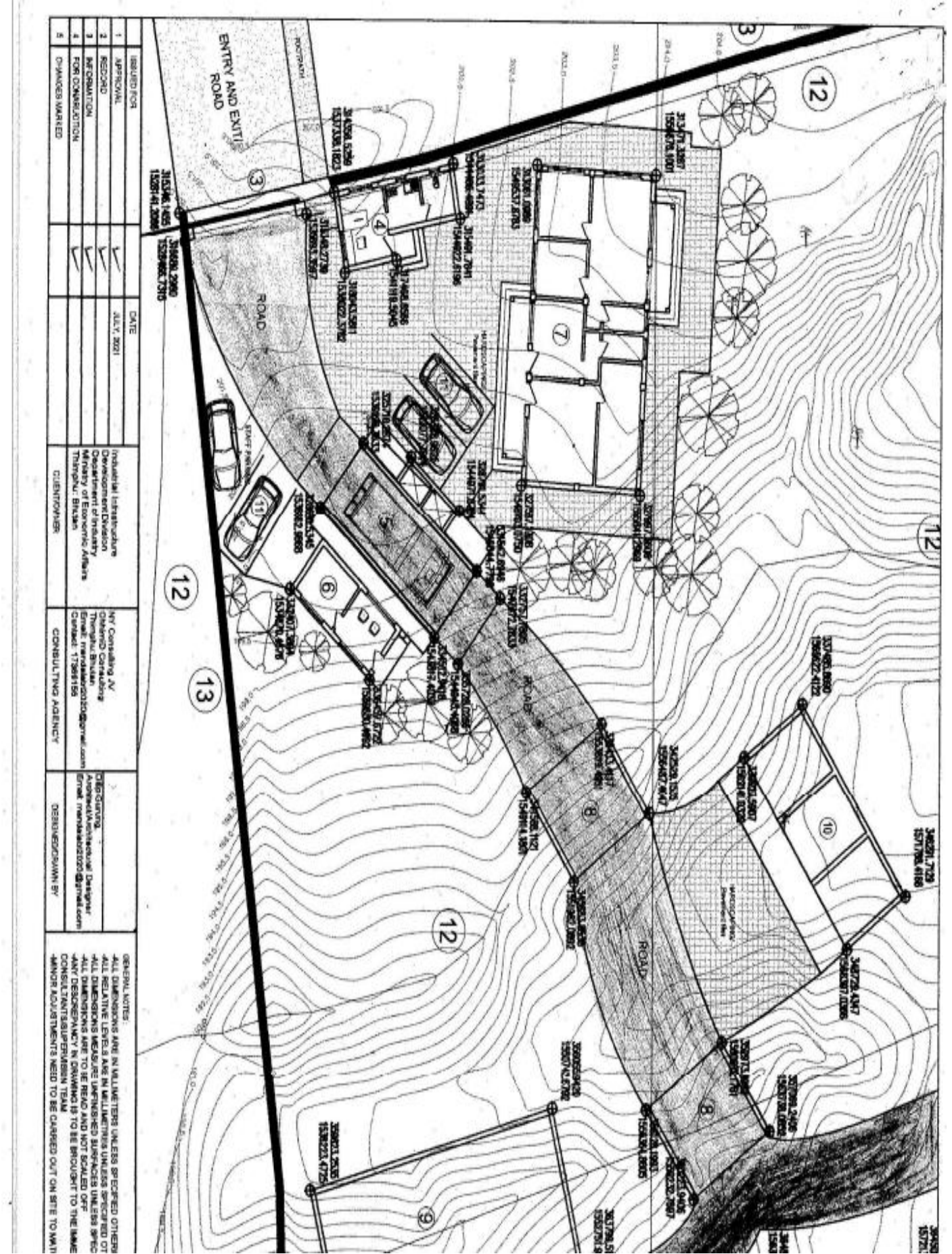
(Signature of the Contractor)

EE(C)
SW
For Accepting Officer



(Signature of the Contractor)

EE(C)
 SW
 For Accepting Officer



(Signature of the Contractor)

EE(C)
 SW
 For Accepting Officer

