

# **NATIONAL AUTOMOTIVE TEST TRACKS**

**NOTICE INVITING TENDER**

**FOR**

**Closing of Culverts opening of HST with Structural works towards  
outer side of High-Speed Track (HST)**

**At NATRAX  
PITHAMPUR, DIST. DHAR (Madhya Pradesh)**

**Tender No. - NATRAX/C&I/CWT/20/93**

**National Automotive Test Tracks (NATRAX)**  
NH-52, Old Agra- Mumbai Highway, Near to Pithampur Flyover, Post Khandwa (Near  
Pithampur)  
Dhar District, Madhya Pradesh-454774  
Phone: +919893892310, Fax – 07292-256101  
Email: [tulika.banerjee@natrip.in](mailto:tulika.banerjee@natrip.in);



## 1. General Instructions:

NATRiP Implementation Society (NATIS), an autonomous body constituted by Ministry of Heavy Industries & Public Enterprises, Government of India for execution of National Automotive Testing and R&D Infrastructure Project (NATRiP), the largest and one of the most significant initiatives in Automotive sector so far which represents a unique joining of hands between the Government of India, a number of State Governments and Indian Automotive Industry to create a state-of-the-art Testing, Validation and R&D infrastructure in the Country.

The Project aims at creating core global competencies in Automotive sector in India and facilitate seamless integration of Indian Automotive industry with the world as also to position the Country prominently on the global automotive map.

The National Automotive Test Tracks (NATRAX) is an Automotive Testing & Certification Centre under NATRIP. NATRAX is being set up on approx. 3000 acres for comprehensive testing and evaluation of all types of automobiles, near Pithampur, Dist. DHAR, (Madhya Pradesh, India). NATRAX invites sealed tenders from the Bidders in the prescribed proforma for performing, executing and implementing the Works on the terms and conditions contained in this Tender Document and in the Contract. Brief description of Works and the timelines for tenders are summarised in the table below:

The details of the Tender are mentioned below: -

Description of Work	Time for completion	Date of start of floating of tender	Last date for submission of Bid	Date & Time of Bid opening	Estimated Cost
Closing of Culverts opening of HST with Structural works towards outer side of High-Speed Track (HST)	2 month from the date of issue of NTP	22 <sup>nd</sup> June 2020	13 <sup>th</sup> July 2020 3:00 pm	13 <sup>th</sup> July 2020, 3:30pm	Rs 9.92 Lakh

Those who meet the minimum eligibility criteria as mentioned in the Instruction to bidder (ITB) (and also in NIT) may be eligible to become successful in the bidding process. The bidder in the form of JV/Consortium is not permitted.

## 2. Bid Submission details:

Sealed bids are to be submitted at the following address not later than the aforesaid time & date or as next convenient date & time on pre-intimation.





Tender No. - NATRAX/C&I/CWB/Misc/20/93

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NATRAX HUB office,  
NH-52, Old Agra- Mumbai Highway,  
Near to Pithampur Flyover, Post Khandwa (Near Pithampur)  
Dhar District, Madhya Pradesh-454774

No Bids will be accepted after the aforesaid date and time. However, on exceptional cases, NATRAX reserves the right to extend the time/last date of submission of Bid to a next convenient date/time before opening of the Bids.

Bids sent telegraphically or through other means of transmission (telefax, email etc.) which cannot be delivered in a sealed envelope shall be treated as defective, invalid and shall stand rejected.

NATRAX shall not be responsible for any postal/courier delays for non-receipt /non-delivery of bids or due to wrong addressee.

**3. Disclaimer:**

NATRAX reserves all rights to accept/ reject/modify/split any or all proposals without assigning any reasons. Bidders shall not have any cause of action or claim against NATRAX for any of its decisions.

**For NATRAX**

Procurement Incharge





**ANNEXURE I  
INSTRUCTION TO BIDDERS**

1. Bidders are required to submit their Bids in two parts in a sealed envelope, superscribed "**Bid for Tender No. NATRAX/C&I/CWB/Misc/20/93**" on the top of envelop, containing two separate sealed envelopes, as given below. The sealed bids shall be submitted at the NATRAX, Pithampur before the closure of bid submission date/time.

