

Ref. Enquiry No.: PE/PG/RTC/E-6476/2020

Dated: 15.07.2020

**TENDER ENQUIRY THROUGH E-PROCUREMENT
(CONDITIONAL ENQUIRY)**

SUBJECT: TENDER ENQUIRY FOR FRAMEWORK AGREEMENT (RATE CONTRACT) OF CABLE TRAYS & ACCESSORIES AS PER TECHNICAL SPECIFICATION NO. PE-RC-998-507-E021 REVISION: 00

OUR REF: TENDER ENQUIRY NO: PE/PG/RTC/E-6476/2020

DUE DATE – 27.07.2020, BY 10.00AM

Dear Sir/ Ma'am,

We are pleased to invite your offer for subject package in two parts strictly as per Clause-2.0 of “Instructions to Bidders” of **GCC Rev 07**. Please upload your best quotation/ offer on <https://bhel.abcprocure.com> for the requirement strictly as per schedule of price format before above mentioned due date & time. The details of the tender enquiry are as mentioned below:

Sl. No	Description for which (Framework Agreement) Rate Contract is desired	Tentative Quantity	Delivery required
1	CABLE TRAYS & ACCESSORIES - Refer Technical specification no PE-RC-998-507-E021 REVISION: 00, REV 00 for detailed description.	As per BOQ cum price schedule in Annexure-I, IA) cumulative for the Prospective Projects as per Annexure-IV	“Within Four (04) months from date of CAT-1 approval of Primary drawing/documents, subjected to drawing/document submission/re-submission schedule as stipulated, in case of any delay in submission/re-submission of Primary drawing/documents, then same shall be reduced from the given delivery period. Delay in BHEL's comments/approval beyond 18 days shall also be considered for delay analysis. Please refer clause no 4 of Volume-II Section-I of Technical Specification no- PE-RC-998-507-E021.”

Your best quotation/offer for the above requirement, in line with our terms and conditions, should be submitted online via e-procurement system. It shall be the responsibility of the bidder to ensure that the Tender is submitted on or before the due date by 10.am. Part-I bids shall be opened at 11.00 am on due date through e-procurement Portal.

Detailed Tender documents can be downloaded from the following websites: -

- a) www.eprocure.gov.in b) <https://bhel.abcprocure.com> c) www.bhel.com d) www.bhelpem.com

Tender submission through e-procurement portal- Bidders may go through the Sellers' manual & Help documents provided on E-Procurement Portal website (<https://bhel.abcprocure.com>).

E-procurement service Provider details:

M/s E-Procurement Technologies Limited, Ahmedabad

B705. Wall Street II, Opp. Orient Club, Near Gujrat college, Ellis Bridge, Ahmedabad, PIN 380 006.

Please get in touch with our service provider at the earliest for required support. The contact details of the service provider are given at: <https://bhel.abcprocure.com/EPROC/contactus>

Note: -

1. Please note that Part Supplies offered for tender BOQ shall disqualify the bidder's offer.
2. Documents and Credential as per Technical & Financial PQR, Techno Commercial Bids and Price Bids should be uploaded on the e-procurement portal.
3. Bidders to ensure that Third party/customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document/certificate issuing authority such as name & designation of Issuing Authority and its organisation contact number and email Id etc. In case the same found not available, Purchaser has right to reject such document from evaluation.
4. “This item/Package/System falls under the list of items defined in Para 3 of Ministry of Finance guideline datedt.20-09-2016 (procurement of items related to public safety, health, critical security operations and equipment's, etc.) & hence criteria of prior experience/turnover shall be same for all the bidders including start up/MSME”.

Please refer GCC Rev-07 which is available on www.bhelpem.com. You are requested to kindly download the same.

MR N C SHARMA
DY MANAGER/CMM
BHEL/PS-PEM
POWER PROJECT ENGINEERING INSTITUTE,
PLOT NO. 25, SECTOR - 16A, NOIDA (UP)
(OFF) 0120-4213591, 9911170053

Regd. Office:
BHEL House
Siri Fort
New Delhi-110049

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TERMS AND CONDITIONS

1. This tender is being issued by BHEL PEM for Framework Agreement (Rate Contract) of Cable Trays & Accessories required at various BHEL project sites on behalf of various BHEL units. All bidders to note the following –
 - a) As and when requirement arises, the concerned unit of BHEL will place order directly on the supplier against the Framework Agreement (Rate Contract).
 - b) The drawings/ documents submission & approval, submission of BG, submission of invoices, processing and release of payment after supply of material shall be dealt as per Framework Agreement (Rate Contract) contract terms and shall be directly done with BHEL unit which has placed purchase order noted at sl.no. (a) above.
2. Bidders to note that their bid shall be conditional, subject to qualify PQR (technical and financial) & registration in PEM for subject package before price bid opening.
3. **Framework Agreement (Rate contract), on firm price basis, will be done for 2 years from placement of Framework Agreement (Rate contract) PO with a provision for further extension after review on mutual consent.**
4. **Framework Agreement (Rate Contract) will be finalized on total lump sum basis.**
5. **Framework Agreement (Rate contract) will be done with 3 vendors in ratio of 50:30:20 value wise at L1 FOR site price (Ex-works + freight) for this package. Splitting of Framework Agreement (Rate contract) among 3 vendors may be changed during project ordering process if any vendor in Framework Agreement (Rate Contract) is not approved by customer (i.e. BHEL may place order on any of the vendor in Framework Agreement (Rate Contract) up to total applicable Framework Agreement (Rate Contract) value in case of non-availability of customer approval for other vendor in Framework Agreement (Rate Contract)). However, order for a project shall not be split.**
6. L1 Rates shall be counter offered to all bidders who participated in Price Bid Opening/RA for 30% & 20% value and in case acceptance of counter offer received from more than one vendor then **acceptance shall be considered as per FINAL Price Bid Opening / Reverse Auction Ranking (as applicable)**. If none accepts L1 rates, RC shall be done with L1 vendor for 100% value. In case only one vendor accepts the L1 rates, RC shall be done with 2 vendors in ratio of 70:30 RC value.
7. Following clause to be mentioned in the NIT in line with PPP-MII circular Public Procurement (preference to make in India), order 2017 Rev dated-04.06.2020:

“For this procurement, the local content to categorize a supplier as a Class I local supplier / Class II local Supplier / Non Local supplier, is as defined in Public Procurement (Preference to Make in India) Order dated 04.06.2020. In case of subsequent orders issued by the nodal ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before finalization of PO against this NIT. It is clarified that only Class I local supplier is eligible for Purchase Preference as per the stipulations laid down in the Public Procurement (Preference to Make in India) Order dated 04.06.2020. ”

 - Min. local content shall be as defined in the para 5 and 2 of the PPP-MII order No. P-45021/2/2017-PP (BE-II) dtd 04/06/20.
 - Margin of purchase preference shall be as given in the para 6 of PPP-MII order No. P-45021/2/2017-PP (BE-II) dtd 04/06/20.
 - Procedure for preference to Make in India shall be as given at Para 3A of PPP-MII order No. P-45021/2/2017-PP (BE-II) dtd 04/06/20 as applicable for case where the tendered package is divisible.
 - It is to note that this is not a Global Tender.

In case L1 bid is not from a Class-I local supplier and Class-I local suppliers found within the margin of purchase preference then further counter-offering for 50:30:20 as mentioned at point no. 5 & 6 shall not be applicable.

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However, if L1 bid is from Class-I local supplier or Class-I local supplier(s) is/are not in the range of margin of purchase preference then further counter-offering for 50:30:20 shall be applicable as mentioned at point no. 5 & 6. Vendors to note that above Make in India clause will supersede clause no 26 of "Instruction to Bidders" of GCC Rev 07.

8. Following shall be made part of NIT regarding verification of local content-

The supplier at the time of tender, bidding or solicitation shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) that the item offered meets the minimum local content, in accordance with para 9 (b) of PP-MII order revision dated-04.06.2020.

9. Bidders to note the following: -

- i. Tender Evaluation - Evaluation will be done on overall L1 (Total Cost to BHEL excluding GST) basis with necessary loading as applicable i.e. Evaluation will be on Ex Works + Freight basis for this tender.
- ii. In the course of evaluation, if more than one bidder happens to occupy L-1 status, effective L-1 will be decided by soliciting discounts from the respective L-1 bidders. In case more than one bidder happens to occupy the L-1 status even after soliciting discounts, the L-1 bidder shall be decided by a toss / draw of lots, in the presence of the respective L-1 bidder(s) or their representative(s). Ranking will be done accordingly. BHEL's decision in such situations shall be final and binding.
- iii. **Bidder to give single % of freight charges considering anywhere in India in the freight column. Bidders have to give same % of freight for each line item.**
- iv. Bidders to mention applicable GST rate on (total Ex. works + freight) in the specified cells of price schedule on price form at e-procurement portal. However, may please note that GST shall not be considered in evaluation.
- v. Though evaluation is on Ex Works + Freight, but there is % allocation weightage against BOQ quantity of each item which shall be used for arriving at price break up. Bidders need to give only their total ex works price for given BOQ at the specific cells that has been kept opened in the price schedule available in the e-procurement portal (Grand Total ex works price). Price mentioned anywhere else in BOQ or price uploaded anywhere else in the e-procurement portal shall not be taken in cognizance.
- vi. Rest of the prices shall be derived by BHEL in line with allocation fixed for each item. There is formula applied in price schedule form available in e-procurement portal. As soon as bidder fills the cells for Total Ex works, freight percentage and GST percentage, rest values for e.g. unit ex works – item wise, total ex works – item wise, FOR site price – item wise will filled automatically.
- vii. For better clarity to the bidders where value is to be filled is kept open in price form at e-procurement portal and for other columns it will be locked which shall be derived by BHEL as per allocation fixed against each item.
- viii. HSN Code has been mentioned in Price Schedule.
- ix. Incomplete offer shall be summarily rejected.
- x. **PRE-QUALIFICATION REQUIREMENT: -**
Bidders is requested to fill up the details in "TECHNICAL AND FINANCIAL PRE-QUALIFYING REQUIREMENT" as per the conditions mentioned in the PQR (technical and financial) and also to submit the credentials. Bids of only those bidders shall be evaluated who meet the Technical & Financial pre-qualifying requirements (if applicable). **Bidders to ensure that Third party/customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document/certificate issuing authority such as name & designation of Issuing Authority and its organisation contact number and email Id etc. In case the same found not available, Purchaser has right to reject such document from evaluation.**

**TENDER ENQUIRY THROUGH E-PROCUREMENT
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"This item/Package/System falls under the list of items defined in Para 3 of Ministry of Finance guideline dated 20-09-2016 (procurement of items related to public safety, health, critical security operations and equipment's, etc.) & hence criteria of prior experience/turnover shall be same for all the bidders including start up/MSME".

- xi. Bidders to note that their bid shall be conditional **subject to qualify PQR (Technical & Financial)** by registered vendors & non-registered vendors have to qualify PQR (technical & financial) & get registered with PEM for the package **before price bid opening.**
For registration in PEM "Bidders needs to apply & get registered for subject package with PEM before P-2 (price bid opening) & hence you need to apply online for registration on PEM web portal & have to enclose acknowledgement with this effect with the bid documents else your bid may not be considered for evaluation"
- xii. This enquiry is subject to Conditions/ limits if any imposed in PMD / Vendor registration.
- xiii. Refer Annexure I for tentative quantity of Cable Trays & Acc, required for prospective projects. Project list is indicative only, BHEL may ask for delivery anywhere in India for any of the project added in the prospective project/ existing projects during Framework Agreement (Rate Contract) period. No minimum quantity is guaranteed by BHEL.
- xiv. Quantity variation shall be +30%. Bidders to note that the quantities indicated in the tender are tentative quantities. No minimum quantity is guaranteed by BHEL.
- xv. CIF allocation is not applicable for this tender. Bidder to quote accordingly.
- xvi. Tenderers must enclose the Quality Plan in the prescribed format, for approval. Equipment will be dispatched only after Purchaser's / Owner's inspection of the hold points specified in the approved Quality Plan and issue of Material Dispatch Clearance Certificate (MDCC).
- xvii. In case of joint bidding, bidders to furnish scope matrix which should be clearly defined between them along with the offer for the complete scope.
- xviii. **Integrity pact is applicable for this tender-**
IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

Sl No.	IEM	Phone & Email
1.	Shri Arun Chandra Verma, IPS (Retd.)	acverma1@gmail.com
2.	Shri Virendra Bahadur Singh, IPS (Retd.)	vbsinghips@gmail.com

The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this pact would be a preliminary qualification. (Refer Annexure-IX for Integrity pact).

Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to the any of the IEMs mentioned in the NIT. All correspondence with the IEMs shall be done through email only.

"No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department officials whose contact details are provided above in NIT".

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OTHER TERMS AND CONDITIONS

1. Procurement of the subject package shall be done through e-procurement
2. Offers should be uploaded in two parts online at <https://bhel.abcpocure.com> in as follows:
 - a) Part-I Bid: - Documents and Credential as per Technical & Financial PQR and Techno-Commercial offer (along with un-priced copy of un-priced bid and un-priced schedule of Technical-Commercial Deviation, Annexure I & II)
 - b) Part II Bid: - Price Bid and Priced schedule of Technical-Commercial Deviation
3. Terms and conditions: -
 - a) Part I bid will be opened on date & time mentioned in the NIT or subsequent corrigenda/amendments, if any.
 - b) **Techno-commercial offer of only those bidders shall be evaluated who will meet the Technical & Financial pre-qualifying requirement of the tender.**
All the above Tender Documents shall automatically become a part of the Order/Contract after its finalisation.
4. Vendors shall quote in accordance with the requirements mentioned in the tender documents. In case of deviations (Technical/ Commercial), the same shall be highlighted separately giving Clause references along with the Cost of withdrawal of Deviations in e-procurement portal, along with reasons for taking such deviations.
Bidder to note all the points mentioned in "Notes" of cost of withdrawal sheet in e-procurement portal.
5. **Please note the following:**
 - a. **Compliance to price form available at e-procurement portal.**
 - b. **SCC enclosed for compliance.**
GCC enclosed for compliance. GCC Rev-07 is available on www.bhelpem.com. You are requested to kindly download the same. Bidders are requested for furnishing compliance of these documents.
6. Tenders shall be submitted strictly in accordance with the requirements of the above tender documents.
7. Standard pre-printed terms & conditions of the tenderers shall not be considered valid.
8. Validity of offer shall be as per cl.no.7(instruction to bidders) of GCC Rev 07.
9. Unsolicited fresh/revised Price Bids shall not be entertained.
10. Purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any/all tender(s) in part or full without assigning any reason whatsoever.
11. Late tenders will be rejected.
12. Definition of Terms is also enclosed. These definitions will apply to all the tender documents including this Enquiry Letter.
13. Tenders and all correspondence thereof, shall be addressed to the undersigned by name & designation and sent at the following address:

Mr. I P SINGH, DGM, CMM
M/s Bharat Heavy Electricals Ltd.,
Project Engineering Management,
Power Project Engineering Institute,
HRD & ESI Complex,
Plot No 25, Sector-16 A, Noida-201301
Kind Attn: I P SINGH/ CMM
E-MAIL: indra.pal.singh@bhel.in
Ph. No. 0120-4218749 ,09818989654

Mr. N C SHARMA, DY MGR, CMM
M/s Bharat Heavy Electricals Ltd.,
Project Engineering Management,
Power Project Engineering Institute,
HRD & ESI Complex,
Plot No 25, Sector-16 A, Noida-201301
Kind Attn: N C SHARMA/ CMM
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14. Delivery Term for project specific POs released on basis of subject Framework Agreement (Rate contract):

“Within Four (04) months from date of CAT-1 approval of Primary drawing/documents, subjected to drawing/document submission/re-submission schedule as stipulated, in case of any delay in submission/re-submission of Primary drawing/documents, then same shall be reduced from the given delivery period. Delay in BHEL's comments/approval beyond 18 days shall also be considered for delay analysis”

Sl. No	Drawings/Document Description	Primary/ Secondary	Drawings / Document Number	Drg Sch for Vendors
1	QUALITY PLAN FOR CABLE TRAYS & ACCESSORIES	Primary	Shall be informed later	R-0 within 14 days from PO & subsequent revisions within 10 days of comments received from BHEL. BHEL shall furnish comments / approval on each submission within 18 days from receipt.
2	TECHNICAL DATA SHEET FOR CABLE TRAYS & ACCESSORIES	Primary		
3	GA DRG. OF CABLE TRAYS & ACCESSORIES	Primary		
4	BOQ OF COUPLER PLATE, NUT BOLT AND WASHER, TRAY COVER ACCESSORIES (FLATS, PIPES, etc.)	Secondary		

** Please refer clause no 4 of Technical Specification no- PE-RC-998-507-E021.

Note:

1. The above list of drawings and documents is indicative.

2. After receiving LOI, the vendor shall submit drawings/documents in requisite number of copies as per NIT.

* Standard Quality Plan as enclosed in the technical specification is to be appended with cover sheet bearing document number and description as stated above. The signed and stamped copy of the same shall be submitted to BHEL without making any changes in the contents of the document.

Note the Following also:

a. The end period specified is for completion of the deliveries. Deliveries to start progressively so as to meet the completion schedule.

b. The delivery conditions specified are for contractual LD purposes, however BHEL may ask for early deliveries without any compensation thereof.

c. Non-applicable drawings shall be decided during execution of the package.

d. Wherever schedule of drawings/documents submission / re-submission is stipulated in the Technical Specifications, same shall be superseded by delivery specified in NIT.

15. All other terms and conditions shall be as per GCC Rev 07 and Special Conditions of (Framework Agreement) Rate Contract as per attached Annexure-III. In the event of any contradiction in the terms and conditions mentioned, the order of preference shall be as mentioned in clause no 36 of GCTC of GCC (Rev.07).

