



NOTICE INVITING QUOTATIONS

File No.	628/23-24/PFMS/DST/PRO/MDS/OC/006	Date:	01.10.2024
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To

(Supplier Address)

Sealed quotations are invited from reputed Authorized Dealers / manufacturers for the supply of the Items.

Name of the Item : 1. Fabrication of Turbine blade
2. Fabrication of Turbine blade with TBC coating

Specification : (As per enclosed Schedule Annexure – IA)

1. Quotation Reference No. : 628/23-24/PFMS/DST/PRO/MDS/OC/006

2. Last date and Time for receipt of quotation : 22.10.2024 before 03.00 PM

3. Date & Time of opening of Quotation : 22.10.2024 at 03.30 PM

4. EMD Amount : 2%

5. Validity (Days) : 90 days

6. Address to which quotations are to be sent

The Deputy Registrar (Research & Consultancy),

Office of Dean (R&C),

National Institute of Technology,

Tiruchirappalli – 620 015, Tamil Nadu, India

Kind attention to : Dr. M. Duraiselvam

Phone : 0431 2503509

E-mail : durai@nitt.edu

7. Quotations should be submitted in the format given in Annexure – I and Annexure-II

8. The envelope should contain the following details:

“QUOTATION AGAINST ENQUIRY (Fabrication of Turbine blade &

Fabrication of Turbine blade with TBC coating,

628/23-24/PFMS/DST/PRO/MDS/OC/006)

Kind attention to: Dr. M. Duraiselvam

Last date and Time for receipt of quotation : 22.10.2024 before 03.00 PM

Terms and Condition

1.	The quotation must be in the format furnished by NIT Tiruchirappalli and should be free from corrections/erasures. In case there is any unavoidable correction it should be properly attested. If not the quotation will not be considered. Quotation written in pencil and incomplete will be rejected.
2.	Earnest Money Deposit (EMD) is to be submitted by way of Demand Draft drawn on any Nationalized bank in India in favor of "The Director, NIT, Tiruchirappalli" payable at Trichy. The bids submitted without EMD will be treated as non-responsive and will be rejected. EMD shall bear no interest. Bidder must fill the EMD returning Form (Annexure-III) and submit along with the quotation. EMD amount of 2% of estimate value is applicable, however UDYAM & NSIC registered Micro & small enterprises are exempted as per Govt.norms proof to be attached.
3.	You are invited to submit your most competitive quotation for the supply of goods according to the specifications and delivery terms as given. Bank guarantee submitted for EMD shall be valid for 45 days beyond bid validity period.
4.	Bidders may send the quotations in sealed covers with the quotation reference number and last date for receipt of quotations duly superscribed on the cover. Kind Attention to: Dr. M. Duraiselvam as mentioned in the point No. 6 NB: Mention the company Contact Number / E-mail id on the cover.
5.	Quotation will be opened on due date at 3.30 PM at the R&C Section, NIT, Tiruchirappalli in presence of the tenderers or their representatives who may wish to be present. (Any change in the date, time and venue of the quotation opening will be informed to the bidders through telephone / E-mail)
6.	The National Institute of Technology, Tiruchirappalli reserves the right to accept or reject any quotations, and to cancel the bidding process, and reject all quotations at any time prior to the award of order without assigning any specific reason thereof.
7.	Manufacturer's name and country of origin of materials offered must be clearly specified. Printed brochures, Purchase preference is only for Micro & Small enterprises (MSE's) register in UDYAM Portal or NSIC as per Ministries policy for MSE's . Proof to be attached
8.	Samples must be submitted where specified along with the quotations. Samples must be carefully packed, sealed and labelled clearly with enquiry number, subject and sender's name for easy identification. Rejected samples will be returned at your cost if insisted
9.	All supplies are subject to inspection and approval before acceptance. Manufacturer / supplier warranty certificates and manufacturer / Government approved lab test certificate shall be furnished along with the supply, wherever applicable
10.	National Institute of Technology, Tiruchirappalli reserves the right to modify the quantity specified in this enquiry.
11.	Startup company exempted from prior turnover & prior experience (startup certificate registered with DIPP should be enclosed)
12.	The bidder has to submit the bids in sealed envelope, (separate for each tender). Further Bidder should not send clubbing many tenders in one envelope, in such case all the bids will be rejected.

