

1 X 800 MW NORTH CHENNAI BTG STAGE-III TPS
BOQ CUM UNPRICED PRICE SCHEDULE FOR
RIGID STEEL CONDUITS

S. No.	ITEM CODE	DESCRIPTION	UNIT	QUANTITY
1	558-15002-A	GI CONDUITS,1.6MM THICK, 20MM DIA	MTR	15,000

Project	1x800 MW TANGEDCO North Chennai Stage-III BTG
Package	Rigid Steel Conduit
Subject	Bid specific ATC
GeM Bid No.	

Annexure-1: PVC Formula

PVC formula to be followed:

$$P = P_o + SS(S-S_o) + ZZ(Z-Z_o)$$

Where

P is the as on date price and P_o is the base month price

SS and ZZ are respectively the multiplication factors for steel and zinc respectively.

S and S_o are the average JPC steel price of H. R. COILS 2.00 MM for current and base month.


Z and Z_o are the price of zinc from pole IEEMA for the current and base month. (Basic prices of raw materials used in the manufacture of Transmission Line Accessories and Hardware prevailing as on 1st working day of the month).

The multiplication factors are being considered as SS = 0.85 and ZZ = 0.15

Base Month/Date shall be – 1st working day of the month, one month prior to the date of enquiry.

Final Month/Date shall be – 1st working day of the month, one month prior to the date of dispatch.

PVC ceiling limit shall be positive (+ve) 20% and negative (-ve) unlimited.

	1x800 MW TANGEDCO NORTHCHENNAI STAGE-III (BTG) PRE-QUALIFICATION REQUIREMENTS OF RIGID STEEL CONDUITS	PE-PQ-423-558-E003A
		REVISION NO. 0 DATE 27/12/2022
		SHEET NO. 1 OF 1

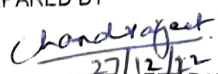
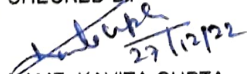

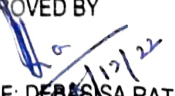
ITEMS : RIGID STEEL CONDUITS

SCOPE : Supply : YES; Erection & Commissioning : NO;

1.0	<p>Vendor should be a BIS approved manufacturer of rigid steel conduits as per IS-9537 Part II.</p> <p style="text-align: center;">or</p> <p>In case, the vendor is not a BIS approved manufacturer, then vendor to furnish the following documents:</p> <p>a) Undertaking from BIS approved manufacturer of offered make to get the inspection & testing of conduits carried out at manufacturer's works.</p> <p>b) Credentials of the manufacturer of offered make to meet the PQR requirement of S no 2.0 to 4.0 below.</p> <p>c) Vendor's Credentials to meet S no 5.0.</p>
2.0	Availability of test reports of rigid steel conduits to establish in- house capability at manufacturer's works to carry out all routine, type & acceptance tests as per relevant IS.
3.0	Capacity of manufacturing 10 MT of rigid steel conduits per month.
4.0	Manufactured and supplied at least 30 km of rigid steel conduits in one or more orders.
5.0	Minimum two (2) nos. purchase orders for rigid steel conduits shall be submitted which should not be more than five (5) years old from the date of techno- commercial bid opening for establishing continuity in business.

NOTES:

1. Consideration of offer shall be subject to customer's approval of bidders, if applicable.
2. Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self-attested English translated document should also be submitted.
3. Notwithstanding anything stated above, BHEL reserves the light to assess the capabilities and capacity of the bidder/collaborators to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.
4. After satisfactory fulfillment of all the above criteria requirement, offer shall be considered for further evaluation as per NIT and all the other terms of the tender.

PREPARED BY  NAME: CHANDRAJEET RATHAUR DESIGNATION: MANAGER	CHECKED BY  NAME: KAVITA GUPTA DESIGNATION: Sr. MANAGER	REVIEWED BY  NAME: PRAVEEN DUTTA DESIGNATION: AGM	APPROVED BY  NAME: DEBASISA RATH DESIGNATION: DH-ELECT
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**TAMILNADU GENERATION & DISTRIBUTION
CORPORATION LIMITED**

1 X 800MW NORTH CHENNAI STAGE-III BTG

VOLUME-II

**TECHNICAL SPECIFICATION FOR
*RIGID STEEL CONDUITS***

SPECIFICATION NO: *PE-TS-423-558-E003A*

REVISION: 00



**BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, UP (INDIA) – 201301**



TECHNICAL SPECIFICATION
FOR
RIGID STEEL CONDUITS

SPECIFICATION NO. PE-TS-423-558-E003A

VOLUME II

SECTION

REVISION 00

DATE: 09.11.22

SHEET 1 OF 1

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	SPECIFIC TECHNICAL REQUIREMENTS	01
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	STANDARD TECHNICAL REQUIREMENTS	02
	STANDARD QUALITY PLAN	03

Total nos. of sheets including cover & separator sheets = 12 sheets



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COMPLIANCE CERTIFICATE

The bidder shall confirm compliance to the following by signing/ stamping this compliance certificate and furnishing same with the offer.

