

BORDER ROADS ORGANISATION
MINISTRY OF DEFENCE
CHIEF ENGINEER PROJECT DANTAK

NAME OF WORK: PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE BHUTAN

Name of Contractor: _____

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(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

* Not attached, these documents can be seen in the office of Accepting Officer/Commander Task Force/OC during working hours

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

80524/ /E8

_____ 2021

M/s _____

PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE 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 HQ 19 BRTF, Jaigaon, Pin-930019, Ph 8145087696 up to 1100 hrs (BST) on **30 Mar 2021** and Part-I of the tender documents will be opened on **01 Apr 2021** at 1130 hrs (BST) . 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.
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)

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

5.1 Part-I ('Technical Bid' – 'T' Bid) shall comprise of the following :-

- (i) Eligibility/qualification documents.
- (ii) Tender forwarding letter including eligibility criteria, list of qualification documents and instructions to tenderers.
- (iii) Notice Inviting Tender
- (iv) Undertaking for General Conditions of Contracts (IAFW 2249) forming part of Contract Agreement.
- (v) Special Conditions of Contract.
- (vi) Particular Specifications.

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- (vii) Any other tender documents except Price Bid.
- (viii) Cost of tender documents is Not required.
- (ix) Earnest Money by “un-enlisted contractors” and “enlisted contractors” who have not submitted standing security deposit.

5.2 Technical evaluation criteria

5.2.1 Blank.

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

5.2.3 All the pages of T-bid should have been duly signed by the bidder/authorized representative.

5.2.4 **Eligibility Criteria**:- (A) Tenderers shall meet the following eligibility criteria:-

A.1 Capabilities. (This criteria A1 A2 and A4 are exempted for tenderers enlisted with BRO in eligible class* & above for works with estimated cost upto Rs. **50 crores** as given in NIT).

| | | |
|-----|--|---|
| (a) | <p><u>Working Capital:</u> The tenderer should have working capital and/or credit facilities of at least 10% of the estimated cost of work as given in NIT i.e. Rs 52.28 Lacs</p> | <p>Copy of latest balance sheet/Income Tax Return for Working Capital and/or Banker's certificate for credit facilities. If necessary deptt will make inquiries with the tenderer's Banker.</p> |
| (b) | <p>The Tenderer should have immovable property of residual market value (i.e. free from loan / mortgage) of at least 10% of estimated cost of work given in NIT i.e. Rs 52.28 Lacs</p> <p>Note:- Immoveable property shall be exclusively in the name of contractor/company and not in the name of family members/ relative/others. In case of limited companies, these should also be reflected in Balance Sheet.</p> | <p>Tenderer shall submit affidavit for immovable property incorporating following certificates in affidavit along-with valuation report from Registered (with any Govt. body) valuer and registration certificate with any Govt. body of registered valuer:-</p> <p>(a) That the immovable property is free from mortgages, hypothecation or any other disputes and encumbrances and clearly belongs to the contractor.</p> <p style="text-align: center;">OR</p> <p>That the immovable is free from any disputes and encumbrance and clearly belongs to the contractor. The immovable property has been mortgaged/hypothecated for Rs.....market value of immovable property as per valuation report given by Registered valuer is Rstherefore Residual market value of property i.e. Rs.....(market value minus mortgaged value) is free from any mortgage/hypothecation.</p> <p>(b) That the said immovable property has not been shown for seeking enlistment of a sister concern in BRO.</p> <p>(c) That the said immovable property will not be sold, transferred, gifted or otherwise disposed off till satisfactory completion of the work.</p> |

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(c) **Engineering establishment:** Firm should have employed following Engineers on regular establishment:-

| Estimated cost of work | Nos of Engineers |
|--|--|
| Up to Rs. 1.00 Crore | One Engineer (Graduate or Diploma) |
| Between Rs. 1.00 Crores to 3 Crores | Two Engineers (Graduate with minimum 2 years experience and/or Diploma with 4 years experience) |
| Between Rs. 3.00 Crs to 6.00 Crores | Three Engineers (Graduate with minimum 2 years experience and/or Diploma with 4 years experience) |
| Between Rs. 6.00 Crs to 12.00 Crores | Four Engineers (Graduate with minimum 2 years experience and/or Diploma with 4 years experience) |
| Between Rs. 12.00 Crs to 18 Crores | Five Engineers (Graduate with minimum 3 years experience and/or Diploma with 6 years experience) |
| Between Rs. 18.00 Crs to 25.00 Crores | Six Engineers (Graduate with minimum 3 years experience and/or Diploma with 6 years experience) |
| Between Rs. 25 .00Crs to 50.00 Crores | Seven Engineers (Graduate with minimum 3 years experience and/or Diploma with 6 years experience) |
| Between Rs. 50 .00Crs to 100.00 Crores | Eight Engineers (Graduate with minimum 3 years experience and/or Diploma with 6 years experience) |

A.2 Experience

| S/ No | Experience Criteria | Documents to be submitted by the tenderers to prove eligibility |
|-------|---|---|
| (a) | <p>Tenderer should have successfully completed or substantially completed three similar works costing not less than the amount equal to 40% of estimated cost of work i.e. Rs 209.11 Lacs each.</p> <p>Or</p> <p>Two similar works costing not less than the amount equal to 50% of estimated cost of work i.e. Rs 261.39 Lacs each</p> <p>Or</p> <p>One similar work costing not less than the amount equal to 80% of estimated cost of work i.e. Rs 418.22 Lacs in ““last seven & current” financial years. These similar works should have been successfully completed or substantially completed ** at altitude 1000 m & above, if works is required to be executed at altitude 1000m & above.</p> <p>“The work should have been preferably executed for Govt. Organizations. In case the work has been executed as JV or sub contractor, then the documents from appropriate Govt. authority for subletting the work and performance of client should be submitted for consideration”.</p> | <p>List of works completed/ substantially completed in last seven and current financial years and ongoing works in the following format:-</p> <ol style="list-style-type: none"> Name of work & CA No Brief scope of work Name and address of employer/clients 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 Remarks explaining reasons of delay if any <p>Note:- Works providing eligibility criteria of experience shall be highlighted and performance certificate from client in respect of these works shall be submitted.</p> |