13.	<p>Bid Price</p> <p>a. The contract shall be for the full quantity Bidders must quote for entire quantity. Each bidder shall submit only one quotation in Indian Rupee only.</p> <p>b. Post work orders & completion certificate should be submitted, wherever applicable.</p> <p>c. The rates quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.</p> <p>d. GST, packing, forwarding and delivering other allied items at the destination shall be included in the price. All such price components may be shown in the quotation. If there is no indication regarding above charges. It will be considered as inclusive of all charges.</p> <p>e. If any arithmetic mistake in total / GST calculation is observed, the same shall be corrected by the purchaser with an intimation to bidder</p> <p>f. In case the items in the enquiry are covered by any rate contract or any other state or central Government, it should be specified in your quotation and accepted contract rates should also be mentioned. It should be confirmed whether you could supply at the RC rates outside rate contract</p> <p>g. Quotations containing conditions like “subject to prior sale” may not be considered.</p> <p>h. Delivery period required for supplying the material should be invariably specified in the quotation</p> <p>i. Bids without quoting GST (unless exempted) will be treated as invalid & disqualified.</p> <p>j. If there is a discrepancy between unit price and total price, the unit price will be considered. If there is any mismatch between figure and word, the amount in word shall prevail.</p>
14.	<p>Evaluation of quotations: Quotations will be evaluated item-wise or lump sum basis. The purchase committee will evaluate and compare the quotations determined to be substantially responsive i.e. (i) are properly signed; (ii) Conform to the terms & conditions and specifications; and (iii) price offered are competitive.</p>
15.	<p>Award of contract</p> <p>a. The National Institute of Technology, Tiruchirappalli will award the Order for supply of Goods / Services to the bidder whose quotation has been determined to be substantially responsive, and who has offered the lowest evaluated quotation price.</p> <p>b. The Bidder should furnish the contract agreement and performance security within 15 days from the date of receipt of the order for supply of goods / services, failing which the order will be cancelled without further notice and awarded to next eligible bidder.</p> <p>c. Notwithstanding the above, National Institute of Technology, Tiruchirappalli reserves the right to accept or reject any quotations, and to cancel the bidding process, and reject all quotations at any time prior to the award of order without assigning any specific reason thereof.</p> <p>d. National Institute of Technology, Tiruchirappalli, prior to the expiration of the quotation validity period, will notify the bidder whose bid is accepted for the award of contract. The terms of accepted offer shall be incorporated in the purchase order.</p>
16.	<p>Warranty: Nil</p>
17.	<p>Performance Security: Nil</p>
18.	<p>Payment: 100% will be paid after satisfactory delivery. The bill should be raised in favor of “The Director, National Institute of Technology, Tiruchirappalli, Tamil Nadu, India.” with institute GST No. 33AAATN5491Q1ZZ.No advance will be provided to the supplier and installer.</p>
19.	<p>Liquidity damages If the bidder / supplier, after accepting the Purchase Order or supply of Goods / Services, fails to deliver any or all of the Goods or to perform Services within the period(s) specified in the Order, The National Institute of Technology,</p>

	Tiruchirappalli shall impose penalty without assigning any reasons to the bidder / supplier a sum equivalent to 0.50 % of the total cost as indicated in the Purchase Order (which will be deemed as agreed price) for each week or part thereof of delay until actual delivery or performance is completed and such penal charges shall be limited to a maximum of 5% of the agreed price. Once the maximum is reached The National Institute of Technology, Tiruchirappalli, may proceed on its own to consider the termination / cancellation of the Order and may inform the bidder about the cancellation of the said purchase order. unless extension is obtained in writing from the office / Department on valid ground before expiry of delivery period
20.	If the deliveries are not maintained and due to that account Procuring Entity is forced to buy the material at your risk and cost from elsewhere, the loss or damage that may be sustained there by will be recovered from the defaulting supplier
21.	Dispute clause: Any dispute relating to the Enquiring /Tender of the indented item shall be under the Hon'ble Court having its jurisdiction over Tiruchirappalli only
22.	Startup company exempted from Prior Turnover & Prior Experience (Startup certificate registered with DIPP should be enclosed)
23.	GST as applicable
24.	Performance Bank guarantee should be valid for 60 days beyond the guarantee & warranty and the BG submitted for EMD shall be valid for 45 days beyond bid validity period.
25.	Bids submitted without EMD (unless exempted) will be treated as disqualified.
26.	The successful bidder should submit Security Deposit/PBG within 15 days from the date of placement of order. The EMD shall be returned only after receipt of SD. If the bidder fails to deliver the material, then the EMD/SD shall be forfeited.
27.	In LTE, bidder has to submit in sealed envelope (separate for each tender). Further Bidder should not send clubbing many tenders in one envelope, in such case all the bids will be rejected.

