	TECHNICAL SPECIFICATION & DATA SHEET FOR CABLE TRAY SUPPORT SYSTEM -WELDED (GALVANISED)	Specification No.: PE-TS-517/518-507-E013 Rev. No. 00 Date : 07.09.2024
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R&M of Boiler OF UKAI TPS UNIT-3 (1X200MW) & UNIT-5 (1X210MW) AND 2x210 MW Wanakbori TPS Unit 1 & 2

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

SPECIFICATION No. PE-TS-517/518-507-E013




BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT DIVISION
NOIDA, INDIA

	TECHNICAL SPECIFICATION & DATA SHEET FOR CABLE TRAY SUPPORT SYSTEM -WELDED (GALVANISED)	Specification No.: PE-TS-517/518-507-E013
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SCOPE

SCOPE OF THIS PACKAGE COVERS THE FOLLOWING:		
1	SUPPLY INCLUDING DESIGN, ENGINEERINF & MANUFACTURING	YES
2	INSPECTION & TESTING AT MANUFACTURER WORKS	YES
3	E&C	NO
4	SUPERVISION OF ERECTION & COMISSIONING	NO
5	MANDATORY SPARE	NO
6	O & M SPARE	NO
7	COMISSIONING SPARE	NO
8	PACKING	YES
9	PAINTING	NO
10	TRANSPORTATION & DELIVERY TO SITE	YES

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A. GENERAL INFORMATION

1	PROJECT	R&M of Boiler of Ukai TPS Unit-3 (1X200MW) & Unit-5 (1X210MW) and 2X210 MW Wanakbori Unit1 & Unit2
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B. DESIGN CODES & STANDARDS


1	DESIGN STANDARD	a) IS: 2062 Hot rolled medium and high Tensile structural steel-specification 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: 2633 Method for testing uniformity of coating on zinc coated articles f) IS: 1852 For Rolling & cutting tolerances of hot rolled steel products
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C. TECHNICAL PARAMETERS / DESIGN FEATURES

1	Material	Hot Rolled Mild Steel as per IS-2062
2	Size	
a)	Channels	ISMC-150, ISMC-100
b)	Angels	ISA 50X50X6
3	Length	Standard length of 5.5m to 6.5m
4	Type	Hot-dip galvanised
5	Galvanizing	
a)	Pre-treatment	As per IS-2629 prior to galvanisation
b)	Type	Hot dip galvanisation as per IS-2629
c)	Min. Weight of zinc coating	610 gm/sq.m.
d)	Thickness of zinc coating	Avg 86 micron and minimum 75 micron
e)	Tests for Galvanizing	Weight of Zinc coating as per IS:6745 Thickness of Zinc coating as per IS:4759 Uniformity of Zinc coating as per IS:2633 Adhesion as per IS:2629


D. PACKING

1	PACKING	a) The material shall be packed to ensure protection against damage during transit, storage for prolonged periods and handling. b) Items Channels/Angles etc may be supplied in open condition. However, while stacking the materials for transportation it should be ensured that, similar items are grouped and tied with steel wires / strips for convenient handling and shall be done in such away to avoid damage during transits. c) The following details shall be marked on the packing/each stack: i) Name and address of the consignee ii) Purchase Order No: iii) Name of supplier iv) Description of material v) Quantity of items vi) Gross weight
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	TECHNICAL SPECIFICATION & DATA SHEET FOR CABLE TRAY SUPPORT SYSTEM -WELDED (GALVANISED)	Specification No.: PE-TS-517/518-507-E013
		Rev. No. 00
		Date : 07.09.2024

DOCUMENTATION REQUIREMENT

DRAWINGS & DOCUMENTS TO BE SUBMITTED AFTER AWARD OF CONTRACT:			
BHEL Drawing No.	Drawing Title	Vendor submission (Days)*	BHEL & Customer comment/ approval (Days)
Primary Documents			
PE-V0-517/518-507-E907	Quality Plan for Cable Trays Support System - Welded (Galvanised)	5	5
NOTES:			
a) * 1st submission within indicated days from date of purchase order.			
DRAWINGS & DOCUMENTS TO BE SUBMITTED AS FINAL/AS-BUILT DOCUMENT			
Sl. No.	DOCUMENT TITLE		
1	APPROVED QUALITY PLAN.		

