

**TELANGANA STATE POWER GENERATION
CORPORATION LIMITED**

5X800MW YADADRI TPS

VOLUME II

**TECHNICAL SPECIFICATION
FOR
CABLE TRAYS & ACCESSORIES**

SPECIFICATION NO: PE-TS-417-507-E021, R00



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


**TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES**

SPECIFICATION NO. PE-TS-417-507-E021

REVISION 00

DATE: 01.03.2023

SHEET 1 OF 1

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TOTAL SHEETS INCLUDING COVER SHEET, CONTENT/SEPARATOR SHEET = 36



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COMPLIANCE CERTIFICATE

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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 deviations 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 the specification shall prevail).

BIDDER'S STAMP & SIGNATURE

1466732/2023/PS-PEM-EL

**TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES**

SPECIFICATION NO. PE-TS-417-507-E021

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SECTION I

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SECTION – I**SPECIFIC TECHNICAL REQUIREMENTS**



TECHNICAL SPECIFICATION FOR CABLE TRAYS & ACCESSORIES

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SECTION I

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1.0 SCOPE OF ENQUIRY

- 1.1 This enquiry covers Manufacture, Inspection and Testing at Manufacturer's works, proper packing and delivery to site of **Cable Trays & Accessories** conforming to this specification.
- 1.2 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.
- 1.3 General technical requirements of the Cable Trays & Accessories are indicated in Section-I. Project specific technical/ quality requirements / changes are listed in Data Sheet-A & Section-II.
- 1.4 The stipulations of Section-I, followed by those of Data Sheet-A shall prevail in case of any conflict between the stipulations of Section-I, Data Sheet - A & Section-II.

2.0 BILL OF QUANTITIES:

- 2.1 Quantity requirements shall be as per **Annexure-I (Bill of Quantities (BOQ))** of NIT.
- 2.2 Number of coupler plates, washers, nuts & bolts to be supplied by vendor shall be as per **Annexure-I**.

3.0 SPECIFIC REQUIREMENTS:

3.1 **Technical:**

Sr. No.	Reference Clause No. of Section II (if any)	Specific Requirement/ Change
1		

3.2 **Quality/ Inspection:**

Sr. No.	Reference Clause No. of Section II (if any)	Specific Requirement/ Change

3.3 **Bill of Material & Packing List**

- 3.3.1 Supplier to submit detailed 'Bill of Material' (BoM) at the time of drawing/document submission after placement of PO. Each item of the BoM to be uniquely identified with item code no. or item serial no.
- 3.3.2 Supplier to ensure that all items which will find separate mention in the packing list are covered in this detailed BoM.
- 3.3.3 Supplier to also give the following undertaking in the BOM:

"The BoM provided herewith completes the scope (in content and intent) of material supply under PO No. -----, dated -----.

Any additional material which may become necessary for the intended application of the supplied item(s)/package will be supplied free of cost in most reasonable time."

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**ANNEXURE – A
LIST OF DRAWINGS / DOCUMENTS
(REQUIRED TO BE FURNISHED BY SUCCESSFUL BIDDER AFTER AWARD OF CONTRACT)**

- 4.1 Drawings/ documents shall be submitted through Document Management System (DMS).
- 4.2 Drawing/Documents required to be submitted shall be as per NIT.
- 4.3 Bidder to submit drawing/document submission schedule at contract stage.



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SECTION II

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DATASHEET-A

1.0 APPLICABLE STANDARDS

- | | | |
|----|----------|------------------------------------------------------------------------|
| a) | IS: 1730 | For dimensions for steel sheet and strip. |
| b) | IS: 1363 | Hexagon head bolts, screws and nuts. |
| c) | IS: 2629 | For hot dip galvanising of steel & surface pre treatment. |
| d) | IS: 2633 | For testing of uniformity of zinc coating. |
| e) | IS: 6745 | For determination of mass of zinc coating. |
| f) | IS: 1367 | Galvanised Coating on threaded Fasteners.
(Part-XIII) |
| g) | IS: 1852 | For Rolling and Cutting Tolerances of hot rolled steel products. |
| h) | IS: 9595 | For Thickness of Welding. |
| i) | IS: 4759 | For Hot Dip Zinc coating on structural steel and other allied products |

2.0 CABLE TRAYS & ACCESSORIES

- | | | | |
|-----|---------------------------------------------------------|---|-----------------------------------------------------|
| 2.1 | Material | : | Hot Rolled Mild Steel |
| 2.2 | Type | : | Ladder Type
Perforated Type |
| 2.3 | Standard Length of
Straight Length of
Cable Trays | : | 2.5 meters |
| 2.4 | Standard Width (mm) | : | 600 450 300 150 |
| 2.5 | Construction | : | Conforming to enclosed drawing [PE-DG-410-507-E005] |
| 2.6 | Bending Radius
of Accessories (in mm) | : | As per Drawing |
| 2.7 | Tolerance in length/
Width / Height | : | + /- 2 mm |

2.8 **Thickness of the finished product shall not be less than 2.0 mm.**

3.0 FITTINGS

- | | | |
|-----------------|---|--------------------------------------------------------------------------------------------------------------------------------------------|
| End connections | : | Through Coupler plates
(Side Coupler Plates shall be provided as part of cable tray & accessories supply with bolts, nuts, washers etc) |
|-----------------|---|--------------------------------------------------------------------------------------------------------------------------------------------|

4.0 TRAY COVERS

- | | | |
|-------------|---|------------------------------------|
| a) Type | : | Non-Perforated type. |
| b) Material | : | Hot Rolled Mild Steel. |
| c) Width | : | Suitable for width of cable trays. |



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d) Tolerance in length/
Width / height : Same as cable trays.

e) Thickness of the finished product shall not be less than 2 mm.

5.0 SHEET THICKNESS before Hot Dip Galvanisation

- a) For cable trays & Accessories : 2.0 mm
- b) For cable tray cover : 2.0 mm
- c) For Coupler plate : 2.0 mm
- d) Tolerance in Thickness : (+/-0.2mm)
- e) Make : SAIL/TISCO/JINDAL

6.0 SURFACE TREATMENT

- a) Type : Hot dip galvanisation

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**STANDARD TECHNICAL SPECIFICATION
FOR CABLE TRAY & ACCESSORIES**

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SECTION-II**STANDARD TECHNICAL REQUIREMENTS**



TECHNICAL SPECIFICATION FOR CABLE TRAY & ACCESSORIES

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1.0 SCOPE OF ENQUIRY

- 1.1 This specification covers the design, manufacture, assembly, testing and inspection at vendor's/sub vendor's works, packing and despatch to site of **CABLE TRAYS & ACCESSORIES** as described in various sections of this specification.

2.0 CODES & STANDARDS

- 2.1 The material, constructional features and various processes involved in manufacture shall comply with latest revision of relevant Indian Standards.
- 2.2 The design, material, construction, manufacture, inspection, testing and performance of Cable Trays & Accessories shall conform to the latest revision of relevant standards and codes of practices mentioned in Data Sheet - A.
- 2.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

3.0 DESIGN REQUIREMENTS AND CONSTRUCTIONAL FEATURES

- 3.1 All items listed in the BOQ –Cum-Price Schedule for Cable Trays & Accessories (Annexure - I of NIT) shall be manufactured as per Datasheet-A and project drawings enclosed with this specification.

3.2 **Cable Trays & Accessories, Tray Covers and Fittings:**

- 3.2.1 Cable trays & accessories shall be of two types, namely ladder type and perforated type as specified in Data Sheet-A and drawings enclosed with this specification.
- 3.2.2 Coupler plates shall be provided for connecting tray ends to other straight trays, horizontal elbows, vertical elbows, tees, cross, reducers etc. The number of coupler plates, washers, nuts & bolts to be supplied shall be as per Data Sheet-A.
- 3.2.3 Necessary fasteners shall be provided along with each length of cable tray as specified in drawings enclosed.
- 3.2.4 The width of the tray covers (where provided) shall be suitable for the width of trays. Suitable bolting arrangement shall be supplied for attaching the cover to the cable trays, elbows, reducers, tees etc. as per the drawing enclosed.
- 3.2.5 All welded joints shall be smooth enough to provide a good appearance and shall not cause any injury to working personnel or any damage to the cable laid directly on it. All welding work shall be done by skilled personnel.

4.0 QUALITY/INSPECTION

- 4.1 BHEL's Standard QP (QP NO. PE-V2-417-507-E902) is enclosed. However, at contract stage, the successful bidder shall submit the QP for BHEL/ ultimate customer's approval. There shall be no commercial implication to BHEL on account of QP approval.



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- 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 equipment & components shall be deemed to be included in the bid price.
- 4.4 Load Test: -

A 2.5-meter straight section of each type of cable tray of width 600mm & 450mm shall be simply supported at the two ends. A uniformly distributed load of 100 kg per meter shall be applied along the length of tray. The maximum deflection at mid span shall not exceed 7 mm.

5.0 PACKING

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

6.0 DELIVERY

The delivery shall be as per NIT (Notice Inviting Tender).

7.0 DOCUMENTATION

- 7.1 Documents to be submitted by the bidder along with the bid.

- A copy of sheet "Compliance Sheet" with bidder's signature & company stamp.
- Unpriced copy of "Annexure-I (BOQ – Cum- Price Schedule for Cable Trays & Accessories)" with bidder's signature & company stamp.
- A copy of sheet "No Deviation Sheet" with bidder's signature & company stamp.
- Supporting documents of PQR.

No other documentation is required to be submitted as technical offer. Any information contained in other parts of the offer (e.g. covering letter, annexures, etc.) which is deviating from specification requirements in any way shall not be considered by BHEL as part of offer.

