

VOLUME-II

TECHNICAL SPECIFICATION

FOR

GALVANISED CABLE TRAY SUPPORT SYSTEM (WELDED TYPE)

SPECIFICATION NO: *PE-RC-999-507-E012*

REVISION: 02



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

	TECHNICAL SPECIFICATION FOR GALVANISED CABLE TRAY SUPPORT SYSTEM (WELDED TYPE)	SPECIFICATION NO. PE-RC-999-507-E012	
		VOLUME II	
		SECTION	
		REVISION 02	DATE: 10.05.2016
		SHEET 1 OF 1	

CONTENTS

Sl. 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	01
	STANDARD QUALITY PLAN	04

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



TECHNICAL SPECIFICATION FOR
GALVANISED CABLE TRAY SUPPORT
SYSTEM (WELDED TYPE)

SPECIFICATION NO. PE-RC-999-507-E012

VOLUME II

SECTION I

REVISION 02

DATE: 10.05.2016

SECTION – I

SPECIFIC TECHNICAL REQUIREMENTS



TECHNICAL SPECIFICATION FOR
GALVANISED CABLE TRAY SUPPORT
SYSTEM (WELDED TYPE)

SPECIFICATION NO. PE-RC- 999-507-E012

VOLUME II

SECTION I

REVISION 02

DATE: 10.05.2016

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'.
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



TECHNICAL SPECIFICATION FOR
GALVANISED CABLE TRAY SUPPORT
SYSTEM (WELDED TYPE)

SPECIFICATION NO. PE-RC-999-507-E012

VOLUME II

SECTION I

REVISION 02

DATE: 10.05.2016

SHEET 1 OF 1

SPECIFIC TECHNICAL REQUIREMENTS

1.0 PURPOSE

This specification is intended for finalization of rate contract between BHEL PEM and Bidder. Standard technical detail as indicated in the specification shall be agreed upon between BHEL PEM and bidder. Project specific technical detail shall be made available to the bidder along with project enquiry.

2.0 SCOPE OF ENQUIRY

- 2.1 Manufacture, Inspection and Testing at Manufacturer's works, proper packing and delivery to site of Galvanised Cable Tray Support System (Welded Type) conforming to this specification.
- 2.2 It is not the intent to specify herein all the details of design & manufacture of material. However, the material shall, conform in all respects to high standard of design, engineering and workmanship and shall be capable of performing in continuous commercial operation at site conditions.
- 2.3 Technical requirements of Galvanised Cable Tray Support System (Welded Type) are indicated in Data Sheet-A & Section-II.
- 2.4 The stipulation of Data Sheet-A shall prevail in case of any conflict between the stipulations of Data Sheet-A & Section-II.

3.0 BILL OF QUANTITIES

The bidder to quote for items as per 'BOQ-cum-Price Schedule' attached with NIT. **The quantity as mentioned in the BOQ is only for evaluation purpose.** However actual ordered quantity may vary from project to project throughout the contract.

4.0 DRAWINGS & DOCUMENTS TO BE SUBMITTED

- 4.1 After rate contract; against specific project requirement following information shall be furnished by BHEL:-
- Updated list of BHEL-PEM approved Galvanizers (Refer Annexure-2 to Quality Plan)
 - BOQ (Bill of Quantities)
- 4.2 Following documents shall be submitted for specific project requirement after placement of order for BHEL & customer's approval:-

Sl. No.	Drawings / Document Description	Document Number	First Submission	Re-Submission
1	Quality Plan for cable tray support material (Welded Type)	PE-V0-XXX-507-E907	Within one week after award of contract	Within five days after comments

- 4.3 Drawings/ documents shall be submitted through Document Management System (DMS).



TECHNICAL SPECIFICATION FOR
GALVANISED CABLE TRAY SUPPORT
SYSTEM (WELDED TYPE)

SPECIFICATION NO. PE-RC-999-507-E012

VOLUME II

SECTION I

REVISION 02

DATE: 10.05.2016

SHEET 1 OF 1

DATA SHEET-A

1.0 APPLICABLE STANDARDS & CODES

- a) IS: 2062 For Structural steel.
- b) IS: 2629 For Hot dip galvanising of steel & surface pre-treatment.
- c) IS: 2633 For Testing uniformity of zinc coating.
- d) IS: 6745 For Determination of mass of zinc coating.
- e) IS: 1852 For Rolling & cutting tolerances for hot rolled steel products.
- f) IS: 4759 For Hot dip zinc coating on structural steel & other allied products.