	TECHNICAL SPECIFICATION & DATA SHEET FOR CABLE TRAY SUPPORT SYSTEM -WELDED (GALVANISED)	Specification No.: PE-TS-517/518-507-E013
		Rev. No. 00
		Date : 07.09.2024

GENERAL NOTES

1. 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 Technical parameters/Design Features.
2. All finished galvanised MS structural members for cable tray supports shall be free from sharp edges, corners, burs & unevenness.
3. All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved Quality Plan.
4. 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.



PRE-QUALIFICATION REQUIREMENTS FOR CABLE TRAY
SUPPORT SYSTEM - (WELDED) GALVANIZED
PROJECT: 1X200MW + 1X210MW GSECL UKAI
BOILER R&M, UNIT # 3 & 5 &
2X200 GSECL WANAKBORI BOILER R&M, UNIT# 1&2

PE-PQ-517/518-507-E002

REVISION NO.00 DATE 10/09/2024

Page 1 of 1

ITEM: STANDARD CHANNELS AND ANGLES (GALVANIZED)

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


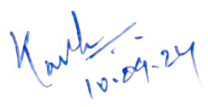


1	Capability of supplying galvanized structural channels and angles for 20 MT per month.
2	Vendor has his own galvanization plant. OR Galvanization of cable tray support - welded type to be done from any BHEL-PEM approved galvanizers.
3	Supplied at least 50 MT of galvanized structural channels/ angles in one or more orders.
4	Minimum two (2) nos. purchase orders for cable tray support system- welded type shall be submitted which should not be more than five (5) years old from the date of techno-commercial bid opening (as applicable) for establishing continuity in business.

NOTES:


1. 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.

2. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.

3. After satisfactory fulfilment of the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of tender.

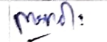
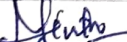


PREPARED BY	CHECKED BY	REVIEWED BY	APPROVED BY
 10/9/24 NIDHI RAWAT / M S S RAJPAL, MANAGER / MANAGER	 10.09.24 KANHAIYA KUMAR / ABHISHEK, SR. MANAGER / DGM	 10/09/24 SANDEEP LODH, AGM	 10/9/24 DEBASISA RATH, GM (DH)

782/2024/


	MANUFACTURER / BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN				SPEC. NO: PE-TS-XXX-507-E012			DATE:			
			CUSTOMER: -NA-				QP NO.: PE-QP-999-507-E006, REV. 04			DATE:04.01.2024			
			PROJECT: -NA-				PO NO.:						
			ITEM: CABLE TRAY SUPPORT SYSTEM- WELDED(GALV)		SYSTEM: CABLING					SHEET 1 OF 2			
SI No.	COMPONENTS & 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	*	**		
					M	B				D	M	B	C