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A.3 **Available Bid Capacity (ABC)** as per formula given here-in-after should be more than the estimated cost of work given in NIT i.e. **ABC > Rs 522.78 Lacs.**

A.4 **Vehicles, Equipments and Plants (VEP)** :

Tenderer should own or have assured access (through hire/lease/purchase agreement/other commercial means) to the requisite Equipments, Plants and vehicles in good working condition as given hereunder:

| S/No | Particulars of Veh/Eqpt/Plant | Nos Reqd |
|------|---|----------|
| (a) | Tipper/Dumpers | 05 |
| (b) | Front end Loader | 01 |
| (c) | Knumetic road Roller (8-10 Ton) | 01 |
| (d) | Vibratory Road Roller (8-10 Ton) | 01 |
| (e) | Hot Mix Plant (Fully Automated) 40/60 TPH or equivalent | 01 |
| (f) | Paver Finisher Hydro-Static Sensor Type. | 01 |
| (g) | Bitumen Pressure Distributor | 01 |
| (h) | Air Compressor | 01 |
| (j) | Mechanical Broomer | 01 |

A.5 **Performance and other requirements:**

- There should not be poor/slow progress in running works due to defaults of the tenderer.
- There should not be serious defects observed in works which stand un-rectified by the tenderer.
- There should not be any Cancelled/abandoned contracts in which Govt. unrealized recoveries exist
- Tenderer should have not been blacklisted by any Govt. Deptt.
- There should not be any Govt. dues, outstanding against the tenderer.
- Tenderer should not be habitual litigant i.e. having more than 3 unsuccessful arbitration/court cases during the last 5 years in which his views/claims substantially rejected.
- Proprietor/partners/directors of firm should not be involved in anti national/social activities and should have neither been convicted nor should any proceedings be pending in court for such activities.

Note for (A):-

(i) ***Eligible class** shall be class **E** for works with estimated cost up to **Rs.0.15 crore** (as per NIT), class **D** for works with estimated cost between **Rs.0.15 crore to Rs.0.30 crore** (as per NIT), class **C** for works with estimated cost between **Rs.0.30 crore to Rs.0.60 crore** (as per NIT), class **B** for works with estimated cost between **Rs.0.60 crore to Rs.1.50 crore** (as per NIT), class **A** for works with estimated cost between **Rs.1.50 crore to Rs.3.00 crore** (as per NIT), class **S** for works with estimated cost between **Rs.3.00 crore to Rs.12.00 crore** (as per NIT) and class **SS** for works with estimated cost between **Rs.12.00 crore to Rs.25.00 crore** (as per NIT).

(ii) The work may have been executed by the tenderer as prime contractor or as a member of joint venture or sub contractor. In case project has been executed by a joint venture, weightage towards experience of the project would be given to each member in proportion to their participation in the joint venture.

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(iii) ** 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.

(iv) 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 0.1))

(v) Available Bid capacity will be calculated as under

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) :-

| <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.

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

(vii) To determine the altitude of work, average of minimum and maximum altitudes of the work site shall be considered.

(viii) No extension of time shall be given on account of delays in arranging/deploying and breakdown of requisite equipments, plants and vehicles and also due to delays in obtaining clearances for installation of hot mix plant if work is awarded to tenderer.

(ix) Immovable property shall be exclusively in the name of contractor/Company and not in the name of family members/relatives/others. In case of Limited Companies, these should also be reflected in Balance Sheet.

(x) **Relaxation may be given in any one criteria (except in criterias of Experience and performance & other requirements) up to 25% extent** i.e ABC may be permitted up to 75% of estimated cost of work/VEP may be permitted upto 75% of total Nos of requisite VEP/Working capital may be permitted upto 75% of requirement/Immovable property may be permitted up to 75% of requirement/Engineering establishment may be permitted upto 75% of requirement. No relaxation shall be permitted in criterias of Experience and performance & other requirements.

(xi) The tenderer may be afforded an opportunity to clarify or modify his qualification documents, if necessary, with respect to any rectifiable defects. The tenderer will respond in not more than 15 days of issue of the clarification letter, failing to which his tender is liable to be rejected.

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(B) **JOINT VENTURE (JV)** :- Joint ventures are permitted for Bridge works with estimated cost more than Rs.10 crores and for other works with estimated cost more than Rs.25 crores. Number of partners in Joint ventures shall not be more than three. Evaluation shall be done as under :-

| Criteria | Method of evaluation |
|---|---|
| Experience | All partners of JV must satisfy collectively. |
| Available bid capacity Immovable property | Each partner of JV should meet the criteria in proportion of shares of partners in JV. For example, if any partner has 40% share in JV, he should have available bid capacity more than 40% of estimated cost of work and minimum immovable property equal to 40% of 10% i.e. 4% of estimated cost of work, |
| Vehicles, Equipments and Plants Working capital Engineering Establishment for execution contracts | All partners of JV must satisfy collectively, |
| Performance and other requirements | All partners of JV must satisfy individually. |

Bid shall be signed so as to legally bind all partners of JV, jointly and severally, and shall be submitted with a copy of the joint venture agreement providing the 'joint and several' liability with respect to the contract. **Relaxation as per note (A) (xi) as stated above shall not be permissible in case of JV.** Payment shall be made either in the name of JV or in the name of lead partner only.

(C) **Disqualification**

(i) 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.

(ii) Price bid of the subject tender may not be opened if the tenderer is found to be overloaded with respect to his upper tendering limit as per his registered class on the discretion of Accepting Officer (i.e., 5 times in normal and 7 times for exceptional cases of upper tendering limit of the registered class).

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

(i) 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.

(ii) **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 here-in-before.

Tenderers shall calculate ABC and submit details duly signed.

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(iii) **Equipments, Plants and Vehicles:**

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

| 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

(iv) **Performance and other requirements.** 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).

(v) 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:-

| Name and address of employer | Cause of dispute | Amount involved | Brief of Court judgment/arbitration award (if published otherwise present progress) |
|------------------------------|------------------|-----------------|---|
| | | | |

(vi) **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.