- a) The first sealed envelope marked as "**Technical Bid for Tender No. NATRAX/C&I/CWB/Misc/20/93**" shall consist of all the technical details eligibility, commercial terms and conditions and documents sought in the NIQ/Tender along with the signed copy the NIQ/Tender document. **Further, the Technical Bid must include a copy of the unfilled Financial Bid of the Bidder without any information on the prices**
- b) The second sealed envelope marked as "**Financial Bid for Tender No. NATRAX/C&I/CWB/Misc/20/93**" should consist of the Financial Bid duly filled and signed by an authorised person from the Bidder's.

Both the envelopes are to be submitted together in a sealed outer envelope.

The technical bids are opened at the first instance and evaluated. At the second stage, financial bids of only these technically acceptable offers are to be opened with prior intimation on the date and time for further scrutiny, evaluation, ranking & placement of order.

2. The bidders are expected to meet the minimum eligibility criteria as given in the "Notice Inviting Tender". NATRAX will reject the bids that do not meet the minimum eligibility criteria as laid down, based on their submission along with the Tender documents even after the bid opening process is concluded.

3. The Contract shall be governed by NATRAX's Special Conditions for Contract (SCC) and all other relevant specification applicable.

4. All Bidders are hereby explicitly informed that "CONDITIONAL OFFERS" or "OFFERS WITH DEVIATIONS" from the conditions of Contract, the quotation not meeting the minimum eligibility criteria, Technical specifications, or any other requirements as stipulated in the Tender documents are liable to be "REJECTED".

5. **Bidders should give details of their technical soundness and provide list of customers/client of previous works of similar nature in Government Departments/ Undertakings/ Public / Private sectors/Autonomous etc.,**

6. **Minimum Eligibility Criteria: -**

**Documents to be submitted along with the bid:**

The bidders whose bid meet the following criteria would only be considered as responsive and evaluated by NATRAX.



**i. MEC 1: -**

**Legal Valid Entity:**

The Bidder shall necessary be a legal valid entity either in the form of Proprietary/Private Partnership/Private/Govt./ Public/Autonomous. In form of JV/Consortium not permitted.

**List of acceptable documents: -**

- a) License certificate/Gumasta of the firm
- b) Details of Owner/partners of the firm
- c) Copies of Income Tax Registration/PAN Card, GST registration, PF registration and any other statutory requirements, etc.,

**ii. MEC – 2: Financial Capabilities**

The minimum **Average Annual Financial** turnover of the bidder during the last three years, ending on 31st March of the previous financial year, should be as Rs 15 Lakh. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid.

In case the date of constitution / incorporation of the bidder is less than 3-year-old, the average turnover in respect of the completed financial years after the date of constitution shall be taken into account for this criterion.

**iii. MEC- 3: Experience**

The Bidder should have successfully completed or substantially completed similar works during last three (3) years ending last day of month previous to the one in which applications are invited should be either of the following: -

- a. Three similar completed works costing not less than the amount equal to 40(forty) percent of the estimated cost; or
- b. Two similar completed works costing not less than the amount equal to 50 (fifty) percent of the estimated cost; or
- c. One similar completed work costing not less than the amount equal to 80 (eighty) percent of the estimated cost;

**\*Similar works mean Structural Steel/Fabrication works for Building/Industrial/Road works, Pre-Engineering Building/Industry/Shed works, etc. Fabrication works with structural steel/ Pipe, Structural Piping works related to utility etc.**

**List of accepted documents:**

- a) Completion certificate/supply of PO, value of works, etc.,
- b) Incase completion certificate/PO does not clearly mention the value of work executed, then the bidder shall submit the fresh summary & proof as TDS, CA certificate, Excise, GST etc.,





7. **Tender Fee & EMD Exemption: -**

- a) This tender is free of cost.
- b) If registered under "Micro & Small Enterprises" (MSEs), supporting documents need to be submitted to avail exemption from Earnest Money, subject to verification of certificate.
- c) For MSME, price benefit shall be given as per the guideline, at the discretion of NATRAX.

