

PRE-QUALIFICATION REQUIRMENTS FOR **RIGID STEEL CONDUITS**

PE-PQ-999-558-E002

REVISION NO. 01 DATE 20/03/2017

SHEET NO. 1 OF 1

ITEMS	: RIGID STEEL CONDUITS
SCOPE	: Supply : YES; Erection & Commissioning : NO.
1.0	Vendor should be a BIS approved manufacturer of rigid steel conduits as per IS 9537 Part II.
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.
2.0	
3.0	Capacity of manufacturing 30 MT of rigid steel conduits per month.
4.0	Manufactured and supplied at least 80 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 application for registration or date of techno- commercial bid opening (as applicable) for establishing continuity in business.

NOTE:

- 1. The vendor can offer rigid steel conduits of any BIS approved make meeting criteria S.No.1 to 4 above. The vendor to furnish the following documents:
- a) Undertaking from BIS approved manufacturer of offered make to get the inspection & testing of conduits carried out at manufacturer's works.
- b) Credentials of the manufacturer of offered make to meet the PQR requirements of S no 1.0 to 4.0 above.
- c) Vendor's Credentials to meet S no 5.0.
- 2. Consideration of offer shall be subject to customer's approval of bidders, if applicable.
- 3. 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.
- 4. Any other project specific requirement shall be as per Annexure-I and bidder shall submit relevant supporting documents.
- 5. Notwithstanding anything stated above, BHEL reserves the right 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.
- 6. After satisfactory fulfillment of all the above criterial requirement, offer shall be considered for further evaluation as per NIT and all the other terms of the tender.

PREPARED BY 20.03.17 DESIGNATION:

REVIEWED BY

NAME:

APPROVED BY

BHEL PEM-ELECTRICAL

PRE-QUALIFYING REQUIREMENTS FOR RIGID STEEL CONDUITS

ANNEXURE -I

PROJECT SPECIFIC CRITERIA AGAINST ENQUIRY

PROJECT: 5X800 MW YADRADRI TPS

NIL

DEV

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TELANGANA STATE POWER GENERATION CORPORATION LIMITED 5X800 MW YADADRI TPS

VOLUME-II

TECHNICAL SPECIFICATION FOR RIGID STEEL CONDUITS

SPECIFICATION NO: PE-TS-417-558-E002

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-417-558-E002

VOLUME II

SECTION I

REVISION 00 DATE: 26.07.2021

5X800 MW YADADRI TPS (TELANGANA STATE POWER GENERATION CORPORATION LIMITED)

SHEET 1 OF 1

CONTENTS

SI. No.	DESCRIPTION	NO. OF SHEETS
1.0	SECTION- I	
	COMPLIANCE CERTIFICATE	01
	SPECIFIC TECHNICAL REQUIREMENTS	01
	DATA SHEET – A	01
2.0	SECTION- II	
	STANDARD TECHNICAL REQUIREMENTS	02
	STANDARD QUALITY PLAN	03

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



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VOLUME II
SECTION I
REVISION 00 DATE: 26.07.2021

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SHEET 1 OF 1

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'
- 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



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VOLUME II
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SHEET 1 OF 1

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 dates for drawing/document submission/BHEL comments/resubmission 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. Supplier to give following undertaking in BOM: "The BOM provided here completes the scope (in content and intent) of material supply under PO no. ---- dtd ----- Any additional material which may become necessary for the intended application of supplied item/package will be supplied free of cost in most reasonable time."



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SHEET 1 OF 1

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
а	Make	-	[√] BIS approved [] As per enclosed sub-vendor list
b	Material	-	Hot or Cold rolled mild steel
С	Sizes	-	As per BOQ cum price schedule
d	Standard length	meter	3 – 5
е	Classification as per mechanical properties		Heavy
f	Conduit thickness (minimum)	mm	1.6 upto 25 mm dia, 2.0 above 25 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 TREATMEMT

а	Pre-treatment	-	As per IS 6005 prior to galvanising
b	Туре	-	Hot dip galvanizing as per IS 2629
С	Min. Thickness of zinc coating	microns	48 (upto 25 mm dia), 65 (above 25 mm & upto 50 mm dia)
d	Min. Weight of zinc coating	(gm/m2)	340 (upto 25 mm dia) 460 (above 25 mm & upto 50 mm dia)
е	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



TECHNICAL SPECIFICATION FOR RIGID STEEL CONDUITS

SPECIFICATION NO. PE-TS-417-558-E002
VOLUME II
SECTION II

5X800 MW YADADRI TPS (TELANGANA STATE POWER GENERATION CORPORATION LIMITED)