1. The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusion/ deviation with regard to same
2. There are no deviation with respect to specification other than those furnished in the 'schedule of deviations'
3. Only those technical submittals which are specifically asked for in NIT to be submitted at tender stage shall be considered as part of offer. Any other submission, even if made, shall not be considered as part of offer.
4. Any comments/ clarifications on technical/ inspection requirements furnished as part of bidder's covering letter shall not be considered by BHEL, and bidder's offer shall be construed to be in conformance with the specification.
5. Any changes made by the bidder in the price schedule with respect to the description/ quantities from those given in BOQ-Cum-Price schedule of the specification shall not be considered (i.e., technical description & quantities as per specification shall prevail).

BIDDER'S STAMP & SIGNATURE



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SECTION – I



**TECHNICAL SPECIFICATION
FOR
RIGID STEEL CONDUITS**

SPECIFICATION NO. PE-TS-411-558-E003

VOLUME II

SECTION I

REVISION 00

DATE: 11.08.22

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1.0 SCOPE

- 1.1 Manufacture, Inspection and Testing at Manufacturer's works, proper packing and delivery to site of rigid steel conduits conforming to this specification.
- 1.2 Technical requirements of rigid steel conduits are indicated in Data Sheet-A & Section-II.
- 1.3 The stipulation of Data Sheet-A shall prevail in case of any conflict between the stipulations of Data Sheet-A & Section-II.

2.0 BILL OF QUANTITIES

The bidder to quote for items as per price schedule attached with NIT.

3.0 DRAWINGS & DOCUMENTS TO BE SUBMITTED

- 3.1 Documents shall be submitted after placement of order for BHEL & customer's approval as specified in NIT.
- 3.2 Documents shall be furnished through BHEL's document management system (wrench) portal.

Notes:

1. Vendor shall submit the drawing/document submission/resubmission schedule after approval of documents.
2. In BOM each of the item to be uniquely identified with item code no. or item Sl. No. Supplier to ensure that all the items which will find separate mention in the packing list are covered in detailed BOM.



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DATA SHEET-A

1.0 APPLICABLE STANDARDS & CODES

- a) IS:9537 (Part I & II) Conduits for electrical installation.
- b) IS:2629 Recommended practice for hot dip galvanizing on iron and steel.
- c) IS:4759 Specification for hot dip zinc coatings on structural steel and allied products
- d) IS:6745 Methods for determination of mass of zinc coating on zinc coated iron and steel articles.
- e) IS:513 Cold reduced low carbon steel sheet and strip
- f) IS: 10748 Hot rolled Steel strip for welded tubes and pipes
- g) IS: 2633 Method for testing uniformity of coating on zinc coated articles
- h) IS:6005 Code of practice for phosphating iron & steel

2.0 RIGID STEEL CONDUITS

S.No.	Description	Unit	Parameters value/ type
a	Make	-	[√] BIS approved [] As per enclosed sub-vendor list
b	Material	-	Hot or Cold rolled mild steel
c	Sizes	-	As per BOQ cum price schedule
d	Standard length	meter	3 – 5
e	Classification as per mechanical properties		Heavy
f	Conduit thickness (minimum)	mm	1.6 upto 32 mm dia, 2.0 above 32 mm & upto 50 mm dia
g	Surface treatment	-	Hot dip galvanizing on inside & outside surface
h	Epoxy thickness	micron	50 (applicable for epoxy coated conduits only)

3.0 SURFACE TREATMENT

a	Pre-treatment	-	As per IS 6005 prior to galvanising
b	Type	-	Hot dip galvanizing as per IS 2629
c	Min. Thickness of zinc coating	microns	48 (upto 32 mm dia), 65 (above 32 mm & upto 50 mm dia)
d	Min. Weight of zinc coating	(gm/m ²)	340 (upto 32 mm dia) 460 (above 32 mm & upto 50 mm dia)
e	Tests for galvanizing		a) Weight of zinc coating as per IS : 6745 b) Thickness of zinc coating as per IS : 4759 c) Uniformity of zinc coating as per IS : 2633 d) Adhesion as per IS: 2629