8. The Bidders are expected to carefully examine all the contents of the Tender documents including instructions, conditions, terms, specifications, drawings (if any), shall inspect the Site with prior notice to NATRAX and at Bidders own cost, acquaint himself with all local conditions, means of access to the work, nature of the work and all matters pertaining thereto & take them fully into account before submitting their offer. Failure to comply with the requirements as detailed in these documents shall be at the Bidder's own risk. Bids which are not responsive to the requirements of the Tender will be rejected.

9. While all efforts have been made to avoid errors in drafting of the Tender documents, the Bidder is advised to check the same carefully. No claim on account of any errors detected in the Tender documents shall be entertained.

10. The Bidder shall carry out all the work strictly in accordance with Specification, Standard Practices and instructions of NATRAX or NATRAX's representative and deviation on any account will not be permitted. If in the opinion of NATRAX, changes have to be made in the design and it desires the Bidder to carry out the same. The decision of NATRAX in such cases shall be final and shall not be open to arbitration.

11. The successful Bidder is bound to carry out associated work necessary for the completion of the job even though such items are not included in the quantities and drawings to achieve end results and deemed to be priced in the other items. No claim on this account shall be entertained.

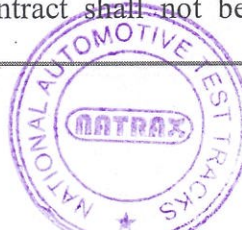
12. The successful Bidder should make his own arrangement to obtain all materials required for the work.

13. Addendum / Corrigendum (if required) to the Tender may be issued prior to the date of opening of the Bid to clarify or to intimate any changes/modifications etc. All such addendum / corrigendum shall be treated as an integral part of the Tender.

14. Any effort by a Bidder to influence NATRAX or any of its functionaries in the process of examination, clarification, evaluation and comparison of tenders and in decisions concerning award of contract, may result in rejection of the Bid.

15. In order to afford prospective bidders, reasonable time for preparing their Quotes after taking into account such amendments, NATRAX may, at its discretion, extend the deadline for submission of bids.

16. Information relating to the examination, clarification, evaluation and comparison of bids and recommendations concerning the award of Contract shall not be disclosed to





Bidders or other persons not officially concerned with such process.

17. NATRAX reserves the right to accept / reject or modify any bids, and to annul the Tender process and reject all quotations, at any time prior to award of Contract, or to divide the Contract between/amongst Bidders without thereby incurring any liability to the affected Bidder or Bidders or any obligations to inform the affected Bidder or Bidders of the grounds for NATRAX's action. Any bidder not following ITB stands rejected.

18. **Bid Opening Details:**

- a) The Bids will be opened at NATRAX HUB office at the date and time mentioned in Tender / corrigendum in the presence of Bidders or their duly authorized representatives, who choose to remain present at the time of opening the Bids.
- b) A letter of authorization shall be submitted to NATRAX, by the Bidder's representative before the opening of Bids.
- c) Absence of bidders or their duly authorized representatives shall not impair the legality of the bid opening process.
- d) All bidders or their duly authorized representatives shall be required to sign the main bid envelopes by way of confirmation of sealed bid status at the time of opening of bids. After identification signing, the Procurement Committee representative shall open the bid envelope.
- e) This will not give any right to the bidder to claim that he is successful in the bidding process.
- f) Bid envelopes shall be required to sign by all the authorized representatives and the same will be kept under the custody of NATRAX.
- g) Refusal to sign on any of the bid envelopes by any of the bidder or his duly authorized representative may disqualify him from the process at the discretion of members of the Tender opening Committee present at the time of opening of the Bids.

19. The rate should be quoted both in words and figures on our prescribed format duly signed & stamped by the bidder, incase any discrepancy, word will be preferred. All statutory deductions shall be applicable while releasing payments. All corrections and overwriting should be initialed by the Bidder.