(vii) **Immovable Property**

Tenderer shall submit Affidavit for immovable property incorporating following certificates in affidavit along with valuation report from Registered (with any Govt. body) valuer & registration certificate with any Govt. body of required valuer :-

(a) That the immovable property is free from mortgages, hypothecation or any other disputes and encumbrances and clearly belongs to the Contractor.

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OR

That the immovable property is free from any disputes and encumbrances and clearly belongs to the Contractor. The immovable property has been mortgaged/hypothecated for Rs..... Market value of immovable property as per valuation report given by Registered valuer is Rs..... Therefore Residual market value of property i.e. Rs..... (market value minus mortgaged value) is free from any mortgage/hypothecation

(b) That the said immovable property has not been shown for seeking enlistment of a sister concern in BRO.

(c) That the said immovable property will not be sold, transferred, gifted or otherwise disposed off till satisfactory completion of the work.

(viii) **Engineering Establishment :**

Tenderer shall submit list of Engineers on his permanent establishment with qualification & experience along with affidavits from requisite number of Engineers regarding employment with firm and copies of Degree/Diploma Certificates and experience certificate.

(ix) 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).

(x) Copies of passport of proprietor/partners/directors (if available). If not submitted and Accepting officer has doubt in character and antecedents of proprietor/partners/directors he may get these verified from police authorities.

(xi) Copies of PAN Card of proprietor/partners/directors.

(xii) Lowest bidder (if his offer is decided for acceptance) will be required to fill enlistment form for provisional enlistment.

Notes:

(i) Documents as listed at Sl (vi) to (viii) above are exempted for tenderers enlisted with **BRO in eligible class * & above for works with estimated cost up to Rs.25 crores as given in NIT.**

(ii) Documents as listed at Sl (ix) to (xii) above are **exempted for tenderers enlisted with BRO in any class.**

(iii) Affidavits shall be submitted on Non-judicial stamp papers of appropriate values duly attested by the Magistrate/Notary Public.

(iv) Photocopies of documents shall be attested by Gazetted officer/public notary and also self attested.

5.3 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 commercial Bid opened.

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

6.1 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

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6.2 **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.

(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.

6.3 **Commercial Evaluation**

(i) Any arithmetical errors shall be corrected including any discrepancy in words and figures when the amount expressed in words shall be treated as final.

(ii) Commercial Bids will be reviewed to ensure that the figures indicated therein are consistent with the details of the corresponding Technical Bids. It shall be ensured that all commercial terms and conditions including payment terms and the delivery schedule as indicated in the tender document have been adhered to.

(iii) For the purpose of evaluation, cost shall be inclusive of taxes and duties. The ultimate cost to the BRO at delivery site should be the deciding factor for determining the lower bidder (L1).

7. 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.

8. 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.

9. 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 **01 Apr 2021 at 1130 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.

(Signature of the Contractor)

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For Accepting Officer

10. The Chief Engineer Project Dantak, C/O 99 APO will be Accepting Officer here-in-after referred to as such for the purpose of this contract.

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

12. If tenderers desire that any condition or stipulation given in the tender documents is to be modified or deleted, they may submit their comments/suggestion well before last date of submission of tender for consideration by the Deptt for issue of corrigendum/amendments to tender documents. If deptt considers comments/suggestion suitable, corrigendum/amendments to tender documents shall be issued and also uploaded on BRO web site. If deptt does not consider comments/suggestion suitable, corrigendum/amendments to tender documents shall not be issued/uploaded on BRO web site and tenderers shall quote strictly complying with the various provisions given in the tender documents. **Any tender which 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.**

13. 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.

14. 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.

15. Tenderers must ensure that their tender is unambiguous and is completed in all respects. Their particular attention is drawn to the following requirements, which must be complied with :-

(a) Tender documents are to be signed, dated and witnessed as provided for the purpose.

(b) All corrections should be signed or initialed. Use of correcting fluid is not allowed.

(c) Cloth lines envelope shall be used for returning the tender documents.

(d) In case they are submitting a BLANK TENDER word '**BLANK**' must be prominently endorsed on the envelope and in Schedule 'A' inside the tender documents and general summary duly signed by the tenderer.

(e) If a tender is submitted on behalf of a firm, it may be signed either by all partners or a person holding a valid power of attorney from all the partners constituting the firm. The person signing the tender on behalf of another or on behalf of a firm shall attach with tender a proper power of attorney duly executed in his favour by such other person or by all the partners stating specifically that he has authority to bind such other person(s) or the firm as the case may be in all matters pertaining to the contract including the arbitration clause. The power of attorney shall be executed as indicated below:-

(i) In case of proprietorship concern if tender is signed by other than proprietor, person signing tender documents should hold power of attorney from proprietor.

(ii) In case of partnership concern, power of attorney shall be executed by all partners.

(iii) In case of company, power of attorney shall be executed in accordance with the constitution of company.

(f) The undertaking is to be signed and attached by tenderer as per format given at Appx 'A'.

(Signature of the Contractor)

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SW
For Accepting Officer

16. Tenderer who has downloaded the tender from the BRO website or CPP Portal shall not temper/modify the tender form in any manner. In case if the same is found to be tempered/modified in any manner tender will be completely rejected and tenderer is liable to be banned from doing business with BRO.

17. Your attention is drawn to the Indian Official Secret Act-1923 (XIX of 1923) as amended upto date particularly Section 5 thereof.

18. **Earnest Money** :-

Earnest money is not required to be attached with tender by the contractors, but contractor has to furnish Bid Security Declaration (**Amended vide GOI Min. of Finance OM No. F.9/4/2020-PPD dated 12 Nov 2020**) as per format given in Special Condition of the tender document

19. **Security Deposit** :- Deleted

20. **Performance security** :- Within 28 days of receipt of the letter of acceptance, the successful contractor shall deliver to the accepting Officer a Performance Security in any of the forms given below for an amount equivalent to **3%** of the Contract sum (**Amended vide GOI Min. of Finance OM No. F.9/4/2020-PPD dated 12 Nov 2020**).