1.0 RAW MATERIAL														
1.1	MILD STEEL SECTIONS (CHANNEL & ANGLES)	1. CHEM. & PHY. PROPERTIES	MA	VERIFICATION OF TC's	100%	-	IS -2062	IS -2062	MILL TC	√	P/V	V	-	
		2.DIMENSIONS	MA	MEASUREMENT	100%	-	IS - 808	IS - 808	QC RECORD		P	-	-	
		3.SURFACE FINISH	MA	VISUAL	100%	-	IS-2062	IS-2062	QC RECORD		P	-	-	
1.2	ZINC	CHEM.COMP.	MA	CHEM TEST	EACH HEAT	-	IS-209	IS-209	TC	√	P/V	V	-	
2.0 IN-PROCESS														
2.1	CUTTING	1.DIMENSIONS	MA	MEASUREMENT	100%	-	Refer remarks	Refer remarks	QC RECORD	√	P	V	-	REFER NOTE-1
		2.SURFACE FINISH	MA	VISUAL	100%	-	-	FREE FROM DEFECTS & SLAG	QC RECORD	√	P	V	-	
2.2	SURFACE PREPARATION	1.CLEANING, PICKLING & RINSING & FLUXING	MA	VISUAL	100%	-	IS:2629	IS:2629	QC RECORD		P/V	-	-	
		2. SURFACE FINISH	MA	VISUAL	100%	-	IS:2629	IS:2629	QC RECORD		P/V	-	-	
2.3	GALVANIZING	1.TEMPERATURE OF ZINC BATH	MA	MEASUREMENT	CONTINUOUS	-	IS-2629	IS-2629	QC RECORD		P/V	-	-	REFER NOTE-2
		2.DROSS	MA	VISUAL	PERIODIC	-	IS-2629	IS-2629	QC RECORD		P/V	-	-	
		3.RATE OF IMMERSION	MA	VISUAL	100%	-	IS 2629	IS 2629	QC RECORD		P/V	-	-	
		4. SURFACE FINISH	MA	VISUAL	100%	-	IS 2629	FREE FROM BURRS, ROUGHNESS, SLAG FLUX, STAIN ETC.	QC RECORD		P/V	-	-	

BIDDER/SUPPLIER	
Sign & Date	
Seal	

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Checked by:		MANOJ MEENA	Checked by:		Manoo
Reviewed by:		HEMA KUSHWAHA	Reviewed by:		Harsh
				22/1/24	

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

	MANUFACTURER / BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN				SPEC. NO: PE-TS-XXX-507-E012		DATE:	
			CUSTOMER: -NA-				QP NO.: PE-QP-999-507-E006, REV. 04		DATE:04.01.2024	
			PROJECT: -NA-				PO NO.:			
			ITEM: CABLE TRAY SUPPORT SYSTEM- WELDED(GALV)		SYSTEM: CABLING				SHEET 2 OF 2	
Sl. No.	COMPONENTS & OPERATIONS	CHARACTERSTICS	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 B C
					M B					

3.0 FINISHED ITEMS														
3.1	CABLE TRAY SUPPORT SYSTEM- WELDED(GALV)	1. DIMENSIONS	MA	MEASUREMENT	IS-2500 (PART 1) LEVEL S-4	IS-2500 (PART 1) LEVEL S-4	IS - 808	IS - 808	INSP REPORT	√	P	W	-	REFER NOTE-1
		2. SURFACE FINISH	MA	VISUAL	IS-2500 (PART 1) LEVEL S-4	IS-2500 (PART 1) LEVEL S-4	-	FREE FROM BURRS, SLAG, ROUGHNESS,FL UX, STAIN ETC.	INSP REPORT	√	P	W	-	
		3.MASS OF ZINC COATING	MA	CHEM. TEST	IS-4759	IS-4759	IS-6745	610 gms/ Sq m	INSP REPORT	√	P	W	-	
		4.UNIFORMITY OF ZINC COATING	MA	CHEM. TEST	IS-4759	IS-4759	IS-2633	IS-2633	INSP REPORT	√	P	W	-	
		5 THICKNESS OF ZINC COATING	MA	PHYSICAL TEST	IS-4759	IS-4759	Refer remarks	Refer remarks	INSP REPORT	√	P	W	-	REFER NOTE-3
		6 ADHESION	MA	MECH.TEST	IS-4759	IS-4759	IS-2629	IS-2629	INSP REPORT	√	P	W	-	
		7.PACKING	MA	VISUAL	100%	100%	BHEL APPD. DOCUMENT	BHEL APPD. DOCUMENT	INSP REPORT	√	P	W	-	

NOTES:

1. LENGTH OF ONE MEMBER OF CABLE TRAY SUPPORT SYSTEM-WELDED(GALV) SHALL BE 5.5 MTRS TO 6.5 MTRS
2. GALVANIZATION IS TO BE DONE AT BHEL APPROVED GALVANIZATION PLANTS LISTED IN ANNEXURE-1 TO QUALITY PLAN
3. THICKNESS OF ZINC COATING SHALL BE 75 MICRONS (MINIMUM) & 86 MICRONS (AVERAGE).
4. LATEST REVISION/ YEAR OF ISSUE OF ALL THE STANDARDS (IS/ASME/IEC ETC.) INDICATED IN QP SHALL BE REFERRED

LEGENDS:

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

BIDDER/SUPPLIER		BHEL				FOR CUSTOMER REVIEW & APPROVAL			
Sign & Date		ENGINEERING		QUALITY		Doc No:			
Seal		Sign & Date	Name	Sign & Date	Name	Sign & Date	Name	Seal	
		Checked by: <i>Manoj</i>	MANOJ	Checked by: <i>Manoj</i>	Manoj	Reviewed by:			
		Reviewed by: <i>Manoj</i>	MEENA	Reviewed by: <i>Manoj</i>	Manoj	Approved by:			
		by: <i>Manoj</i>	KUSHWAHA	by: <i>Manoj</i>	Manoj				

22/2/24

577782/2024/PS-PEM-EL

ANNEXURE-I to QUALITY PLAN (LIST OF APPROVED GALVANIZERS)			
ITEM DESCRIPTION	SL NO.	VENDOR NAME	ADDRESS
GALVANISING	1	Jenco Industrial Corporation	Chincholi Bunder Khkar Road Near Link Road Devruwadi Malad (W) Mumbai 400064
GALVANISING	2	National Galvanizing Company	66, Barrackpore Kamarhatt Trunk Road Calcutta-700058
GALVANISING	3	Sigma Galvanising Pvt. Ltd.	Plot No.C-169, TTC, MIDC Ind Area Navin Mumbai-400705
GALVANISING	4	B.P. Projects PVT LTD	167A, Vivekananda Road Kolkata-700006
GALVANISING	5	Standard Galvanisers	Makardah Road, Kabar Para, Bankra, Howarah -711403
GALVANISING	6	Steel Products	National Highway No. 6, Chamrail, Kona, Howrah-711114
GALVANISING	7	Unitech Fabricators & Engineers Pvt. Ltd.	Village- Ajab Nagar, P.O. -Molla Simlla, P.S. - Singur, Dist - Hoogly, Pin-712223
GALVANISING	8	Shivam Engineers & Fabricators	A0-282-284, Industrial Area, South Side of G.T. Road, Ghaziabad, U.P.
GALVANISING	9	B.G. Shirke Construction Technology Pvt. Ltd	72-76, Mundhawa, Pune - 401 036
GALVANISING	10	Galbro Ispat Galvanizers Pvt. Ltd.	GUT 11 AND 12, OPP. Kudus Steel,Rolling Mill, Wada, Thane , Mumbai
GALVANISING	11	Eros Metals	G-97, MIDC, Bhutibori , Nagpur
GALVANISING	12	Industrial Perforation (India) Pvt. Ltd.	Ganganagr, Katakhal, Kolkata-700132
GALVANISING	13	Indmark Formtech Pvt. Ltd.	Phase - 3, E - 11 / 1, M. I. D. C., Chakan, Pune - 410 501, Maharashtra, India.
GALVANISING	14	Namdhari Industrial Traders Pvt. Ltd.	Village Latton Dana, Chandigarh Road, Ludhiana
GALVANISING	15	Neha Galvaniser	Jalan Industrial Estate, Gate No-1, 1st Right Choise Lane, Near N.G-6, Jangalpur, PO Domjur Howrah - 700071, West Bengal, India
GALVANISING	16	Patny Systems (P) Ltd.	Unit-IV, Sy No. -228/9, Plot No. 6, IP Kuchavaram, Toopran(M) Dist.- Medak, Telegana - 502336
GALVANISING	17	Parmar Metal Company	Survey No.207,Veraval (Shapar) Dist. Rajkot, India.
GALVANISING	18	Rukmani Electrical & Components Pvt Ltd	Urla Industrial Area, Urla Sarora Road, Raipur- 493 221 (Chhattisgarh)
GALVANISING		Rukmani Fab & Gal Pvt Ltd	Shankharidaha Baniyarah, Jalan Industrial Complex, Gate no.3, Lane no. 4, Domjur, Howrah , W.B .- 711411
GALVANISING	19	DMP Projects Pvt.Ltd.	Dulagarh Industrial Park , PS-Sankrail , Howrah -711302
GALVANISING	20	Vinfab Engineers India Private Limited	Gut no. 224/1 &2 Bhiwandi Wada State Highway, Village khupri, Dist. Thane, Maharashtra -421303
GALVANISING	21	Saral Projects & Processors	B-1, Industrial Area, Site-II, Amawan Road Rae Bareli
GALVANISING	22	Brahampuri Steels Limited	172 (F) Industrial Area, Jhotwara, Jaipur-302013
GALVANISING	23	Indiana Gratings PVT. LTD	F-5, MIDC Jejuri, Pune-412 303
GALVANISING	24	M/s AVAIDS TECHNOVATORS PVT. LTD.	131, MATSYA INDUSTRIAL AREA, ALWAR RAJASTHAN
GALVANISING	25	M/s Ratan Projects & Engineering Co. Pvt. Ltd.	VILL Muslim Para, PO- Barunda, P.S – Bagnan, Howrah – 711 303