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SECTION-II



**TECHNICAL SPECIFICATION
FOR
RIGID STEEL CONDUITS**

SPECIFICATION NO. PE-RC-999-558-E002

VOLUME II

SECTION II

REVISION 00

DATE: 11.08.2022

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1.0 INTENT OF SPECIFICATION

The intent of specification is not to specify all details of design & construction of material. The material shall, however, conform in all aspects to high standard of design, engineering and workmanship and be capable of performing in continuous operation up to & after bidder's guarantee period in manner acceptable to purchaser who will interpret the drawings & specification and shall have power to reject any work or material which in his judgement is not in full accordance with this specification.

2.0 CODES AND STANDARDS

- 2.1 The material shall comply with all currently applicable safety codes and statutory regulations of India as well as of the locality where the material is to be installed.
- 2.2 The material, construction, manufacture, inspection and testing of Rigid steel conduits shall conform to the latest revision of relevant standards as per Data Sheet-A.
- 2.3 In case of conflict between the applicable reference standard and this specification, the stringent requirement of the two shall govern.

3.0 TECHNICAL REQUIREMENTS

- 3.1 Rigid conduits shall generally conform to the requirements of IS: 9537 (part I & II).
- 3.2 The diameter of conduits shall be uniform throughout the length. Each end of conduit length shall be threaded. The ends of conduits shall be sealed with protective caps to prevent damage to threaded portions and entrance of moisture and foreign material.
- 3.3 The inside surface of all conduits shall be smooth and suitable for pulling insulated cables and wires without damage.
- 3.4 Technical particulars of rigid conduits are specified in Data Sheet – A.

4.0 QUALITY ASSURANCE, TESTING & INSPECTION

- 4.1 Bidder shall confirm compliance with the BHEL's Standard Quality Plan (PE-QP-999-558-E002) as attached with the specification without any deviations. At contract stage, the successful bidder shall submit the Quality Plan for BHEL/ ultimate customer's approval. In case bidder has reference Quality Plan agreed with ultimate customer, same can be submitted for specific project after award of contract for BHEL/ ultimate customer's approval. There shall be no commercial implication to BHEL on account of Quality plan approval.
- 4.2 All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved quality plan.
- 4.3 The supplier shall perform all tests necessary to ensure that the material and workmanship conform to the relevant standards and comply with the requirements of the specification. Charges for all these tests for all the equipments & components shall be deemed to be included in the bid price.



TECHNICAL SPECIFICATION
FOR
RIGID STEEL CONDUITS

SPECIFICATION NO. PE-RC-999-558-E002

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4.4 In case ordered quantities are manufactured and offered for inspection in more than one lot, BHEL reserves the right to witness testing on all lots without any commercial implication to BHEL.

5.0 PACKING

5.1 The material shall be packed to ensure protection against damage during transit, storage for prolonged periods and handling.

5.2 The ends of conduits shall be sealed with protective caps.

5.3 Each conduit shall be wrapped in plastic to prevent dust deposition.

5.4 The conduits should be aligned and stacked in bundles (a maximum of 25 pieces per bundle).

5.5 Each bundle shall be covered with jute fibre or thick plastic wrap for protection against extreme weather. Then, the bundle shall be tied with twin-strand mild steel wire, strong rope or steel strip.

6.0 MARKING


6.1 Rigid conduits shall be marked at least once on each manufacturing length, preferably 50 mm from one end, with the following:

- a) Manufacturer's name or trade mark, if any;
- b) Country of manufacture; and
- c) Nominal size of the conduits.
- d) ISI Certification Mark.

Marking may be applied by moulding, stamping, printing, adhesive label or water slide transfers.

6.2 Marking shall be durable and legible.

6.3 Marking shall be checked by inspection and by rubbing lightly the marking by hand for 15 seconds with a piece of cloth soaked with water and again for 15 seconds with a piece of cloth soaked with petroleum spirit.

		MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN				SPEC. NO :		DATE:	
								CUSTOMER :		QP NO.: PE-QP-999-558-E001, R04	
PROJECT:		ITEM: RIGID STEEL CONDUITS		SYSTEM: STATION LIGHTING SYSTEM				PO NO.:		DATE:	
								SECTION: II		SHEET 1 OF 3	

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS		
1	2	3	4	5	6	7	8	9	*	D	M	C	N	

1.0 RAW MATERIAL/BOUGHT OUT ITEMS													
1.1	HOT ROLLED STEEL STRIP	MA	VISUAL, MECH. & CHEMICAL	MFR. STD.	-	IS10748	IS10748	TEST CERT.	✓	P	V	-	AS APPLICABLE
1.2	COLD ROLLED STEEL SHEET	MA	VISUAL, MECH. & CHEMICAL	MFR. STD.	-	IS513	IS513	TEST CERT.	✓	P	V	-	AS APPLICABLE

2.0 ACCEPTANCE TESTS													
2.1	DIMENSIONS	MA	MEASUREMENT	IS 9537-II	IS 9537-II	IS:9537/ APPROVED DATA SHEET	APPROVED DATA SHEET	INSP. REPORT	✓	P	W	-	
2.2	MECH. PROPERTIES												
2.2A	RIGID STEEL CONDUITS	CR	BENDING TEST	IS 9537-II	IS 9537-II	IS 9537-II	IS 9537-II	INSP. REPORT	✓	P	W	-	
2.2B		CR	COMPRESSION TEST	IS 9537-II	IS 9537-II	IS 9537-II	IS 9537-II	INSP. REPORT	✓	P	W	-	
2.3			GALVANISATION TEST										
2.3A		CR	UNIFORMITY OF ZINC COATING	IS 9537-II	IS 9537-II	IS-2633/ APPD DS	IS-2633/ APPD DS	INSP. REPORT	✓	P	W	-	


ENGINEERING				QUALITY			
Prepared by:	MEET SAGAR SINGH RAJPAL	Name	MEET SAGAR SINGH RAJPAL/ MUDIT CHOPRA	Checked by:	KUNAL GANDHI	Sign & Date	
Reviewed by:	PRAVEEN DUTTA	Name	PRAVEEN DUTTA	Reviewed by:	RITESH KUMAR JAISWAL	Sign & Date	


BIDDER/ SUPPLIER			
Doc No:		Sign & Date	
Reviewed by:		Sign & Date	
Approved by:		Name	Seal

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:		Sign & Date	
Reviewed by:		Name	Seal
Approved by:			

BHEL Logo: 

 BHEL Logo: 

 BHEL Logo: 

		MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN				SPEC. NO :		DATE:	
				CUSTOMER :		ACCEPTANCE NORMS		FORMAT OF RECORD		AGENCY	
PROJECT:		SYSTEM: STATION LIGHTING SYSTEM		REFERENCE DOCUMENT		QUANTUM OF CHECK		7		8	
ITEM: RIGID STEEL CONDUITS		SECTION: II		7		6		9		3	
CLASS		TYPE OF CHECK		M		C/ N		* D		M C N	
COMPOENT & OPERATIONS		CHARACTERISTICS		3		4		5		8	
SL NO.		1		2		3		4		5	

5. Latest revision/ year of issue of all the standards (IS/ ASME/ IEC etc.) Indicated in QP shall be referred.
6. BHEL reserves the right for conducting repeat test if required.
7. After packing and prior to issue MDCC, photographs of items to be dispatched shall be sent to BHEL purchase group for review.
8. Thickness of zinc coating shall be the average of the determination made at each end and the middle of the article.

LEGENDS:
 *RECORDS, IDENTIFIED WITH "TICK"(✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION,
 ** M: SUPPLIER/MANUFACTURER/SUB-SUPPLIER, C: MAIN SUPPLIER/BHEL/ THIRD PARTY INSPECTION AGENCY, N: CUSTOMER,
 P: PERFORM, W: WITNESS, V: VERIFICATION, AS APPROPRIATE
 MA: MAJOR, MI: MINOR, CR: CRITICAL, D: DOCUMENTATION

BHEL				BIDDER/SUPPLIER				FOR CUSTOMER REVIEW & APPROVAL					
ENGINEERING		QUALITY		Sign & Date		Sign & Date		Doc No:		Name		Seal	
Prepared by: MEET SAGAR SINGH RAJPAL/ MUDIT CHOPRA		Checked by: MEET SAGAR SINGH RAJPAL/ MUDIT CHOPRA		Sign & Date		Name		Reviewed by:		Name		Seal	
Reviewed by: PRAVEEN DUTTA		Reviewed by: RITESH KUMAR		Sign & Date		Name		Approved by:		Name		Seal	

MEET SAGAR SINGH RAJPAL
 MUDIT CHOPRA
 PRAVEEN DUTTA
 RITESH KUMAR
 KUMAR
 JAISWAL

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