- a) Bank Guarantee in the prescribed form issued by the nationalized banks/scheduled Indian banks but its confirmation shall be done only from the Head office of the bank.
- b) FDR/Govt Securities

20.1 Failure of the successful contractor to comply with the requirement of above shall constitute sufficient ground for cancellation of the award of work and forfeiture of earnest money. In case enlisted contractor, the amount equal to earnest money shall be notified to the tenderer for depositing the amount through MRO, issue of tender to such tenderers shall remain suspended till aforesaid amount equal to the earnest money is deposited.

21. 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.

22. In view of postal and other delays, it is suggested that your tender be posted sufficiently in advance of the last date fixed for receipt of tenders or sent through a special messenger, if necessary. Tender received late will not be considered. Telegraphic communications received in connection with this tender will also be not considered.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

23. The tender shall remain open for acceptance for a period of **120 Days (One hundred twenty days)** from the date of opening of 'Q' bid (Priced bid).

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

25. **Revision/Modification of Quoted Price:-**

(a) The tenderer shall quote his rates on the Schedule 'A' and General Summary pages only. In case the tenderer has to revise/modify the rates quoted in the Schedule 'A' and/or General Summary before deposition in tender box, he may do so only in the Schedule 'A'/General Summary.

(b) In case of a tenderer has to revise/modify/withdraw his quoted rates/offer after it is deposited in Tender Box, he may do so on his letter head before the latest time fixed for submission of tenders and deposit in tender box in sealed/properly closed cover only. Any revision/modification in offer/withdrawal of offer in the form of an open letter shall not be taken into account, while considering his originally quoted offer.

(c) The tenderers shall not be permitted to revise/modify/withdraw price bid unopened after closure of the time fixed for receipt of tender.

26. **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 opening of tenders 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 of 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

Enclosures : Tender Documents

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 AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE BHUTAN**" from **Page No. 1 to 167** as advertised on the www.eprocure.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 : bro-dtk@gmail.com
Tele : 009752 - 351082/351086/351088
Fax : 009752 – 351285

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

80524/ /E8

..... 2021

NAME OF WORK: **“PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE 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 upto 1100 hrs (BST) on **30 Mar 2021** addressed to Headquarters, Chief Engineer, Project Dantak, PIN – 931708, C/o 99 APO **PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE BHUTAN”** to be opened on **01 Apr 2021** at 1130 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- 11/2019-20

1. A sealed tender is invited for “**PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE 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 | 09 Mar 2021 at 1200 Hrs |
| 02 | Bid document download start date | 09 Mar 2021 at 1230 Hrs |
| 03 | Clarification start date & time (Pre Bid queries) | 10 Mar 2021 at 1130 Hrs |
| 04 | Clarification end date & time | 27 Mar 2021 at 1100 Hrs |
| 05 | Bid submission start date & time | 10 Mar 2021 at 1130 Hrs |
| 06 | Bid submission end date & time | 30 Mar 2021 at 1100 Hrs |
| 07 | Opening date & time of Technical bid | 01 Apr 2021 at 1130 Hrs |
| 08 | Opening date of Financial bid | Will be intimated later |

3. The estimated cost of work is **Rs 522.78 Lacs (Rupees Five Crore Twenty Two Lac Seventy Eight Thousand only)** approximately or as subsequently amended in tender documents and uploaded in BRO website. 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

7. **The Chief Engineer (P) Dantak, C/O 99 APO will be Accepting Officer** hereinafter, referred to as such for the purpose of this contract.

8. 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 HQ 19 BRTF, Jaigaon, Pin-930019, Ph 8145087696/9643800181 at **1100 hrs (BST) on 30 Mar 2021**. Part - I un-priced bid will be opened on **01 Apr 2021 at 1130 hrs (BST)**. Tender received after due date shall not be considered for opening and no reason for delay or claim whatsoever shall be entertained.

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 contractors, but contractor has to furnish Bid Security Declaration (**Amended vide GOI Min. of Finance OM No. F.9/4/2020-PPD dated 12 Nov 2020**) as per format given in Special Condition of the tender document.

11. **Successful Bidder (L-1) shall deposit to Accepting Officer a Performance Security for an amount of 3% of contract sum (Amended vide GOI Min. of Finance OM No. F.9/4/2020-PPD dated 12 Nov 2020) 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. Blank.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

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 date.

30. The tender may be accepted as whole.

31. This notice of tender shall form part of the contract.

No.80524/ /E8

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

| | |
|----------------------|--|
| NAME OF WORK: | <u>“PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE BHUTAN</u>” |
|----------------------|--|

GENERAL CONDITION OF CONTRACTS
IAFW -2249: 1989 PRINT
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 CONTRACT 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 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..
4. This tender submitted by me/us is subject to the aforesaid General condition of contract IAFW-2249, errata and amended copy of which is in my/our possession and which I/we have read and fully understood before submission of tender.
5. My/our signature here under is in token of my/our having accepted the aforesaid amended General conditions of contract including errata & amendments there to (IAFW-2249) and the clause relating to arbitration forming as integral part of this tender.

Note: - Serial Page numbers 22 to 118 (General conditions of contract for execution of works IAFW-2249) will be enclosed with the accepted tender only. However 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 AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE 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/ / 2020-21 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 to 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 charges 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 representatives and workmen to enter the State.

8.4 In case of accident during transit and hiring period and subsequent claims by pers/agency/Deptt involved in the accident, responsibility of pursuing court case/compensation cases will rest with the contractor.

8.5 In case of total loss of the eqpt due to any reasons, natural or otherwise whatsoever, the loss will be borne by the contractor.

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, year 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. Blank

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.

(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.

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

(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) Unit rates quoted shall also deemed to include all charges/expenses on account of all Veh/Eqpts required for completing the work as specified in Schedule A, Sales Tax, Service Tax, labour welfare cess, Royalty, Work Contract Tax, Octroi, inter state barrier charges, stacking of material or any other charges which are required for completion of work as per Schedule A /Work Order.

(c) The rate quoted shall also include transportation of equipments 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 or 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).

27. BLANK

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

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 extant).

(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 Angles 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 willing 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 as per decision of 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 **3%** of contract sum (**Amended vide GOI Min. of Finance OM No. F.9/4/2020-PPD dated 12 Nov 2020**) 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.