	MANUFACTURING QUALITY PLAN	
	CUSTOMER : TSGENCO	QP NO.: PE-V2-417-507-E902 DATE:
	PROJECT: YADADRI TPS - 5X800MW	
	ITEM: CABLE TRAYS & ACCESSORIES	Page 1 of 5

SL NO.	COMPONENT /OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					6	C/N			9	*	**			
							D	M			C	N		

1.0 RAW MATERIAL


1.1	HOT ROLLED CARBON STEEL SHEET	1.CHEMICAL & PHYSICAL PROPERTIES	MA	VERIFICATION OF TC'S	100%	100%	IS -1079	IS -1079	MILL TC	√	P/V	V	V	Steel shall be procured from SAIL/TISCO/RINL/BHUSAN/JINDAL ISPAT/ESSAR/LLOYD/JISCO/ authorised SAIL Re-Rollers.
		2.DIMENSIONS	MA	MEASUREMENT	100%	-	IS-1730	IS-1730	QC RECORD		P	-	-	
		3.SURFACE FINISH	MA	VISUAL	100%	-	IS-1079	IS-1079	QC RECORD		P	-	-	
1.2	ZINC	CHEMICAL COMPOSITION	MA	CHEM TEST	EACH HEAT	EACH HEAT	IS-209	IS-209	TC	√	P/V	V	V	

TSGENCO approved vendors SAIL, TISCO, JINDAL

2.0 IN-PROCESS


2.1	FABRICATION	1.DIMENSIONS	MA	MEASUREMENT	100%	100%	BHEL APPD. DRAWING	BHEL APPD. DRAWING	QC RECORD	√	P	V	V	
		2.WELDING QUALITY	MA	VISUAL	100%	100%	ASME SEC. IX	ASME SEC. IX	QC RECORD	√	P	V	V	Welding is to be done by qualified welders in accordance with ASME SEC. IX article III. WPS , PQR & WPQ to be reviewed during inspection.
		3.SURFACE FINISH	MA	VISUAL	100%	100%	Free From Defects & Slag	Free From Defects & Slag	QC RECORD	√	P	V	V	

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QUALITY ASSURANCE		QUALITY		Doc No:		
		Sign & Date Name		Sign & Date		Name
Prepared by:		Reviewed by:		Approved by:		
Reviewed by:				AL		

	MANUFACTURING QUALITY PLAN	
	CUSTOMER : TSGENCO	QP NO.: PE-V2-417-507-E902
	PROJECT: YADADRI TPS - 5X800MW	DATE:
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SL NO.	COMPONENT / OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C/N			9	*	**			
1	2	3	4	5	6		7	8	9	D	M	C	N	
2.2	SURFACE PREPARATION	1. CLEANING, PICKLING & RINSING & FLUXING	MA	VISUAL	100%	-	IS:2629	IS:2629	QC RECORD		P	-	-	
		2. SURFACE FINISH	MA	VISUAL	100%	-	IS:2629	IS:2629	QC RECORD		P	-	-	
2.3	GALVANISING	1. TEMPERATURE OF ZINC BATH	MA	MEASUREMENT	CONTINUOUS	-	IS-2629	IS-2629	QC RECORD		P	-	-	Galvanization is to be done at BHEL-PEM approved galvanization plant
		2. DROSS	MA	VISUAL	PERIODIC	-	IS-2629	IS-2629	QC RECORD		P	-	-	
		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	-	-	
3.0 FINISHED ITEMS														
3.1	CABLE TRAY, ACCESSORIES & HARDWARES	1. DIMENSIONS	MA	MEASUREMENT	IS-2500 (Part 1) Level S-4	IS-2500 (Part 1) Level S-4	BHEL APPD. DRAWING	BHEL APPD. DRAWING	IR	√	P	W	W	Overall thickness of finished product shall not be less than the thickness of cable tray & accessories defined in technical datasheet.


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Reviewed by:							

	MANUFACTURING QUALITY PLAN	
	CUSTOMER : TSGENCO	QP NO.: PE-V2-417-507-E902
	PROJECT: YADADRI TPS - 5X800MW	DATE:
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SL NO.	COMPONENT /OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY				REMARKS
					M	C/N			9	*	**				
1	2	3	4	5	6		7	8	9	*	**				
	2. SURFACE FINISH	MA	VISUAL	IS-2500 (Part 1) Level S-4	IS-2500 (Part 1) Level S-4	BHEL APPD. DRAWING	Free From Burrs, Slag, Roughness, Flux, Stain Etc.	IR	√	P	W	W	W	Fasteners shall be of good quality as per IS 1363	
	3. MARKING	MA	VISUAL	IS-2500 (Part 1) Level S-4	IS-2500 (Part 1) Level S-4	BHEL APPD. DRAWING	BHEL APPD. DRAWING	IR	√	P	W	W	W	Following shall be engraved/ punched on each standard length of cable tray at the center of both sides of runner: 'PEM' (length of letter 90mm & height 30mm).	
	4. RIGIDITY (FOR TRAYS)	MA	DEFLECTION TEST	2 No./ LOT/ TYPE	2 No./ LOT/ TYPE	BHEL APPD. DRAWING	BHEL APPD. DRAWING	IR	√	P	W	W	W	600MM wide cable tray to be tested. Maximum deflection shall not exceed 7MM on mid span on uniform loading of 100KG/M.	
	5. MASS OF ZINC COATING	MA	CHEMICAL TEST	IS-4759	IS-4759	IS-6745	610 gms/ Sq m (for 2.0mm thick product) 460 gms/ Sq m (for 1.6 mm thick product)	IR	√	P	W	W	W		
	6. UNIFORMITY OF ZINC COATING	MA	CHEMICAL TEST	IS-4759	IS-4759	IS-2633	IS-2633	IR	√	P	W	W	W		


and 450mm

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Reviewed by:					

	MANUFACTURING QUALITY PLAN							
	CUSTOMER: TSGENCO						QP NO.: PE-V2-417-507-E902	DATE:
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SL NO.	COMPONENT /OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD			AGENCY	REMARKS	
					6	7			8	9	*			**
1	2	3	4	5	M	C/N	7	8	9	D	M	C	N	
		7.THICKNESS OF ZINC COATING	MA	PHYSICAL TEST	IS-4759	IS-4759	75 MICRONS (minimum), 86 MICRONS (average) for 2.0mm thick product. 55 MICRONS (minimum), 65 MICRONS (average) for 1.6mm thick product.	75 MICRONS (minimum), 86 MICRONS (average) for 2.0mm thick product. 55 MICRONS (minimum), 65 MICRONS (average) for 1.6mm thick product.	IR	√	P	W	W	
		8.ADHESION	MA	MECH.TEST	IS-4759	IS-4759	IS-2629	IS-2629	IR	√	P	W	W	
		9. COUPLER PLATE	MA	VISUAL	100%	100%	BHEL APPD. DOCUMENT	BHEL APPD. DOCUMENT	IR	√	P	W	W	Inspector to mention the total number of gunny bags/bundles of coupler plates, nuts, bolts & washer in the inspection report.
		10. NUT & BOLT	MA	VISUAL	100%	100%	BHEL APPD. DOCUMENT	BHEL APPD. DOCUMENT	IR	√	P	W	W	
		11. WASHER	MA	VISUAL	100%	100%	BHEL APPD. DOCUMENT	BHEL APPD. DOCUMENT	IR	√	P	W	W	Further manufacturer shall attach the detail of total number of gunny bags/bundles of the respective items with packing list.
		12. PACKING	MA	VISUAL	100%	100%	BHEL APPD. DOCUMENT	BHEL APPD. DOCUMENT	IR	√	P	-	-	Refer Note - 2

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		Sign & Date	Name			
Prepared by:		Reviewed by:		Sign & Date	Name	
Reviewed by:				Approved by:		
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		MANUFACTURING QUALITY PLAN									
		CUSTOMER : TSGENCO						QP NO.: PE-V2-417-507-E902		DATE:	
		PROJECT: YADADRI TPS - 5X800MW									
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1	2	3	4	5	6	7	8	9	*	**	
					M C/N				D	M C N	

NOTES:

1. BHEL reserves the right for conducting repeat test, if required.
2. For export job, packing shall be as per BHEL seaworthy packing specification. Seaworthy Packing shall be suitable in order to avoid damage during transit and also during storage at site in tropical climate conditions.
3. Latest revision/ year of issue of all the standards (IS/ ASME/ IEC etc.) indicated in QP shall be referred at the time of approval of documents.
4. List of BHEL-PEM approved galvanization plant is as per Annexure-A.

LEGENDS:

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

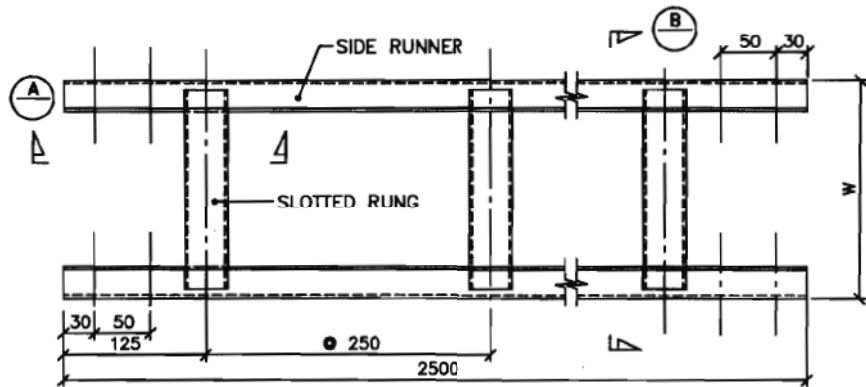
SUPPLIER		BHEL		FOR CUSTOMER REVIEW & APPROVAL		
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		Sign & Date	Name		Sign & Date	Name
Prepared by:		Reviewed by:		Approved by:		
Reviewed by:				SWAL		

ANNEXURE-2 to Quality Plan
(LIST OF BHEL- PEM APPROVED GALVANIZERS)

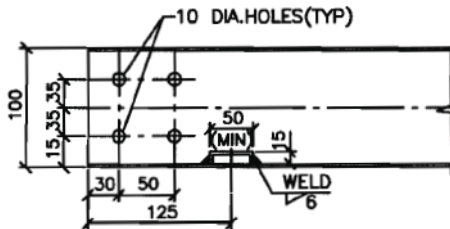
SL NO.	ITEM	VENDOR NAME	ADDRESS
1	GALVANISING	Jenco Industrial Corporation	Chincholi Bunder Khkar Road Near Link Road Devruwadi Malad (W) Mumbai 400064
2	GALVANISING	National Galvanizing Company	66, Barrackpore Kamarhatt Trunck Road Calcutta-700058
3	GALVANISING	Sigma Galvanising Pvt. Ltd.	Plot No.C-169, 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 Infrastructures Pvt. Ltd.	G-97, MIDC, Bhutibori , Nagpur-441108, Maharashtra
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	Rukmani Electrical & Components Pvt Ltd	Urla Industrial Area, Urla Sarora Road, Raipur- 493 221 (Chhattisgarh)
19	GALVANISING	Rukmani Fab & Gal Pvt Ltd	Shankharidaha Baniyarah, Jalan Industrial Complex, Gate no.3, Lane no. 4, Domjur, Howrah , W.B .- 711411
19	GALVANISING	DMP Projects Pvt.Ltd.	Dulagarh Industrial Park , PS-Sankrail , Howrah -711302
20	GALVANISING	Vinfab Engineers India Private Limited	Gut no. 224/1 &2 Bhiwandi Wada State Highway, Village khupri, Dist. Thane, Maharashtra -421303
21	GALVANISING	Saral Projects & Processors	B-1, Industrial Area, Site-II, Amawan Road Rae Bareli
22	GALVANISING	Brahampuri Steels Limited	172 (F) Industrial Area, Jhotwara, Jaipur-302013
23	GALVANISING	Indiana Gratings PVT. LTD	F-5, MIDC Jejuri, Pune-412 303
24	GALVANISING	M/s AVAIDS TECHNOVATORS PVT. LTD.	131, MATSYA INDUSTRIAL AREA, ALWAR RAJASTHAN

NOTES:

- IT SHALL BE THE RESPONSIBILITY OF THE VENDOR TO GET THE MATERIAL GALVANIZED FROM THE ABOVE LIST WITHOUT ANY COMMERCIAL IMPLICATION TO BHEL



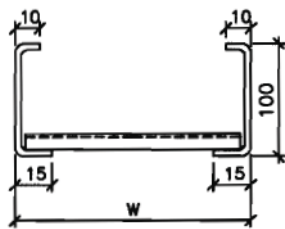
LADDER TYPE CABLE TRAY



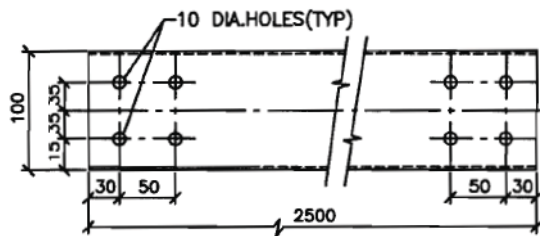
SEC - A



SLOTTED RUNG



SEC - B



SIDE RUNNER

W	300	450	600	150
L	295	445	595	145

MATERIAL : M.S. SHEET 14 SWG.(2mm.THK.)
FINISH : HOT DIP GALVANISED

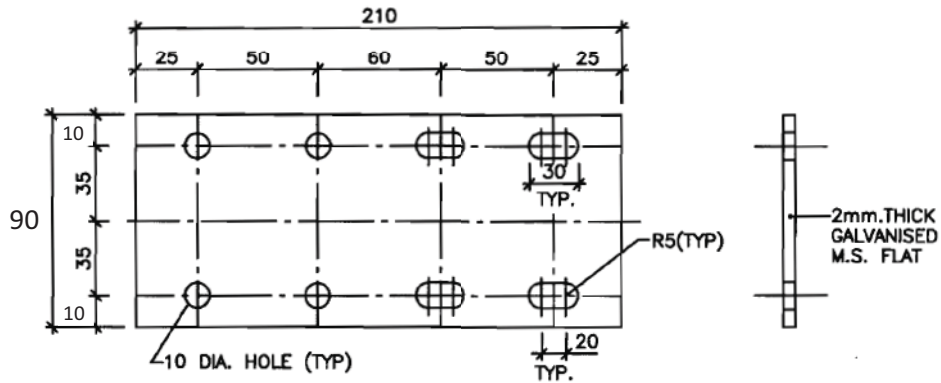
NOTE :-

1. ALL DIMENSIONS ARE IN MM.

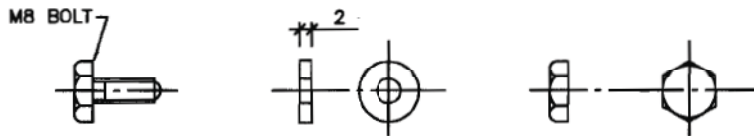
TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES



DWG. NO.
PE-V2-417-507-E012



SIDE COUPLER PLATE
(TWO COUPLER PLATE FOR EACH JOINT) ⚠



M8 BOLT, WASHER & NUT
(FOR CABLE TRAY JOINT)

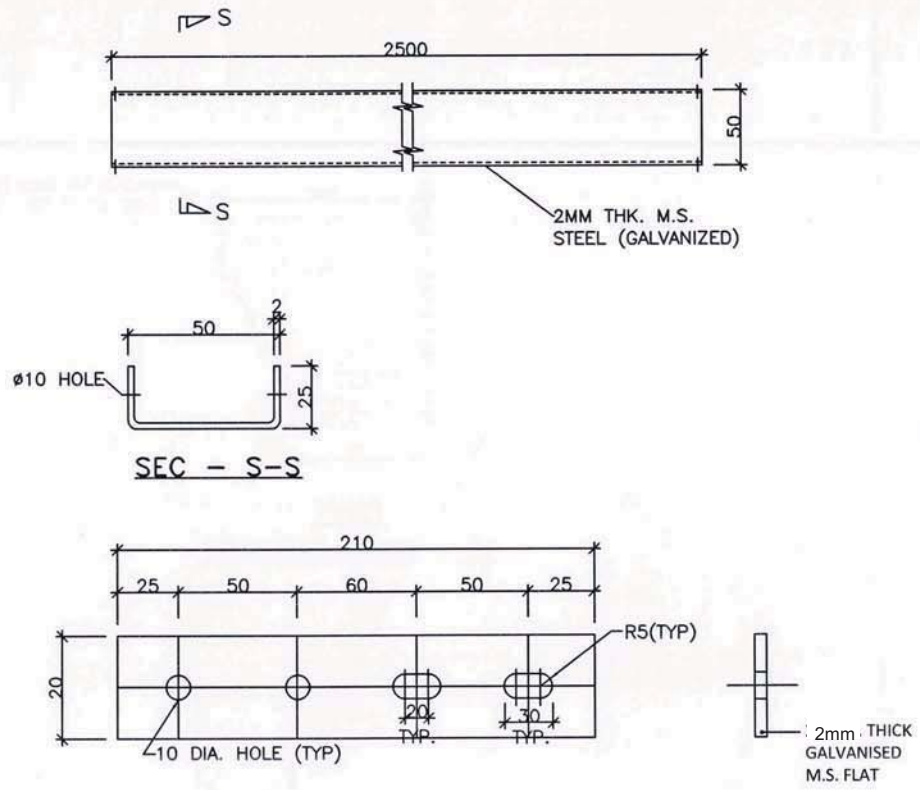
NOTE :-

1. ALL DIMENSIONS ARE IN MM.

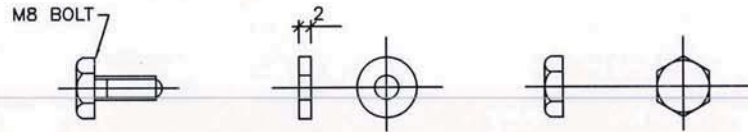
TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES



DWG. NO.
PE-V2-417-507-E012



SIDE COUPLER PLATE



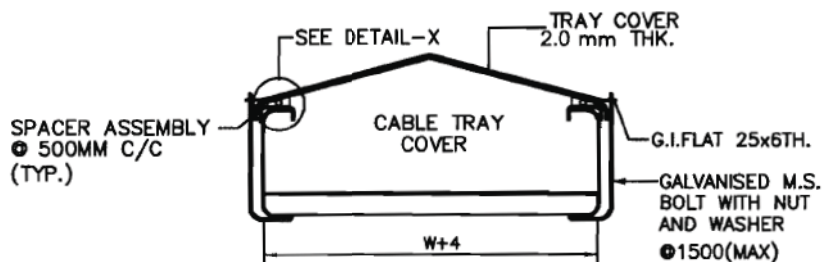
M8 BOLT, WASHER & NUT
(FOR CABLE TRAY JOINT)

CABLE TROUGH

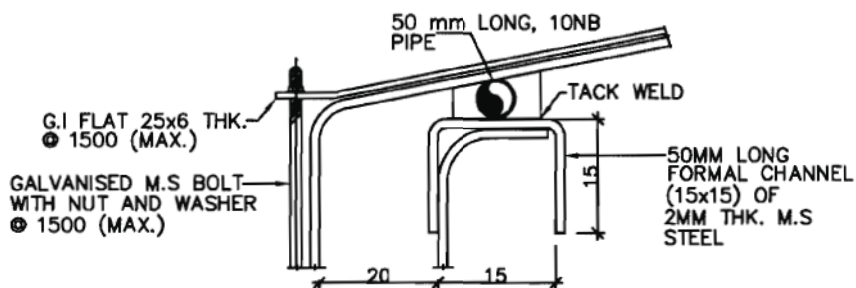


TITLE: TYPICAL DETAILS OF CABLE TRAY AND ACCESSORIES

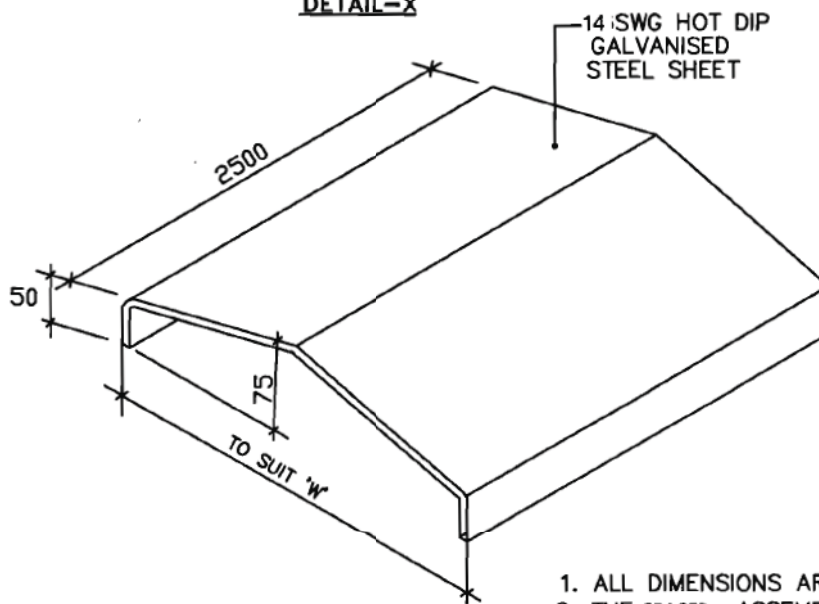
DWG. NO.
PE-V2-417-507-E012



COVER FIXING (TYP.)