For any details / clarifications regarding could be obtained from Research and Consultancy Section of National Institute of Technology, Tiruchirappalli on all working days during 10 AM to 5 PM.

For further detail kindly contact Dr. M. Duraiselvam (Purchase initiator)

(NB: Mention the Contact Number / E-mail on the cover. Any change in the date, time and venue of the tender opening will be informed to the bidders through telephone / E-mail)

Enclosures:

Specifications of the Work	Annexure – I & IA
Price Format	Annexure - II
Bid Security Declaration Form	Annexure – III
Bank Mandate Form	Annexure – IV



NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI - 620 015
DEPARTMENT OF PRODUCTION ENGINEERING

Annexure- I

Specifications of the Work

Ref: 628/23-24/PFMS/DST/PRO/MDS/OC/006

Date: 01.10.2024

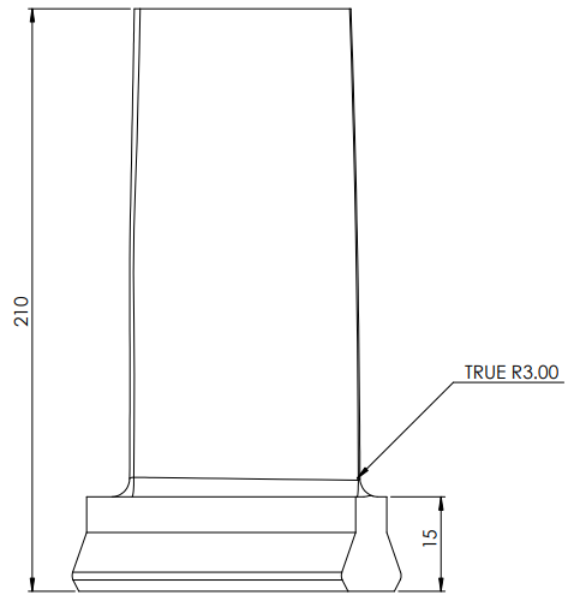
Sl. No.	Specification of NIT-T	Specification of the Supplier	Reasons (if there is difference in specification)
1.	Refer Annexure- IA for the detailed specification		
2.	Delivery Period (Weeks)	4 Weeks	
3.	Shipment terms	At NIT-T	
4.	Performance Security in %	Nil	

Signature & Seal of Vendor with Date

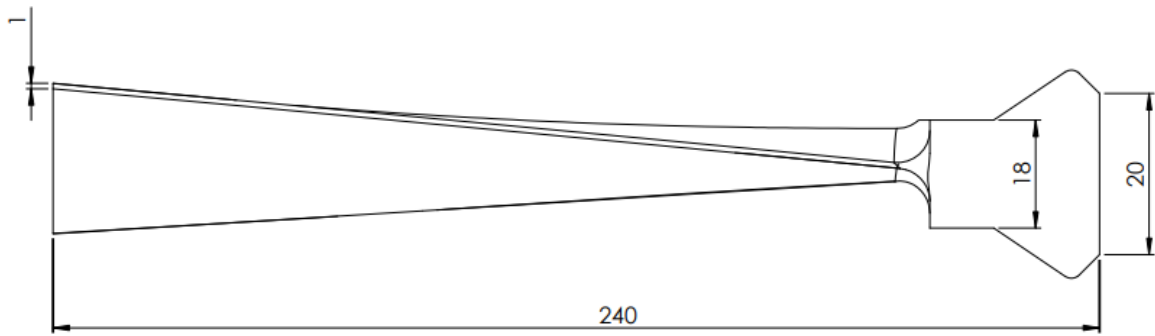
ANNEXURE – IA
TECHNICAL SPECIFICATION OF THE WORK
1. FABRICATION OF TURBINE BLADE

S.No	Description	Specification	
1.	Fabrication of Turbine Blade	01 No (Quantity)	
	Fabrication of Turbine Blade with TBC coating	08 Nos (Quantity)	
2.	Suitable Additive Manufacturing Technique	Laser Powder Bed Fusion (LPBF)	
3.	Material	Inconel 718 (Spherical Powder)	
4.	Powder Particle Size	15-53µm	
5.	Material Chemical Composition (%)	Carbon	0.08 max
		Manganese	0.35 max
		Silicon	0.35 max
		Chromium	17-21
		Nickel	50-55
		Molybdenum	2.80-3.30
		Columbium	4.75-5.5
		Titanium	0.65-1.15
		Aluminium	0.20-0.80
		Cobalt	1.00 max
		Copper	0.30 max
		6.	Operating conditions
Bed Temp.	150°C		
Layer Thickness	0.04 mm		
Parameter for core area			
Laser Power	285 W		
Laser Speed	960 mm/s		
Parameter for Downskin area			
Laser Power	145 W		
Laser Speed	2400 mm/s		
Parameter for upskin area			
Laser Power	145 W		
Laser Speed	2400 mm/s		
Parameter for Contour area			
Laser Power	160 W		
Laser Speed	900 mm/s		