2.0 GALVANISED CABLE TRAY SUPORT SYSTEM (WELDED):

- a) Material: Hot Rolled Mild Steel as per IS 2062
- b) Make: SAIL/ TISCO/ RINL / JINDAL STEEL/ JINDAL ISPAT/
BHUSHAN STEEL/ ESSAR/ LLOYD/ IISCO or authorised re-
rollers of SAIL
- c) Sizes:
Channels: ISMC-75, ISMC-100, ISMC-125, ISMC-150
Angles: ISA 50x50x6
ISA 65x65x6
ISA 75x75x6
- d) Length: Standard length of 5.5m to 6.5m.
- e) Type: Hot-dip galvanised

3.0 SURFACE TREATMENT:

Galvanizing:

- a) Pre-treatment: As per IS 2629 prior to galvanisation
- b) Type: Hot dip galvanization as per IS 2629
- c) Minimum thickness: 75 microns (minimum)
86 microns (average)
- d) Min. weight of:
Zinc deposit 610 gms. per square meter
- e) Tests for galvanizing:
 - i) Weight of zinc coating as per IS : 6745
 - ii) Thickness of zinc coating as per IS : 4759
 - iii) Uniformity of zinc coating as per IS : 2633
 - iv) Adhesion as per IS: 2629



TECHNICAL SPECIFICATION FOR
GALVANISED CABLE TRAY SUPPORT
SYSTEM (WELDED TYPE)

SPECIFICATION NO. PE-RC-999-507-E012

VOLUME II

SECTION II

REVISION 02

DATE: 10.05.2016

SECTION-II

STANDARD TECHNICAL REQUIREMENTS



TECHNICAL SPECIFICATION FOR
GALVANISED CABLE TRAY SUPPORT
SYSTEM (WELDED TYPE)

SPECIFICATION NO. PE-RC-999-507-E012

VOLUME II

SECTION II

REVISION 02

DATE: 10.05.2016

Sheet 1 of 1

1.0 CODES AND STANDARDS

- 1.1 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.
- 1.2 The material, construction, manufacture, inspection and testing of Cable Tray Support System (Welded Type) shall conform to the latest revision of relevant standards as per Data Sheet-A.
- 1.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

2.0 TECHNICAL REQUIREMENTS

- 2.1 Hot dip galvanised MS channels and angles shall be supplied as per technical particulars of cable tray support system specified in Data Sheet – A.
- 2.2 All finished galvanised MS structural members for cable tray supports shall be free from sharp edges, corners, burs & unevenness.

3.0 QUALITY ASSURANCE, TESTING & INSPECTION

- 3.1 Bidder shall confirm compliance with the BHEL's Standard Quality Plan (PE-QP-999-507-E006 Rev 2) 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 minor changes in Quality Plan during contract stage.
- 3.2 All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved Quality Plan.
- 3.3 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.