DETAIL-X



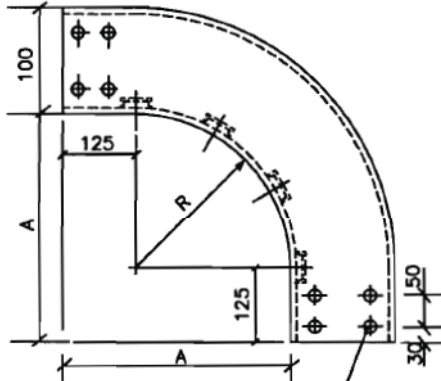
1. ALL DIMENSIONS ARE IN MM.
2. THE SPACER ASSEMBLY SHALL BE HOT DIP GALVANISED

CABLE TRAY COVER

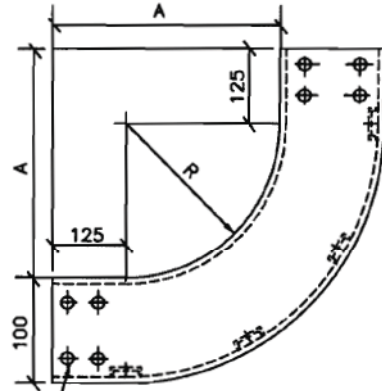


TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES

DWG. NO.
PE-V2-417-507-E012



ELEVATION
90° VERTICAL ELBOW
(OUTSIDE)

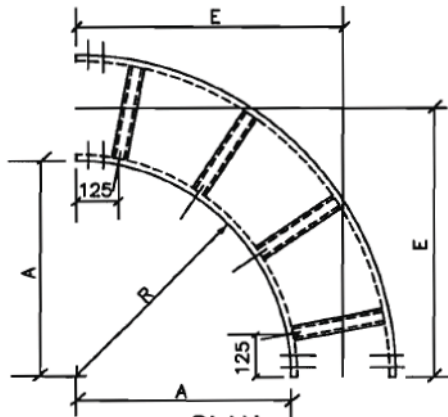


ELEVATION
90° VERTICAL ELBOW
(INSIDE)

4 NOS. 10 DIA. HOLES FOR COUPLER PLATE

VERTICAL ELBOW		
WIDTH (W)	RADIUS (R)	A
600	1050	1175
450	600	725
&		
300	450	575
150	300	425

HORIZONTAL ELBOW			
WIDTH (W)	RADIUS (R)	A	E
600	1050	1175	1475
	600	725	1025
	450	575	875
	300	425	725
450	1050	1175	1400
	600	725	950
	450	575	800
	300	425	650
300	1050	1175	1325
	600	725	875
	450	575	725
	300	425	575



PLAN
90° HORIZONTAL ELBOW

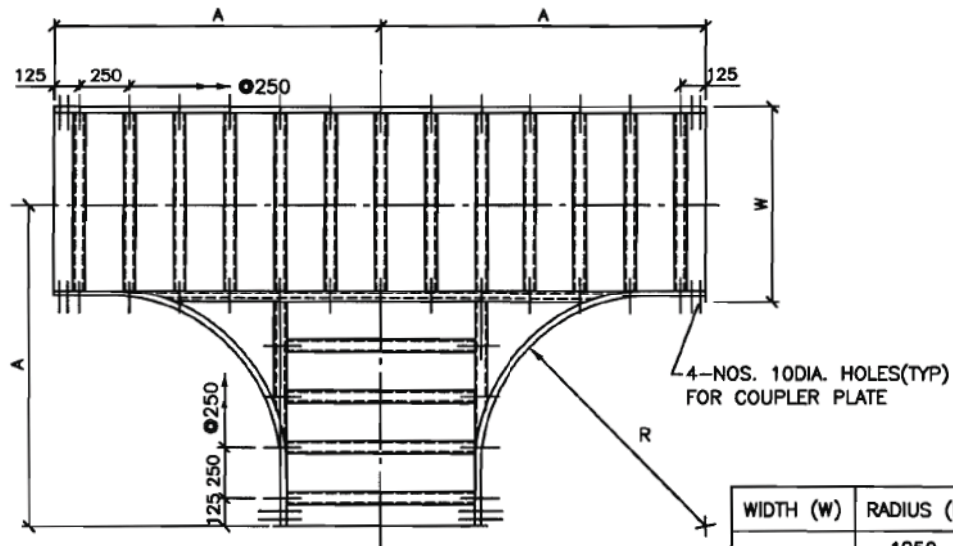
NOTES :-

1. ALL DIMENSIONS ARE IN MM.
2. FOR MULTITIER CABLE TRAY, THE BENDING RADIUS AT THE BENDS SHALL BE SAME FOR ALL TRAYS AND THIS RADIUS SHALL BE AS PER THE RECOMMENDED BENDING RADIUS OF LARGEST CABLE IN THE ROUTE.

TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES

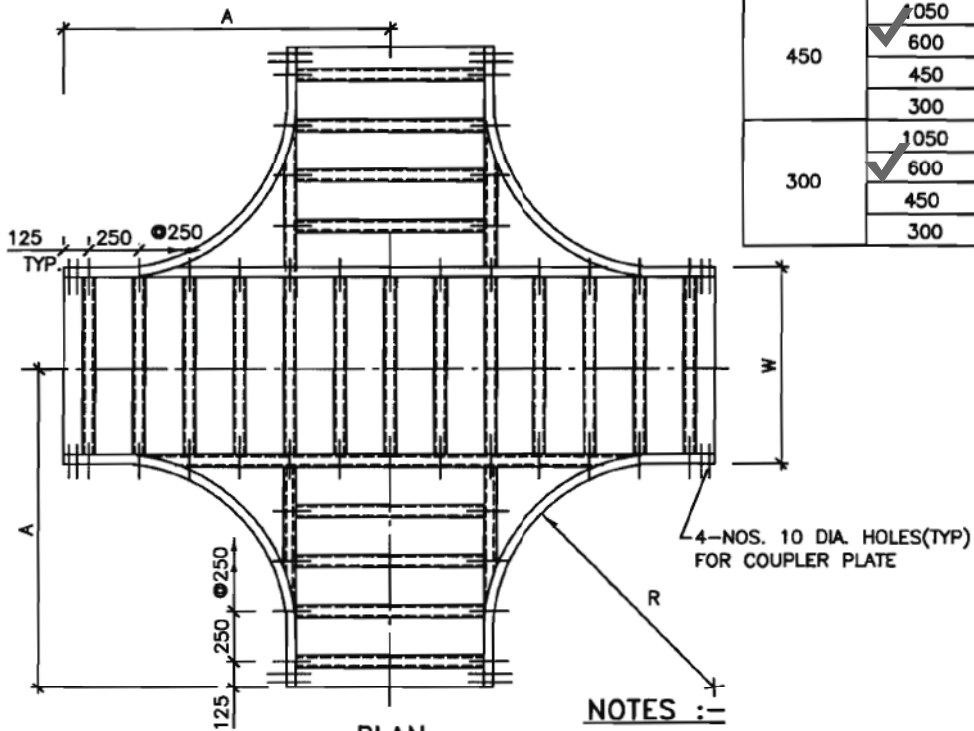


DWG. NO.
PE-V2-417-507-E012



**PLAN
HORIZONTAL TEE**

WIDTH (W)	RADIUS (R)	A
600	✓ 1050	1475
	✓ 600	1025
	450	875
	300	725
450	✓ 1050	1400
	✓ 600	950
	450	800
300	✓ 1050	1325
	✓ 600	875
	450	725
	300	575



**PLAN
HORIZONTAL CROSS**

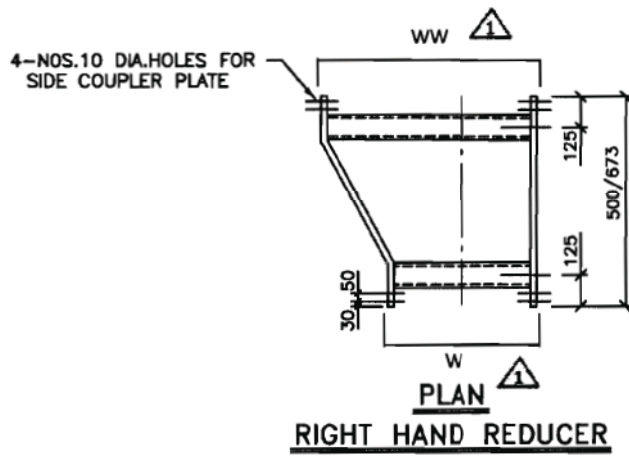
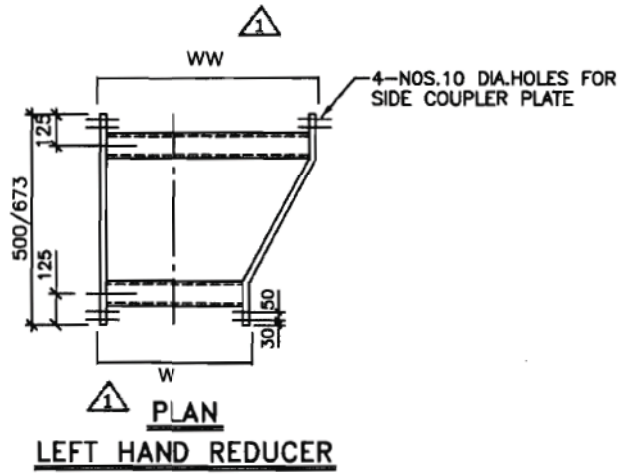
NOTES :-

1. ALL DIMENSIONS ARE IN MM.
2. FOR MULTITIER CABLE TRAY, THE BENDING RADIUS AT THE BENDS SHALL BE SAME FOR ALL TRAYS AND THIS RADIUS SHALL BE AS PER THE RECOMMENDED BENDING RADIUS OF LARGEST CABLE IN THE ROUTE.

TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES



DWG. NO.
PE-V2-417-507-E012



WIDTH	WW	600	600	450
	W	450	300	300

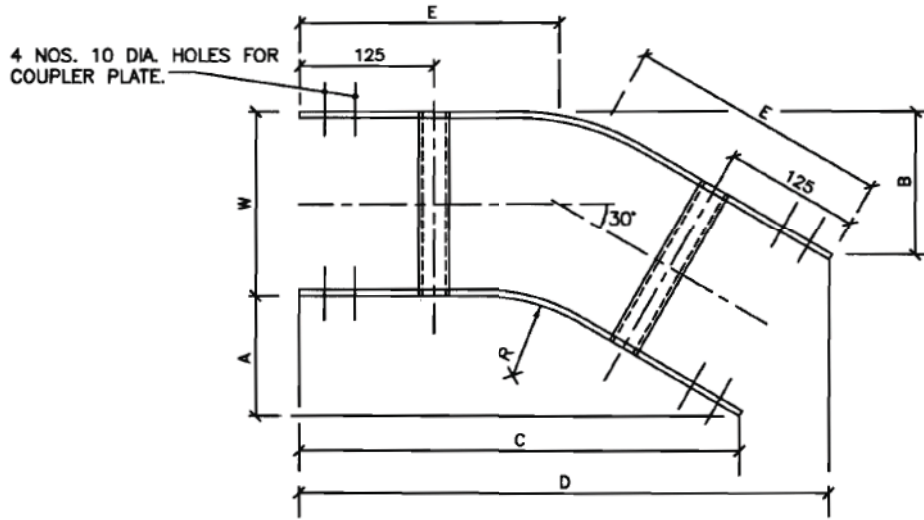
NOTE :-

1. ALL DIMENSIONS ARE IN MM.

TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES



DWG. NO.
PE-V2-417-507-E012



PLAN
30° HORIZONTAL ELBOW

WIDTH (W)	RADIUS (R)	A	B	C	D	E
600	1050	205	285	755	1055	485
	600	145	225	530	830	365
	450	125	205	455	755	325
	300	105	185	380	680	285
450	1050	205	265	755	980	465
	600	145	205	530	755	345
	450	125	185	455	680	305
	300	105	165	380	605	265
300	1050	205	245	755	905	445
	600	145	185	530	680	325
	450	125	165	455	605	285
	300	105	145	380	530	245

NOTE :-

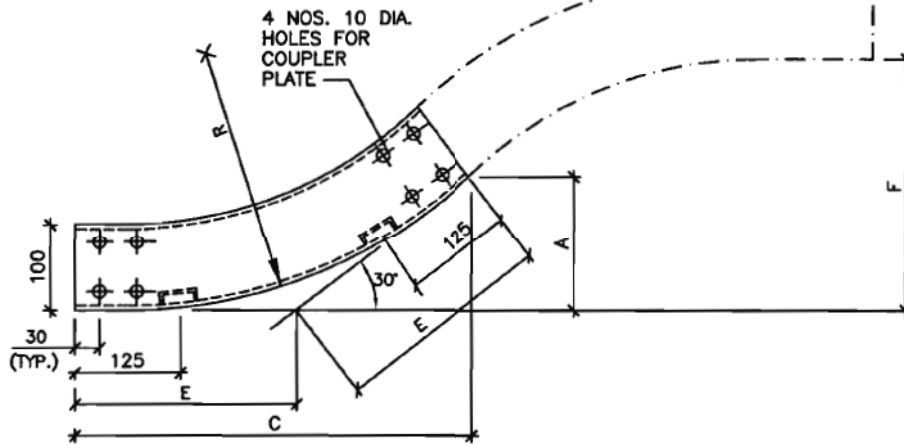
1. ALL DIMENSIONS ARE IN MM.