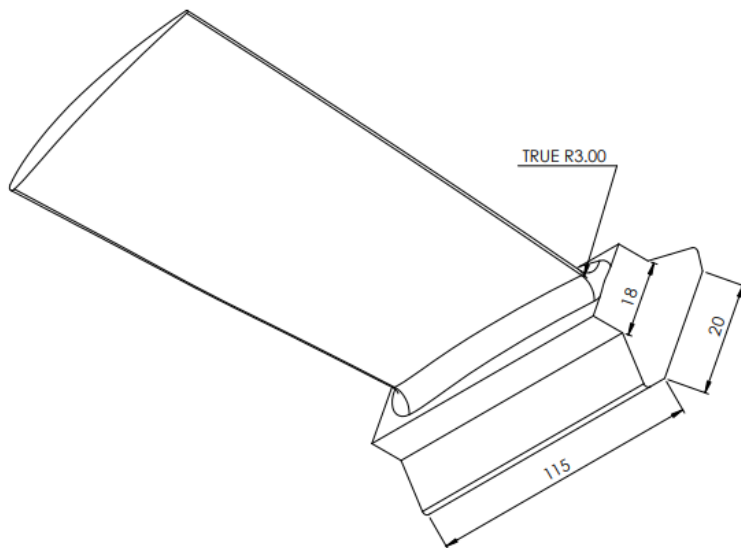
Design for Fabrication of Turbine Blade – 1 No