REVISION 00 DATE: 26.07.2021

SECTION-II



TECHNICAL SPECIFICATION FOR RIGID STEEL CONDUITS

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VOLUME II SECTION II

DATE: 26.07.2021

SPECIFICATION NO. PE-TS-417-558-E002

5X800 MW YADADRI TPS (TELANGANA STATE POWER GENERATION CORPORATION LIMITED)

SHEET 1 OF 2

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, Rev 04) 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

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VOLUME II

SECTION II

REVISION 00 DATE: 26.07.2021

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SHEET 2 OF 2

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

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				ITEM: RIGID ST	ΓEEL CONDUI	TS SYSTE	EM: STATION LI	GHTING	SECT	ION: II					SHEET 1 OF 3
SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC S	CLASS	TYPE OF CHECK	QUAN OF CH		REFERENCE DOCUMENT	ACCEP E NOR		FORMAT RECORI		A	GENO	CY	REMARKS
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1.0 RAV	MATERIAL/BOU	GHT OUT ITEMS		T	T	ı	T			1					
1.1		HOT ROLLED STEEL STRIP	MA	VISUAL, MECH. & CHEMICAL	MFR. STD.	-	IS10748	IS107	48	TEST CERT.	$\sqrt{}$	Р	V	-	AS APPLICABLE
1.2		COLD ROLLED STEEL SHEET	MA	VISUAL, MECH. & CHEMICAL	MFR. STD.	-	IS513	IS51	3	TEST CERT.	$\sqrt{}$	Р	V	-	AS APPLICABLE
2.0 ACC	EPTANCE TESTS												•	•	
2.1		DIMENSIONS	MA	MEASUREM ENT	IS 9537-II	IS 9537-II	IS:9537/ APPROVED DATA SHEET	APPROV DATA SI		INSP. REPORT	V	Р	W	-	
2.2		MECH. PROPERTIES													
2.2A	RIGID STEEL CONDUITS	BENDING TEST	CR	TEST	IS 9537-II	IS 9537-II	IS 9537-II	IS 9537-	I	INSP. REPORT	V	Р	W	-	
2.2B		COMPRESSION TEST	CR	TEST	IS 9537-II	IS 9537-II	IS 9537-II	IS 9537-	I	INSP. REPORT	√	Р	W	-	
2.3		GALVANISATION TEST													
2.3A		UNIFORMITY OF ZINC COATING	CR	TEST	IS 9537-II	IS 9537-II	IS-2633/ APPD DS	IS-2633/ APPD D	6	INSP. REPORT	$\sqrt{}$	Р	W	-	

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	FOR CUSTOMER REVIEW & APPROVAL											
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				ITEM: RIGID S'	TEEL CONDU	ITS SYST	EM: STATION LI EM	GHTING	SECT	ION: II					SHEET 2 OF 3
SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC S	CLASS	TYPE OF CHECK	QUAN OF CH	ITUM	REFERENCE DOCUMENT	ACCEP E NOR		PECOPD		F AGENCY		CY	REMARKS
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2.3B		MASS OF ZINC COAT.	CR	TEST	IS 9537-II	IS 9537-II	IS-6745/ APPD DS	IS-6745/ APPD DS		INSP. REPORT	√	Р	W	-	
2.3C		COATING THICKNESS	CR	TEST	IS 9537-II	IS 9537-II	IS-4759/ APPD DS	IS-4759/ APPD DS	S	INSP. REPORT	√	Р	W	-	BY ELCOMETER Refer Note 8
2.3D		EPOXY THICKNESS	MA	VISUAL/PH YSICAL	IS 9537-II	IS 9537-II	50 MICRONS	50 MICR	ONS	INSP. REPORT	√	Р	W	-	AS APPLICABLE
2.4		MARKING	CR	VISUAL/PH YSICAL	IS 9537-II	IS 9537-II	APPROVED DATA SHEET	APPROV DATA SI		INSP. REPORT		Р	W	-	
3.0 PAC	KING														
	PACKING	Soundness of Packing against transit damage	Major	Visual	100%	100%	BHEL approved document	BHEL approved documen		Inspection report	√	Р	W	-	

NOTES:

- 1. The inspection shall be carried out once for the material offered for inspection in one lot. For subsequent lots against the same project, the material can be accepted based on certificate of compliance furnished by the vendor.
- 2. Project specific QP shall be based on customer requirement. In case, any changes in QP commented by customer at contract stage shall be carried out by bidder without any implication to BHEL/ Customer.
- 3. For export jobs, BHEL technical specification for seaworthy packing for export jobs is to be followed.
- Packing shall be suitable for storage at site in tropical climatic conditions.

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5. Latest revision/ year of issue of all the standards (IS/ ASME/ IEC etc.) Indicated in QP shall be referred.

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- 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:

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*RECORDS, INDENTIFIED WITH "TICK" (V) 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

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MA: MAJOR, MI: MINOR, CR: CRITICAL, D: DOCUMENTATION

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