20. **TECHNICAL BID EVALUATION**

- a) NATRAX shall follow the **Segregated bid evaluation** system (No bearing of technical score in the financial bid evaluation and L-1 in the financial bid shall be deemed as successful bidder) to determine the successful bidder. (Bidders may also refer the SCC).
- b) The bidder should qualify the all three MEC.
- c) The Bidder is requested to specify what particular value he is offering for each particular requirement, rather than just stating he is fulfilling the Minimum Requirement. Unless



specifically required (“Specify yes/no”), cells filled with terms like “compliant” or “yes” will not be evaluated. Even when a “Specify yes/no” answer is required a small sentence explaining the requirement is required.

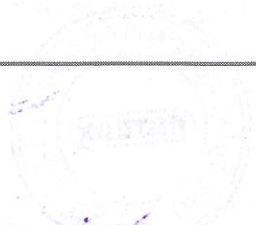
- d) During the technical bid evaluation process, NATIS may ask clarifications to the bidder through E-mail/ Fax, for confirming and consolidating their technical offers.
- e) All such clarifications are required to be answered by the bidder by E-mail/Fax, within the time specified by NATRAX.
- f) Only the technically qualified bidders shall be intimated for financial bid opening in writing.

**21. FINANCIAL BID EVALUATION**

- a) For the evaluation of the Financial Bids, the eventual Bid prices shall be ascertained after considering all the terms and conditions associated with the Bid price specified in the Financial Bid document and after detailed scrutiny of the financial bid.
- b) No Bidder shall be allowed to propose/carry out any revision / correction / modification in his Price Bid offer.
- c) If there is a discrepancy between the sub total/s and the total price that is obtained by multiplying the unit price and quantity/adding the sub total/s, the sub total/s shall prevail and the total price shall be corrected, unless in the opinion of the Employer that there is an obvious misplacement of the decimal point in the sub total price, in which case the total price as quoted shall govern and the sub total/s shall be corrected;
- d) If there is an error in a total, corresponding to the addition or subtraction of sub totals, the subtotals shall prevail and the total shall be corrected; and
- e) The bidder needs to fill the rates against each item in word as well as in figures as mentioned in BOQ (Financial bid). In case of any discrepancy, the rate provided in word shall prevail and correct the amount against the item. All the prices should be inclusive of all taxes and GST.
- f) The amount stated in the Letter to Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and, shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount of bid, the bid will be rejected.
- g) Contract negotiations, if any, will be held before the issuance of Letter of Acceptance/ Notification of Award. The negotiation shall conclude with a revised offer letter from the successful bidder, affecting the discounts if any and accepted by NATRAX.

**22. Award of Work:**

- a) Prior to the expiry of the period of Bid validity prescribed, NATIS will issue to the Successful Bidder, the Work Order. The Successful Bidder shall return one copy of the Work Order to NATRAX duly acknowledged and signed by the authorized signatory, within two [2] days of receipt of the same by him.







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- b) NATRAX shall notify all the unsuccessful Bidders and discharge/ return their Earnest Money Deposit. No correspondence will be entertained by NATRAX from the unsuccessful Bidders.

**23. Validity of bids:**

The rate quoted should be valid for a **minimum period of 120 days** from the last date of Submission of Quotation. No claim for escalation of rate will be considered at any point of time.

24. Prospective bidders requiring any clarification of the Tender may write to [tulika.banerjee@natrip.in](mailto:tulika.banerjee@natrip.in).