37. RE-IMBURSEMENT / REFUND ON VARIATION IN PRICES OF BITUMEN

(This special condition is applicable only in contracts having original completion period more than 18 Months)

Increase or decrease in prices of Bitumen shall be adjusted on the basis stipulated hereinafter irrespective of the actual variation in prices to the contractor:-

$$EB = (QB) \times (B_1 - B_0) \times 1.15$$

Where:-

EB = Variation in price of Bitumen to be adjusted . (In Rs.)

QB = Quantity of Bitumen , brought at site for incorporation in work / incorporated in work (in MT)

B₀ = Ex-refinery price of Bitumen inclusive of all taxes / duties at "refinery nearest to the work site" of Indian Oil Corporation as available on web site of IOC Ltd (i.e. www.iocl.com) as on the last date of receipt of tender. (In Rs/ MT)

B₁ = Ex-refinery price of Bitumen inclusive of all taxes / duties at "refinery nearest to the work site" of Indian Oil Corporation as available on web site of IOC Ltd (i.e. www.iocl.com) as on the date of purchase of bitumen. (In Rs/ MT)

(Factor of 1.15 has been used to cover contractor's overhead and profit)

Notes:-

1. No adjustments, whatsoever, due to variation in prices of materials and fuel on account of coming into force of any fresh law or statutory rule or order as provided in condition 63 of IAFW-2249 or otherwise than provided in this condition shall be made. In short once this special condition is operative condition 63 of IAFW-2249 stands superseded.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

2. No adjustment in prices shall be made for any work done with materials brought at site after the stipulated date of completion given in work order No. 1 or extension of time granted under condition 11 of IAFW-2249 (whichever is later) for the work under the contract.
3. Any dispute arising out of interpretation of application of this special condition shall be referred to the Accepting Officer whose decision shall be final and binding.
4. For purpose of calculation of retention money, liquidated damages, sales tax / service tax on works contracts, deduction of income tax at source and recovery of water charges (in case of unmetered supply) the value of contracts as revised by the above price variation will be taken into account.

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.
 - 1.1.1 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 conciliation by the parties.

1.2 COMMENCEMENT OF CONCILIATION PROCEEDINGS

- 1.2.1 The party initiating conciliation shall send to the other party a written invitation to conciliate, briefly identifying the subject of the dispute.
- 1.2.2 Conciliation proceedings shall commence when the other party accepts in writing the invitation to conciliate.

1.3 Number of Conciliators

- 1.31 There shall be a sole conciliator.

1.4 Appointment of Conciliator

- 1.4.1 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.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

1.5 STATUS OF EFFECT OF SETTLEMENT AGREEMENT

1.5.1 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. BLANK

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**”.

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 reimbursement 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.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

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).

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

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 Bhutaneese 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 45

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 | |

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

Annexure-I to special conditions

FORMAT FOR BANK GURANTEE 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.

Place: _____

Date : _____

(Signature of the Contractor)

Yours faithfully,

For _____ Bank
(Authorised Attorney)

Seal of Bank

EE (C)
SW
For Accepting Officer

SPECIAL CONDITIONS (CONTD)

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 :

Annexure-II to special conditions

FORMAT FOR BID SECURING DECLARATION

(To be enclosed with tender documents)

1. I hereby submit a declaration that the bid submitted by the undersigned, on behalf of the bidder, M/S _____, either sole of in JV, shall not withdrawn or modified during the period of validity.

2. I, on behalf of the bidder, M/S _____, also accept the fact that in case the bid is withdrawn or modified during the period of its validity or if we fail to sign the contract in case of work is awarded to us or we fail to submit a performance security before the deadline defined in the tender document then, M/S _____, will be suspended for participation in the tendering process for the works of BRO/MoRT&H/NHA/NHIDCL/Any other Govt. Deptt. and work under other centrally sponsored schemes, for a period of one year from the bid due date of this work.

(Signature of the Authorised signatory)

(Official Seal)

(Signature of the Contractor)

EE (C)

SW

For Accepting Officer

PARTICULAR SPECIFICATIONS

“PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE BHUTAN”.

The scope of work shall consist of **“PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE BHUTAN.** All materials to be used, all methods adopted and all works performed shall be strictly in accordance with the requirements of the specification 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. PRIME COAT OVER GRANULAR BASE

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(Signature of the Contractor)

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PARTICULAR SPECIFICATIONS (CONTD.....)

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2. TACK COAT

2.1 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.

2.2 Binder 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 OC Contract/Engineer-in-Charge.

2.3 Weather and seasonal limitations Bituminous material 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.

2.4 Construction

2.4.1 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 Engineer-in-Charge/OC Contract.

2.4.2 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 Engineer-in-Charge/OC Contract

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PARTICULAR SPECIFICATIONS (CONTD....)

2.4.3 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). Quality control and arrangement of traffic shall be in accordance with Clause 503.5 and 503.6 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 |
|--------------------------------------|-----------------------------------|
| Granular surface treated with primer | 0.25 |

2.5 Measurement for Payment: Tack coat shall be measured in terms of surface area of application in "square meters".

2.6 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 401.8 (i) to (v) of MoRT&H specifications for road and bridge works (Fifth Revision) and as applicable to the works specified in these specifications.

2.7 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. |

3. DENSE BITUMINOUS MACADAM OF CONSOLIDATED THICKNESS OF 50 MM.

3.1 Scope of Work The work shall consists of construction in a single layer of Dense Bituminous Macadam 50 mm thick compacted with HMP mix on a previously prepared base or sub base or as directed by Engineer-In-Charge/OC Contract as per clause 505 of MoRT&H Specifications for Road and Bridge Works (Fifth Revision).