NOTES:

1. ANY CHANGE IN THE ABOVE LIST SHALL BE INFORMED BY BHEL 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 AS PER ABOVE WITHOUT ANY COMMERCIAL IMPLICATION TO BHEL.

	<p style="text-align: center;"><u>Price Variation Formulae</u></p>	<p style="text-align: center;">ANNEXURE-A</p>
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Prices shall be variable as per following PVC formulae: -

Cable Tray Support System-Welded	
$P = Po/100 (11 + 57 (SBIR/SBIRo) + 9 (Zn/Zno) + 23 (W/ Wo))$	Indices to be taken from IEEMA Circular (IEEMA(PVC)/TLT- 2014/_/_) for the applicable month.

Wherein,

P = Price payable as adjusted in accordance with the above formula.

Po = Price quoted/confirmed.

SBIRo = Price of Steel Billets- Retail (refer notes)

This price is as applicable on the 1st working day of the month, one month prior to the date of tendering.

Zno = Price of Electrolytic high grade zinc (refer notes)

This price is as applicable on the 1st working day of the month, one month prior to the date of tendering.

Wo = All India average consumer price index number for industrial workers, as published by the Labour Bureau, Ministry of Labour, Govt. of India (Base: 2016 = 100) (Refer notes)

This index number is as applicable on the first working day of the month, **three months** prior to the date of tendering.

SBIR = Price of Steel Billets-Retail (refer notes)

This price is as applicable on the 1st working day of the month, two 'months prior to the date of delivery.

Zn = Price of Electrolytic high grade zinc (refer notes)

This price is as applicable on the 1st working day of the month, two months prior to the date of delivery.

W = All India average consumer price index number for industrial workers, as published by the Labour Bureau, Ministry of Labour, Govt. of India (Base: 2016 = 100) (refer notes)

This index number is as applicable on the first working day of the month, **four months** prior to the date of delivery.

The date of delivery is the date on which the materials are notified as being ready for inspection/dispatch (in the absence of such notification, the date of manufacturer's dispatch note is to be considered as the date of delivery) or the contracted delivery date (including any agreed extension thereto), whichever is earlier.

**Price Variation Formulae****ANNEXURE-B****Notes:**

- (a) All prices of raw materials are exclusive of modvatable excise/CV duty amount and exclusive of any other central, state or local taxes; octroi etc.
- (b) All prices are as on first working day of the month.
- (c) PVC ceiling limit shall be positive (+ve) 20% and negative (-ve) unlimited.