25. The Bids / related correspondences shall be made in English language only.

**26. Special Conditions:**

a.	Scope of work	<b>Closing of Culverts opening of HST with Structural works towards outer side of High-Speed Track (HST) at NATRAX Pithampur</b>
b.	Completion Schedule	<b>2 Month from the date of issue of NTP</b>
c.	Liquidated Damages	0.1% of the Contract Price per day to a maximum of 10% of the Contract Price.
d.	Payment & Mode	<ul style="list-style-type: none"><li>• In Indian National Rupees (INR) &amp; through RTGS against submission of invoice on monthly basis with all supporting documents for actual works executed.</li><li>• Payment shall be processed only after due certification by Engineer-in-Charge.</li><li>• No Advance payments.</li></ul>
e.	Retention	5% (Five) of the Contract Price.
f.	Release of Retention Amount	On completion of Defect rectification period.
g.	Defect Rectification Period	6 (Six) months from the date of issue of work completion certificate.
h.	Project Facility / Place of Installation/delivery	NATRAX Site NH-52, Old Agra- Mumbai Highway, Near to Pithampur Flyover, Post Khandwa (Near Pithampur) Dhar District, Madhya Pradesh-454774
j.	Tender Document Fee	Free of Cost
k.	Bid Security/EMD	<b>Rs 24,000/-</b> be submitted as Bid Security/EMD along with the Technical bid in the form of A/C Payee Demand Draft/Fixed Deposit Receipt/Banker's Cheque or Bank Guarantee from any of the Commercial Banks favouring <b>"National Automotive Test Tracks"</b> & payable at <b>Pithampur</b> . Bid Security/EMD should remain valid for a period of forty-five days beyond the final bid validity period.





Tender No. - NATRAX/C&I/CWB/Misc/20/93

		<b>Bids received without EMD will be summarily rejected.</b>
1.	Performance Security	5% (Five) of the Contract value should be submitted as Performance Security by the Successful Bidder on award of Contract. Performance Security may be furnished in the form of an A/C Payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee from a Commercial Bank favouring "National Automotive Test Tracks" & payable at Pithampur and should remain valid for a period of Sixty days beyond the date of completion of all Contractual Obligations. Bid Security/EMD will be returned to the successful bidder on receipt of Performance Security.
m.	List of Mandatory Tests to be carried out	MTC required for structural steel from manufactures. Any other tests as per the disction of Engineer-In-Charge.
n.	Approved brands for Materials	<b>43 grade OPC Cement</b> – Birla, Ultratech, Vikram, or any equivalent brand approved by Engineer-In-Charge <b>Structure Steel</b> – SAIL, RINL, TISCO, PRAKASH, ZINDAL Brand or any equivalent brand approved by Engineer-in-Charge <b>Anchor Fastner</b> - HILTI, FISHERS brand or any equivalent brand approved by Engineer-in-Charge <b>Enamel Paint</b> - Asian, Berger, Neroluc brand approved by Engineer-in-Charge.
o.	Detailed scope of Work	As per Annexure A

27. The bidder should give the following, duly signed and sealed, failing to which the bids will be summarily rejected:

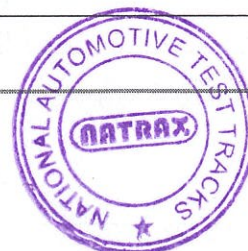
**a. DECLARATION**  
**(To be executed on Bidder's letter head)**

I/We having aquainted with the content & requirement of this Tender, do hereby accept to furnish the same in compliance with all terms & conditions. I/we have not tampered/modified the tender in any manner and breach of any such, will result in rejection of Tender and / or prosecuted.

I / We hereby declare that the firm/company has not been blacklisted or debarred in the past by any other Government organization from taking part in Government tenders.

In case the above information found false or in case of breach of any of terms and conditions at any stage of Tender or Contract, I/We are fully aware that the Tender/ Contract will be rejected / cancelled by NATRAX and Payments (for completed/partially completed), Retention, Bid Security (EMD), Performance Security, etc., shall be forfeited.