4.0 PACKING

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

STANDARD QUALITY PLAN												
		CUSTOMER :				PROJECT TITLE :			SPECIFICATION NO. : PE-RC-999-507-E012 R2			
		MANUFACTURER NAME & ADDRESS:				STANDARD QP NO. : PE-QP-999-507-E006, REV. 02			SPECIFICATION TITLE: TECHNICAL SPECIFICATION FOR GALVANISED CABLE TRAY SUPPORT SYSTEM			
						DOC. NO. :						
SHEET 1 OF2		SYSTEM CABLING				ITEM : CABLE TRAY SUPPORT SYSTEM (WELDED TYPE)						
SL. NO.	COMPONENT/OPERATION	CHARACTERISTIC CHECK	CAT.	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY			REMARKS
									P	W	V	
1	2	3	4	5	6	7	8	9	10			11
1.0	RAW MATERIAL											
1.1	MILD STEEL SECTIONS (CHANNEL & ANGLES) AS PER SPECIFICATION	1.CHEMICAL & PHY. PROPERTIES	MA	VERIFICATION OF TC'S	100%	IS -2062	IS -2062	MILL TC	3	-	1/2	Steel shall be procured from SAIL/TISCO/RINL/BHUSAN STEEL/JINDAL STEEL/JISPA/ESSAR/LLOYD/ IISCO/ authorised SAIL Re Rollers.
		2.DIMENSIONS	MA	MEASUREMENT	100%	IS - 808/ IS - 1852	IS - 808/ IS - 1852	QC RECORD	3/2	-	-	
		3.SURFACE FINISH	MA	VISUAL	100%	IS:2062	IS:2062	QC RECORD	3/2	-	-	
1.2	ZINC	CHEM.COMP.	MA	CHEM. TEST	EACH HEAT	IS-209	IS-209	MILL TC	3/2	-	1/2	
2.0	IN-PROCESS											
2.1	CUTTING	1.DIMENSIONS	MA	MEASUREMENT	100%	5.5 MTRS TO 6.5 MTRS	5.5 MTRS TO 6.5 MTRS	QC RECORD	2	-	1	
		2. WELDING QUALITY (IF APPLICABLE)	MA	VISUAL	100%	GOOD WELDING PRACTICE	FREE FROM DEFECTS & SLAG	QC RECORD	2	-	1	
		3.SURFACE FINISH	MA	VISUAL	100%	FREE FROM DEFECTS & SLAG	FREE FROM DEFECTS & SLAG	QC RECORD	2	-	1	
2.2	SURFACE PREPARATION	1.CLEANING, PICKLING, RINSING & FLUXING	MA	VISUAL	PERIODIC IN EACH SHIFT	IS:2629	IS:2629	QC RECORD	2	-	-	
		2. SURFACE QUALITY	MA	VISUAL	100%	IS-2629	IS-2629	QC RECORD	2	-	-	
2.3	GALVANISING	1.TEMPERATURE OF BATH	MA	TEMPERATURE INDICATOR	CONTINUOUS	IS-2629	IS-2629	QC RECORD	3/2	-	-	Galvanization is to be done at galvanisation plant listed in annexure-2 to quality plan.
BHEL			PARTICULARS			BIDDER/VENDOR						
			NAME									
			SIGNATURE									
			DATE						BIDDER'S/VENDORS COMPANY SEAL			
LEGEND : 1 - BHEL/ CUSTOMER 2 - VENDOR 3 - SUB- VENDOR P - PERFORM W - WITNESS V - VERIFICATION												

		CUSTOMER :				PROJECT TITLE :			SPECIFICATION NO. : PE-RC-999-507-E012 R2			
		MANUFACTURER NAME & ADDRESS:				STANDARD QP NO. : PE-QP-999-507-E006, REV. 02			SPECIFICATION TITLE: TECHNICAL SPECIFICATION FOR GALVANISED CABLE TRAY SUPPORT SYSTEM			
		SHEET 2 OF2		SYSTEM CABLEING		ITEM : CABLE TRAY SUPPORT SYSTEM (WELDED TYPE)			DOC. NO. :			
SL. NO.	COMPONENT/OPERATION	CHARACTERISTIC CHECK	CAT.	TYPE/ METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY			REMARKS
									P	W	V	
1	2	3	4	5	6	7	8	9	10			11
3.0	FINISHED ITEMS	2. DROSS	MA	VISUAL	PERIODIC	IS - 2629	IS - 2629	QC RECORD	3/2	-	-	
		3. RATE OF IMMERSION	MA	VISUAL MEASUREMENT	100%	IS - 2629 / MFR'S PRACTICE	IS - 2629 / MFR'S PRACTICE	QC RECORD	3/2	-	2	
		4. SURFACE QUALITY	MA	VISUAL	100%	IS - 2629	FREE FROM BURRS, ROUGHNESS, SLAG, FLUX, STAIN, ETC.	QC RECORD	3/2	-	-	
		1.DIMENSIONS	MA	MEASUREMENT	IS 2500 (PART 1) LEVEL S-4	5.5 MTRS TO 6.5 MTRS	5.5 MTRS TO 6.5 MTRS	INSP. REPORT	2	1	-	
		2. SURFACE FINISH	MA	VISUAL	IS 2500 (PART 1) LEVEL S-4	FREE FROM BURRS, SLAG, ROUGHNESS, FLUX, STAIN, ETC.	FREE FROM BURRS, SLAG, ROUGHNESS, FLUX, STAIN, ETC.	INSP. REPORT	2	1	-	
		3.MASS OF ZINC COATING	MA	CHEM. TEST	IS 4759	IS - 6745	610 gms/ Sq m	INSP. REPORT	2	1	-	
		4.UNIFORMITY OF ZINC COATING	MA	CHEM. TEST	IS 4759	IS-2633	IS-2633	INSP. REPORT	2	1	-	
		5.THICKNESS OF ZINC COATING	MA	ELCOMETER	IS 4759	75 MICRONS (MINIMUM)) 86 MICRONS (AVERAGE))	75 MICRONS (MINIMUM)) 86 MICRONS (AVERAGE))	INSP. REPORT	2	1	-	
		6.ADHESION	MA	MECH.TEST	IS 4759	IS-2629	IS-2629	INSP. REPORT	2	1	-	
NOTE:- Instruction for filling Quality Plan is attached as Annexure-1.												
BHEL					PARTICULARS			BIDDER/VENDOR				
					NAME							
					SIGNATURE							
					DATE							
BIDDER'S/VENDORS COMPANY SEAL												
LEGEND : 1 - BHEL/ CUSTOMER 2 - VENDOR 3 - SUB- VENDOR P - PERFORM W - WITNESS V - VERIFICATION												