16. All the above Tender Documents shall automatically become a part of the Order/Contract after its finalization.

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17. All corrigenda, addenda, amendments, time extensions, clarifications etc. to the tender will be hosted on BHEL websites only (www.bhelpem.com., www.bhel.com & <https://bhel.abcprocure.com> under subject tender reference. Bidders are requested to visit our websites from time to time to keep themselves updated. **Bidders may go through the Sellers' manual & Help documents provided on E-Procurement Portal website & obtain required Digital Signature Certificate for participating in the subject Tender.**
18. Bidders to submit their offers strictly in line with the form available at e-procurement portal.
19. Inspection shall be done by BHEL/ END CUSTOMER/Third party Agency (finalized by BHEL).
20. Foreign & indigenous bidders participating through open/limited tender will necessarily have to but class III DSCs issued by the certifying authorities in India. Basic procedure/ checklist is uploaded on www.bhel.com.
21. Non- registered bidder to submit the credentials required for Registration in BHEL PEM: -
"Online Registration Portal is operational in BHEL. Non-registered Vendors, who wish to apply for registration with BHEL-PEM, have to apply through Online Registration Portal available at www.bhelpem.com - vendor section - Online Supplier Registration. All credentials and/or documents duly signed and stamped related to registration has to be uploaded on the website and submit the application for registration. One set of hard copy of the filled-up SRF downloaded from Online Registration Portal duly signed and stamped has to be submitted."
22. Purchaser reserves the right to split up the scope of the tender enquiry and place the orders for different scope/ items with different bidders and also increase or decrease the quantity.
23. **Finalization of prices for this tender shall be through Reverse Auction & hence Upfront declaration for Reverse Auction (RA) as per below:**
"BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com) for this tender. RA shall be conducted among all the techno-commercially qualified bidders. Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered as initial bids of bidders in RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking."
Vendors to note that above RA clause will supersede clause no 13 of "Instruction to Bidders "of GCC Rev 07". RA Guideline 2020 shall be made part of NIT.
For RA Guidelines visit:
http://www.bhel.com/vender_registration/pdf/Guidelines%20for%20Reverse%20Auction-2020.pdf
24. The Bidders has to quote the Single Price (i.e. Total Cost to BHEL) (excl. GST) in Reverse Auction. Price are to be inclusive of Packing & Forwarding charges, all the routine & type tests as per tender scope, Freight as applicable, including loading (if any) but excluding GST. De-loading (if any) shall be done in line with NIT terms.
25. If any bidder has mentioned the term Not Applicable / Not required / Not Quoted in bidding form. The bidder needs to substantiate the same. If the same item will be required in future for the system same will be supplied free of cost.

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26. L1 bidder will have to submit Bank Guarantee for each POs (irrespective of value) which will be placed under the (Framework Agreement) Rate Contract finalised through this tender considering RC as original contract as per format mentioned in in GCC Rev 07.

Thanking you,
Yours faithfully,
For and on behalf of BHEL

Digitally signed by
NARESH CHANDRA
SHARMA

Date: 2020.07.15
12:30:57 +05'30'

(Signature of official with Name & Designation)

Enclosure:

1. Enquiry Terms & Conditions.
2. Price Schedule - Annexure-I, IA to NIT (to be filled in e-procurement portal only)
3. Cost of withdrawal sheet -Annexure-II to NIT (to be filled in e-procurement portal only)
4. Technical Specifications
5. Technical PQR
6. Financial PQR
7. SCC – Annexure-III to NIT.
8. Prospective Project List – Annexure-IV to NIT
9. Bank Guarantee Format – Annexure-V to NIT.
10. Integrity Pact (IP) – Annexure-VI to NIT

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ANNEXURE I TO NIT REF: PE/PG/RTC/E-6476/2020													
PRICE SCHEDULE FOR CABLE TRAYS & ACCESSORIES													
FRAMEWORK AGREEMENT (RATE CONTRACT)													
NAME OF VENDOR - (Please fill vendor's name)													
SL. NO.	ITEM CODE	ITEM DESCRIPTION	UOM	QUANTITY	HSN CODE	UNIT EX- WORKS PRICE (DULY PACKED) OF TOTAL EX- WORKS PRICE For Type - A (INR)	UNIT EX- WORKS PRICE (DULY PACKED) OF TOTAL EX- WORKS PRICE For Type - B (INR)	UNIT EX- WORKS PRICE (DULY PACKED) For Type - A (INR)	FORMULA FOR TOTAL EX- WORKS PRICE (DULY PACKED) For Type - A (INR)	TOTAL EX- WORKS PRICE (DULY PACKED) For Type - A (INR)	FREIGHT CHARGES WITHOUT GST @ % OF TOTAL EX WORKS (INR)	APPLICABLE GST RATE % ON (TOTAL EX WORKS + FREIGHT) (INR)	TOTAL FOR SITE PRICE (INR)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.0		HOT DIP GALVANISED LADDER TYPE CABLE TRAY											
a)	507-21101-A	CABLE TRAY 2MM THK LAD TYPE 150W	MTR	183092	7308	$(0.12085 * X) / 183092$	$((0.12085 * X) / 183092) * 0.9$	Derived	$0.12085 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21102-A	CABLE TRAY 2MM THK LAD TYPE 300W	MTR	127057	7308	$(0.09396 * X) / 127057$	$((0.09396 * X) / 127057) * 0.9$	Derived	$0.09396 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21103-A	CABLE TRAY 2MM THK LAD TYPE 450W	MTR	9484	7308	$(0.00782 * X) / 9484$	$((0.00782 * X) / 9484) * 0.9$	Derived	$0.00782 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
d)	507-21104-A	CABLE TRAY 2MM THK LAD TYPE 600W	MTR	353705	7308	$(0.31901 * X) / 353705$	$((0.31901 * X) / 353705) * 0.9$	Derived	$0.31901 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
2.0		HOT DIP GALVANISED PERFORATED TYPE CABLE TRAY											
a)	507-21204-A	CABLE TRAY 2MM THK- PERFORATED TYPE 50W	MTR	73090	7308	$(0.02046 * X) / 73090$	$(0.02046 * X) / 73090$	Derived	$0.02046 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21005-A	CABLE TRAY 2MM THK- PERFORATED TYPE 100W	MTR	75148	7308	$(0.02831 * X) / 75148$	$(0.02831 * X) / 75148$	Derived	$0.02831 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21109-A	CABLE TRAY 2MM THK PER TYPE 150W	MTR	89917	7308	$(0.06494 * X) / 89917$	$((0.06494 * X) / 89917) * 0.9$	Derived	$0.06494 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
d)	507-21110-A	CABLE TRAY 2MM THK PER TYPE 300W	MTR	18927	7308	$(0.01929 * X) / 18927$	$((0.01929 * X) / 18927) * 0.9$	Derived	$0.01929 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
e)	507-21111-A	CABLE TRAY 2MM THK PER TYPE 450W	MTR	3492	7308	$(0.0045 * X) / 3492$	$((0.0045 * X) / 3492) * 0.9$	Derived	$0.0045 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
f)	507-21112-A	CABLE TRAY 2MM THK PER TYPE 600W	MTR	109651	7308	$(0.17165 * X) / 109651$	$((0.17165 * X) / 109651) * 0.9$	Derived	$0.17165 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
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 600 RAD 150W	NOS	3770	7308	$(0.00514 * X) / 3770$	$((0.00514 * X) / 3770) * 0.9$	Derived	$0.00514 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21117-A	LAD HOR 90D BEND 2MM THK 600R 300W	NOS	3770	7308	$(0.00638 * X) / 3770$	$((0.00638 * X) / 3770) * 0.9$	Derived	$0.00638 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21118-A	LAD HOR 90D BEND 2MM THK 600R 450W	NOS	40	7308	$(0.00008 * X) / 40$	$((0.00008 * X) / 40) * 0.9$	Derived	$0.00008 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
d)	507-21119-A	LAD HOR 90D BEND 2MM THK 600R 600W	NOS	200	7308	$(0.0004 * X) / 200$	$((0.0004 * X) / 200) * 0.9$	Derived	$0.0004 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
3.2		LADDER TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (INSIDE)											
a)	507-21123-A	LAD VER 90D BEND 2MM THK 600R I/S 300W	NOS	20	7308	$(0.00004 * X) / 20$	$((0.00004 * X) / 20) * 0.9$	Derived	$0.00004 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21124-A	LAD VER 90D BEND 2MM THK 600R I/S 450W	NOS	40	7308	$(0.00005 * X) / 40$	$((0.00005 * X) / 40) * 0.9$	Derived	$0.00005 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21125-A	LAD VER 90D BEND 2MM THK 600R I/S 600W	NOS	2700	7308	$(0.00574 * X) / 2700$	$((0.00574 * X) / 2700) * 0.9$	Derived	$0.00574 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
3.3		LADDER TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (OUTSIDE)											
a)	507-21129-A	LAD VER 90D BEND 2MM THK 600R O/S 300W	NOS	20	7308	$(0.00003 * X) / 20$	$((0.00003 * X) / 20) * 0.9$	Derived	$0.00003 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21130-A	LAD VER 90D BEND 2MM THK 600R O/S 450W	NOS	40	7308	$(0.00009 * X) / 40$	$((0.00009 * X) / 40) * 0.9$	Derived	$0.00009 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21131-A	LAD VER 90D BEND 2MM THK 600R O/S 600W	NOS	2700	7308	$(0.006 * X) / 2700$	$((0.006 * X) / 2700) * 0.9$	Derived	$0.006 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived

3.4		LADDER TYPE TEES-600mm RADIUS											
a)	507-21135-A	LAD TEES 600R 2MM THK 300W	NOS	20	7308	$(0.00006 * X) / 20$	$((0.00006 * X) / 20) * 0.9$	Derived	$0.00006 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21136-A	LAD TEES 600R 2MM THK 450W	NOS	40	7308	$(0.00009 * X) / 40$	$((0.00009 * X) / 40) * 0.9$	Derived	$0.00009 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21137-A	LAD TEES 600R 2MM THK 600W	NOS	2245	7308	$(0.00743 * X) / 2245$	$((0.00743 * X) / 2245) * 0.9$	Derived	$0.00743 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
3.5		LADDER TYPE CROSS-600mm RADIUS											
a)	507-21141-A	LAD CROSS 600R 2MM THK 300W	NOS	20	7308	$(0.00007 * X) / 20$	$((0.00007 * X) / 20) * 0.9$	Derived	$0.00007 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21142-A	LAD CROSS 600R 2MM THK 450W	NOS	40	7308	$(0.00011 * X) / 40$	$((0.00011 * X) / 40) * 0.9$	Derived	$0.00011 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21143-A	LAD CROSS 600R 2MM THK 600W	NOS	840	7308	$(0.00332 * X) / 840$	$((0.00332 * X) / 840) * 0.9$	Derived	$0.00332 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
3.6		LADDER TYPE REDUCERS											
a)	507-21946-A	LAD RED (50% LHS/RHS) 2MM THK 300-150W	NOS	4700	7308	$(0.00406 * X) / 4700$	$((0.00406 * X) / 4700) * 0.9$	Derived	$0.00406 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21147-A	LAD RED (50% LHS/RHS) 2MM THK 450-300W	NOS	30	7308	$(0.00003 * X) / 30$	$((0.00003 * X) / 30) * 0.9$	Derived	$0.00003 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21947-A	LAD RED (50% LHS/RHS) 2MM THK 600-150W	NOS	3000	7308	$(0.00289 * X) / 3000$	$((0.00289 * X) / 3000) * 0.9$	Derived	$0.00289 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
d)	507-21148-A	LAD RED (50% LHS/RHS) 2MM THK 600-300W	NOS	2530	7308	$(0.00244 * X) / 2530$	$((0.00244 * X) / 2530) * 0.9$	Derived	$0.00244 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
e)	507-21149-A	LAD RED (50% LHS/RHS) 2MM THK 600-450W	NOS	30	7308	$(0.00003 * X) / 30$	$((0.00003 * X) / 30) * 0.9$	Derived	$0.00003 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
3.7		PERFORATED TYPE HORIZONTAL 90 DEG. BEND-600mm RADIUS											
a)	507-21041-A	PER HOR 90DEG BEND 600 RAD. 150W	NOS	1270	7308	$(0.00163 * X) / 1270$	$((0.00163 * X) / 1270) * 0.9$	Derived	$0.00163 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21153-A	PER HOR 90D BEND 2MM THK 600R 300W	NOS	1270	7308	$(0.0031 * X) / 1270$	$((0.0031 * X) / 1270) * 0.9$	Derived	$0.0031 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21154-A	PER HOR 90D BEND 2MM THK 600R 450W	NOS	17	7308	$(0.00005 * X) / 17$	$((0.00005 * X) / 17) * 0.9$	Derived	$0.00005 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
d)	507-21155-A	PER HOR 90D BEND 2MM THK 600R 600W	NOS	10	7308	$(0.00004 * X) / 10$	$((0.00004 * X) / 10) * 0.9$	Derived	$0.00004 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
3.8		PERFORATED TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (INSIDE)											
a)	507-21159-A	PER VER 90D BEND 2MM THK 600R I/S 300W	NOS	20	7308	$(0.00005 * X) / 20$	$((0.00005 * X) / 20) * 0.9$	Derived	$0.00005 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21160-A	PER VER 90D BEND 2MM THK 600R I/S 450W	NOS	17	7308	$(0.00004 * X) / 17$	$((0.00004 * X) / 17) * 0.9$	Derived	$0.00004 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21161-A	PER VER 90D BEND 2MM THK 600R I/S 600W	NOS	1260	7308	$(0.00459 * X) / 1260$	$((0.00459 * X) / 1260) * 0.9$	Derived	$0.00459 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
3.9		PERFORATED TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (OUTSIDE)											
a)	507-21165-A	PER VER 90D BEND 2MM THK 600R O/S 300W	NOS	20	7308	$(0.00005 * X) / 20$	$((0.00005 * X) / 20) * 0.9$	Derived	$0.00005 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21166-A	PER VER 90D BEND 2MM THK 600R O/S 450W	NOS	17	7308	$(0.00006 * X) / 17$	$((0.00006 * X) / 17) * 0.9$	Derived	$0.00006 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21167-A	PER VER 90D BEND 2MM THK 600R O/S 600W	NOS	1260	7308	$(0.00453 * X) / 1260$	$((0.00453 * X) / 1260) * 0.9$	Derived	$0.00453 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
3.10		PERFORATED TYPE TEES-600mm RADIUS											
a)	507-21171-A	PER TEES 600R 2MM THK 300W	NOS	20	7308	$(0.00007 * X) / 20$	$((0.00007 * X) / 20) * 0.9$	Derived	$0.00007 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21172-A	PER TEES 600R 2MM THK 450W	NOS	17	7308	$(0.00009 * X) / 17$	$((0.00009 * X) / 17) * 0.9$	Derived	$0.00009 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21173-A	PER TEES 600R 2MM THK 600W	NOS	1260	7308	$(0.00717 * X) / 1260$	$((0.00717 * X) / 1260) * 0.9$	Derived	$0.00717 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
3.11		PERFORATED TYPE CROSS-600mm RADIUS			7308								
a)	507-21177-A	PER CROSS 600R 2MM THK 300W	NOS	20	7308	$(0.00009 * X) / 20$	$((0.00009 * X) / 20) * 0.9$	Derived	$0.00009 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21178-A	PER CROSS 600R 2MM THK 450W	NOS	17	7308	$(0.00009 * X) / 17$	$((0.00009 * X) / 17) * 0.9$	Derived	$0.00009 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21179-A	PER CROSS 600R 2MM THK 600W	NOS	1260	7308	$(0.0087 * X) / 1260$	$((0.0087 * X) / 1260) * 0.9$	Derived	$0.0087 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived

3.12		PERFORATED TYPE REDUCERS											
a)	507-21183-A	PER RED (50% LHS/RHS) 2MM THK 450-300W	NOS	20	7308	$(0.00003 * X) / 20$	$((0.00003 * X) / 20) * 0.9$	Derived	$0.00003 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21948-A	PER RED (50% LHS/RHS) 2MM THK 600-150W	NOS	5000	7308	$(0.01025 * X) / 5000$	$((0.01025 * X) / 5000) * 0.9$	Derived	$0.01025 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21184-A	PER RED (50% LHS/RHS) 2MM THK 600-300W	NOS	1300	7308	$(0.00267 * X) / 1300$	$((0.00267 * X) / 1300) * 0.9$	Derived	$0.00267 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
d)	507-21185-A	PER RED (50% LHS/RHS) 2MM THK 600-450W	NOS	10	7308	$(0.00002 * X) / 10$	$((0.00002 * X) / 10) * 0.9$	Derived	$0.00002 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
3.13		HOT DIP GALVANISED CABLE TRAY COVER COMPLETE WITH FORMED CHANNEL, PIPE, GI FLAT, BOLTS WITH NUTS & WASHERS & FIXING HARDWARES ETC.											
a)	507-21949-A	COVER 1.6MM THK- NON PER GALV MS 50W	MTR	37840	7308	$(0.00804 * X) / 37840$	$(0.00804 * X) / 37840$	Derived	$0.00804 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
b)	507-21950-A	COVER 1.6MM THK- NON PER GALV MS 100W	MTR	43100	7308	$(0.01832 * X) / 43100$	$(0.01832 * X) / 43100$	Derived	$0.01832 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
c)	507-21189-A	COVER 1.6MM THK- NON PER GALV MS 150W	MTR	43775	7308	$(0.02753 * X) / 43775$	$(0.02753 * X) / 43775$	Derived	$0.02753 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
d)	507-21201-A	COVER 1.7 MM THK-NON PER GALV MS 300W	MTR	800	7308	$(0.00058 * X) / 800$	$(0.00058 * X) / 800$	Derived	$0.00058 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
e)	507-21202-A	COVER 1.7 MM THK-NON PER GALV MS 450W	MTR	1150	7308	$(0.00117 * X) / 1150$	$(0.00117 * X) / 1150$	Derived	$0.00117 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
f)	507-21203-A	COVER 1.7 MM THK-NON PER GALV MS 600W	MTR	4200	7308	$(0.00544 * X) / 4200$	$(0.00544 * X) / 4200$	Derived	$0.00544 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
3.14		CABLE TROUGH											
a)	507-21199-A	CABLE TROUGH 2MM THK 50W	MTR	1615	7308	$(0.00033 * X) / 1615$	$(0.00033 * X) / 1615$	Derived	$0.00033 * X$	Derived	% TO BE QUOTED	% TO BE QUOTED	Derived
3.15													
a)	507-21939-A	Coupler Plate	NOS	1753186	7308	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED
b)	507-21940-A	NUT	NOS	7346684	7318	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED
c)	507-21941-A	BOLT	NOS	7346684	7318	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED
d)	507-21942-A	WASHER	NOS	14693367	7318	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED
4.00	GRAND TOTAL (1.0 TO 3.15)									X= TO BE QUOTED (IN FIGURES)	Derived = Rs Y	Derived	Derived
										X= TO BE QUOTED (IN WORDS)			
NOTE:-													
1. Bidder to note that quantities mentioned above are the sum of Type-A and Type - B quantities. For break up of Type - A and Type - B quantities please refer ANNEXURE - IA to (BOQ-CUM-PRICE SCHEDULE FOR CABLE TRAYS & ACCESSORIES).													
2. Bidder has to quote ' X ' as total Ex-works value considering the total quantities mentioned in Column No: 5 as Type - A only. Unit rate of each item of Type-A and Type-B shall be derived by BHEL as per formula given for respective items of Type-A and Type-B.													
3.Prices for items at Sl. No: 3.15 above shall be included in price of cable trays. No Separate charges shall be applicable.													
5. Bidder to note that evaluation shall be on Total Ex works price + Freight. Bidder to quote grand total Ex works value of the complete package (Sl. No 4 Column 11.i.e Rs X) only as per the BOQ above. The item wise break up of Ex works prices (unit as well as total) for all the items in the BOQ shall be derived as per the formula indicated above by BHEL. Bidder also need to indicate Freight and GST rate in percentage in the respective column. Single Freight percentage to be quoted in percentage of Ex works value considering delivery anywhere in India.													
6. Value is to be filled only where “to be quoted” is mentioned and for other columns where “derived” is mentioned same shall be derived by BHEL as per % allocation fixed against each item													
7. Price mentioned anywhere else in BOQ shall not be taken in cognizance.													
8. For any clarification please refer Technical Specification No--PE-RC-998-507-E021 REVISION: 00													
9. For Reverse Auction, vendor has to quote their Ex Works price+ Freight , that is price quoted above at Sl No-4, column 11 i.e. (Rs X) + Freight Value, Rs Y													
10. Quantity variation shall be +30%.													