**Signature of the Bidder:**





Tender No. - NATRAX/C&I/CWB/Misc/20/93

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Name and Designation:

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Address:

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Contact details:

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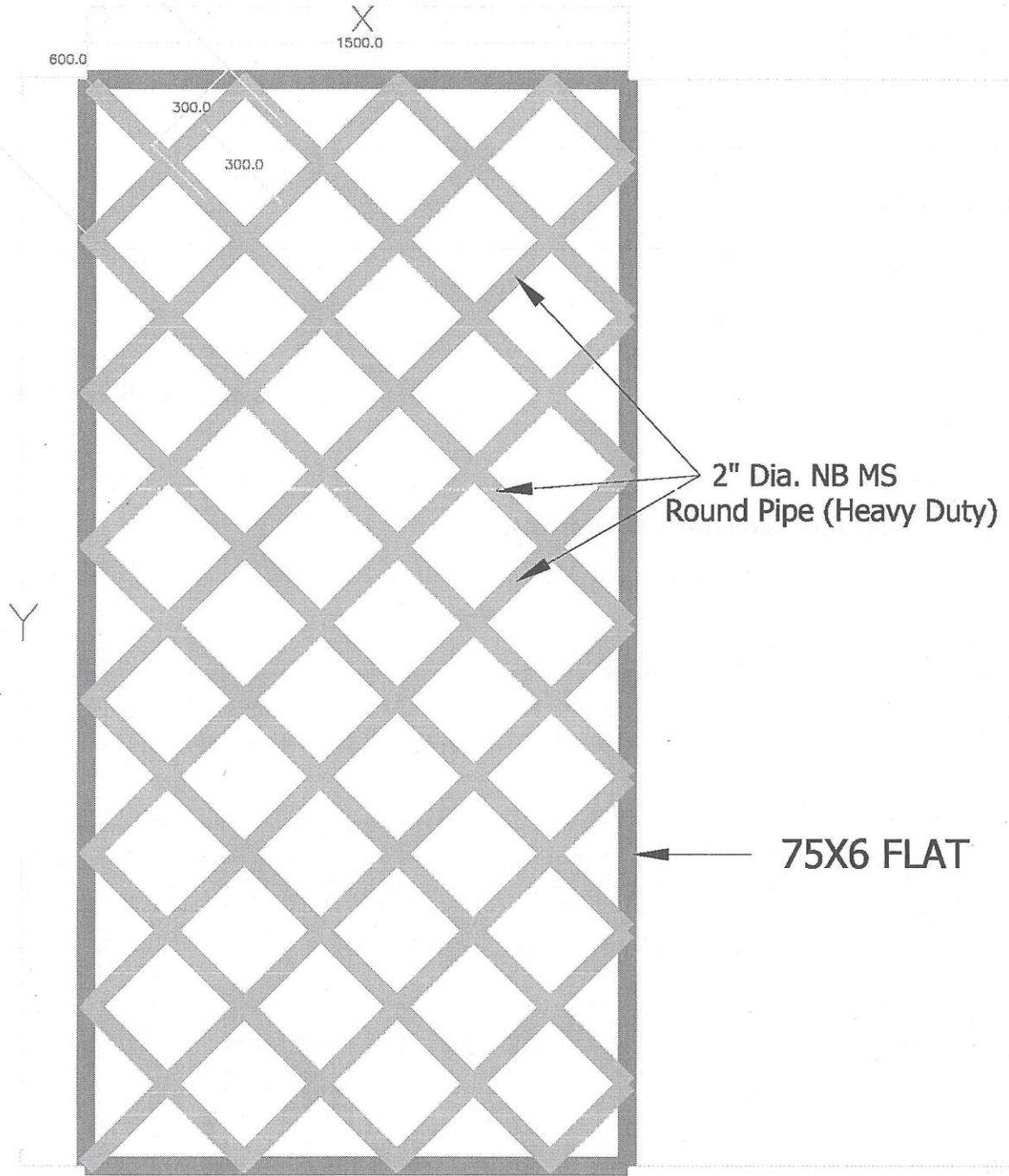
Place:

Date:

Seal of the Bidder's Firm

b. The completed tender documents.