ANNEXURE-1

INSTRUCTIONS FOR QUALITY PLAN

The Quality Plan shall include all the Quality Control Measures and Checks adopted by the Vendor to ensure that the material/component/assembly/services supplied by him meet/will meet the requirements as per specifications and good practices. They shall include all stages of operation such as materials, processes, manufacture, assembly, packing and despatch. The following guide lines may be noted:

Column 1-	Serial Number
Column 2-	Component/Operation- The component and/or operation being checked shall be given here.
Column 3-	Characteristics check- The characteristics being checked shall be given here, e.g., chemical composition, mechanical properties, leak tightness, surface defects etc..
Column 4-	Category - 'CR' stands for critical characteristic - affecting safety of equipment and personnel 'MA' stands for major Characteristic - affecting safety of equipment and personnel 'MI' stands for minor characteristic - affecting appearance etc.
Column 5-	Type/Method of check e.g. chemical analysis tensile testing, hydraulic test, visual examination radiography etc.
Column 6-	Extent of check, such as, 100, 10, 1 percent etc.
Column 7-	Reference Documents - Documents, such as technical specification, drawings, standard specifications (IS, BS ETC.) procedure, etc. according to which check is done.
Column 8-	Acceptance Norms - Standards etc. according to which acceptability or otherwise of the characteristics being checked is decided.
Column 9-	Format of Record - Formats, log shets, reports, etc. in which the observations are recorded. Standard log sheets, reports, formats etc. of the Vendors shall be numbered and such reference numbers shall be included here.
Column 10-	Agency - The agency which performs the test/instruction shall be written in sub-column 'W' The agency which verifies test certificates/inspection records and carries out audit check of the components/operation shall be written in sub-column 'V' The agencies are codified as 1,2 & 3 '1' stands for (BHEL) '1' * means the operation shall be cleared by BHEL before the start of the next operation. '2' Stands for Vendor '3' stands for sub-Vendor of the Vendor and so on.
Example :	
Entry	'3' in column 'P' means test./inspection to be performed by sub-Vendor's QC
Entry	'2' in column 'W' means test./inspection to be witnessed by Vendor's QC
Entry	'1' in column 'V' means verification shall be done by BHEL and next stage to be started only after the hold point is cleared by BHEL
Column11-	Remarks - Any special remarks shall be given here.

NOTES :

1. In absence of correlation with the test certificate(s) (e.g. material identification) samples shall be drawn bgy BHEL and all tests as per relevent specifications shall be carried out in their presence or in recognized Government Laboratory.
2. When materials and components are initially identified and stamped by BHEL QS engineer, the identification marks shall be presserved till despatch. Wherever this is not possible, the identification mark shall be transferred to the components in the presence of BHEL QS Engineer unless other wise agreed.
3. For castings and forgings integral test specimens shall be provided, When this is not possible for casting, they shall be poured in the presence of BHEL QS Engineer unless otherwise, if witnessing of test by BHEL is called for.
4. When welders qualified by reputed inspection agencies or statutory bodies are not available, qualification tests shall be conducted in the presence of BHEL QS Engineer.
5. This Quality Plan is liable to be modified as per the requirements of approved drawings and changes in technical specifications/drawings. If there are contradictions in respect of column 7 & 8 between this Quality Plan and the approved drawings specifications, the latter shall prevail.
6. Wherever inspection by BHELs Purchaser/Third Party/Statutory authorities are mandatory, this shall be compiled with.
7. Inspection reports, log sheets, test reports/certificate. etc. shall be furnished to BHEL at the appropoate stages or at the time of final inspection, as required.
8. This Quality Plan is also applicable to spares, if any, under scope of supply of Vendor.
9. The quality plan shall be submitted in minimum 4 copies with a soft copy of the same or in line with contract requirements.