Note: These Drawings are not Applicable for PO

TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES

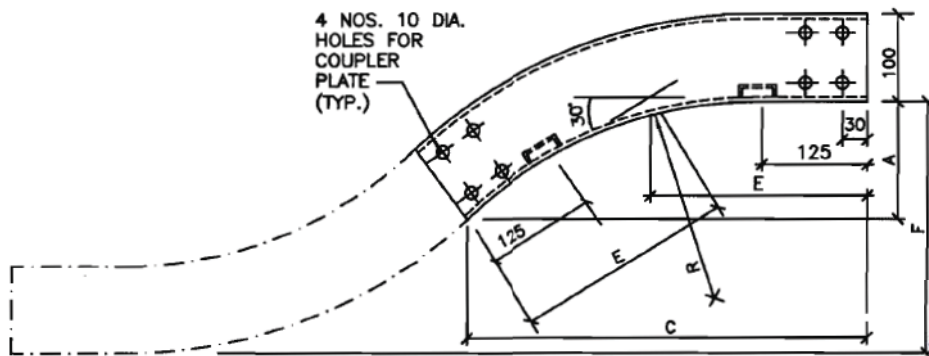


DWG. NO.
PE-V2-417-507-E012



ELEVATION
30° VERTICAL ELBOW (INSIDE)

WIDTH(W)	RADIUS(R)	A	C	E	F
600	1050	205	760	410	410
450	600	145	535	290	290
&	450	125	460	250	250
300	300	105	385	210	210



ELEVATION
30° VERTICAL ELBOW (OUTSIDE)

NOTE :-

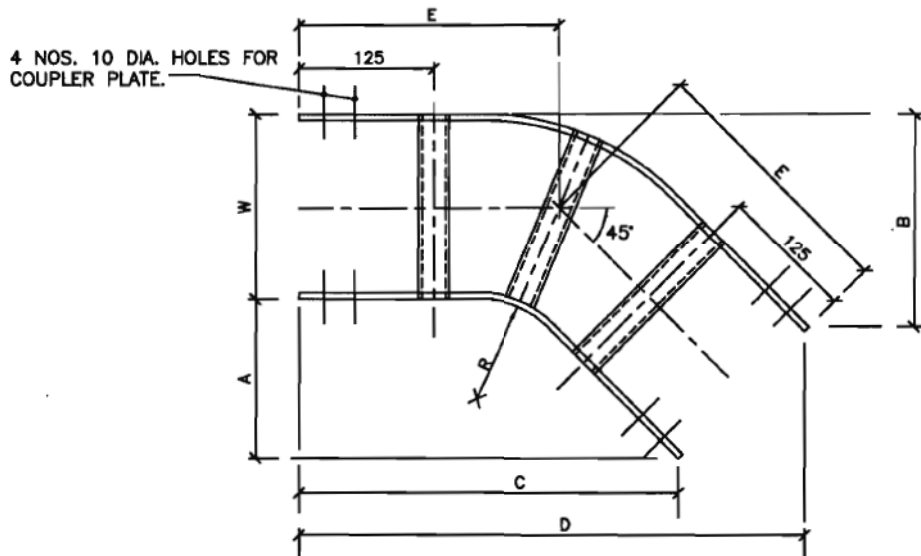
1. ALL DIMENSIONS ARE IN MM.

Note: These Drawings are not Applicable for PO

TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES



DWG. NO.
PE-V2-417-507-E012



PLAN
45° HORIZONTAL ELBOW

WIDTH (W)	RADIUS (R)	A	B	C	D	E
600	1050	395	570	955	1380	685
	600	265	440	640	1065	535
	450	220	395	530	955	470
	300	175	350	425	850	410
450	1050	395	530	955	1275	690
	600	265	395	640	955	500
	450	220	350	530	850	440
	300	175	310	425	745	390
300	1050	395	485	955	1165	655
	600	265	350	640	850	470
	450	220	310	530	745	410
	300	175	265	425	635	345

NOTE :-

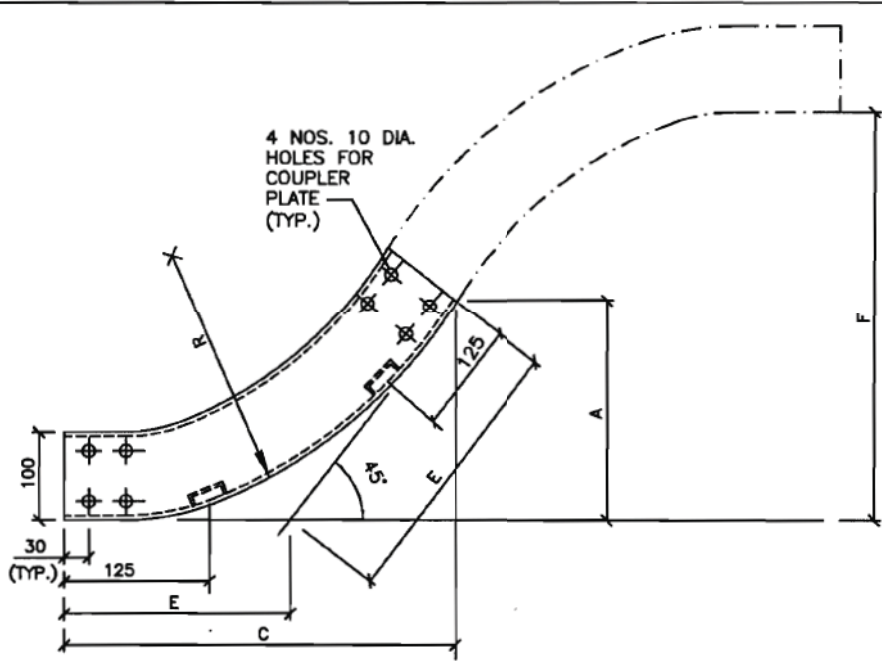
1. ALL DIMENSIONS ARE IN MM.

Note: These Drawings are not applicable for PO

TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES

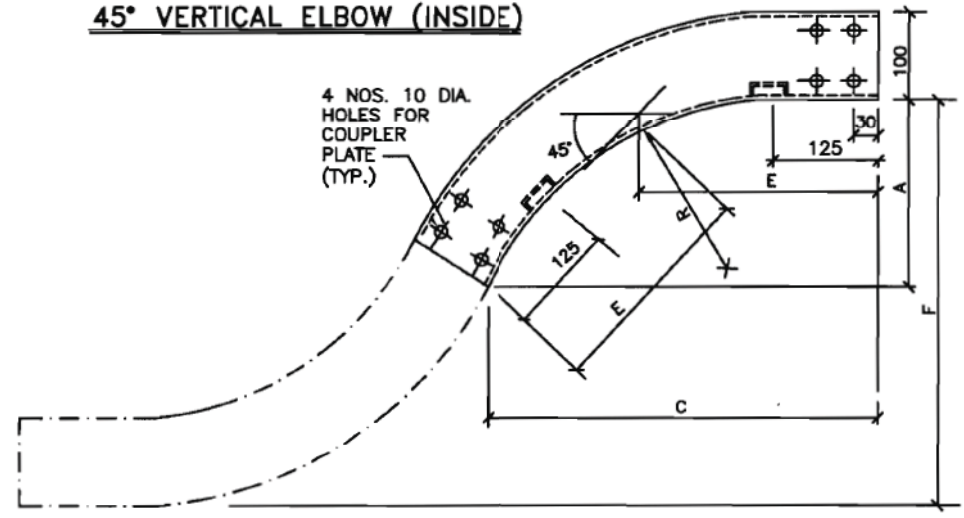


DWG. NO.
PE-V2-417-507-E012



ELEVATION

45° VERTICAL ELBOW (INSIDE)



ELEVATION

45° VERTICAL ELBOW (OUTSIDE)

WIDTH(W)	RADIUS(R)	A	C	E	F
600	1050	395	955	560	790
450	600	265	640	375	530
&	450	220	530	310	440
300	300	175	425	250	350

NOTE :-

1. ALL DIMENSIONS ARE IN MM.

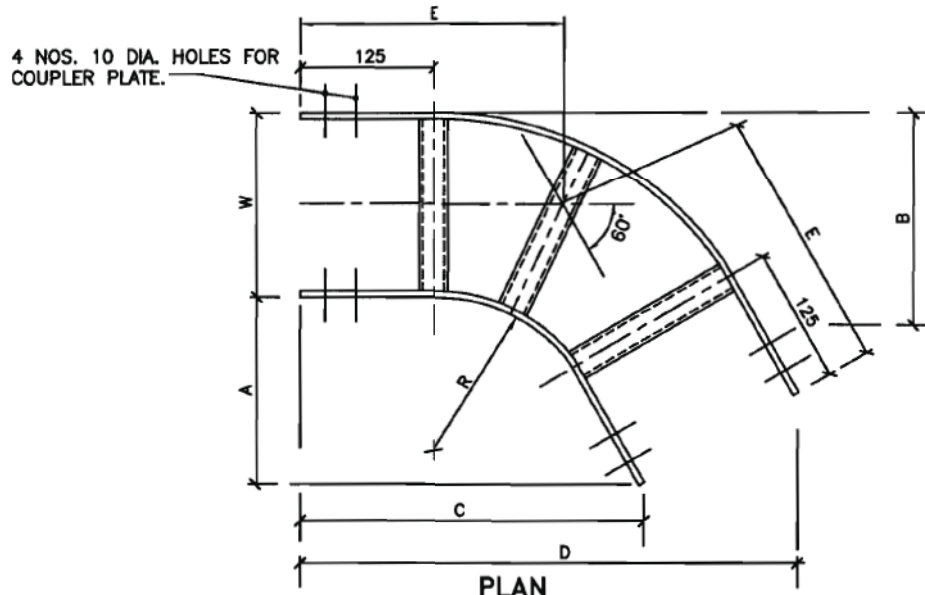
Note: These Drawings are not applicable for PO

TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES



DWG. NO.
PE-V2-417-507-E012





PLAN
60° HORIZONTAL ELBOW

WIDTH (W)	RADIUS (R)	A	B	C	D	E
600	1050	635	935	1095	1615	905
	600	410	710	705	1225	645
	450	335	635	575	1095	560
	300	250	550	450	965	470
450	1050	635	860	1095	1485	860
	600	410	635	705	1095	600
	450	335	550	575	965	515
	300	250	485	450	835	425
300	1050	635	785	1095	1355	815
	600	410	560	705	965	555
	450	335	485	575	835	470
	300	250	410	450	705	385

NOTE :-

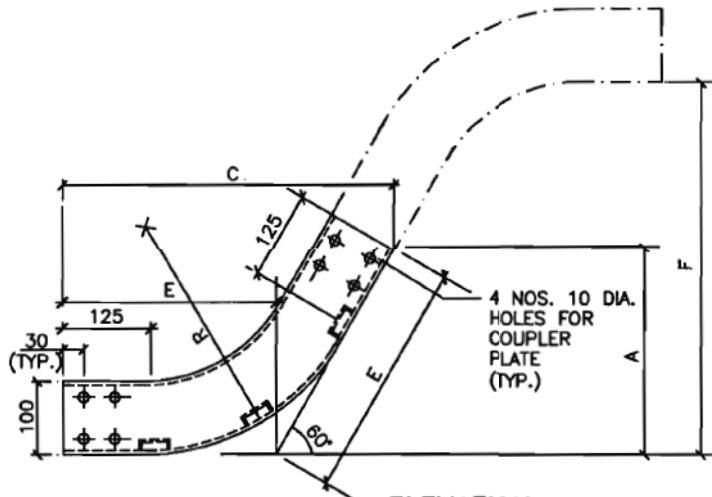
1. ALL DIMENSIONS ARE IN MM.

Note: These Drawings are Not Applicable for PO

TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES

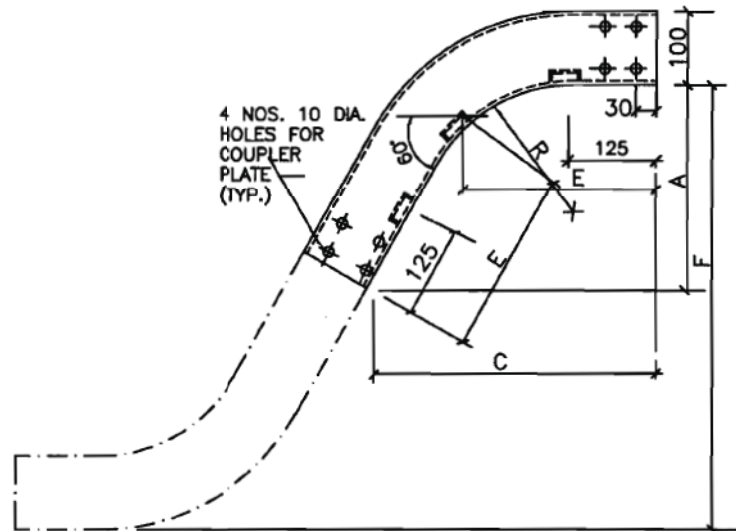


DWG. NO.
IPE-V2-417-507-E012



ELEVATION

60° VERTICAL ELBOW (INSIDE)



ELEVATION

60° VERTICAL ELBOW (OUTSIDE)

WIDTH(W)	RADIUS(R)	A	C	E	F
600	1050	635	1095	730	1270
450	600	410	705	470	820
&	450	335	575	385	670
300	300	260	450	300	520

NOTE :-

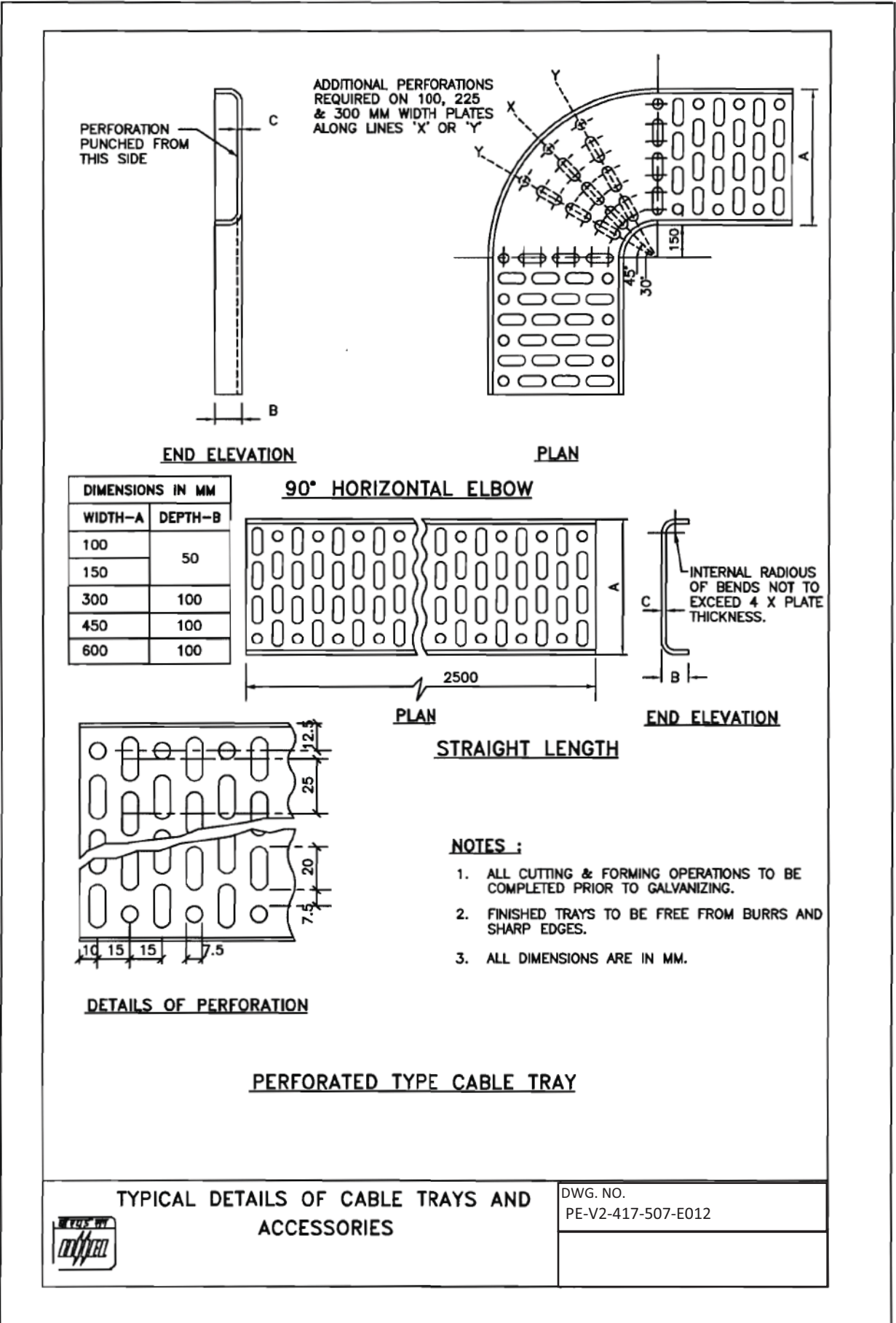
- 1. ALL DIMENSIONS ARE IN MM.

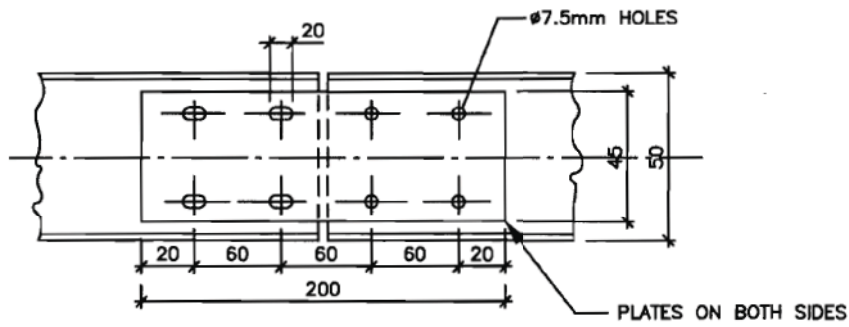
Note: These Drawings are not applicable for PO

TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES

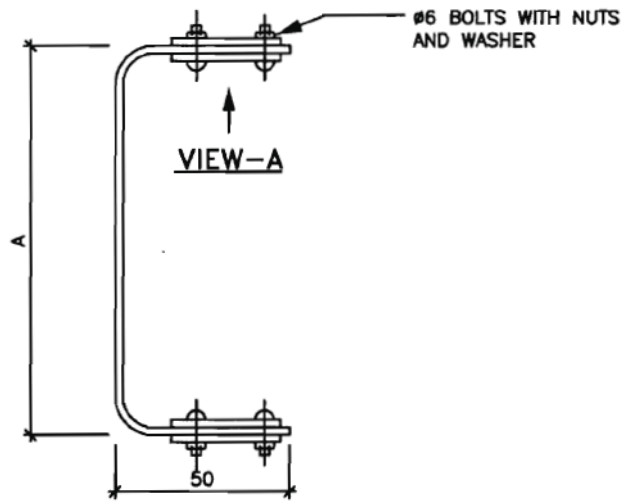


DWG. NO.
PE-V2-417-507-E012

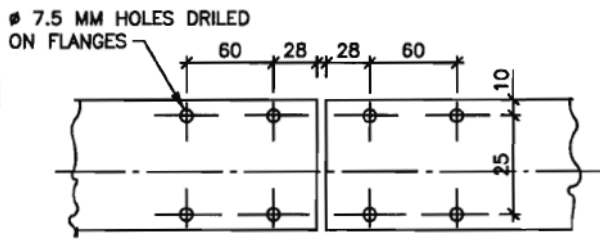




VIEW-A



END ELEVATION



COUPLING PLATE

**PERFORATED TRAY JOINING BY
COUPLING PLATES**

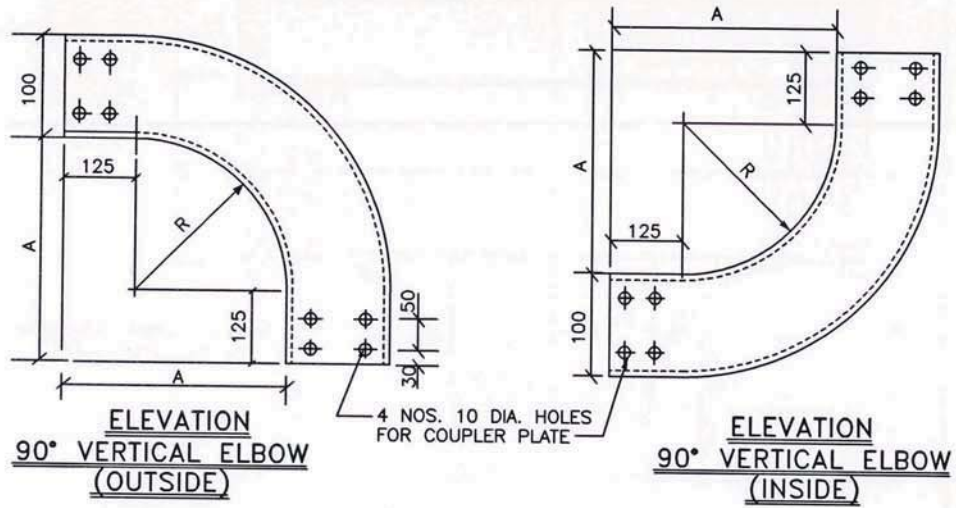
NOTES:-

1. COUPLING PLATES 2 MM THICK M.S.
2. ALL DIMENSIONS ARE IN MM.

**TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES**



DWG. NO.
PE-V2-417-507-E012



VERTICAL ELBOW		
WIDTH (W)	RADIUS (R)	A
600 450 & 300	600	725

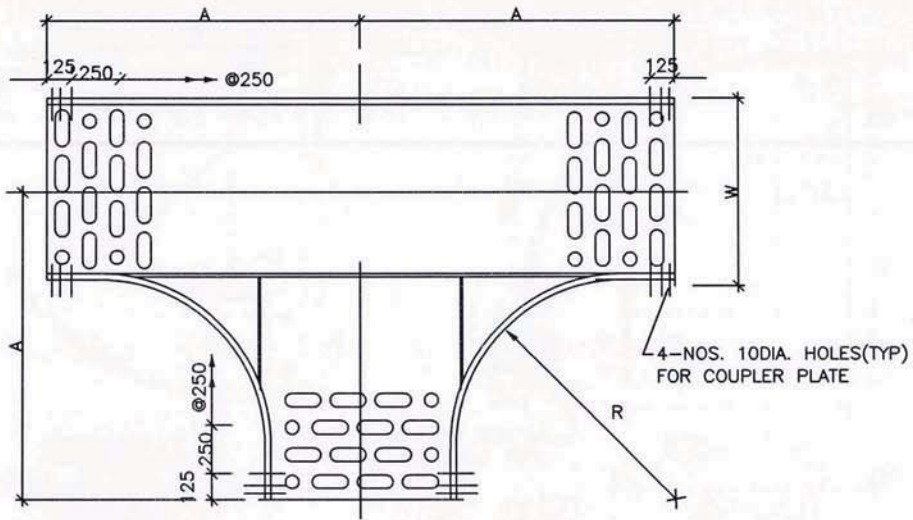
NOTES :-

1. ALL DIMENSIONS ARE IN MM.
2. FOR MULTITIER CABLE TRAY, THE BENDING RADIUS AT THE BENDS SHALL BE SAME FOR ALL TRAYS AND THIS RADIUS SHALL BE AS PER THE RECOMMENDED BENDING RADIUS OF LARGEST CABLE IN THE ROUTE



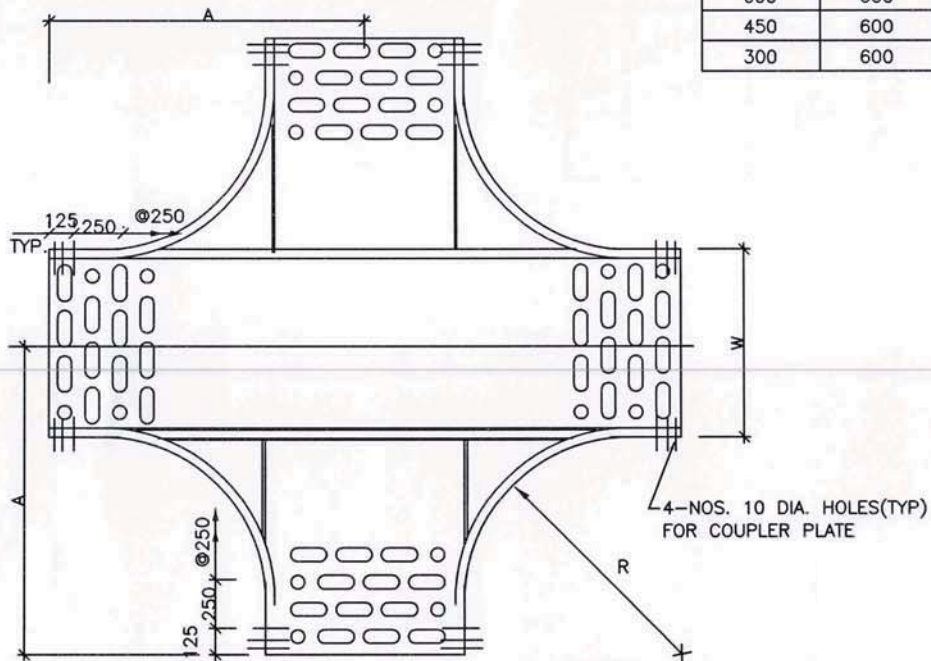
TITLE: TYPICAL DETAILS OF CABLE TRAY AND ACCESSORIES

DWG. NO.
PE-V2-417-507-E012



**PLAN
HORIZONTAL TEE**

WIDTH (W)	RADIUS (R)	A
600	600	1025
450	600	950
300	600	875



HORIZONTAL CROSS

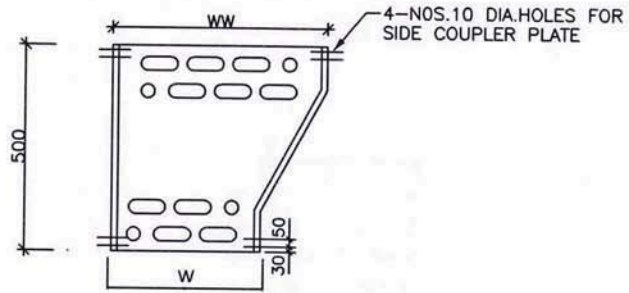
NOTES :-

1. ALL DIMENSIONS ARE IN MM.
2. FOR MULTITIER CABLE TRAY, THE BENDING RADIUS AT THE BENDS SHALL BE SAME FOR ALL TRAYS AND THIS RADIUS SHALL BE AS PER THE RECOMMENDED BENDING RADIUS OF LARGEST CABLE IN THE ROUTE.

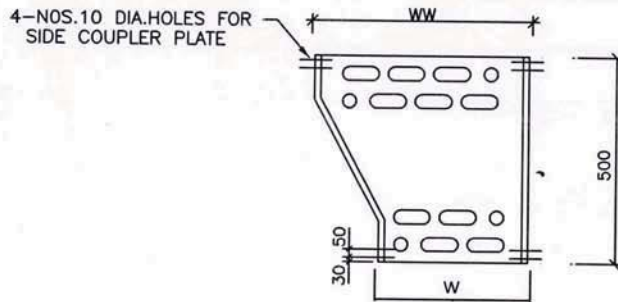


TITLE: TYPICAL DETAILS OF CABLE TRAY AND ACCESSORIES

**DWG. NO.
PE-V2-417-507-E012**



PLAN
LEFT HAND REDUCER



PLAN
RIGHT HAND REDUCER

WIDTH	WW	600	450	600
	W	300	300	450

NOTE :-



1. ALL DIMENSIONS ARE IN MM.



TITLE: TYPICAL DETAILS OF CABLE TRAY AND ACCESSORIES

DWG. NO.
PE-V2-417-507-E012

NOTES:-

1. THE LADDER AND PERFORATED TYPE CABLE TRAYS AND ACCESSORIES (INCLUDING SIDE RUNNERS OF LADDER TYPE CABLE TRAYS), SIDE COUPLER PLATE AND CABLE TRAY COVER SHALL BE MADE OF HOT DIP GALVANISED AS PER IS 1079. THICKNESS OF CABLE TRAYS & ACCESSORIES, SIDE COUPLER PLATE AND TRAY COVERS SHALL BE 2MM, 2MM AND 2.0 MM RESPECTIVELY. 
2. THE CABLE TRAYS ACCESSORIES AND TRAY COVERS SHALL BE HOT DIP AS PER IS 2629. GALVANIZATION SHALL BE UNIFORM & THICKNESS OF GALVANIZATION SHALL NOT BE LESS THAN 610 GRAMS/ SQ.MTR. ALSO ZINC DEPOSIT THICKNESS AT ANY POINT SHALL NOT BE LESS THAN 75 MICRONS.
3. FOR LADDER TYPE CABLE TRAYS AND ACCESSORIES, ALL RUNGS SHALL BE SLOTTED.
4. PERFORATED TRAYS SHALL BE FABRICATED OUT OF A SINGLE M.S. SHEET.
5. STANDARD TRAY ACCESSORIES SHALL BE WITH THE RADIUS INDICATED IN THIS DRAWING.
6. THE DIMENSIONS OF ALL BENDS, TEES, CROSSES, ETC. FOR PERFORATED CABLE TRAYS SHALL BE THE SAME AS FOR LADDER TYPE TRAY FITTINGS.
7. SIDE CHANNELS OF PERFORATED TRAY ACCESSORIES SHALL BE WELDED WITH THE PERFORATED SHEET AT INTERVALS OF 100mm.
8. LENGTH OF WELDING SHALL NOT BE LESS THAN 25mm.
9. ALL TRAY CORNERS SHALL BE SMOOTH AND FREE OF SHARP EDGES.
10. THE DEPTH, WIDTH AND LENGTH OF TRAYS SHALL BE WITHIN A TOLERANCE OF (+/-) 2 mm. THE THICKNESS TOLERANCE IS OF (+/-) 0.2 mm. AS PER IS:1852
11. TO FACILITATE ASSEMBLY, ALL ACCESSORIES AT ENDS SHALL HAVE 100mm STRAIGHT PORTION.
12. ALL NUTS, BOLTS, WASHERS ETC., SHALL BE HOT DIP GALVANISED AS PER IS:1367 PART XIII FOR SIZES 12 MM & ABOVE AND ELECTROPLATED/ZINC PASSIVATED FOR SIZES BELOW 12 MM.
13. ALL CUTTING & FORMING OPERATIONS SHALL BE COMPLETED PRIOR TO GALVANIZING.
14. FINISHED TRAYS SHALL BE FREE FROM BURRS AND SHARP EDGES.
15. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
16. TOP MOST CABLE TRAY OF A HORIZONTAL RUN AND FRONT CABLE TRAY OF A VERTICAL RUN IN ALL OUTDOOR AREAS SHALL BE PROVIDED WITH REMOVABLE TRAY COVER.
17. THE PORTION OF GALVANIZED STEEL, WHICH, IF REQUIRED, UNDERGOES ANY WELDING AT SITE, SHALL BE COATED WITH TWO COATS OF COLD GALVANIZING ANTI-CORROSIVE PAINT AFTER WELDING. EPOXY PAINT SHALL BE APPLIED IN CABLE TRAY COVERS IN CHEMICAL CORROSIVE AREA.
18. WIDTH OF CABLE TRAYS PROPOSED TO BE USED FOR THE PROJECT ARE AS UNDER:
 - A) LADDER TYPE: 600W, 450W, 300W, 150W.
 - B) PERFORATED TYPE: 600W, 450W, 300W, 150W, 100W
 - c) CABLE TROUGH 50W (FOR DETAIL REFER SHEET 3)
19. THE DEPTH OF 600W, 450W & 300W TRAYS & ACCESSORIES SHALL BE 100MM AND DEPTH OF 150W, 100W TRAY SHALL BE 50MM.
20. A 2.5 METER STRAIGHT SECTION OF EACH TYPE OF CABLE TRAY OF WIDTH 600mm, 450mm, 300mm &  150 mm SHALL BE SIMPLY SUPPORTED AT TWO ENDS. A UNIFORMLY DISTRIBUTED LOAD OF 100 kg PER METER SHALL BE APPLIED ALONG THE LENGTH OF TRAY. THE MAXIMUM DEFLECTION AT MID SPAN SHALL NOT EXCEED 7 mm.
21. Areas where corrosive chemicals are likely to be handled, cable trays and covers shall be epoxy painted.