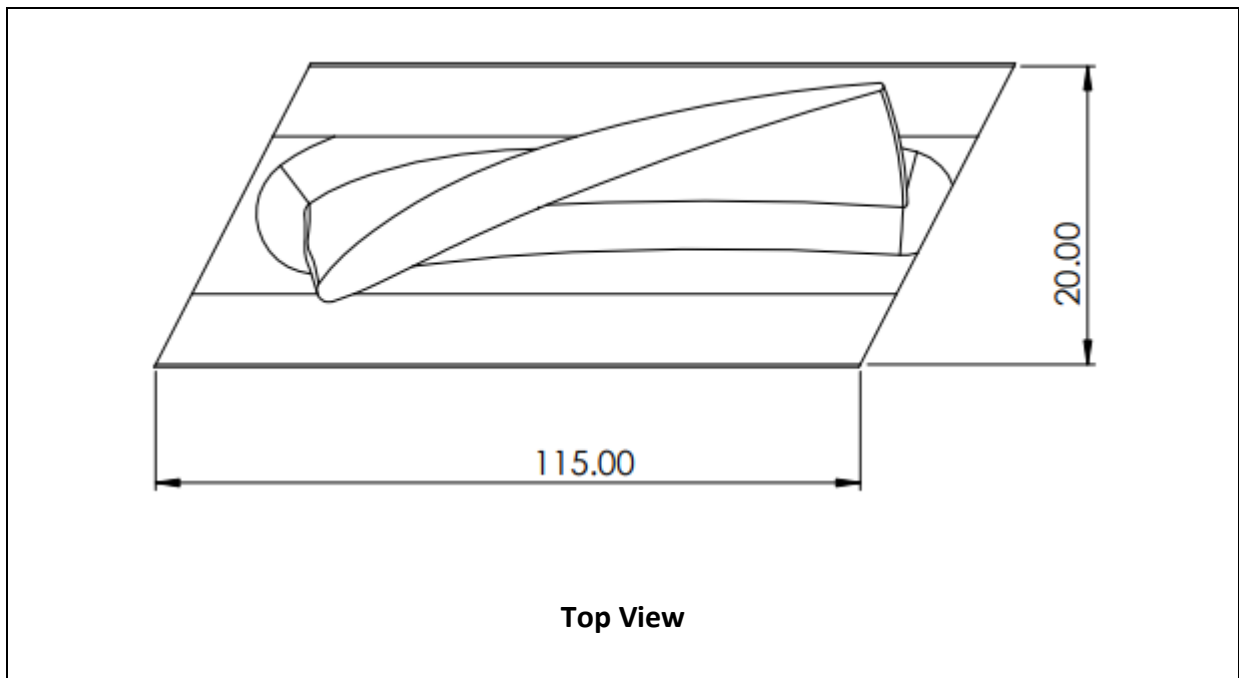
Front View



Side View



Isometric View

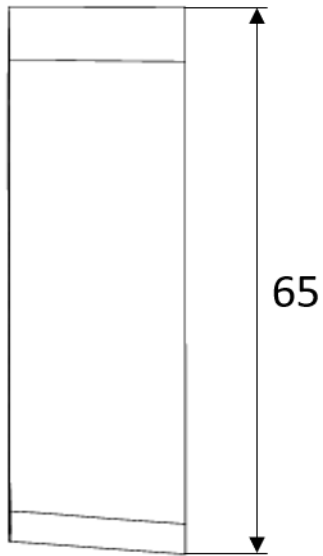


Post-processing:

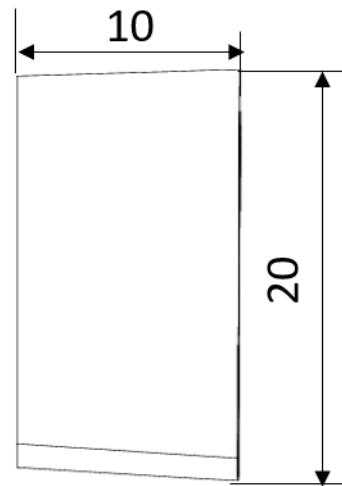
- Remove the blades from base plate using EDM Wire cut process or band saw cutting with good dimensional accuracy.
- **Clean Residue Metal Powder:** Metal powders may exist in the porous areas and attach to the surface. It is necessary to clean residue before going to the next step.
- **Surface Finishing:** Methods like sandblasting or polishing are applied to enhance surface quality of the blades.
- For high precision, secondary machining is necessary. For that post-processing, it is essential to provide enough cutting allowance before Additive Manufacturing process. After the post-processing, the printed parts should achieve the normal precision and surface smoothness of CNC machining.
- **Quality Inspection:** Throughout the fabrication process, rigorous quality control measures should be implemented to ensure the turbine blades to meet the highest standards to verify dimensional accuracy, surface quality and structural integrity.

2. FABRICATION OF TURBINE BLADE WITH TBC COATING

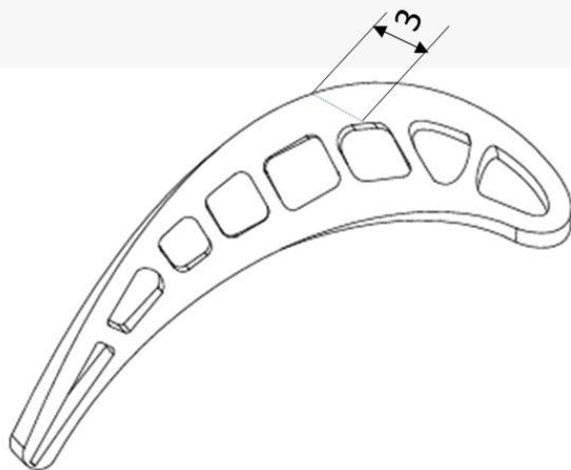
Design for Fabrication of Turbine Blade with TBC Coating – 8 Nos.



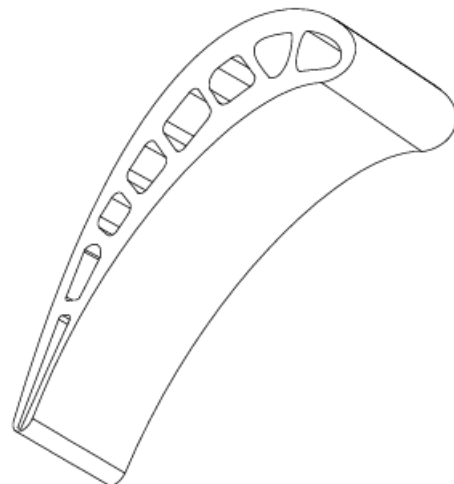
Front View



Side View



Top View



Isometric View

Post-processing:

- Remove the blades from base plate using EDM Wire cut process or band saw cutting with good dimensional accuracy.