3.2 Material

3.2.1.Bitumen The grade of Bitumen shall be VG-30 (60/70). The Bitumen shall be satisfying the requirement of IS: 73 and requirements set forth below. Random testing of Bitumen used by the contractor for this work should be conducted through recognized Govt laboratory at the cost of the contractor or as per the satisfaction of Engineer-in-Charge/OC Contract. Bitumen manufactured by IOC/HPCL/BPCL only is to be used in preparation of Mix. **The contractor shall furnish sufficient proof regarding purchase of bitumen and emulsion from IOC/HPCL/BPCL by producing original purchase/receipt voucher to Engineer-In-Charge before incorporating it in the work and certified copy of same (to be certified by Engineer-In-Charge) be attached with RAR and final bill at the time of submission of each RAR and Final Bill.**

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PARTICULAR SPECIFICATIONS (CONTD....)
Requirements for Paving Bitumen

| SI No. | Characteristics | Paving Grades | | Method of Test, Ref to |
|--------|--|---------------|-------------|-----------------------------|
| | | VG10 | VG30 | |
| 1. | Penetration at 25°C, 100 g, 5 s, 0.1 mm, <i>Min</i> | 80 | 45 | IS 1203 |
| 2. | Absolute viscosity at 60°C, Poises | 800-1 200 | 2 400-3 600 | IS 1206 (Part 2) |
| 3. | Kinematic viscosity at 135°C, cSt, <i>Min</i> | 250 | 350 | IS 1206 (Part 3) |
| 4. | Flash point (Cleveland open cup), °C, <i>Min</i> | 220 | 220 | IS 1448 [P : 69] |
| 5. | Solubility in trichloroethylene, percent, <i>Min</i> | 99.0 | 99.0 | IS 1216 |
| 6. | Softening point (R&B), °C, <i>Min</i> | 40 | 47 | IS 1205 |
| 7. | Tests on residue from rolling thin film oven test: Viscosity ratio at 60°C, <i>Max</i> Ductility at 25°C, cm, <i>Min</i> | 4.0 75 | 4.0 40 | IS 1206 (Part 2) IS 1208 |

3.2.2 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. Where 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).

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.

3.2.3 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.

3.2.4 Filler

Filler 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 indicated in Table 500-9 of MoRT&H Specifications for road and bridge works (Fifth Revision).

Table 500-9: Grading requirements for mineral filler

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

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PARTICULAR SPECIFICATIONS (CONTD....)

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.

3.3 Aggregate Grading and Binder Content

3.3.1 The combined grading of the coarse aggregates and fine aggregates and filler when tested in accordance with IS-2386 Part I (Wet sieving method), 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 mm | 100 |
| 26.50 mm | 90-100 |
| 19 mm | 71-95 |
| 13.2 mm | 56-80 |
| 4.75 mm | 38-54 |
| 2.36 mm | 28-42 |
| 0.3 mm | 7-21 |
| 0.075 mm | 2-8 |
| Bitumen content, percent by weight of total mixture – Min 4.5 % ** | |

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.

3.3.2 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).

3.3.3 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% |

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| Property | Test | Test method | Requirements |
|------------------------|--|--------------------|------------------------------|
| Strength (*) | Los Angels 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 anti stripping agent is recommended to meet the minimum requirement.

3.4 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 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.

3.5 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. 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.

3.6 Mix Design

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

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PARTICULAR SPECIFICATIONS (CONTD....)

3.7 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:-

Table 500-11: Requirements for Dense Graded Bituminous Macadam

| 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 9mm) | 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 | | | |
| 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 | | | |

3.8 Binder Content

3.8.1 The binder content shall be optimized to achieve the requirements of the mix set out in 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 Asphalt Institute Manual MS-2.

3.8.2 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.

Table 500-12: Minimum Percent Voids in Mineral Aggregate (VMA)

| 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.

3.9 Job Mix Formula

3.9.1 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 proposed for use in the works, together with the following details:-

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- (i) Source and location of all materials.
- (ii) Proportions of all materials expressed as follows:-
 - (a) Binder type and percentage by weight of total mix.
 - (b) Coarse aggregate/fine aggregate/mineral filler as percentage by weight of total aggregate including mineral filler.
- (i) A single definite percentage passing each sieve for the mixed aggregate.
- (ii) The individual grading of the individual aggregate fraction and the proportion of each in the combined grading.
- (iii) 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.
- (iv) Where the mixer is a batch mixer, the individual weights of each type of aggregate and binder per batch.
- (v) Test results of physical characteristics of aggregates to be used.
- (viii) Mixing temperature and compacting temperature.

3.9.2 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.

4.9.3 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.

3.9.4 The approved job mix formula shall remain effective unless and until a revised job mix formula is approved by OC 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.

3.10 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 |

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PARTICULAR SPECIFICATIONS (CONTD....)

3.11 Laying Trials

3.11.1 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.

3.11.2 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.**

3.11.3 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.

3.12 Construction Operations

3.12.1 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.

3.13 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.

(Signature of the Contractor)

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For Accepting Officer

PARTICULAR SPECIFICATIONS (CONTD....)

4. BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS

4.1 SCOPE: The work consists of providing; laying, spreading and compaction of Bituminous Concrete 30 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.

4.2 Materials

4.2.1 Bitumen The grade of Bitumen shall be VG-30 (60/70). The Bitumen shall be satisfying the requirement of IS: 73 and requirements set forth below. Random testing of Bitumen used by the contractor for this work should be conducted through recognized Govt. laboratory at the cost of the contractor or as per the satisfaction of Engineer-in-Charge / OC Contract. Bitumen manufactured by IOC/HPCL/BPCL only is to be used in preparation of Mix. **The contractor shall furnish sufficient proof regarding purchase of bitumen and emulsion from IOC/HPCL/BPCL by producing original purchase/receipt voucher to Engineer-In-Charge before incorporating it in the work and certified copy of same (to be certified by Engineer-In-Charge) be attached with RAR and final bill at the time of submission of each RAR and Final Bill.**

Requirements for Paving Bitumen

| SI No. | Characteristics | Paving Grades | | Method of Test, Ref to |
|--------|--|---------------|-------------|-----------------------------|
| | | VG10 | VG30 | |
| 1. | Penetration at 25°C, 100 g, 5 s, 0.1 mm, <i>Min</i> | 80 | 45 | IS 1203 |
| 2. | Absolute viscosity at 60°C, Poises | 800-1 200 | 2 400-3 600 | IS 1206 (Part 2) |
| 3. | Kinematic viscosity at 135°C, cSt, <i>Min</i> | 250 | 350 | IS 1206 (Part 3) |
| | Flash point (Cleveland open cup), °C, <i>Min</i> | 220 | 220 | IS 1448 [P : 69] |
| 5. | Solubility in trichloroethylene, percent, <i>Min</i> | 99.0 | 99.0 | IS 1216 |
| 6. | Softening point (R&B), °C, <i>Min</i> | 40 | 47 | IS 1205 |
| 7. | Tests on residue from rolling thin film oven test: Viscosity ratio at 60°C, <i>Max</i> Ductility at 25°C, cm, <i>Min</i> | 4.0 75 | 4.0 40 | IS 1206 (Part 2) IS 1208 |

4.2.2 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.