ANNEXURE - IA TO NIT REF: PE/PG/RTC/E-6476/2020
PRICE SCHEDULE FOR CABLE TRAYS & ACCESSORIES - BIFURCATION OF TYPE A AND TYPE B CABLE TRAY QUANTITY
FRAMEWORK AGREEMENT (RATE CONTRACT)

Sr. No.	ITEM CODE	ITEM DESCRIPTION	UNIT	TOTAL QUANTITY	QUANTITY OF TYPE-A (For technical details Refer TYPICAL DETAILS OF CABLE TRAYS & ACCESSORIES TYPE-A)	QUANTITY OF TYPE-B (For technical details Refer TYPICAL DETAILS OF CABLE TRAYS & ACCESSORIES TYPE-B)
1.0		HOT DIP GALVANISED LADDER TYPE CABLE TRAY				
a)	507-21101-A	CABLE TRAY 2MM THK LAD TYPE 150W	MTR	183092	128492	54600
b)	507-21102-A	CABLE TRAY 2MM THK LAD TYPE 300W	MTR	127057	87882	39175
c)	507-21103-A	CABLE TRAY 2MM THK LAD TYPE 450W	MTR	9484	7984	1500
d)	507-21104-A	CABLE TRAY 2MM THK LAD TYPE 600W	MTR	353705	269060	84645
2.0		HOT DIP GALVANISED PERFORATED TYPE CABLE TRAY				
a)	507-21204-A	CABLE TRAY 2MM THK- PERFORATED TYPE 50W	MTR	73090	48250	24840
b)	507-21005-A	CABLE TRAY 2MM THK- PERFORATED TYPE 100W	MTR	75148	49048	26100
c)	507-21109-A	CABLE TRAY 2MM THK PER TYPE 150W	MTR	89917	44642	45275
d)	507-21110-A	CABLE TRAY 2MM THK PER TYPE 300W	MTR	18927	13847	5080
e)	507-21111-A	CABLE TRAY 2MM THK PER TYPE 450W	MTR	3492	3492	0
f)	507-21112-A	CABLE TRAY 2MM THK PER TYPE 600W	MTR	109651	82086	27565
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 600 RAD 150W	NOS	3770	3770	0
b)	507-21117-A	LAD HOR 90D BEND 2MM THK 600R 300W	NOS	3770	3770	0
c)	507-21118-A	LAD HOR 90D BEND 2MM THK 600R 450W	NOS	40	40	0
d)	507-21119-A	LAD HOR 90D BEND 2MM THK 600R 600W	NOS	200	200	0
3.2		LADDER TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (INSIDE)				
a)	507-21123-A	LAD VER 90D BEND 2MM THK 600R I/S 300W	NOS	20	20	0
b)	507-21124-A	LAD VER 90D BEND 2MM THK 600R I/S 450W	NOS	40	40	0
c)	507-21125-A	LAD VER 90D BEND 2MM THK 600R I/S 600W	NOS	2700	2700	0
3.3		LADDER TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (OUTSIDE)				
a)	507-21129-A	LAD VER 90D BEND 2MM THK 600R O/S 300W	NOS	20	20	0
b)	507-21130-A	LAD VER 90D BEND 2MM THK 600R O/S 450W	NOS	40	40	0
c)	507-21131-A	LAD VER 90D BEND 2MM THK 600R O/S 600W	NOS	2700	2700	0
3.4		LADDER TYPE TEES-600mm RADIUS				
a)	507-21135-A	LAD TEES 600R 2MM THK 300W	NOS	20	20	0
b)	507-21136-A	LAD TEES 600R 2MM THK 450W	NOS	40	40	0
c)	507-21137-A	LAD TEES 600R 2MM THK 600W	NOS	2245	2245	0
Sr. No.	ITEM CODE	ITEM DESCRIPTION	UNIT			
3.5		LADDER TYPE CROSS-600mm RADIUS				
a)	507-21141-A	LAD CROSS 600R 2MM THK 300W	NOS	20	20	0
b)	507-21142-A	LAD CROSS 600R 2MM THK 450W	NOS	40	40	0
c)	507-21143-A	LAD CROSS 600R 2MM THK 600W	NOS	840	840	0
3.6		LADDER TYPE REDUCERS				
a)	507-21946-A	LAD RED (50% LHS/RHS) 2MM THK 300-150W	NOS	4700	4700	0
b)	507-21147-A	LAD RED (50% LHS/RHS) 2MM THK 450-300W	NOS	30	30	0
c)	507-21947-A	LAD RED (50% LHS/RHS) 2MM THK 600-150W	NOS	3000	3000	0
d)	507-21148-A	LAD RED (50% LHS/RHS) 2MM THK 600-300W	NOS	2530	2530	0
e)	507-21149-A	LAD RED (50% LHS/RHS) 2MM THK 600-450W	NOS	30	30	0
3.7		PERFORATED TYPE HORIZONTAL 90 DEG. BEND-600mm RADIUS				
a)	507-21041-A	PER HOR 90DEG BEND 600 RAD. 150W	NOS	1270	1270	0
b)	507-21153-A	PER HOR 90D BEND 2MM THK 600R 300W	NOS	1270	1270	0

c)	507-21154-A	PER HOR 90D BEND 2MM THK 600R 450W	NOS	17	17	0
d)	507-21155-A	PER HOR 90D BEND 2MM THK 600R 600W	NOS	10	10	0
3.8		PERFORATED TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (INSIDE)				
a)	507-21159-A	PER VER 90D BEND 2MM THK 600R I/S 300W	NOS	20	20	0
b)	507-21160-A	PER VER 90D BEND 2MM THK 600R I/S 450W	NOS	17	17	0
c)	507-21161-A	PER VER 90D BEND 2MM THK 600R I/S 600W	NOS	1260	1260	0
3.9		PERFORATED TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (OUTSIDE)				
a)	507-21165-A	PER VER 90D BEND 2MM THK 600R O/S 300W	NOS	20	20	0
b)	507-21166-A	PER VER 90D BEND 2MM THK 600R O/S 450W	NOS	17	17	0
c)	507-21167-A	PER VER 90D BEND 2MM THK 600R O/S 600W	NOS	1260	1260	0
3.10		PERFORATED TYPE TEES-600mm RADIUS				
a)	507-21171-A	PER TEES 600R 2MM THK 300W	NOS	20	20	0
b)	507-21172-A	PER TEES 600R 2MM THK 450W	NOS	17	17	0
c)	507-21173-A	PER TEES 600R 2MM THK 600W	NOS	1260	1260	0
3.11		PERFORATED TYPE CROSS-600mm RADIUS				
a)	507-21177-A	PER CROSS 600R 2MM THK 300W	NOS	20	20	0
b)	507-21178-A	PER CROSS 600R 2MM THK 450W	NOS	17	17	0
c)	507-21179-A	PER CROSS 600R 2MM THK 600W	NOS	1260	1260	0
3.12		PERFORATED TYPE REDUCERS				
a)	507-21183-A	PER RED (50% LHS/RHS) 2MM THK 450-300W	NOS	20	20	0
b)	507-21948-A	PER RED (50% LHS/RHS) 2MM THK 600-150W	NOS	5000	5000	0
c)	507-21184-A	PER RED (50% LHS/RHS) 2MM THK 600-300W	NOS	1300	1300	0
d)	507-21185-A	PER RED (50% LHS/RHS) 2MM THK 600-450W	NOS	10	10	0
3.13		HOT DIP GALVANISED CABLE TRAY COVER COMPLETE WITH FORMED CHANNEL, PIPE, GI FLAT, BOLTS WITH NUTS & WASHERS & FIXING HARDWARES ETC.				
a)	507-21949-A	COVER 1.6MM THK- NON PER GALV MS 50W	MTR	37840	21000	16840
b)	507-21950-A	COVER 1.6MM THK- NON PER GALV MS 100W	MTR	43100	21000	22100
c)	507-21189-A	COVER 1.6MM THK- NON PER GALV MS 150W	MTR	43775	11300	32475
d)	507-21201-A	COVER 1.7 MM THK-NON PER GALV MS 300W	MTR	800	800	0
e)	507-21202-A	COVER 1.7 MM THK-NON PER GALV MS 450W	MTR	1150	1150	0
f)	507-21203-A	COVER 1.7 MM THK-NON PER GALV MS 600W	MTR	4200	4200	0
3.14		CABLE TROUGH				
a)	507-21199-A	CABLE TROUGH 2MM THK 50W	MTR	1615	1615	0
3.15						
a)	507-21939-A	Coupler Plate	NOS	1753186	1234435	518750
b)	507-21940-A	NUT	NOS	7346684	5172872	2173811
c)	507-21941-A	BOLT	NOS	7346684	5172872	2173811
d)	507-21942-A	WASHER	NOS	14693367	10345745	4347622



ANNEXURE-II: DEVIATION SHEET (COST OF WITHDRAWAL) TO NIT REF: PE/PG/RTC/E-6476/2020

PACKAGE:-CABLE TRAYS & ACCESSORIES- RATE CONTRACT (FRAMEWORK AGREEMENT)

TENDER ENQUIRY REF: PE/PG/RTC/E-6476/2020

NAME OF VENDOR:-

SL NO	VOLUME/ SECTION	PAGE NO.	CLAUSE NO.	TECHNICAL SPECIFICATION/ TENDER DOCUMENT	COMPLETE DESCRIPTION OF DEVIATION	COST OF WITHDRAWAL OF DEVIATION	REFERENCE OF PRICE SCHEDULE ON WHICH COST OF WITHDRAWAL OF DEVIATION IS APPLICABLE	NATURE OF COST OF WITHDRAWAL OF DEVIATION (POSITIVE/ NEGATIVE)	REASONS FOR QUOTING DEVIATION
-------	--------------------	----------	------------	--	--------------------------------------	---------------------------------------	--	---	-------------------------------------

TECHNICAL DEVIATIONS

[illegible]

COMMERCIAL DEVIATIONS

[illegible]

PARTICULARS OF BIDDERS/ AUTHORISED REPRESENTATIVE

[illegible]

NOTES:

- | |
|--|
| 1. Cost of withdrawal of deviation will be applicable on the basic price (i.e. excluding taxes, duties & freight) only. |
| 2. All the bidders have to list out all their Technical & Commercial Deviations (if any) in detail in the above format. |
| 3. Any deviation not mentioned above and shown separately or found hidden in offer, will not be taken cognizance of. |
| 4. Bidder shall submit duly filled unpriced copy of above format indicating "quoted" in "cost of withdrawal of deviation" column of the schedule above along with their Techno-commercial offer, wherever applicable. In the absence of same, such deviation(s) shall not be considered and offer shall be considered in total compliance to NIT. |
| 5. Bidder shall furnish price copy of above format along with price bid. |
| 6. The final decision of acceptance/ rejection of the deviations quoted by the bidder shall be at discretion of the Purchaser. |
| 7. Bidders to note that any deviation (technical/commercial) not listed in above and asked after Part-I opening shall not be considered. |
| 8. For deviations w.r.t. Credit Period, Liquidated damages, Firm prices if a bidder chooses not to give any cost of withdrawal of deviation loading as per Annexure-VII, will apply. For any other deviation mentioned in unpriced copy of this format submitted with Part-I bid but not mentioned in priced copy of this format submitted with Priced bid, the cost of withdrawal of deviation shall be taken as NIL. |
| 9. Any deviation mentioned in priced copy of this format, but not mentioned in the un-priced copy, shall not be considered. |
| 10. All techno-commercial terms and conditions of NIT shall be deemed to have been accepted by the bidder, other than those listed in unpriced copy of this format. |
| 11. Cost of withdrawal is to be given separately for each deviation. In no event bidder should club cost of withdrawal of more than one deviation else cost of withdrawal of such deviations which have been clubbed together shall be considered as NIL. |
| 12. In case nature of cost of withdrawal (positive/negative) is not specified it shall be assumed as positive. |
| 13. In case of discrepancy in the nature of impact (positive/ negative), positive will be considered for evaluation and negative for ordering. |



BHEL / PEM / CMM
SPECIAL CONDITIONS OF (FRAMEWORK AGREEMENT) RATE CONTRACT

ANNEXURE III TO NIT REF: PE/PG/RTC/E-6476/2020
SPECIAL CONDITION OF (FRAMEWORK AGREEMENT) RATE CONTRACT FOR CABLE TRAYS & ACCESSORIES

1. BHEL/PEM on behalf of various BHEL units intends to enter into (Framework Agreement) Rate Contract for supply of the tendered items for a period of two years. The (Framework Agreement) Rate Contract shall come into force from the date of issue of Purchase order for Rate Contract. Validity for ordering shall be two years from the purchase order for (Framework Agreement) Rate Contract.
2. For this specific tender, Purchaser word referred in GCC Rev 07 shall mean BHEL units which will place project specific purchase order to seller on the basis of framework agreement (rate contract) finalized with this tender.
3. Seller to use GSTIN number (wherever required) of Purchaser i.e. BHEL unit who will issue project specific purchase order. GSTIN number mentioned in GCC Rev 07 shall be applicable for all project specific purchase orders issued by BHEL PEM.
4. Clause no 7 of GCTC, GCC Rev 07 is applicable for project specific purchase orders issued by BHEL PEM. For other BHEL Unit who will issue project specific purchase order, their respective DMS for drgs/docs submission will be applicable.
5. Details of consignee and project site information for dispatch of material shall be intimated at the time of placement of PO for specific project after finalization of (Framework Agreement) Rate Contract
6. Transit Insurance is in BHEL scope.
7. The items will be required against respective projects. Exact quantities and Project information shall be intimated while placing order for a specific project based on the (Framework Agreement) Rate Contract.
8. The prices shall remain firm during the period of two years with a provision for further extension after review on mutual consent.
9. Inspection of materials shall be carried out by BHEL/CQA and or by Customer or by an authorized agency at manufacture's works before dispatch, if required. Dispatch of material to be done, only after receipt of BHEL/Customer MDCC. It is responsibility of vendor to for obtain Material Dispatch Clearance Certificate (MDCC) from BHEL or Customer as required before dispatch of material.

Vendor shall give inspection call on BHEL-CQS web site to applicable inspection agency with a copy of inspection call to BHEL for arranging Customer participation (if applicable) in inspection / Joint inspection on the proposed date with an advance notice of 15 working days. Inspection charges shall be paid by BHEL.

Items have to be manufactured as per specification and supplied strictly in accordance with the approved BHEL / Customer's Drawings & Quality Plan. The items/ test certificate of items, which for any reason are not acceptable to BHEL / Customer, shall be required to be retested. No extra charge shall be payable on those account by BHEL.

10. Other terms and conditions shall be as per Standard Technical specification no, GCC Rev 07 & Enquiry letter.
11. This enquiry is subject to Conditions/ limits if any imposed in PMD/ Vendor registration.
12. Tentative quantity is given in enquiry.
13. Bidders to submit offer for (Framework Agreement) Rate Contract of said items ONLINE via e-Procurement System only. Bidder to upload tender documents complete in all respects duly signed & stamped on each and every page by the authorized signatory of the bidder as a token of acceptance of all the terms and conditions of tender.
14. The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendor/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL web site <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud as soon as it comes to their notice.

Annexure-IV TO NIT REF: PE/PG/RTC/E-6476/2020	
SL. NO	PROJECT LIST
1	Mauda 2 X 500MW, Barh 3 X 660MW, Barh 2 X 660MW, Nabinagar 4 X 250MW, Nabinagar 3 X 660MW, Patratu 3 X 660MW, Bhilai 2x250MW, Ramagundam 3x500MW, Korba 4x500MW, Korba 3x200MW, Yadadri 5x800MW, Bhadradi 4x270MW, Bhusawal 1 X 660MW, Kothagudem 1 X 800MW, Shyam 40 MW, BHUSAWAL FGD, Panki (1X660 MW), Udangudi (2X660 MW), Patratu (3X800 MW), IOC Panipat

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No: _____

Date: _____

To,

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of the Bharat Heavy Electricals Limited 1 (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at1 through its Unit at..... (name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) having its registered office at2 hereinafter referred to as the 'Vendor/Contractor/Supplier', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated3 valued at Rs 4 (Rupees)/ FC (in words) for..... 5 (hereinafter called the 'Contract') and the Vendor/Contractor/Seller having agreed to provide a Contract Performance Guarantee, equivalent to % (.... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we, , (hereinafter referred to as the Bank), having registered/Head office at and inter alia a branch at being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer a maximum amount Rs 6 (Rupees) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor/Contractor/ Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor/Contractors/Supplier shall have no claim against us for making such payment.

We the bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor/Contractor/Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor/Contractor/Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor/Contractor/Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor/Contractor/Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor/Contractor/Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor/Contractor/Supplier 's liabilities.

This Guarantee shall remain in force up to and including..... 7 and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor/Contractor/Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the8 we shall be discharged from all liabilities under this guarantee thereafter.

We, BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a. The liability of the Bank under this Guarantee shall not exceed6
- b. This Guarantee shall be valid up to7
- c. Unless the Bank is served a written claim or demand on or before..... 8 all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We,Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

Dated.....

For and on behalf of

Place of Issue.....

(Name of the Bank)

1 NAME AND ADDRESS OF EMPLOYER i.e. Bharat Heavy Electricals Limited

2 NAME AND ADDRESS OF THE VENDOR / CONTRACTOR / SUPPLIER.

3 DETAILS ABOUT THE NOTICE OF AWARD/ CONTRACT REFERENCE

4 CONTRACT VALUE

5 PROJECT/SUPPLY DETAILS

6 BG AMOUNT IN FIGURES AND WORDS

7 VALIDITY DATE

8 DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. Units are advised that expiry of claim period may be kept 3-6 months after validity date. It may be ensured that the same is in line with the agreement/ contract entered with the vendor.
2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Contractor/Supplier/Bank issuing the guarantee.
3. In line with the GCC, SCC and contractual terms, Unit may carry out minor modifications in the Standard BG Formats. If required, such modifications may be carried out after taking up appropriately with the Unit/Region's Law Deptt.
4. In Case of Bank Guarantees submitted by Foreign Vendors-
 - a) From Nationalized Public Sector 1 Private Sector/ Foreign Banks (BG issued by Branches in India) can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/ city or at nearest branch where the Unit (New Delhi for POs issued from PEM Noida/ PO issuing agency) is located i.e. Demand can be presented at the Branch located in the town/ city or at nearest branch where the Unit is located.
 - b) From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)
 - b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks** only will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It is advisable that all charges for issuance of Bank Guarantee/ Counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b 2 In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at sl.no. b.1 will required to be followed.
 - b 3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). The BG Format provided to them should clearly specify the same.

or & On behalf of Guarantee issuing bank

(Office Seal)

Name:

E-mail ID:

Contact number:

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi – 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for

_____. The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 – Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 – Commitments of the Bidder(s)/ Contractor(s)

2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to

any third person any material, immaterial or any other benefit which he / she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant IPC/ PC Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and will await their decision in the matter.

Section 3 – Disqualification from tender process & exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors". framed by the Principal.

Section 4 – Compensation for Damages

4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/Bid Security.

4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

Section 5 – Previous Transgression

5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 – Equal treatment of all Bidders/ Contractors/ Sub-contractors

6.1 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors. In case of sub-contracting, the Principal contractor shall be responsible for the adoption of IP by his sub-contractors and shall continue to remain

responsible for any default by his sub-contractors.

6.2 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 – Criminal Charges against violating Bidders / Contractors / Sub-contractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 –Independent External Monitor(s)

8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.

8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality in line with Non-disclosure agreement.

8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

8.5 The role of IEMs is advisory, would not be legally binding and it is restricted to resolving issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.

8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter should be examined by the full panel of IEMs jointly as far as possible, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.

8.7 The IEMs would examine all complaints received by them and give their recommendations! views to CMD, BHEL, at the earliest. They may also send their report directly to the CVO and the Commission, in case of suspicion of serious irregularities requiring legal! administrative action. IEMs will tender their advice on the complaints within 10 days as far as possible.

8.8 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.

8.9 IEM should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the organization should be looked into by the CVO of the concerned organization.

8.10 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code! Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.11 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.

8.12 The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

9.1 This Pact shall be operative from the date IP is signed by both the parties till the final completion of contract for successful bidder and for all other bidders 6 months after the contract has been awarded. Issues like warranty! guarantee etc. should be outside the purview of IEMs.

9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 – Other Provisions

10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.

10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders/ contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

For & On behalf of the Principal
(Office Seal)

For & On behalf of the Bidder/ Contractor
(Office Seal)

Place-----

Date-----

Witness: _____
(Name & Address) _____

Witness: _____
(Name & Address) _____



**PRE-QUALIFICATION REQUIREMENTS FOR
CABLE TRAYS & ACCESSORIES**

PE-PQ-999-507-E001

REVISION NO. 02 DATE 29/04/2016

SHEET NO. 1 OF 1

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

1	Vendor should have in-house fabrication & manufacturing facility.
2	Capability of manufacturing cable trays & accessories for 40km 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 the date of application for registration or date of techno-commercial bid opening (as applicable) for establishing continuity in business.

NOTE:

Supplier to comply to "general points of PQR" available at <http://bhelpem.com/vensection/PMD/PMD.aspx>
In case supplier is not OEM, the offer shall be evaluated as per point no 1 of "general points of PQR".

PREPARED BY

A.K. Rawat
29/04/16

NAME: A.K. RAWAT
DESIGNATION: SR. MGR

REVIEWED BY

Rajnish Goyal
28/4/16

NAME: RAJNISH GOYAL
DESIGNATION: AGM

APPROVED BY

M. Kesri
29.04.16

NAME: MEENA KESRI
DESIGNATION: AGM L.DH(E)

BHEL PEM-ELECTRICAL
PRE-QUALIFICATION REQUIREMENTS FOR CABLE TRAYS &
ACCESSORIES
DOC NO. PE-PQ-999-507-E001, REV 02
ANNEXURE-I

PROJECT SPECIFIC CRITERIA AGAINST ENQUIRY
PROJECT: RATE CONTRACT

NIL

Sujit Kumar Sethy
(Dy. Mgr-Elect)

Ayan Saha
(Mgr-Elect)

Sandeep Lodh
(Sr. DGM-Elect)

Debasisa Rath
(DH-Elect)

VOLUME II

TECHNICAL SPECIFICATION

FOR

CABLE TRAYS & ACCESSORIES

SPECIFICATION NO: PE-RC-998-507-E021

REVISION: 00



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



TECHNICAL SPECIFICATION FOR CABLE TRAYS & ACCESSORIES

SPECIFICATION NO. PE-RC-998-507-E021

REVISION 00

DATE: 09.07.2020

SHEET 1 OF 1

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2.0	SECTION- 'II'	
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	QUALITY PLAN	09
	TYPICAL DETAILS OF CABLE TRAYS & ACCESSORIES TYPE-A	14
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	TOTAL SHEETS INCLUDING COVER SHEET, CONTENT/SEPARATOR SHEET =	46



**TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES**

SPECIFICATION NO. PE-CP-998-507-E021

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SECTION – I

SPECIFIC TECHNICAL REQUIREMENTS



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COMPLIANCE CERTIFICATE

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

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

BIDDER'S STAMP & SIGNATURE



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1.0 PURPOSE

This specification is intended for finalization of rate contract between BHEL and Bidder. Standard technical detail as indicated in the specification shall be agreed upon between BHEL 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 cable trays & accessories 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 cable trays & accessories 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, after issuance of purchase order against specific project requirement following information shall be furnished by BHEL: -
 - a.) Project information
 - a.) Applicable list of Galvanizers (Refer Annexure-2A/2B to Quality Plan)
 - b.) Bill of Quantity
- 4.2 Following documents/drawings shall be submitted after placement of order (for specific project) for BHEL & customer's approval: -

Sl. No.	Drawings / Document Description	Document Number	Document Type	First Submission/ Re submission Schedule
1	Technical Data Sheet for Cable trays & Accessories	Shall be informed later.	Primary	R-0 within 14 days from PO & subsequent revisions within 10 days of comments received from BHEL. BHEL shall furnish comments / approval on each submission within 18 days from receipt.
2	GA drawings of Cable Trays & Accessories		Primary	
3	Quality Plan for Cable Trays & Accessories		Primary	
4	BOQ of Coupler plates, Bolts, Washers & Nuts, Tray Cover Accessories (Flat, Pipes etc) for lot wise ordered quantity.		Secondary	



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DATASHEET-A

1.0 APPLICABLE STANDARDS

- | | | |
|----|----------|--|
| a) | IS: 1079 | For hot rolled carbon steel sheet and strip. |
| b) | IS: 1730 | For dimensions for steel sheet and strip. |
| c) | IS: 1363 | Hexagon head bolts, screws and nuts. |
| d) | IS: 2629 | For hot dip galvanising of steel & surface pre treatment. |
| e) | IS: 2633 | For testing of uniformity of zinc coating. |
| f) | IS: 6745 | For determination of mass of zinc coating. |
| g) | IS: 1367 | Galvanised Coating on threaded Fasteners.
(Part-XIII) |
| h) | IS: 1852 | For Rolling and Cutting Tolerances of hot rolled steel products. |
| i) | IS: 9595 | For Thickness of Welding. |
| j) | 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) | : | 600 300 150 (Ladder)
600 300 150 100 50 (Perforated) |
| 2.5 | Construction | : | Conforming to enclosed drawing |
| 2.6 | Bending Radius
of Accessories (in mm) | : | 600 mm |
| 2.7 | Tolerance in length/
Width / Height | : | + / - 2 mm |
| 2.8 | Marking | : | Following shall be engraved/punched on each standard length
of cable tray at the centre of both side of runner: "BHEL"
(length of letter shall be 90mm & height shall be 30mm) |

2.9 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. |



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- c) Width : Suitable for width of cable trays.
- d) Tolerance in length/
Width / height : Same as cable trays.
- e) Thickness of the finished product shall not be less than 1.7/ 1.6 mm (As applicable).

5.0 SHEET THICKNESS before Hot Dip Galvanisation

- a) For cable trays & Accessories : 2.0 mm
- b) For cable tray cover : 1.7/ 1.6 mm (As applicable)
- c) For Coupler plate : 3.0 mm
- d) Tolerance in Thickness : As per IS: 1852
- e) Make : SAIL / TISCO / RINL / BHUSAN / JINDAL ISPAT /
ESSAR / LLOYD / IISCO / Authorized re-rollers of
SAIL

6.0 SURFACE TREATMENT

- a) Pre-treatment : IS 2629 before galvanisation
- b) Type : Hot dip galvanisation
- c) Applicable Standard : IS 2629
- d) Minimum thickness : 75 microns (minimum), 86 microns (average) for 2.0 mm
thick product
55 microns (minimum), 65 microns (average) for 1.7/ 1.6
mm thick product
- e) Min. weight of Zinc deposit : 610 grams per square meter for 2.0 mm thick product
460 grams per square meter for 1.7/ 1.6 mm thick product
- f) 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 Test as per IS 2629.



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7.0 NUMBER OF COUPLER PLATES, BOLTS, WASHERS & NUTS REQUIRED FOR EACH CABLE TRAY SECTION (2.5 MTRS)

Sl. No.	NAME OF ITEM	COUPLER PLATE (nos.)	NUTS (nos.)	WASHERS (nos.)	BOLTS (nos.)
1	Cable tray of standard length 2.5 meters	4	16	32	16

NOTE: - Based on above table, no. of coupler plates, bolts, washers & nuts shall be calculated for the offered lot. Over & above the calculated quantity, additional 5% coupler plates & 10% bolts, washers & nuts shall be supplied by the bidder.



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SECTION-II

STANDARD TECHNICAL REQUIREMENTS



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1.0 CODES & 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 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 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 Cable trays & accessories shall be of two types, namely ladder type and perforated type. Technical particulars are specified in Data Sheet-A and drawings enclosed with this specification. Minor fabrication detail changes which do not affect the material /dimensional aspect of the equipment, shall be subject to BHEL/owner's approval without any commercial implication.
- 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.
- 2.3 Necessary fasteners shall be provided along with each length of cable tray as specified in drawings enclosed.
- 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.
- 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.

3.0 QUALITY ASSURANCE, TESTING AND INSPECTION

- 3.1 Bidder shall confirm compliance with BHEL'S standard Quality plan (PE-QP-999-507-E005, Rev-03) as attached with the specification. At contract stage, the successful bidder shall submit the QP for BHEL/ ultimate customer's approval. In case bidder has reference QP 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 equipment & components shall be deemed to be included in the bid price.



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4.0 PACKING

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



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STANDARD QUALITY PLAN

	MANUFACTURER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN		SPEC. NO. :	DATE:
	CUSTOMER :		CUSTOMER :		QP NO.: PE-QP-999-507-E005, REV. 03	DATE: 13.02.2020
	PROJECT:		PROJECT:		PO NO.:	DATE:
	ITEM: CABLE TRAYS & ACCESSORIES		SYSTEM: CABLING		SECTION: II	SHEET Page 1 of 7

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1	2	3	4	5	M	C/ N	7	8	9	*	**			
										D	M	C	N	
1.0 RAW MATERIAL														
1.1	HOT ROLLED CARBON STEEL SHEET	1.CHEM.& PHY. PROPERTIES	MA	VERIFICATION OF TCS	100%	100%	IS -1079	IS -1079	MILL TC	✓	P/V	V	V	Steel shall be procured from SAIL/TISCO/RINL/ BHUSAN/JINDAL, ISPAT/ESSAR/LLO YD/ IISCO/ 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	CHEM.COMP.	MA	CHEM TEST	EACH HEAT	EACH HEAT	IS-209	IS-209	TC	✓	P/V	V	V	
2.0 IN-PROCESS														
2.1	FABRICATION	1.DIMENSIONS	MA	MEASUREMENT	100%	100%	APPD.DRG	APPD.DRG	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.
		2.WELDING QUALITY	MA	VISUAL	100%	100%	ASME SEC. IX	ASME SEC. IX	QC RECORD	✓	P	V	V	

BHEL				BIDDER/ SUPPLIER				FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING		QUALITY		Sign & Date		Sign & Date		Doc No:		Sign & Date	
Prepared by:	Manish SETHY	Checked by:	SUJIT KUMAR	Sign & Date	Seal	Reviewed by:	Kundan PRASAD	Sign & Date	Seal	Approved by:	Ritesh KUMAR JAISWAL
Reviewed by:	Manish SHUKLA	Reviewed by:	MANISH SHUKLA	Sign & Date	Seal	Approved by:	RITESH KUMAR JAISWAL	Sign & Date	Seal		

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN		SPEC. NO.:	DATE:
	CUSTOMER :		CQ NO.: PE-QP-999-507-E005, REV. 03		DATE: 13.02.2020	
	PROJECT:		PO NO.:		DATE:	
	ITEM: CABLE TRAYS & ACCESSORIES		SYSTEM: CABLING		SECTION: II	SHEET Page 2 of 7

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1	2	3	4	5	6		7	8	9	* D	**			
					M	C/ N					M	C	N	
2.2	SURFACE PREPARATION	3.SURFACE FINISH	MA	VISUAL	100%	100%	FREE FROM DEFECTS & SLAG	FREE FROM DEFECTS & SLAG	QC RECORD	✓	P	V	V	
		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 galvanisation plant listed in annexure-2 to quality plan.
		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	-	-	

BHEL			
ENGINEERING		QUALITY	
Prepared by:	Sign & Date	Name	Sign & Date
SUJIT KUMAR SETHY	13/02/2020	KUNDAN PRASAD	13/02/2020
Reviewed by:	Manish Chukla	Manish Kumar	15/02/2020

BIDDER/ SUPPLIER	
Sign & Date	Sign & Date
Seal	Seal

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

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN		SPEC. NO. :	DATE:
	CUSTOMER :		CUSTOMER :		QP NO.: PE-QP-999-507-E005, REV. 03	DATE: 13.02.2020
	PROJECT:		PROJECT:		PO NO.:	DATE:
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1	2	3	4	5	M	C/ N	7	8	9	*	D	**	
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	APPD.DRG	APPD.DRG	INSP.REPORT	✓	P	W	Overall thickness of finished product shall not be less than the thickness of cable tray & accessories defined in technical datasheet.
		2. SURFACE FINISH	MA	VISUAL	IS-2500 (PART 1) LEVEL S-4	IS-2500 (PART 1) LEVEL S-4	APPD.DRG	FREE FROM BURRS, SLAG, ROUGHNESS, F LUX, STAIN ETC.	INSP.REPORT	✓	P	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	APPD.DRG		INSP.REPORT	✓	P	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).