- **Clean Residue Metal Powder:** Metal powders may exist in the porous areas and attach to the surface. It is necessary to clean residue before going to the next step.
- **Surface Finishing:** Methods like sandblasting or polishing are applied to enhance surface quality of the blades.
- For high precision, secondary machining is necessary. For that post-processing, it is essential to provide enough cutting allowance before Additive Manufacturing process. After the post-processing, the printed parts should achieve the normal precision and surface smoothness of CNC machining.
- **Quality Inspection:** Throughout the fabrication process, rigorous quality control measures should be implemented to ensure the turbine blades to meet the highest standards to verify dimensional accuracy, surface quality and structural integrity.
- **Cooling holes drilling:** Turbine blades often feature intricate internal cooling systems to maintain temperature stability. These cooling holes are drilled or machined into the blade to allow for the passage of cooling air. Specialized drilling techniques such as laser drilling or EDM (Electric Discharge Machining) are utilized to achieve precise hole placement and diameters.
- **TBC Coating:** After completing all the fabrication process, thermal barrier coating (YSZ) to the thickness of 500 μm and a bond coating has to be provided as per standards.

Terms and conditions:

- The vendor should follow the fabrication, post-processing steps mentioned above.
- The work is to be carried out as per standards.
- The STL file of the blades will be provided to the successful bidder.
- The vendor shall treat all information as confidential and shall not disclose it without prior written consent.



NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI - 620 015
DEPARTMENT OF PRODUCTION ENGINEERING

Annexure- II

PRICE BID FORMAT FOR BIDDERS

Tender No. & Date : 628/23-24/PFMS/DST/PRO/MDS/OC/006 Dt. 01.10.2024

Bidder's Offer No. & Date :

S. No.	Description of item	Unit (Set / No)	QTY	Rate / Qty in Rs. (excluding GST)	GST in Rs.			Total Value + GST in Rs.
					SGST	CGST	IGST	
1.	Fabrication of Turbine blade	Nos	01					
2.	Fabrication of Turbine Blade with TBC coating	Nos	08					
3.	Other accessories / spares etc. as given in scope of supply (Individual item-wise break-up price shall be attached as an annexure to this price bid format.)							
4.	Installation and Commissioning (extra, if any)							
5.	Packing & Forwarding charges (extra, if any)							
6.	Freight & Transit insurance charges, extra, if any							
7.	Total price (delivery, installation and commissioning at NIT-T)							
8.	Value of Annual Maintenance Contract							
9.	Net cost to be paid by NIT-T							

Signature & Seal of Vendor

Note: The price bid should be submitted only as per the above format. No row shall be left blank. Please indicate NA, in case the item is "Not Applicable". If this format is not used or any column is left blank, then the bid will be rejected.

(TO BE PRINTED IN LETTER PAD OF THE FIRM)

EMD Returning Form

To
The Director
National Institute of Technology,
Tiruchirappalli – 620 015

Sub: Returning EMD amount

Sir / Madam,

Our firm has participated in the tender / quotation enquiry No mentioned below and produced the EMD amount through DD, details of the DD are given below.

Tender / Quotation Reference No	
EMD amount	
DD Number	
DD issued Bank	
Date of DD	

It is requested to return the EMD amount to our firm after completion of the purchase to the below mentioned Bank account.

Account Name	
Bank Account Number	
IFSC code	
Bank	

Signature with Seal and Date

MANDATE FORM FOR ELECTRONIC FUND TRANSFER/RTGS TRANSFER

Date: / /

To

The Director,
National Institute of Technology,
Tiruchirappalli – 620 015, Tamil Nadu

Sub	:	Authorization for release of payment / dues from National Institute of Technology, Tiruchirappalli through Electronic Fund Transfer/RTGS Transfer.
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1. Name of the Party / Firm / Company / Institute :
2. Address of the Party :
3. City _____ Pin Code _____
4. E-Mail _____ Mobile No: _____
5. Permanent Account Number _____
6. Particulars of Bank:

Bank Name:		Branch Name:	
PIN Code:		Branch Code:	
IFS Code:(11 digit alpha numeric code)			
Account Type	Savings	Current	Cash Credit
Account Number:			

DECLARATION

I hereby declare that the particulars given above are correct and complete. If any transaction delayed and not effected for reasons of incomplete or incorrect information I shall not hold Director, National Institute of Technology Tiruchirappalli responsible. I also undertake to advise any change in the particulars of my account to facilitate updating of records for purpose of credit of amount through NEFT/RTGS Transfer.

Place: _____ Date: _____

Signature & Seal of the Authorized Signatory of the Party