CONSTRUCTION DRAWING	<b>NATRIP</b> NATIONAL AUTOMOTIVE TESTING AND R&D INFRASTRUCTURE PROJECT	PROJECT NATRAX - NTHAIPUR	SCALE AS SHOWN	DATE 15/08/20	BY ATA	CHECKED ATA	APPROVED ATA	TYPICAL DETAILS OF CULVERT CLOSING DRAWING	IND- CW-01 REV- RD
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Tender No. - NATRAX/C&I/CWB/Misc/20/93

Bill of Quantity for Providing and Fixing of MS Pipe Jali in Box Culvert Vent of High-Speed Test Track at NATRAX-Pithampur, Dhar (MP).						
Item No	Item Description	Unit	Qty	Unit Rate in Rs	Unit Rate in Figures	Total Amount in Rs
1	Providing and fixing in position structural steel work for the superstructure of bridges including cutting, rivetting, bolting or welding as per the approved design and including hoisting in position etc. complete as per specifications and Frame shall be fixed to wall using Expendable Fastner with necessary stainless steel bolts, all complete as per direction of Engineer-in-charge. (Fastner will be paid extra)	Kg	12393			
2	Supply of Anchor Fastener - M10	Each	240			
3	Painting with aluminium paint of approved brand and manufacture to give an even shade.	Sqm	210			
<b>Total Amount in Rs;</b>						
<b>Total Amount in Figures;</b>						





Tender No. - NATRAX/C&I/CWB/Misc/20/93

Form for the submission of Financial Bid

**Financial Proposal Submission Form**

(To be Executed on Letterhead of the Bidder)

**FINANCIAL PROPOSAL SUBMISSION FORM**

[Location, Date]

To:  
The Procurement Officer  
NH-52, Old Agra- Mumbai Highway,  
Near to Pithampur Flyover,  
Post Khandwa (Near Pithampur)  
Dhar District, Madhya Pradesh-454774

Dear Sir,

We, the undersigned, offer to provide the equipment & services in accordance with your Tender No. \_\_\_\_\_, dated \_\_\_\_\_ and our Technical Bid. Our attached Financial Bid includes the price in the format for financial bid provide as part of tender documents. The total price of our offer is \_\_\_\_\_ (in figures and words) and includes all the deliverables under this tender as per our Technical Bid.

We hereby declare that all the information and statements made in this Bid is true and complete in all respects and is as per the guidelines and terms & conditions laid down in the tender document. We further understand that any information which is found false or is not as per the guidelines and terms & conditions of the tender document may lead to our disqualification.

Our Financial Bid shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Bid.

We understand NATRAX has right to accept or reject our Bid as per its discretion.

Yours sincerely,

Authorized Signature [*In full*]: \_\_\_\_\_

Authorized Signature [*In initials*]: \_\_\_\_\_

Name and Title of Signatory: \_\_\_\_\_

Name of Firm: \_\_\_\_\_

Address: \_\_\_\_\_

[Note : To be signed in blue ink]





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Checklist Tender No. NATRAX/C&I/CWB/Misc/20/93

S.No	Particulars	Document Attached	
1	Have you submitted bids in 2 parts in sealed envelopes with the necessary headings? Have you submitted both the envelopes together in a sealed outer envelope?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2	Have you enclosed the EMD for Rs 24,000/- in the technical Bid?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
3	Have you submitted the details of your technical soundness.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4	Legal Valid Entity: Have the documents mentioned in the NIQ have been submitted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
5	Is your firm a legal entity for the last 3 years. If yes, please provide Certificate of Incorporation,	Yes <input type="checkbox"/>	No <input type="checkbox"/>
6	ITR Returns for last three Assessment years including Audited Balance sheet (2016-17, 2017-18 & 2018-19) should be provided.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
7	It should have the average turnover of Rs. 15 Lac, in the last 3 financial years (2016-17, 2017-18 & 2018-19), please provide details	Yes <input type="checkbox"/>	No <input type="checkbox"/>
8	Details of Technical Capabilities (similar experience) in last 3 years with reference of clients (Name & Contact numbers) should be attached.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
9	If registered under "Micro, Small & Medium Enterprises" (MSME), supporting documents need to be submitted to avail exemption from Bid Security / Earnest Money.	Yes <input type="checkbox"/>	No <input type="checkbox"/>