BHEL				BIDDER/ SUPPLIER				FOR CUSTOMER REVIEW & APPROVAL					
ENGINEERING		QUALITY		Sign & Date		Sign & Date		Doc No:		Sign & Date		Seal	
Prepared by:	Sign & Date	Name	Checked by:	Sign & Date	Name	Reviewed by:	Sign & Date	Name	Reviewed by:	Sign & Date	Name	Approved by:	Sign & Date
Manish Shukla	13/02/2020	SUJIT KUMAR SETHY	Kundan Prasad	13/02/2020	Kundan Prasad	Ritesh Kumar Jaiswal	13/02/2020	Ritesh Kumar Jaiswal					

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN		SPEC. NO. :	DATE:
			CUSTOMER :	QP NO.: PE-QP-999-507-E005, REV. 03	DATE: 13.02.2020	
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			ITEM: CABLE TRAYS & ACCESSORIES	SYSTEM: CABLING	SECTION: II	SHEET Page 4 of 7

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

	4. RIGIDITY (FOR TRAYS)	MA	DEFLECTION TEST	2 No./ LOT/ TYPE	2 No./ LOT/ TYPE	APPD. DRG	APPD. DRG	INSP REPORT	✓	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	CHEM. 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)	INSP REPORT	✓	
	6. UNIFORMITY OF ZINC COATING	MA	CHEM. TEST	IS-4759	IS-4759	IS-2633	IS-2633	INSP REPORT	✓	

BHEL				BIDDER/ SUPPLIER				FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING		QUALITY		Sign & Date		Sign & Date		Doc No:		Seal	
Prepared by:	Sign & Date	Name	Checked by:	Sign & Date	Name	Reviewed by:	Sign & Date	Name	Reviewed by:	Sign & Date	Seal
Reviewed by:	Sign & Date	Name	Reviewed by:	Sign & Date	Name	Approved by:	Sign & Date	Name	Approved by:	Sign & Date	Seal

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN		SPEC. NO. :	DATE:
	CUSTOMER :		CUSTOMER :		QP NO.: PE-QP-999-507-E005, REV. 03	DATE: 13.02.2020
	PROJECT:		PROJECT:		PO NO.:	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
1	2	3	4	5	6	7	8	9	**	
		7. THICKNESS OF ZINC COATING	MA	PHYSICAL TEST	IS-4759 IS-4759	75 MICRONS (MINIMUM), 86 MICRONS (AVERAGE) for 2.0mm thick product.	75 MICRONS (MINIMUM), 86 MICRONS (AVERAGE) for 2.0mm thick product.	INSPECTION REPORT	P W W	
		8. ADHESION	MA	MECH. TEST	IS-4759	IS-2629	IS-2629	INSPECTION REPORT	P W W	

BHEL				BIDDER/ SUPPLIER				FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING		QUALITY		Sign & Date		Sign & Date		Doc No:		Sign & Date	
Prepared by:	SUIT KUMAR SETHY	Checked by:	KUNDAN PRASAD	Sign	Date	Seal		Reviewed by:		Seal	
Reviewed by:	MANISH SHUKLA	Reviewed by:	RITESH KUMAR JAISWAL					Approved by:			
13/02/2020		13/02/2020									

	MANUFACTURER/ SUPPLIER NAME & ADDRESS		BIDDER/ ADDRESS		STANDARD QUALITY PLAN		SPEC. NO. :		DATE:	
	CUSTOMER :		PROJECT:		ITEM: CABLE TRAYS & ACCESSORIES		SYSTEM: CABLING		SECTION: II	
	PO NO.:		DATE:		DATE:		DATE:		DATE:	
	DATE:		DATE:		DATE:		DATE:		DATE:	

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK			REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C/ N				D	*	M	C	N	
1	2	3	4	5	6		7	8	9	INSP.REPORT	✓	P	W	W	INSPECTOR TO MENTION THE TOTAL NUMBER OF GUNNY BAGS/BUNDLES OF COUPLER PLATES, NUTS, BOLTS & WASHER IN THE INSPECTION REPORT. FURTHER MANUFACTURER SHALL ATTACH THE DETAIL OF TOTAL NUMBER OF GUNNY BAGS/BUNDLES OF THE RESPECTIVE ITEMS WITH PACKING LIST. Refer Note - 2
		9. COUPLER PLATE	MA	VISUAL	100%	100%	BHEL APPD. DOCUMENT	BHEL APPD. DOCUMENT	INSP.REPORT	✓		P	W	W	
		10. NUT & BOLT	MA	VISUAL	100%	100%	BHEL APPD. DOCUMENT	BHEL APPD. DOCUMENT	INSP.REPORT	✓		P	W	W	
		11. WASHER	MA	VISUAL	100%	100%	BHEL APPD. DOCUMENT	BHEL APPD. DOCUMENT	INSP.REPORT	✓		P	W	W	
		12. PACKING	MA	VISUAL	100%	100%	BHEL APPD. DOCUMENT	BHEL APPD. DOCUMENT	INSP.REPORT	✓		P	V	-	

ENGINEERING				BHEL				QUALITY			
Prepared by:	Sign & Date	Name	Checked by:	Sign & Date	Name	Reviewed by:	Sign & Date	Checked by:	Sign & Date	Name	Reviewed by:
Manish Shukla	13/02/2020	SUIT KUMAR SETHY	Manish Shukla	13/02/2020	KUNDAN PRASAD	Ritesh Kumar	13/02/2020	Manish Shukla	13/02/2020	Ritesh Kumar	13/02/2020

BIDDER/ SUPPLIER	
Sign & Date	Seal

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

	MANUFACTURER/ SUPPLIER NAME & ADDRESS	BIDDER/ BIDDER NAME & ADDRESS	STANDARD QUALITY PLAN	SPEC. NO. :	DATE:
	CUSTOMER :		QP NO.: PE-QP-999-507-E005, REV. 03	DATE: 13.02.2020	
	PROJECT:		PO NO.:	DATE:	
	ITEM: CABLE TRAYS & ACCESSORIES	SYSTEM: CABLING	SECTION: II	SHEET Page 7 of 7	

NOTES:

1. BHEL RESERVES THE RIGHT FOR CONDUCTING REPEAT TEST IF REQUIRED.
2. PHOTOGRAPHS OF COMPLETE CABLE TRAYS AFTER PACKING TO BE SENT TO BHEL PURCHASE GROUP FOR REVIEW BEFORE ISSUING MDCC.
3. PROJECT SPECIFIC QUALITY PLAN TO BE DEVELOPED BASED ON CUSTOMER REQUIREMENT.

LEGENDS:

*RECORDS, IDENTIFIED WITH "TICK"(✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION, D: DOCUMENTATION

** M: SUPPLIER/ MANUFACTURER/ SUB-SUPPLIER, C: MAIN SUPPLIER/ BHEL/ THIRD PARTY INSPECTION AGENCY, N: CUSTOMER,

P: PERFORM, W: WITNESS, V: VERIFICATION, AS APPROPRIATE

MA: MAJOR, MI: MINOR, CR: CRITICAL

BHEL				FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING		QUALITY		Doc No:			
Sign & Date	Name	Sign & Date	Name	Reviewed by:	Sign & Date	Name	Seal
Prepared by: <i>Manish</i> 13/2/2020	SUJIT KUMAR SETHY	Checked by: <i>Kundan</i> 13/2/2020	KUNDAN PRASAD	Approved by: <i>Ritesh</i> 13/2/2020			
Reviewed by: <i>Manish</i> 13/2/2020	MANISH SHUKLA	Reviewed by: <i>Ritesh</i> 13/2/2020	RITESH KUMAR JAISWAL				

ANNEXURE-2A 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	Rukmani Electrical & Fabricators Pvt, Ltd.	Urla Industrial Area, Urla Sarora Road, Raipur- 493 221 (Chhattisgarh) Shankharidaha Baniyarah, Jalan Industrial Complex, Gate no.3, Lane no. 4, Domjur, Howrah , W.B .- 71141
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,
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:

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.

ANNEXURE-2B to Quality Plan

LIST OF NTPC APPROVED GALVANIZERS (FOR NTPC PROJECTS)

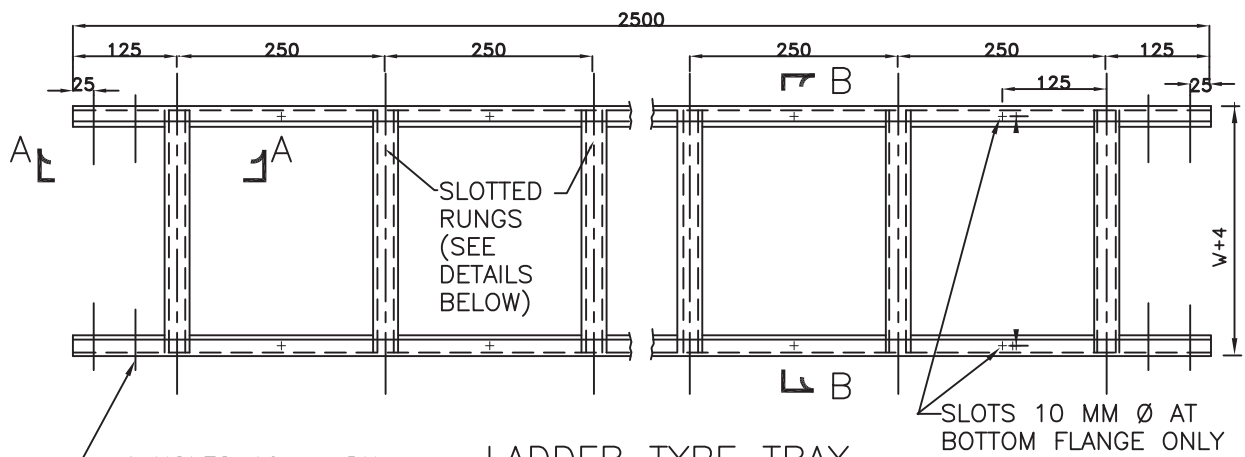
S. NO.	ITEM	VENDOR NAME
1	Galvanising	MJ Engg., Delhi
2	Galvanising	Jamna Metal, Delhi
3	Galvanising	A.V. Engg., Kolkata
4	Galvanising	Inar Profiles, Vishakapatnam
5	Galvanising	Anand Udyog, Mumbai
6	Galvanising	Techno Engg., Chandigarh
7	Galvanising	Steelite Engg., Mumbai
8	Galvanising	National Galvanizer, Kolkata
9	Galvanising	Unistar Galvanizer, Kolkata
10	Galvanising	B.P. Projects, Kolkata
11	Galvanising	Bajaj, Pune
12	Galvanising	Electrocure Industries, Mumbai
13	Galvanising	B.G. Shirke, Pune
14	Galvanising	Gurpreet Galvanizer, Hyderabad
15	Galvanising	Sigma, Mumbai
16	Galvanising	Radhakrishnan Shetty, Chennai
17	Galvanising	Karamtara, Mumbai
18	Galvanising	Poona Galvanizers, Pune
19	Galvanising	Neha Galvanizer, Kolkata
20	Galvanising	Unitech Galvanizers, Hoogly
21	Galvanising	DMP projects, Kolkata
22	Galvanising	Patny Systems, Medhak

NOTES:

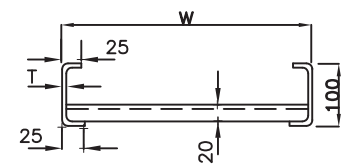
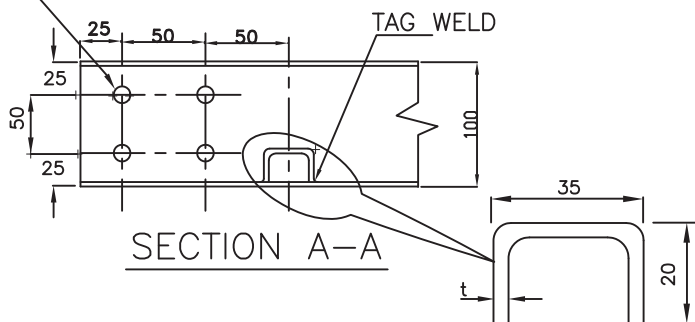
- 1** *ANY CHANGE IN THE ABOVE LIST SHALL BE INFORMED BY BHEL AT THE TIME OF SPECIFIC PROJECT REQUIREMENT AND NO COMMERCIAL IMPLICATION SHALL BE ALLOWED ON THIS ACCOUNT.*
- 2** *IT SHALL BE THE RESPONSIBILITY OF THE VENDOR TO GET THE MATERIAL GALVANIZED AS PER ABOVE WITHOUT ANY COMMERCIAL IMPLICATION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

TYPICAL DETAILS OF
CABLE TRAYS AND ACCESSORIES
TYPE - A

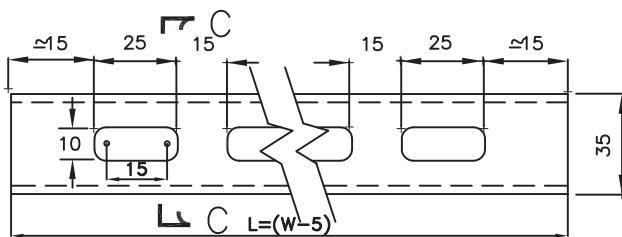
CUSTOMER							
PROJECT							
JOB NO.	बी एच ई लि  BHARAT HEAVY ELECTRICALS LIMITED POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA(U.P) INDIA	DPT CODE-E	DRN	NAME	SIGN	DATE	
			DSN	SKS			
			CHD	KG			
			APP	MS			
		DWG. NO. PE-TS- 998-507-E021					
	SHT. 01 OF 14 REV. 0						



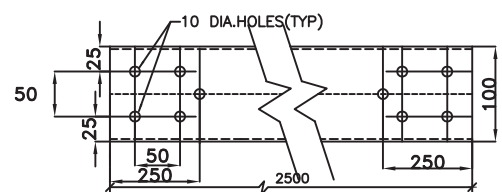
4 HOLES 10mm DIA. LADDER TYPE TRAY



SECTION B-B



SLOTTED RUNGS
(TO SUIT TRAY WIDTH)



SIDE RUNNER

W	150	300	450	600
L	145	295	445	595
T	2	2	2	2
t	2	2	2	2

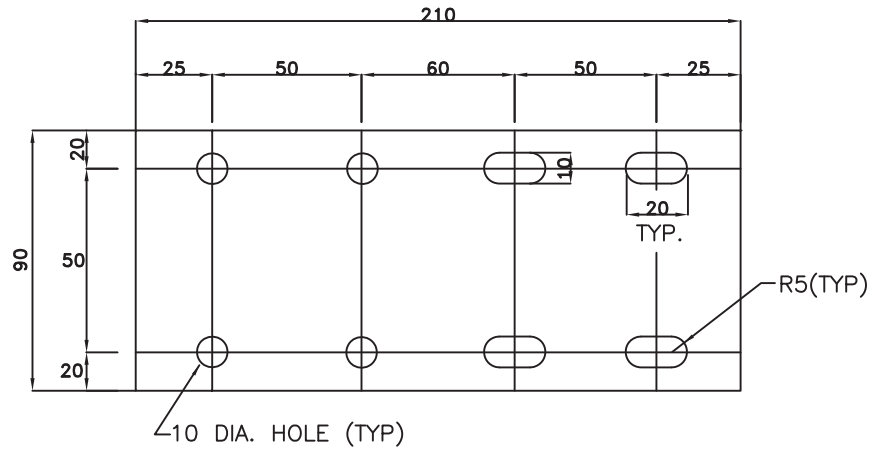
FOR GENERAL NOTES REFER SHEET 14 OF 14



TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE-A)

DWG. NO.
PE-TS- 998-507-E021

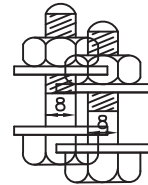
SHT. 02 OF 14 REV. 0



**SIDE COUPLER PLATE FOR
LADDER/PERFORATED TYPE TRAYS**

(600/450/300/150W TRAYS)

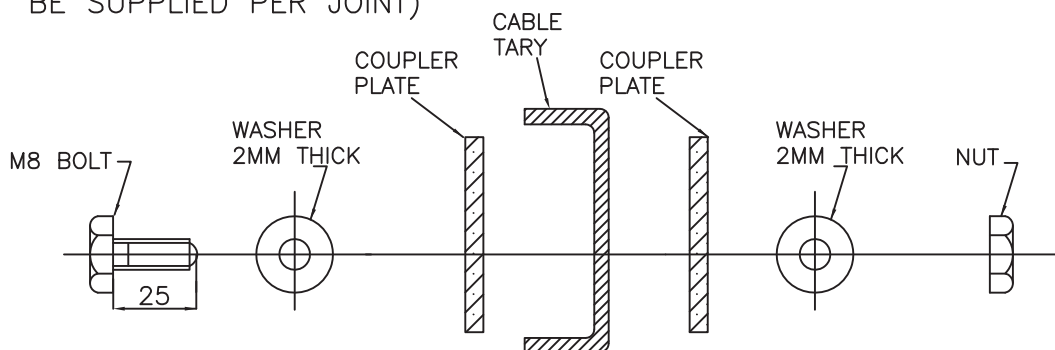
QTY. REQUIRED/TRAY SECTION : 4 NOS.



QTY. REQD/TRAY SECTION

- A) 16 NOS. M8 BOLTS
- B) 16 NOS. NUTS
- C) 32 NOS. WASHERS

(2 NOS. COUPLER PLATES
OF 3 MM THICKNESS TO
BE SUPPLIED PER JOINT)



SEQUENCE OF M8 BOLT, WASHER, NUT, COUPLER PLATE & CABLE TRAY
FOR TYPICAL CABLE TRAY JOINT

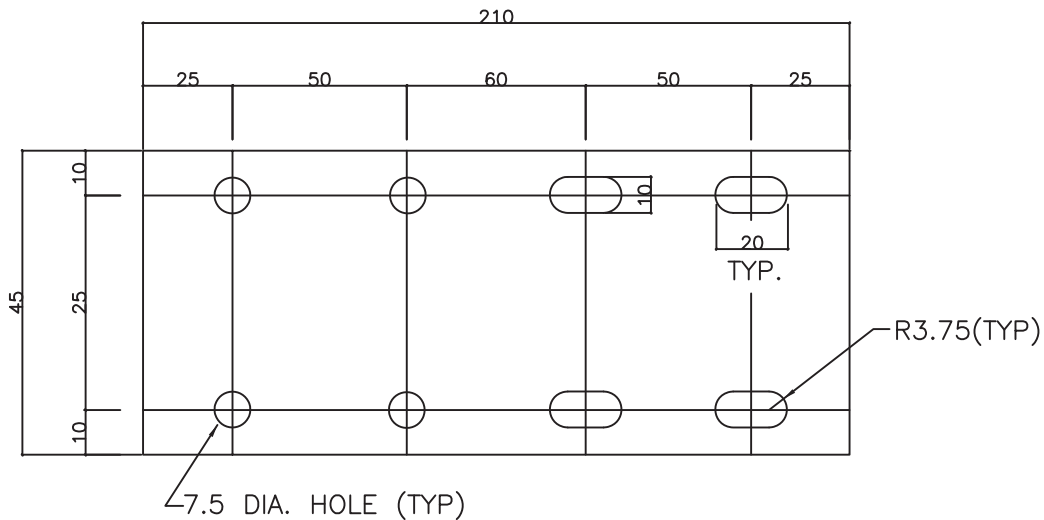
FOR GENERAL NOTES REFER SHEET 14 OF 14



**TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE-A)**

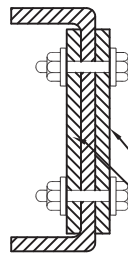
DWG. NO.
PE-TS- 998-507-E021

SHT. 03 OF 14 REV. 0

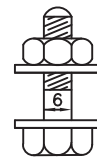


SIDE COUPLER PLATE FOR PERFORATED TYPE TRAYS (100/50W TRAYS)

QTY. REQUIRED/TRAY SECTION : 4 NOS.