(Signature of the Contractor)

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For Accepting Officer

PARTICULAR SPECIFICATIONS (CONTD....)

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 |
| 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.

4.2.3 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.

4.2.4 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.

4.2.5 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 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.

4.2.6 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.

4.3. Mix Design

4.3.1 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 | | | |
| 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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4.3.2 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 |
|--------------------------------------|--|------|------|-----|
| | 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.

4.3.3 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, 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.
- (iv) The individual grading of the individual aggregate fraction, and the proportions of each in the combined grading.
- (v) The results of mix deign 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.

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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.

4.3.4 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 |

4.3.5 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 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.

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4.4 Construction Operation

4.4.1 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.

4.4.2 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.

4.4.3 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.

4.4.4. 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 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 |

- o 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.

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.

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4.4.5 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 .

4.4.6 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.

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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.

4.4.7 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.

(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.

4.5 Opening to Traffic

The Bituminous Concrete surface shall be covered with a wearing course within 48 hours. If there is to be any delay, by the contractor, the course shall be covered by a seal coat to the requirement of Clause 512 before opening to any traffic. The seal coat in such cases shall be considered incidental to the work and shall not be paid for separately.

4.6 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.

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Table 900-1: Tolerance in surface levels

| | | |
|---|--------------------------------------|---------|
| 1 | Wearing course for flexible pavement | |
| | (a) Granular | |
| | (i) Machine laid | ± 6 mm |
| | (ii) Manually laid | ± 10 mm |

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.

4.6.1 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.

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 |

4.7 Arrangement for Traffic

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

4.8 Measurement for Payment. Bituminous concrete shall be measured as finished work in **square meter** for 30 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.

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4.9 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. 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. 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.

4.10 Quality Control Tests and their minimum frequency for AC/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) | 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- |

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| | | |
|--|--|---|
| | 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. |
| | 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. |

5 MARKING OF CENTRE AND EDGE LINE

5.1 Scope

The work shall consists of providing road markings of specified width (Centre line 150 mm and edge line 100 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.

5.2 Materials

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

5.3 Hot applied Thermoplastic Road marking

5.3.1 Thermoplastic Material

5.3.1.1 General

The thermoplastic material shall be homogeneously composed of aggregate, pigment, resins and glass reflectorising 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.

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5.3.1.2 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 |

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 AASHTO 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)

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- 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.**

5.3.2 Reflectorising Glass Beads

5.3.2.1 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)

5.3.2.2 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)

5.3.2.3 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.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

PARTICULAR SPECIFICATIONS (CONTD....)

5.3.2.4 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).

(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.

5.3.4 Application properties of thermoplastic material

5.3.4.1 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.

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

5.3.5 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.

5.3.6 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.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

PARTICULAR SPECIFICATIONS (CONTD....)

- (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.

5.3.7 Measurement for Payment

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

5.3.8 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.

6. ROAD DELINATORS

6.1 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 channelling island in approaches to intersections.

6.2 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 of the car headlights.

6.3. 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.

6.4. Measurement for Payments.

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

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

PARTICULAR SPECIFICATIONS (CONTD....)

6.5. 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.

7. REFLECTIVE PAVEMENT MARKERS (ROAD STUDS)

7.1 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.

7.2. Material

7.2.1. 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.

7.2.2. Reflective panels shall consist of number of lenses containing single or dual prismatic cubes capable of providing total internal reflection of the light entering the lens face. Lenses shall be moulded of methyl methacrylate conforming to ASTM D 788 or equivalent.

7.3 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.

7.4 Optical Performance

7.4.1 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.

7.4.2 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 |

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

PARTICULAR SPECIFICATIONS (CONTD....)

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 |

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'.

7.5 Tests

7.5.1 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.

7.5.2 Under test conditions, a stud shall not be considered to fail the photometric requirements if the measured C.I.L. at any one position of measurement is less than the values specified in 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.

6. 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.

(Signature of the Contractor)

EE (C)
SW
For Accepting Officer

PART-II PRICED BID

SCHEDULE - "A" NOTES

PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE 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 tender will be considered for acceptance as a whole or in parts as per the discretion of the Accepting officer and the bidder will have no claim on this account.**
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** from the date of commencement of work as per work order No. 1, which will be generally within one months 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/GST on materials, Sales, Tax/VAT/GST 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 works 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, Millimeter, 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

PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE BHUTAN

| S/No | Description of Works | A/U | Qty | Rate per Unit to be quoted by the Bidder | | Amount | |
|--|--|-----|------------------|--|-------|---------|-------|
| | | | | Figures | Words | Figures | Words |
| <u>RE-SURFACING WORKS BETWEEN KM KM 128.00 TO KM 143.00 ON DARRANGA – TRASHIGANG ROAD</u> | | | | | | | |
| 1. | Providing & applying Tack Coat with Bitumen emulsion using bitumen emulsion pressure distributor @ 2.50 Kgs/10 Sqm on the prepared bituminous/granular surface cleaned with mechanical broom, all completed as per Clause 503 of MoRT&H specifications (Fifth Revision) all as specified in particular specifications and as directed by OC Contract/Engineer-in-Charge | Sqm | 121275.00 | | | | |
| 2 | Providing and laying 50 mm thick Dense Bituminous Macadam (DBM) layer with pre-coated stone aggregate, physical requirements/grading/mix composition as per Table 500/8/9/10 respectively of MoRT&H specifications for road and bridge works (Fifth Revision) mixed with 4.50% by weight of total mix as binder asphalt VG-30 (60/70) penetration grade and rolled to the required specifications as per clause 505 of MoRT&H Specifications (Fifth Revision), all as specified in particular specifications and as directed by OC Contract/Engineer-in-Charge. | Sqm | 11025.00 | | | | |
| Total of srl page No. 161 | | | | | | | |

(Signature of the Contractor with seal)

EE (Civil)
SW
for Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD...

PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE BHUTAN

| S/No | Description of Works | A/U | Qty | Rate per Unit to be quoted by the Bidder | | Amount | |
|----------------------------------|--|-----|------------------|--|-------|---------|-------|
| | | | | Figures | Words | Figures | Words |
| 3 | Providing and laying of 30 mm thick Bituminous Concrete (BC) layer conforming to clause 507 of MoRT&H specifications for road and bridge work (Fifth Revision) including cost of coarse aggregates, fine aggregates, filler, Bitumen VG-30, Anti Stripping Agent, Warm Mix Additives (quantity, quality and grade as per the approved Job Mix Formula) etc, cleaning of the road surface, application of tack coat with appropriate grade bitumen, cleaning and pre-heating of the mineral aggregate, filler & bitumen to the specific temperature, thoroughly mixing with binder of specified bitumen content, Anti Stripping Agent, Warm Mix Additives as per mix design in Hot Mix Plant of 20-30Ton/40-60T capacity, carrying the hot mixed materials by means of tipper, trucks, or any other approved and suitable arrangements, laying the hot premixed materials over the prepared surface by means of paver finisher including manual operation as and when required for proper grade, level and camber thorough rolling with power roller with necessary hand packing and pinning to give an even surface, including running expense of all plants and machineries, inclusive of proper traffic control during laying to the satisfaction of Engineer-in-Charge/OC Contract, required quality control tests at required interval etc complete in all respect as directed. | Sqm | 110250.00 | | | | |
| 4 | Road Marking with thermoplastic paint (2.50 mm thick) confirming to Clause 803.4 of MoRT&H specifications (Fifth Revision) including preparation of surface and application. | Sqm | 5137.50 | | | | |
| Total of srl page No. 162 | | | | | | | |

(Signature of the Contractor with seal)

EE (Civil)
SW
for Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD...
COLLECTION OF SCHEDULE 'A'/BILL OF QUANTITIES

PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE BHUTAN

| S/No | Description of Works | A/U | Qty | Rate per Unit to be quoted by the Bidder | | Amount | |
|----------------------------------|---|-----|--------------|--|-------|---------|-------|
| | | | | Figures | Words | Figures | Words |
| 5 | Supply and installation of MS Round pipe Delinators of overall size 900 mm X 48 mm dia with high intensity prismatic retro reflecting sheeting of Red, Yellow and White colour of ASTM D4956 compliance covered by MS wire guard on top conforming to 3 M and MORTH specifications. | Nos | 1500 | | | | |
| 6 | Providing and fixing of Alumminium road stud (Cat Eye Reflectors) conforming to ASTM D2444 standard and 3M specifications with highest retro reflection double side acrylic prismatic reflectors colour : Amber with high durability and impact resistance of overall size 100 X 100 X 20 mm and shank size 48 mm alongwith epoxy adhesive to fix the studs at the rate of one liter for eight to ten studs. | Nos | 13501 | | | | |
| 7 | Providing and fixing of Solar Cat Eye | Nos | 1500 | | | | |
| Total of srl page No. 163 | | | | | | | |

(Signature of the Contractor with seal)

EE (Civil)
SW
for Accepting Officer

SCHEDULE 'A'/BILL OF QUANTITIES CONTD...

PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE BHUTAN

| | | | |
|-----|--|------------|--|
| (a) | Total brought forward from srl page No.161 | Rs. | |
| (b) | Total brought forward from srl page No.162 | Rs. | |
| (c) | Total brought forward from srl page No.163 | Rs. | |
| | Total | Rs. | |

Total (Rupees _____)

(Signature of the Contractor with seal)

EE (Civil)
SW
for Accepting Officer

SCHEDULE `B`

(ISSUE OF STORES TO THE CONTRACTOR)

PROVIDING AND LAYING OF BITUMINOUS CONCRETE 30 MM COMPACTED THICKNESS INCLUDING CORRECTION WORKS WITH 50 MM THICK DBM INCLUDING APPLICATION OF TACK COAT, ROLLING AND COMPACTION AS PER MORT&H SPECIFICATIONS AND ROAD MARKING WITH THERMOPLASTIC PAINT 2.50 MM THICK CONFORMING TO IRC : 35 - 1997 AND BTS 33 : 2017 INCLUDING PREPARATION OF SURFACING FOR CARRYING OUT RESURFACING ALONG WITH FIXING OF CATS EYE AND DELINATORS BETWEEN KM 128.00 TO KM 143.00 ON ROAD DARRANGA - TRASHIGANG DURING FY 2020 - 21 UNDER 63 RCC/19 BRTF OF PROJECT DANTAK INSIDE BHUTAN

| Srl No | Particulars | Rate at which Material will be | | Place of issue by Name | Remarks |
|--------|-------------|--------------------------------|-----------|------------------------|---------|
| | | Unit | Rate (Rs) | | |
| | | | | NIL | |
| | | | | | |

SCHEDULE `C`

LIST OF TOOLS AND PLANT (OTHER THAN TRANSPORT) WHICH WILL BE HIRED TO THE CONTRACTOR)

| 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

| S/No | Quantity/Particulars | Rate per unit per working day | Place of issue | Remarks |
|------|----------------------|-------------------------------|----------------|---------|
| NIL | | | | |

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer

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 (MoRT&H) 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 40 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 Contacts 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 **22** of tender documents).

Witness:
(Name in Block letters)
Address-----

Signature of Contractor
in the capacity of _____ duly
authorized to sign the tender for and on behalf
of M/s _____
(In Block letters)
Postal address: - _____

(Signature of the Contractor)

EE(C)
SW
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 2020, 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 _____ 2021

(Signature of the Contractor)

EE(C)
SW
For Accepting Officer