 2



TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES

DWG. NO.
PE-V2-417-507-E012

(Handwritten signature/initials)

	YADADRI TPS (5X800 MW)	PE-PQ-417-507-E001
	PRE-QUALIFICATION REQUIREMENTS FOR CABLE TRAYS & ACCESSORIES	REVISION NO. 00 DATE 13/04/2023
	Page 1 of 2	


ITEMS: Cable trays & Accessories	
SCOPE: Supply: YES; Erection & Commissioning: NO;	
1	Vendor should have in-house fabrication & manufacturing facility.
2	Capability of manufacturing cable trays & accessories for 40 km per month.
3	Vendor has his own galvanization plant. OR Vendor should get galvanization of cable trays & accessories to be done from any of the BHEL-PEM approved galvanizers.
4	Manufactured & supplied at least 100 km of cable trays & accessories in one or more orders and at least 30 km in a single order.
5	Minimum two (2) nos. purchase orders for cable trays & accessories shall be submitted which should not be more than five (5) years old from date of techno-commercial bid opening for establishing continuity in business.

Notes (General points of PQR):

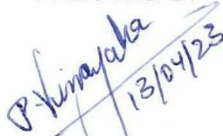



1. Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/ Indian subsidiaries shall be evaluated as follows:
 - a. If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.
 - b. If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.
 - c. If bidder happens to bid jointly with their partner, then credentials of both the partners will be considered for meeting PQR as per distribution of the work. In all such cases, lead bidder as specified in bid documents shall be responsible for overall execution of the contract and all guarantee/ warranty.
 - d. If bidder happens to be the having valid collaboration agreement/ MOU/ licensing agreement with some other company, then the credentials of collaborator/ MOU partner/ licensing company can also be considered for meeting PQR.

Note: If bidder(s) qualifies on the basis of credentials of his principal/ JV partner/ Collaborator/ joint bidder etc., then the principal/ JV partner/ Collaborator/ MOU partner/ joint bidder shall be responsible for overall design vetting and warranty/ guarantee of the package. The scope matrix clearly defining their respective roles including design vetting, manufacturing of critical component, E&C etc. etc. and warranty/ guarantee shall be submitted along with the offer.

<p>PREPARED BY</p> <p style="font-size: 1.2em; font-family: cursive;">P. Vinayaka</p> <p style="font-size: 1.2em; font-family: cursive;">13/04/23</p> <p>PRATIK VINAYAKA, MANAGER</p>	<p>CHECKED BY</p> <p style="font-size: 1.2em; font-family: cursive;">H. Jajware</p> <p style="font-size: 1.2em; font-family: cursive;">13.04.23</p> <p>N N JAJWARE, SR. MANAGER</p>	<p>REVIEWED BY</p> <p style="font-size: 1.2em; font-family: cursive;">P. Dutt</p> <p style="font-size: 1.2em; font-family: cursive;">13/4/2023</p> <p>PRAVEEN DUTTA, AGM</p>	<p>APPROVED BY</p> <p style="font-size: 1.2em; font-family: cursive;">D. Rath</p> <p style="font-size: 1.2em; font-family: cursive;">13/4/23</p> <p>DEBASISA RATH, AGM (DH)</p>
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2. Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of the project.
3. Consideration of offer shall be subject to customer's approval of bidders, if applicable
4. 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.
5. 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.
6. 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  PRATIK VINAYAKA, MANAGER	CHECKED BY  N N JAJWARE, SR. MANAGER	REVIEWED BY  PRAVEEN DUTTA, AGM	APPROVED BY  DEBASISA RATH, AGM (DH)
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	<u>Price Variation Formulae</u>	ANNEXURE-B
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Prices shall be variable as per following PVC formulae: -

Cable Trays & Accessories	
$P = P_o/100 (20 + 58 (SBIR/SBIR_o) + 7 (Zn/Zn_o) + 15 (W/ W_o))$	Indices to be taken from IEEMA Circular (IEEMA(PVC)/TLA&H(R-3)/_/_) for the applicable month.

Wherein,

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

P_o = Price quoted/confirmed.

SBIR_o = 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.

Zn_o = 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.

W_o = 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.

YADADRI TPS (5X800 MW)

(BOQ-CUM-PRICE SCHEDULE FOR CABLE TRAYS & ACCESSORIES)

SR. NO.	ITEM CODE	ITEM DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT EX-WORKS PRICE (INR)	TOTAL EX-WORKS PRICE (DULY PACKED) (INR)	FREIGHT CHARGES% of TOTAL EX WORKS (INR)	TOTAL PRICES (Total Ex works + Freight) (INR)	APPLICABLE GST RATE% ON(TOTAL EX WORKS + FREIGHT) (INR)	TOTAL PRICE F.O.R SITE (INR)
1.0		HOT DIP GALVANISED LADDER TYPE CABLE TRAY								
a)	507-21101-A	CABLE TRAY 2 MM THICK- LADDER TYPE 150W	MTR	18,150						
b)	507-21103-A	CABLE TRAY 2 MM THICK- LADDER TYPE 450W	MTR	4,600						
c)	507-21104-A	CABLE TRAY 2 MM THICK- LADDER TYPE 600W	MTR	60,600						
2.0		HOT DIP GALVANISED PERFORATED TYPE CABLE TRAY								
a)	507-21109-A	CABLE TRAY 2 MM THICK- PERFORATED TYPE 150W	MTR	24,250						
b)	507-21110-A	CABLE TRAY 2 MM THICK- PERFORATED TYPE 300W	MTR	8,050						
c)	507-21111-A	CABLE TRAY 2 MM THICK- PERFORATED TYPE 450W	MTR	7,050						
d)	507-21112-A	CABLE TRAY 2 MM THICK- PERFORATED TYPE 600W	MTR	19,500						
3.0		HOT DIP GALVANISED CABLE TRAY ACCESSORIES								
3.1		LADDER TYPE HORIZONTAL 90 DEG. BEND-600mm RADIUS								
a)	507-21020-A	LAD HOR 90DEG BEND 2 MM THICK 600 RAD 150W	NOS	488						
b)	507-21117-A	LAD HOR 90DEG BEND 2 MM THICK 600 RAD 300W	NOS	145						
c)	507-21118-A	LAD HOR 90DEG BEND 2 MM THICK 600 RAD 450W	NOS	8						
d)	507-21119-A	LAD HOR 90DEG BEND 2 MM THICK 600 RAD 600W	NOS	2,025						
3.2		LADDER TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (INSIDE)								
a)	507-21319-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 150W	NOS	190						
b)	507-21123-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 300W	NOS	310						
c)	507-21124-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 450W	NOS	6						
d)	507-21125-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 600W	NOS	265						
3.3		LADDER TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (OUTSIDE)								
a)	507-21320-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 150W	NOS	132						
b)	507-21129-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 300W	NOS	230						
c)	507-21130-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 450W	NOS	4						
d)	507-21131-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 600W	NOS	290						
3.4		LADDER TYPE TEES-600mm RADIUS								
a)	507-21135-A	LAD TEES 600MM RADIUS 2 MM THICK 300W	NOS	18						
b)	507-21136-A	LAD TEES 600MM RADIUS 2 MM THICK 450W	NOS	10						
c)	507-21137-A	LAD TEES 600MM RADIUS 2 MM THICK 600W	NOS	180						
3.5		LADDER TYPE REDUCERS								
a)	507-21147-A	LAD REDUCER (50% LHS/RHS) 2 MM THICK 450-300W	NOS	4						

YADADRI TPS (5X800 MW)

(BOQ-CUM-PRICE SCHEDULE FOR CABLE TRAYS & ACCESSORIES)

SR. NO.	ITEM CODE	ITEM DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT EX-WORKS PRICE (INR)	TOTAL EX-WORKS PRICE (DULY PACKED) (INR)	FREIGHT CHARGES% of TOTAL EX WORKS (INR)	TOTAL PRICES (Total Ex works + Freight) (INR)	APPLICABLE GST RATE% ON(TOTAL EX WORKS + FREIGHT) (INR)	TOTAL PRICE F.O.R SITE (INR)
a)	507-21177-A	PER CROSS 600R 2MM THK 300W	NOS	2						
b)	507-21178-A	PER CROSS 600R 2MM THK 450W	NOS	2						
c)	507-21179-A	PER CROSS 600R 2MM THK 600W	NOS	10						
3.13		HOT DIP GALVANISED CABLE TRAY COVER COMPLETE WITH FORMED CHANNEL, PIPE, GI FLAT, BOLTS WITH NUTS & WASHERS & FIXING HARDWARES ETC. (2mm THICK GALVANISED MS SHEET)								
a)	507-21194-A	COVER 2.0MM THK- NON PERFORATED GALV MS 300W	MTR	700						
b)	507-21196-A	COVER 2.0MM THK- NON PERFORATED GALV MS 600W	MTR	1,625						
3.14										
a)	507-21939-A	COUPLER PLATE	NOS	2,38,896						
b)	507-21940-A	NUT	NOS	10,01,088						
c)	507-21941-A	BOLTS	NOS	10,01,088						
d)	507-21942-A	WASHER	NOS	20,02,176						

NOTES:

- 1.Total Quantity indicated above shall be known as Order Quantities. The total quantity variation shall be as per NIT.
- 2.The additional quantities (against quantity var.) may be released for manufacturing in additional lot.
- 3.The unit prices shall apply for adjustment of variation in quantity.