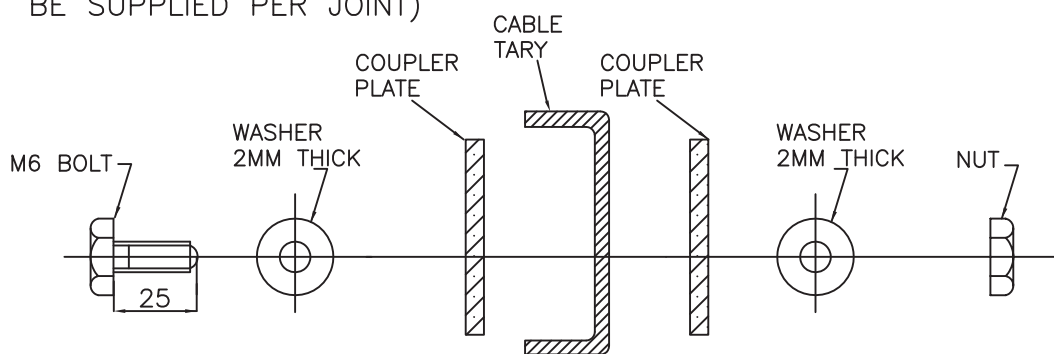


(2 NOS. COUPLER PLATES
OF 3 MM THICKNESS TO
BE SUPPLIED PER JOINT)



QTY. REQD/TRAY SECTION

- A) 16 NOS. M6 BOLTS
- B) 16 NOS. NUTS
- C) 32 NOS. WASHERS



SEQUENCE OF M6 BOLT, WASHER, NUT, COUPLER PLATE & CABLE TRAY
FOR TYPICAL CABLE TRAY JOINT

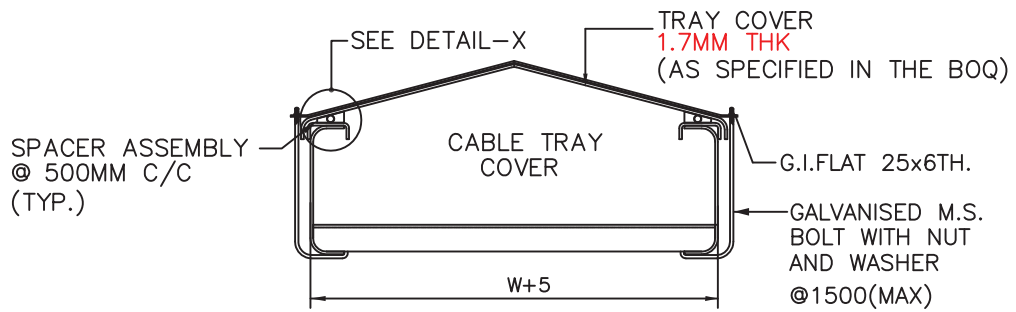
FOR GENERAL NOTES REFER SHEET 14 OF 14



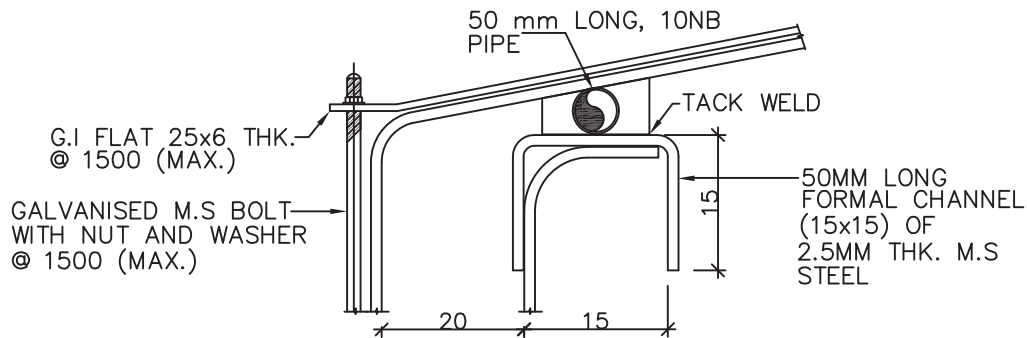
TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE-A)

DWG. NO.
PE-TS- 998-507-E021

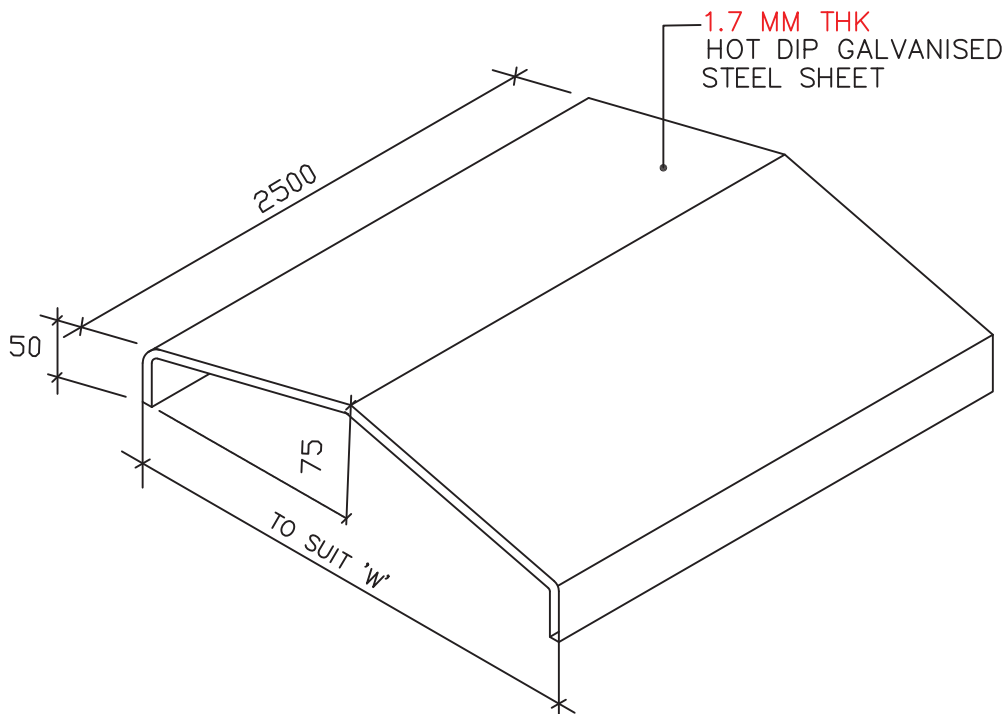
SHT. 04 OF 14 REV. 0



COVER FIXING (TYP.)



DETAIL-X



CABLE TRAY COVER

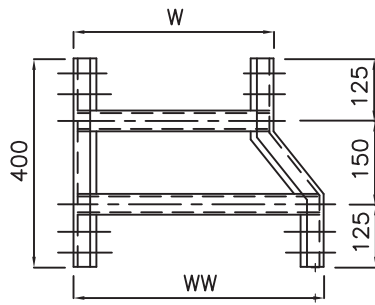
FOR GENERAL NOTES REFER SHEET 14 OF 14



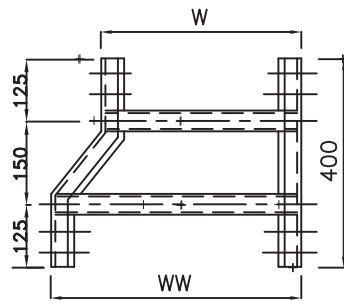
TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE-A)

DWG. NO.
PE-TS- 998-507-E021

SHT. 05 OF 14 REV. 0



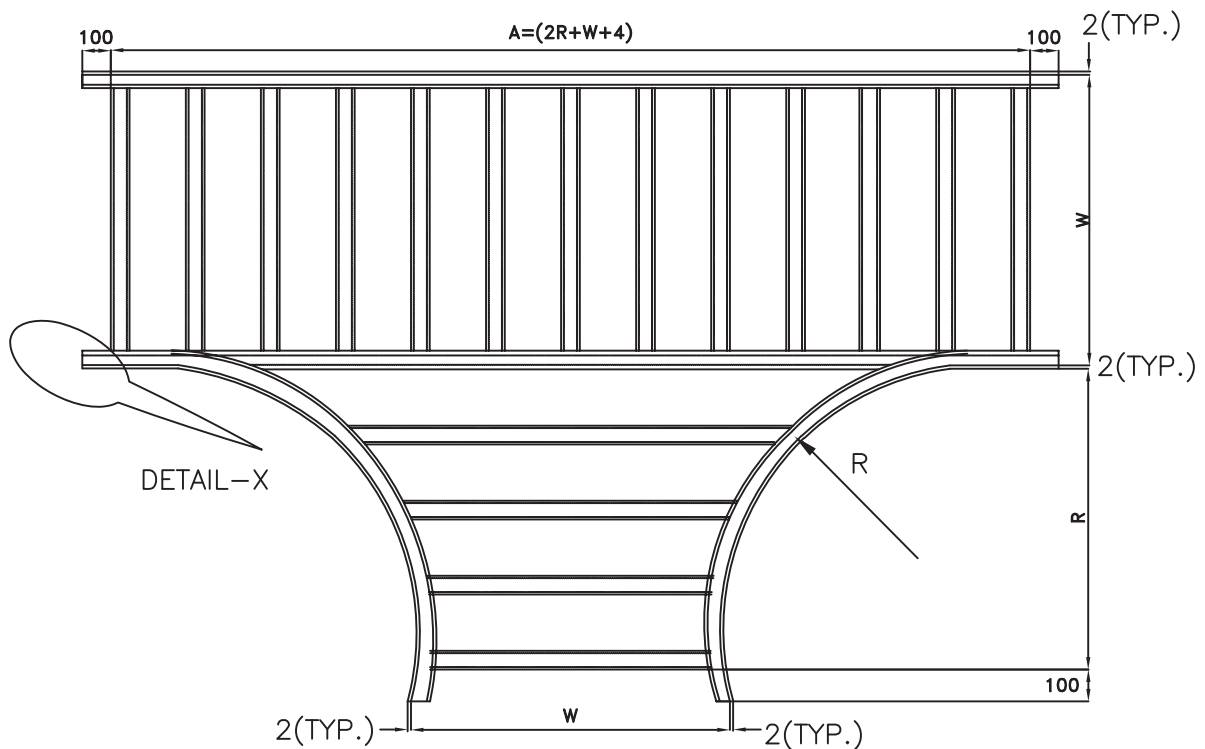
LEFT HAND REDUCER



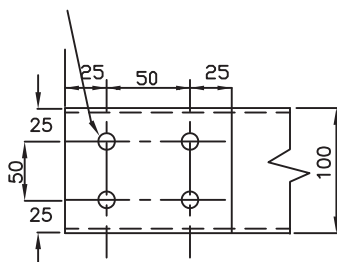
RIGHT HAND REDUCER

WW	W	DEPTH
600	450	100
600	300	100
600	150	100
450	300	100
300	150	100

LADDER TYPE



10mm DIA. HOLES



WIDTH W	BENDING RADIUS R	DEPTH	A			
			W			
			150	300	450	600
150, 300, 450 & 600	600	100	1354	1504	1654	1804

LADDER TYPE

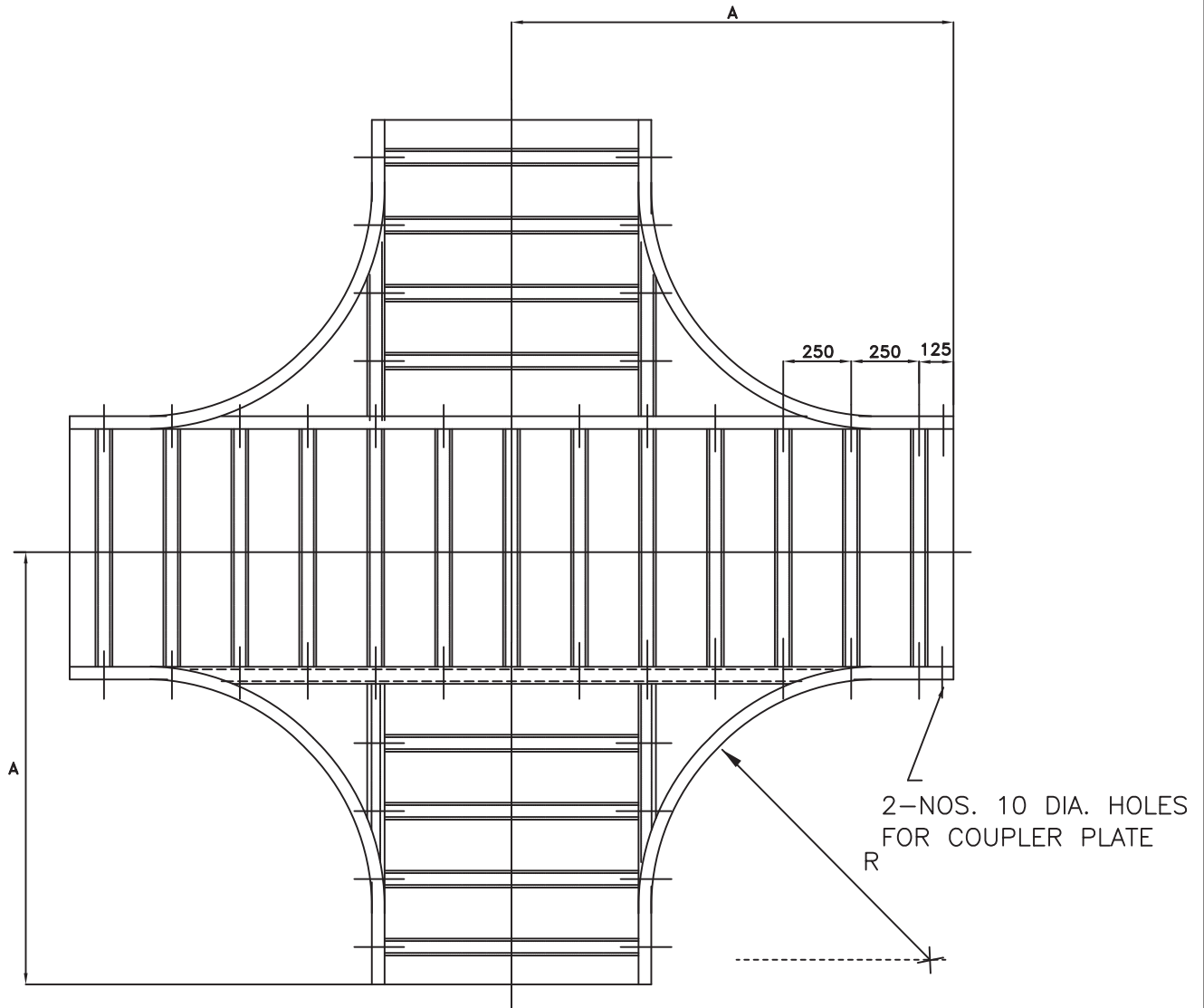
FOR GENERAL NOTES REFER SHEET 14 OF 14



TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE-A)

DWG. NO.
PE-TS- 998-507-E021

SHT. 06 OF 14 REV. 0



HORIZONTAL CROSS-PLAN

WIDTH W	BENDING RADIUS R	$A=R+W/2+100$
600	600	1000
450	600	925
300	600	850

FOR GENERAL NOTES REFER SHEET 14 OF 14

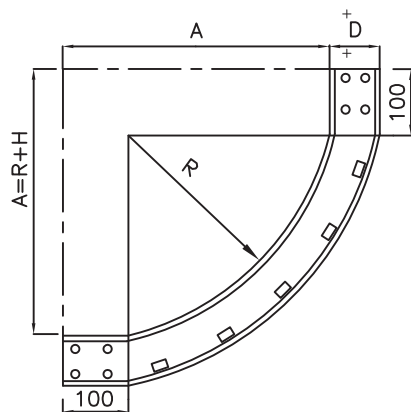


TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE-A)

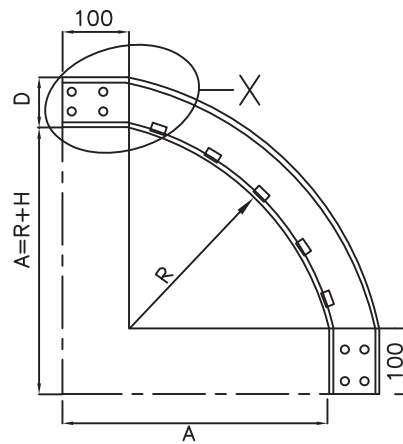
DWG. NO.
PE-TS-998-507-E021

SHT. 07 OF 14

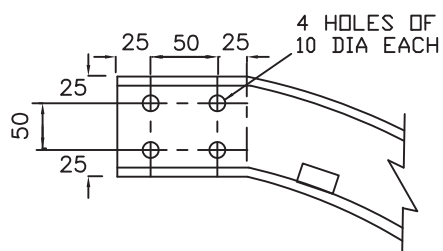
REV. 0



INSIDE TYPE



OUTSIDE TYPE

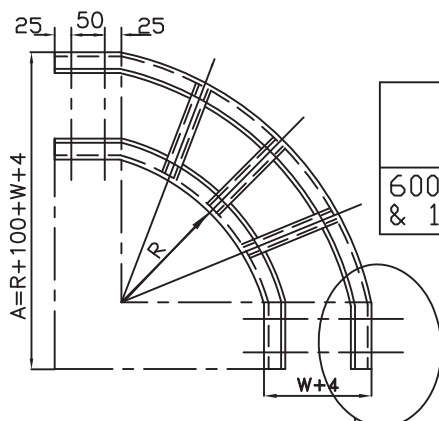


ENLARGED VIEW OF "X"

VERTICAL ELBOW 90 DEG UP/DOWN

INSIDE WIDTH W	BENDING RADIUS R	DEPTH	A
600, 450, 300 & 150	600	100	700

90° VERTICAL BEND - LADDER TYPE



LADDER TYPE

X (AS ABOVE)

HORIZONTAL ELBOW 90 DEG

INSIDE WIDTH W	BENDING RADIUS R	DEPTH	A			
			W			
			150	300	450	600
600, 450, 300 & 150	600	100	854	1004	1154	1304

90° HORIZONTAL BEND - LADDER TYPE

LADDER TYPE ACCESSORIES

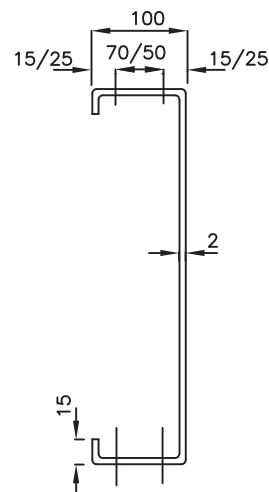
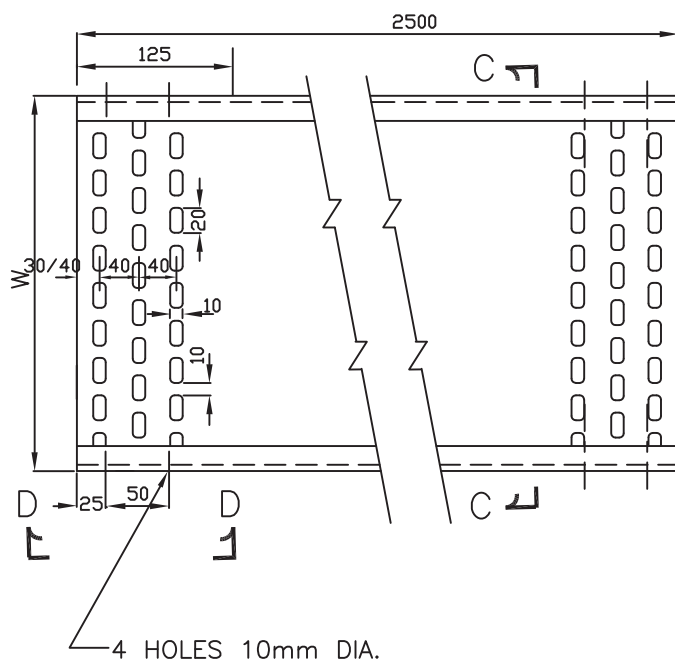
FOR GENERAL NOTES REFER SHEET 14 OF 14



TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE-A)

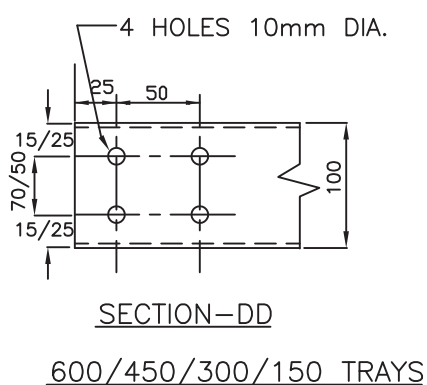
DWG. NO.
PE-TS- 998-507-E021

SHT. 08 OF 14 REV. 0



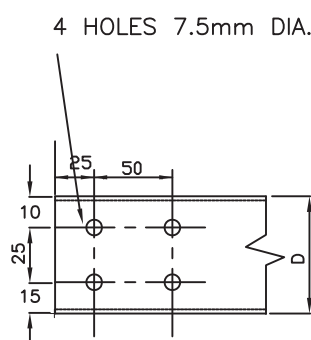
SECTION-CC

600/450/300/150 TRAYS



SECTION-DD

600/450/300/150 TRAYS



SECTION-DD

100/50 TRAYS



SECTION-CC

(100/50 TRAYS)

TRAY WIDTH W (mm)	600	450	300	150	100	50
TRAY DEPTH D (mm)	100	100	100	100	50	50
T (mm)	2	2	2	2	2	2

PERFORATED TYPE TRAY

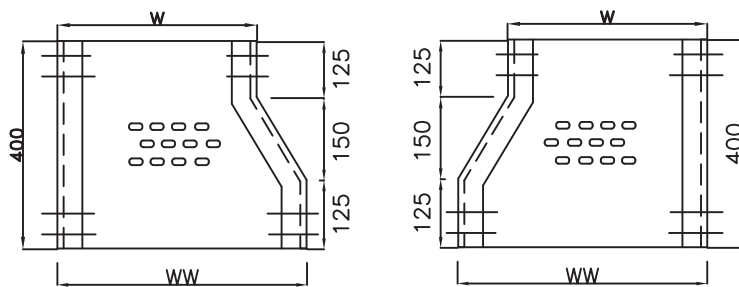
FOR GENERAL NOTES REFER SHEET 14 OF 14



TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE-A)

DWG. NO.
PE-TS- 998-507-E021

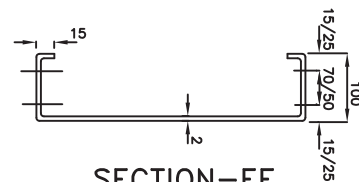
SHT. 09 OF 14 REV. 0



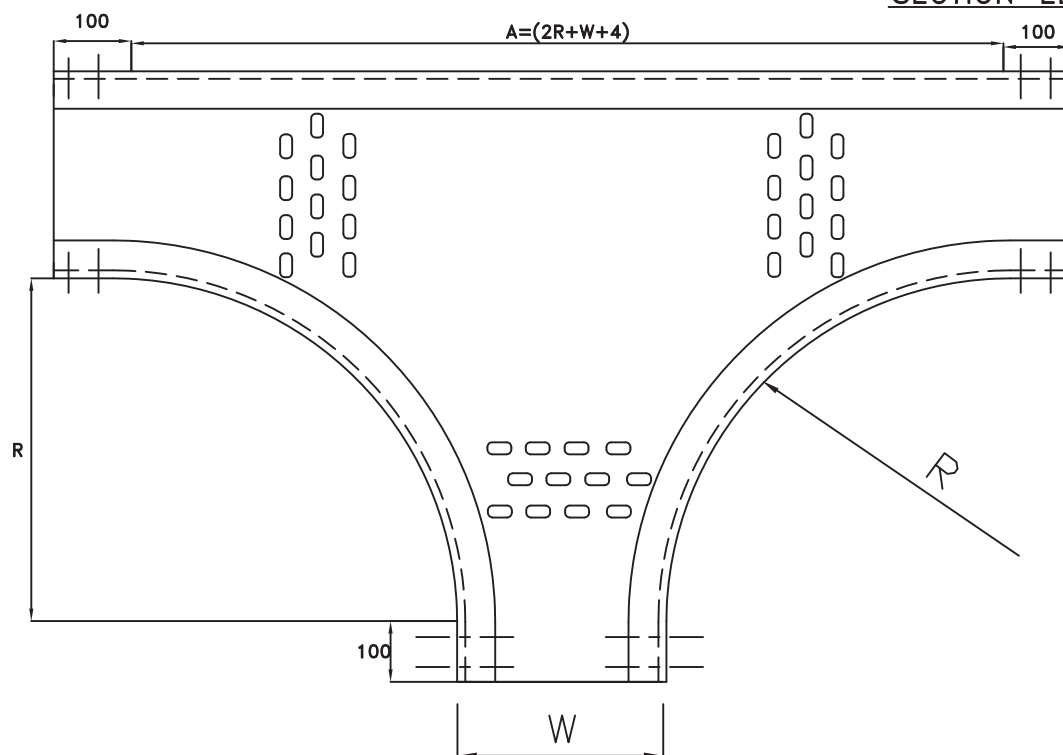
WW	W	DEPTH
600	450	100
600	300	100
600	150	100
450	300	100
300	150	100

LEFT HAND REDUCER RIGHT HAND REDUCER

PERFORATED TYPE



SECTION-EE



TEE

WIDTH W	BENDING RADIUS R	DEPTH	A			
			W			
			150	300	450	600
150, 300, 450 & 600	600	100	1354	1504	1654	1804

PERFORATED TYPE

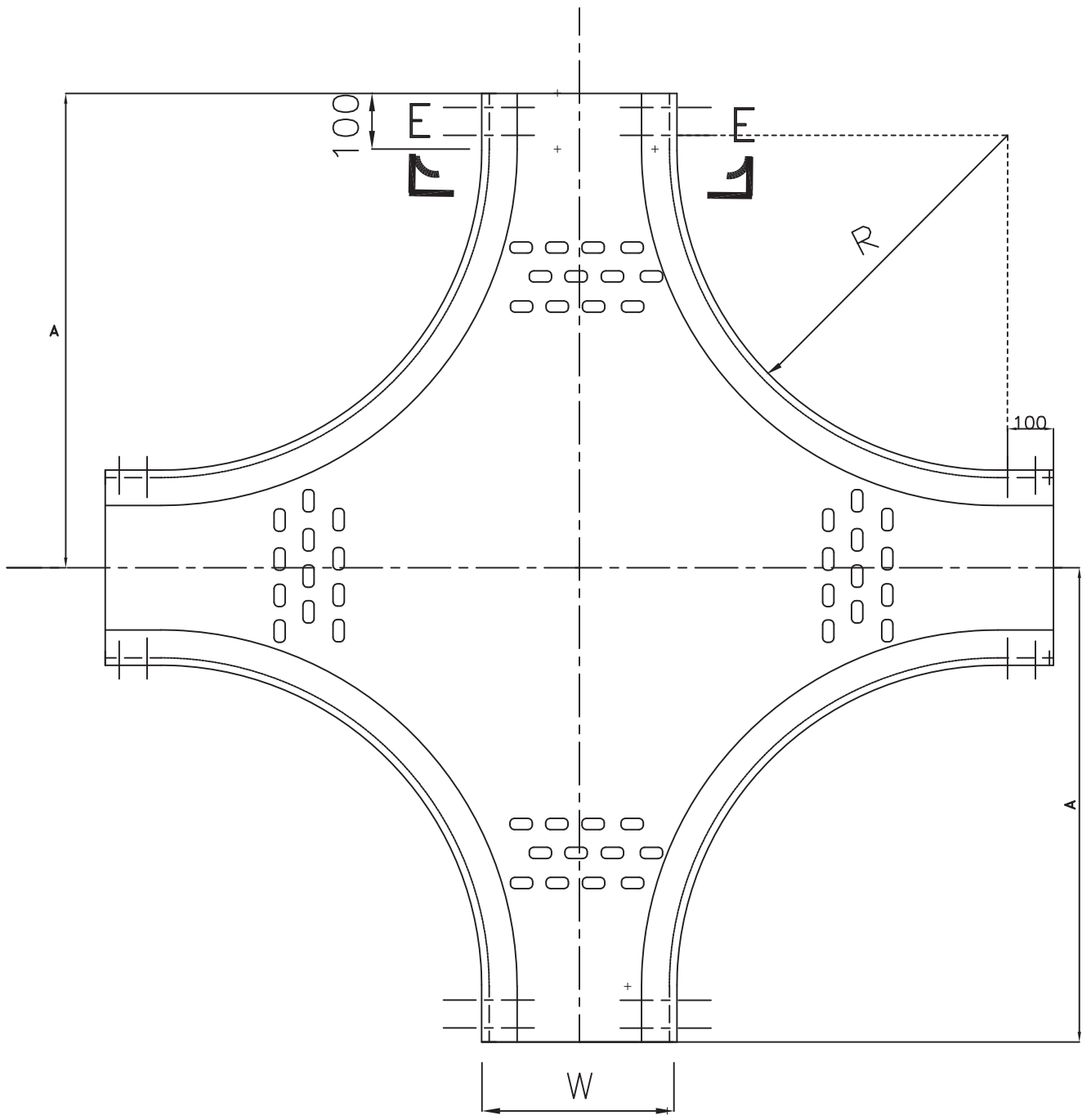
FOR GENERAL NOTES REFER SHEET 14 OF 14



TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE-A)

DWG. NO.
PE-TS- 998-507-E021

SHT. 10 OF 14 REV. 0



CROSS

WIDTH W	BENDING RADIUS R	$A=R+W/2+100$
600	600	1000
450	600	925
300	600	850

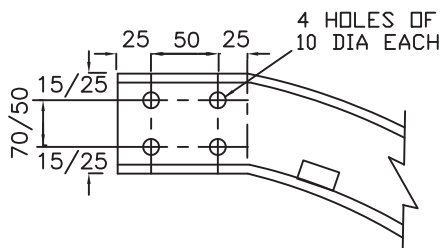
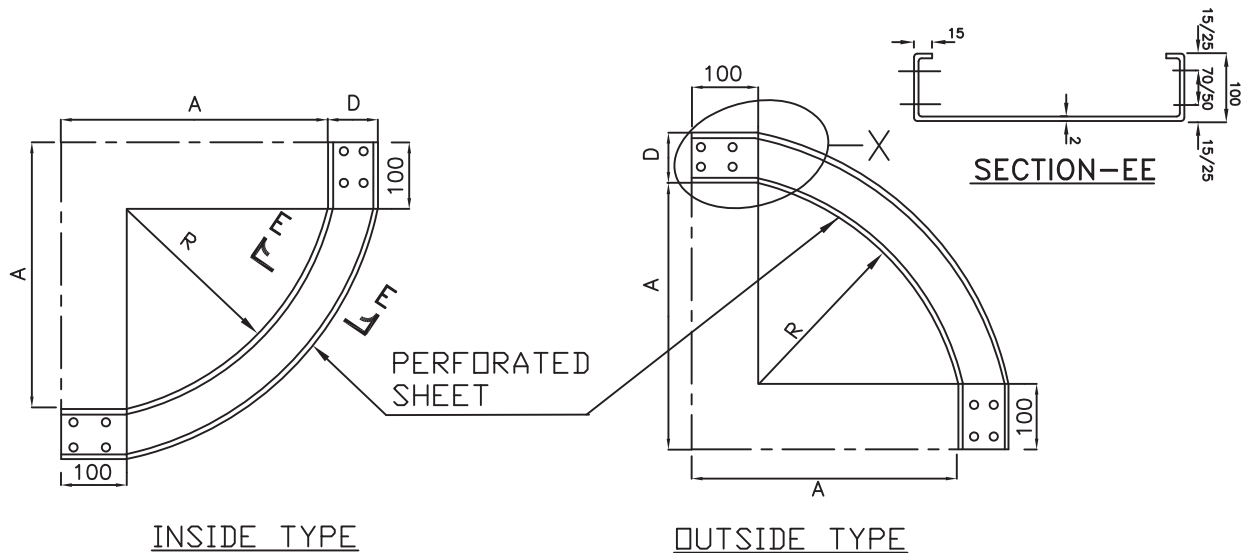
FOR GENERAL NOTES REFER SHEET 14 OF 14



TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES (TYPE-A)

DWG. NO.
PE-TS-998-507-E021

SHT. 11 OF 14 REV. 0



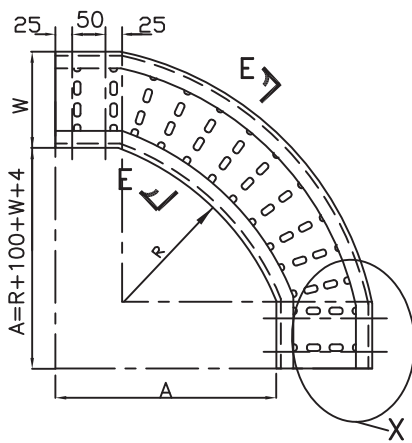
ENLARGED VIEW OF "X"

VERTICAL ELBOW 90 DEG UP/DOWN

INSIDE WIDTH W	BENDING RADIUS R	DEPTH	A
600, 450, 300 & 150	600	100	700

90° VERTICAL BEND - PERFORATED TYPE

HORIZONTAL ELBOW 90 DEG



INSIDE WIDTH W	BENDING RADIUS R	DEPTH	A			
			W			
150, 300, 450 & 600	600	100	150	300	450	600
			854	1004	1154	1304

90° HORIZONTAL BEND - PERFORATED TYPE

FOR GENERAL NOTES REFER SHEET 14 OF 14



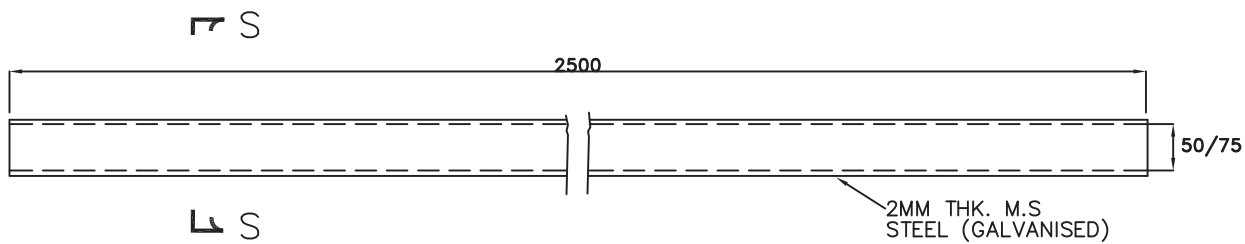
TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES (TYPE-A)

DWG. NO.

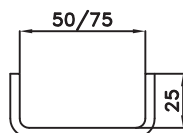
PE-TS- 998-507-E021

SHT. 12 OF 14

REV. 0

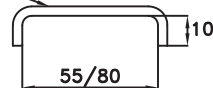


S



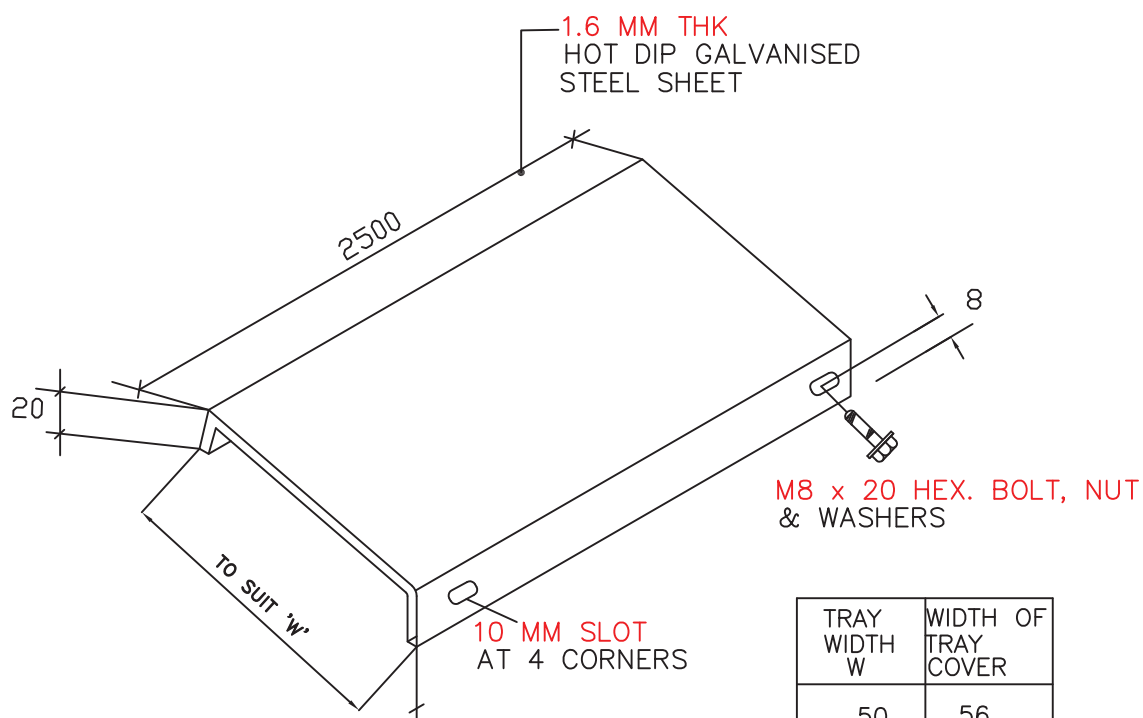
SECTION S-S

2MM THK. M.S
STEEL (GALVANISED)