ANNEXURE-2 to Quality Plan

(LIST OF BHEL- PEM APPROVED GALVANIZERS)

SL. NO.	ITEM	VENDOR NAME	ADDRESS
1	Galvanising	Jenco Industrial Corporation	Chincholi Bunder Khkar Road Near Link Road Devruwadi Malad (W) Mumbai 400064
2	Galvanising	National Galvanizing Company	66, Barrackpore Kamarhatt Trunck Road Calcutta-700058
3	Galvanising	Sigma Galvanising Pvt. Ltd.	Plot No.C-169, TTC, MIDC Ind Area Navin Mumbai-400705
4	Galvanising	B.P. Projects PVT LTD	167A, Vivekananda Road Kolkata-700006
5	Galvanising	Standard Galvanisers	Makardah Road, Kabar Para, Bankra, Howarah -711403
6	Galvanising	Steel Products	National Highway No. 6, Chamrail, Kona, Howrah-711114
7	Galvanising	Unitech Fabricators & Engineers Pvt. Ltd.	Village- Ajab Nagar, P.O. -Molla Simlla, P.S. - Singur, Dist - Hoogly, Pin-712223
8	Galvanising	Shivam Engineers & Fabricators	A0-282-284, Industrial Area, South Side of G.T. Road, Ghaziabad, U.P.
9	Galvanising	B.G. Shirke Construction Technology Pvt. Ltd	72-76, Mundhawa, Pune - 401 036
10	Galvanising	Galbro Ispat Galvanizers Pvt. Ltd.	GUT 11 AND 12, OPP. Kudus Steel,Rolling Mill, Wada, Thane , Mumbai
11	Galvanising	Eros Metals	G-97, MIDC, Bhutibori , Nagpur
12	Galvanising	Industrial Perforation (India) Pvt. Ltd.	Ganganagr, Katakhal, Kolkata-700132
13	Galvanising	Indmark Formtech Pvt. Ltd.	Phase - 3, E - 11 / 1, M. I. D. C., Chakan, Pune - 410 501, Maharashtra, India.
14	Galvanising	Namdhari Industrial Traders Pvt. Ltd.	Village Latton Dana, Chandigarh Road, Ludhiana
15	Galvanising	Neha Galvaniser	Jalan Industrial Estate, Gate No-1, 1st Right Choise Lane, Near N.G-6, Jangalpur, PO Domjur Howrah - 700071, West Bengal, India
16	Galvanising	Patny Systems (P) Ltd.	Unit-IV, Sy No. -228/9, Plot No. 6, IP Kuchavaram, Toopran(M) Dist.-Medak, Telegana - 502336
17	Galvanising	Parmar Metal Company	Survey No.207,Veraval (Shapar) Dist. Rajkot, India.
18	Galvanising	Passive Infra Projects Pvt. Ltd	8th KM Stone, Sampla Kharkhoda Road, Hassangarh, Rohtak, Haryana
19	Galvanising	Rukmani Electrical & Fabricators Pvt. Ltd.	Urla Industrial Area, Urla Sarora Road, Raipur- 493 221 (Chhattisgarh)
20	Galvanising	DMP Projects Pvt.Ltd.	Dulagarh Industrial Park , PS-Sankrail , Howrah -711302
21	Galvanising	Vinfab Engineers India Private Limited	Gut no. 224/1 &2 Bhiwandi Wada State Highway, Village khupri, Dist. Thane, Maharashtra -421303
22	Galvanising	Saral Projects & Processors	B-1, Industrial Area, Site-II, Amawan Road Rae Bareli
23	Galvanising	Jamna Metal Company	D - 1513, DSIDC, Narela Industrial Area Delhi - 110040, India
24	Galvanising	Brahampuri Steels Limited	172 (F) Industrial Area, Jhotwara, Jaipur-302013
25	Galvanising	TJSV Steel Fabrication & Hot dip Galvanizing	No. 83, Vasavanaickenpatti, Gudimangalam, Kondampatti P.O., Udumalpet, Tiruppur Dist.- 642201, Tamil Nadu

NOTES:

1. ANY CHANGE IN THE ABOVE LIST SHALL BE INFORMED AT THE TIME OF SPECIFIC PROJECT REQUIREMENT AND NO COMMERCIAL IMPLICATION SHALL BE ALLOWED ON THIS ACCOUNT.
2. IT SHALL BE THE RESPONSIBILITY OF THE VENDOR TO GET THE MATERIAL GALVANIZED FROM THE ABOVE LIST WITHOUT ANY COMMERCIAL IMPLICATION TO BHEL.