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10	Have your technical bid been prepared for packing as per Tender?	Yes <input type="checkbox"/> No <input type="checkbox"/>
11	Duly Stamped and signed on all pages of the Tender/Quotation documents, as issued by NATRAX (in Original)	Yes <input type="checkbox"/> No <input type="checkbox"/>
12	Have your financial Bid proposal is duly filled, sealed and signed on all pages?	Yes <input type="checkbox"/> No <input type="checkbox"/>
13	Have you filled your quotes against all items?	Yes <input type="checkbox"/> No <input type="checkbox"/>
14	Have you verified the calculation of prices ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
15	Have your financial bid been properly packed as per Tender?	Yes <input type="checkbox"/> No <input type="checkbox"/>
16	Total no of pages submitted by the bidder as a part of the bid	Total no. of pages: _____pgs





Annexure-A

Detailed Scope of Works

1. Welding:

Welding of reinforcing bars is not permitted unless indicated or approved by the Engineer in writing in each case. Where permitted in writing, reinforcement which is specified to be welded shall be welded by any process after which the Contractor can demonstrate by bend and tensile tests that the strength of the parent metal is not reduced and that the weld possesses a strength not less than that of the parent metal. The welding procedure established by successful test welds shall be maintained and no departure from this procedure shall be permitted. Welds in positions other than those shown on the drawings shall not be permitted. Welding shall be carried out only by qualified welders with experience of similar works. The standard for welding will be those required by IS : 2751 - 79 code of practice for welding of mild steel bars used in reinforced concrete construction and IS : 9417-1989 Recommendations for welding cold worked steel bars for reinforced concrete construction.

2. Welding Electrodes

The electrodes shall conform to the requirements of IS:814 latest edition.

3. Shop Painting

Structural steel not designated to be galvanised shall be stop-coated using priming coat of red lead as specified in painting section of these specifications. The portion of steel to be embedded in concrete shall not be painted.

4. STRUCTURAL STEEL

This specification are for the supplying, fabricating and erecting in position mild steel structures such as beams, monorail, platform, M.S.ladders, stairs and M.S.grating etc. from angles channels, flats, plates etc. including cost of steel, cutting to required size, rivetting, bolting or welding, fixing in the line and level, painting with two coats, of red oxide primer and two coats of approved enamel paint. Requirements specified in this section will form a part of detailed specifications for item of works falling under this category. Indian standards shall apply as if included herein. Design of structure shall be compliance with Indian Standards (IS) viz. for rivets IS:1148-1954 for bolts IS:1148- 1964 and IS:1962 for structural fabrication IS:800-1962, and its latest edition.

Structural steel members, steel joints, plates and connections, steel chair assemblies, pipe supports for piping in all locations, ladders and stairs and miscellaneous metal work for water supply and sewerage and disposal installations. Unless otherwise specified all work specified herein and shown on the drawing shall conform to the applicable requirements of



the following specifications and codes. Fabrication and erection of structural steel shall be in accordance with IS:800-962 and amendments issued.

This work shall include the furnishing and installation of all structural steel and miscellaneous metal work and related supports, tanks, manhole steps, equipment guards, anchors and other appurtenances and any other work shown on the drawings or herein specified. All materials shall be new, sound and of the best quality available.

5. **Anchors Bolts and Anchors fastners**

Anchors bolts and anchors shall be properly located and built into concrete to work. Bolts and anchors shall be present by the use of templates or such other methods as may be required to locate the anchors and anchor bolts accurately. Embedded anchor bolts that are submerged in process water or pump room floors, or are in enclosed tanks or spaces exposed to process gas or moisture, shall be of stainless-steel bolts, a non-oxidising lubricant grease will be applied before bolting.

6. **Protection:** According to local environment plants may have to be protected adequately from vandalism until established.

7. **Completion:** on completion the ground should be formed over and left tidy.

8. Specification as per CPWD & MPSOR