COVER FOR CABLE TROUGHS

CABLE TROUGHS



TRAY WIDTH W	WIDTH OF TRAY COVER
50	56
100	106
150	156

CABLE TRAY COVER FOR 50, 100 & 150W TRAY

FOR GENERAL NOTES REFER SHEET 14 OF 14



TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE-A)

DWG. NO.
PE-TS- 998-507-E021

SHT. 13 OF 14 REV. 0

NOTES:—

1. THE CABLE TRAYS AND ACCESSORIES SHALL BE MADE OF 2mm HOT ROLLED M.S.SHEET CONFIRMING TO IS:1079. ALL THE COUPLER PLATE SHALL BE OF 3 MM THICK.
2. THE CABLE TRAYS AND ACCESSORIES SHALL BE HOT DIP GALVANISED AS PER IS 2629. THE MASS OF ZINC COATING SHALL BE 610 gm/sqm FOR 2MM THICK PRODUCT AND 460 gm/sqm FOR 1.7/1.6 MM THICK PRODUCT. THICKNESS SHALL BE 75 MICRONS (MINIMUM), 86 MICRONS (AVERAGE) FOR 2.0 MM THICK PRODUCT AND 55 MICRONS (MINIMUM), 65 MICRONS (AVERAGE) FOR 1.7/ 1.6 MM THICK PRODUCT .
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. THE DIMENSIONS OF ALL BENDS, TEES, CROSSES, ETC. FOR PERFORATED CABLE TRAYS SHALL BE THE SAME AS FOR LADDER TYPE TRAY FITTINGS.
6. SIDE CHANNELS OF PERFORATED TRAY ACCESSORIES SHALL BE WELDED WITH THE PERFORATED SHEET AT INTERVALS OF 100mm.
7. LENGTH OF WELDING SHALL NOT BE LESS THAN 25mm. WELDING SHALL BE AS PER IS 9595.
8. PREFERABLY SINGLE MS PERFORATED SHEET SHALL BE USED AS BASE OF ALL PERFORATED TYPE TRAY ACCESSORIES. HOWEVER, IF USE OF PIECES OF PERFORATED SHEET IS UNAVOIDABLE FOR BASE, PIECES SHALL BE WELDED WITH EACH OTHER IN LINE WITH THE ABOVE.
9. ALL TRAY CORNERS SHALL BE FREE OF SHARP EDGES & SMOOTH.
10. THE DEPTH, WIDTH AND LENGTH OF TRAYS AND ACCESSORIES SHALL BE WITHIN A TOLERANCE AS PER RELEVANT IS
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 FOR SIZES ABOVE 12MM AND ELECTROPLATED/ELECTROGALVANISED FROM SIZE BELOW 12MM.
13. ALL DIMENSIONS ARE IN mm UNLESS NOTED OTHERWISE.
14. TRAY ACCESSORIES SHOWN IN THIS DRAWING SHALL BE FACTORY FABRICATED FOR USE AT SITE AS PER APPROVED LAYOUT DRAWINGS. FOR SPECIFIC SITE REQUIREMENTS (E.G. IRREGULAR ANGLE BENDS SUCH AS 30°/60° BENDS, ETC) AS PER SITE LAYOUT CONDITIONS, TRAY ACCESSORIES SHALL BE FABRICATED AT SITE FROM THE STRAIGHT LENGTH OF RESPECTIVE SIZES AS REQUIRED. GALVANISATION DAMAGED DURING CUTTING/WELDING OPERATIONS SHALL BE BRUSHED AND RED LEAD PRIMER, OIL PRIMER AND ALUMINIUM PAINT SHALL BE APPLIED BEFORE INSTALLATION OF THE ACCESSORIES.
15. WIDTH OF CABLE TRAYS PROPOSED TO BE USED FOR PROJECT ARE AS UNDER :
LADDER TYPE CABLE TRAY (MM) : 600,450,300 & 150.
PERFORATED TYPE CABLE TRAY (MM) : 600,450,300,150,100 & 50.
16. 600MM WIDE CABLE TRAY SHALL BE SUITABLE FOR WEIGHT OF 100KG/M INCLUDING LIVE LOAD OF RUNNING LENGTH OF CABLE TRAY.
17. CABLE TROUGHS SHALL BE USED FOR BRANCHING OUT FEW CABLES FROM MAIN CABLE ROUTE.
18. MAKE OF ALL ITEMS SHALL BE AS PER BHEL/CUSTOMER APPROVAL.
19. CABLE TROUGHS OR 50/100MM WIDE PERFORATED TYPE TRAY SHALL BE USED FOR LOCAL CABLING/BRANCHING OUT FEW CABLES FROM MAIN ROUTE.



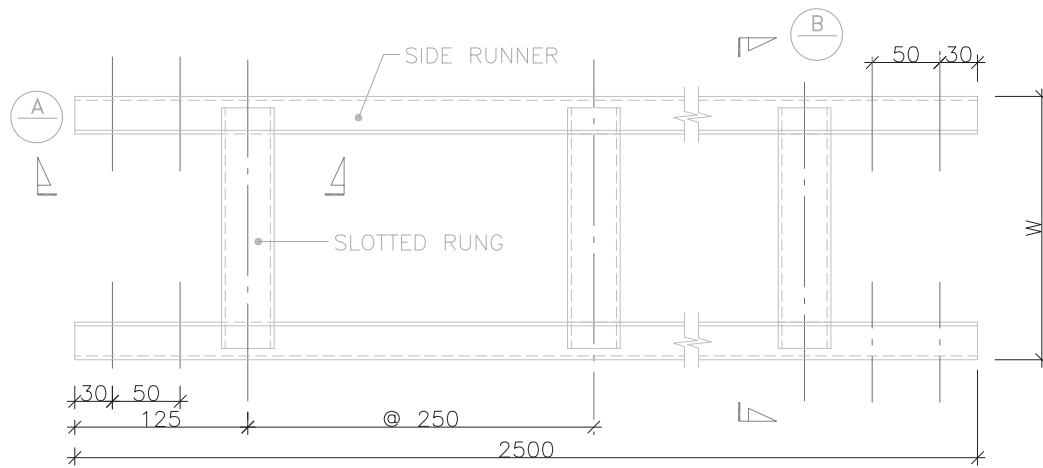
TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES (TYPE-A)

DWG. NO.
PE-TS- 998-507-E021

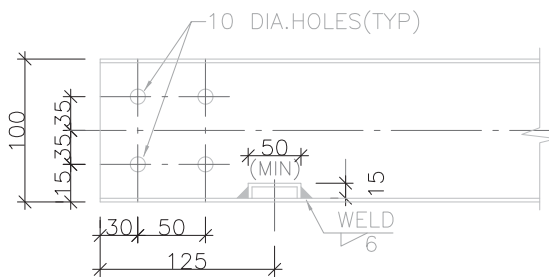
SHT. 14 OF 14 REV. 0

TYPICAL DETAILS OF
CABLE TRAYS AND ACCESSORIES
TYPE-B

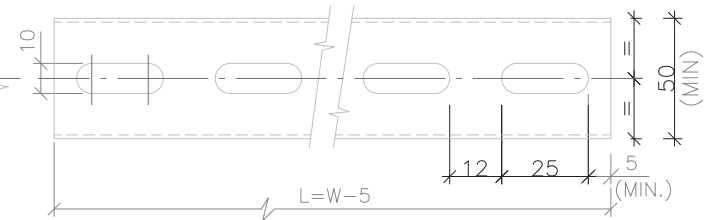
CUSTOMER							
PROJECT							
JOB NO.	BHARAT HEAVY ELECTRICALS LIMITED POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA(U.P) INDIA	DPT CODE-E	DRN	NAME	SIGN	DATE	
बी एच ई लि 			DSN	SKS			
			CHD	KG			
			APP	MS			
		DWG. NO. PE-TS- 998-507-E021					
SHT. 01 OF 11 REV. 0							



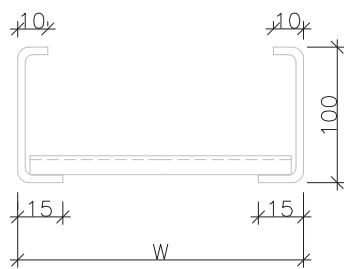
LADDER TYPE CABLE TRAY



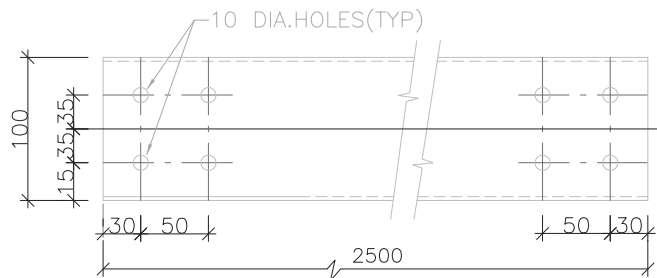
SEC - A



SLOTTED RUNG



SEC - B



SIDE RUNNER

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

W	300	450	600
L	295	445	595

NOTE :-

1. ALL DIMENSIONS ARE IN MM.

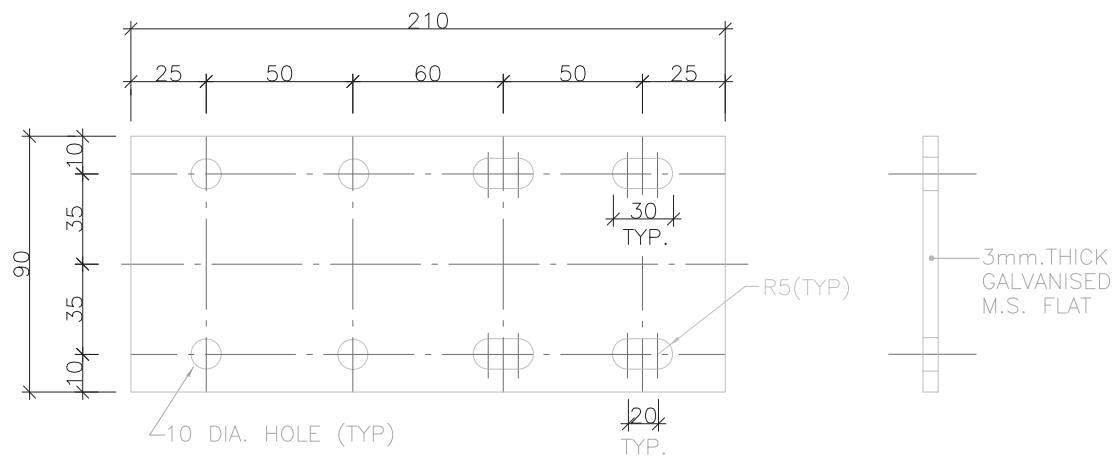
TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE -B)



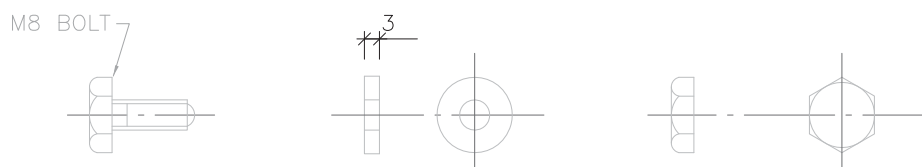
DWG. NO.

PE-TS-998-507-E021

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SIDE COUPLER PLATE



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

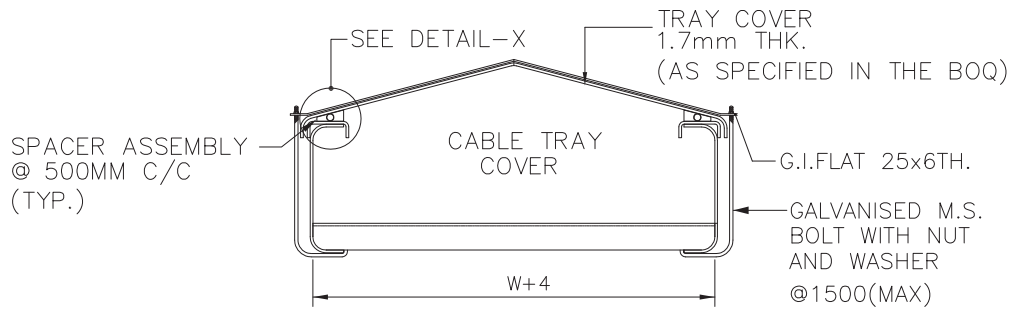
NOTE :-

1. ALL DIMENSIONS ARE IN MM.

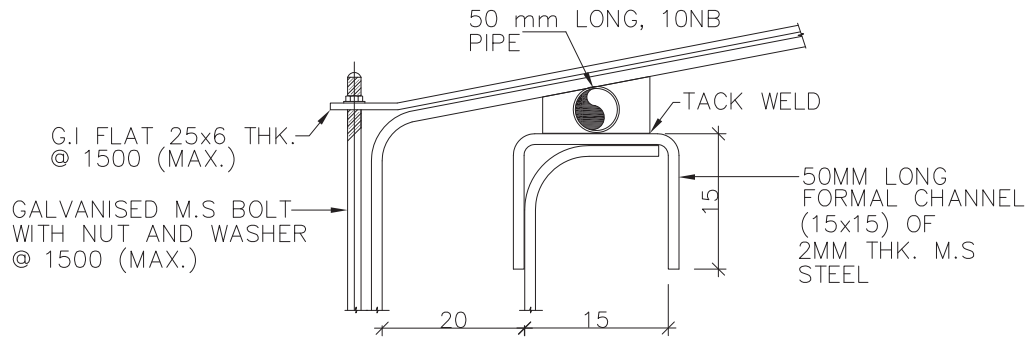
TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE -B)



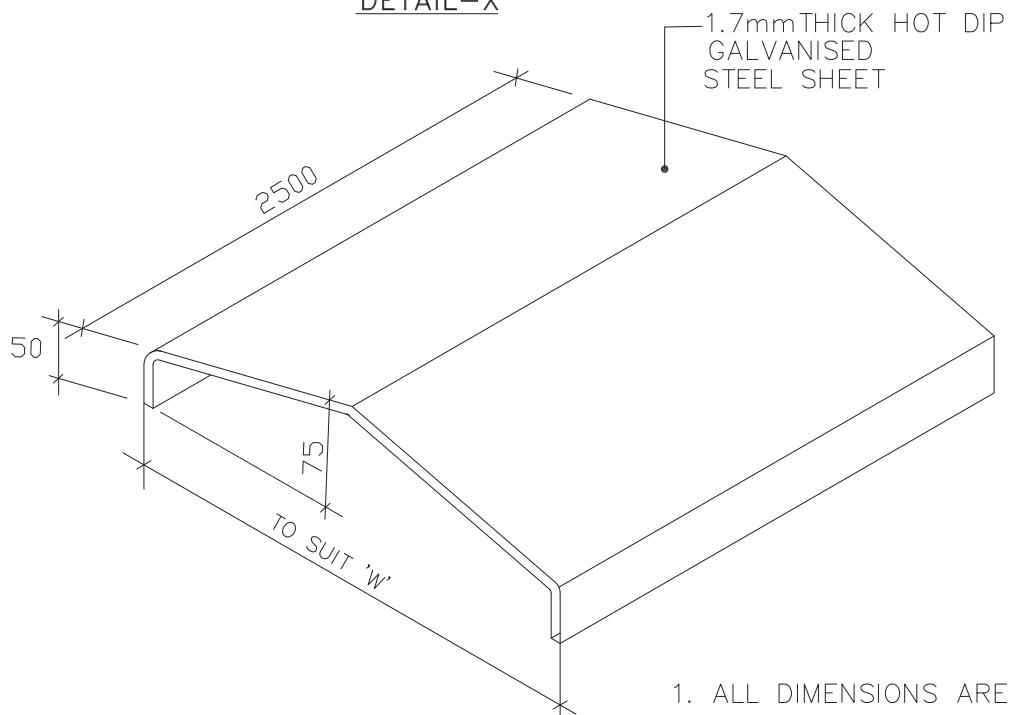
DWG. NO.
PE-TS-998-507-E021
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COVER FIXING (TYP.)



DETAIL-X



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

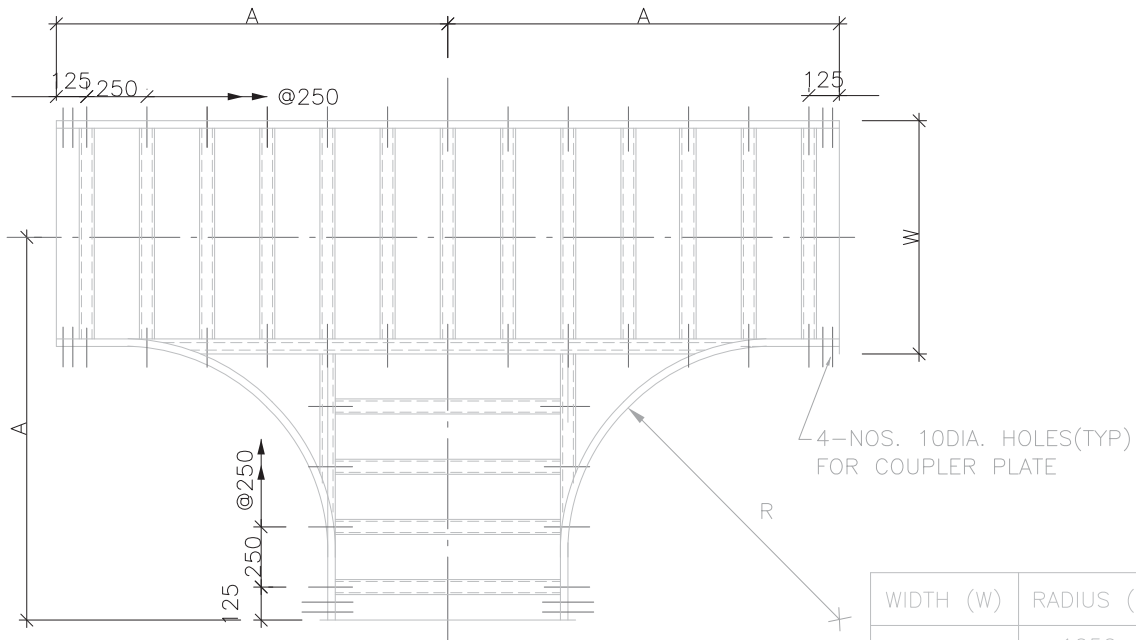
CABLE TRAY COVER



TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE-B)

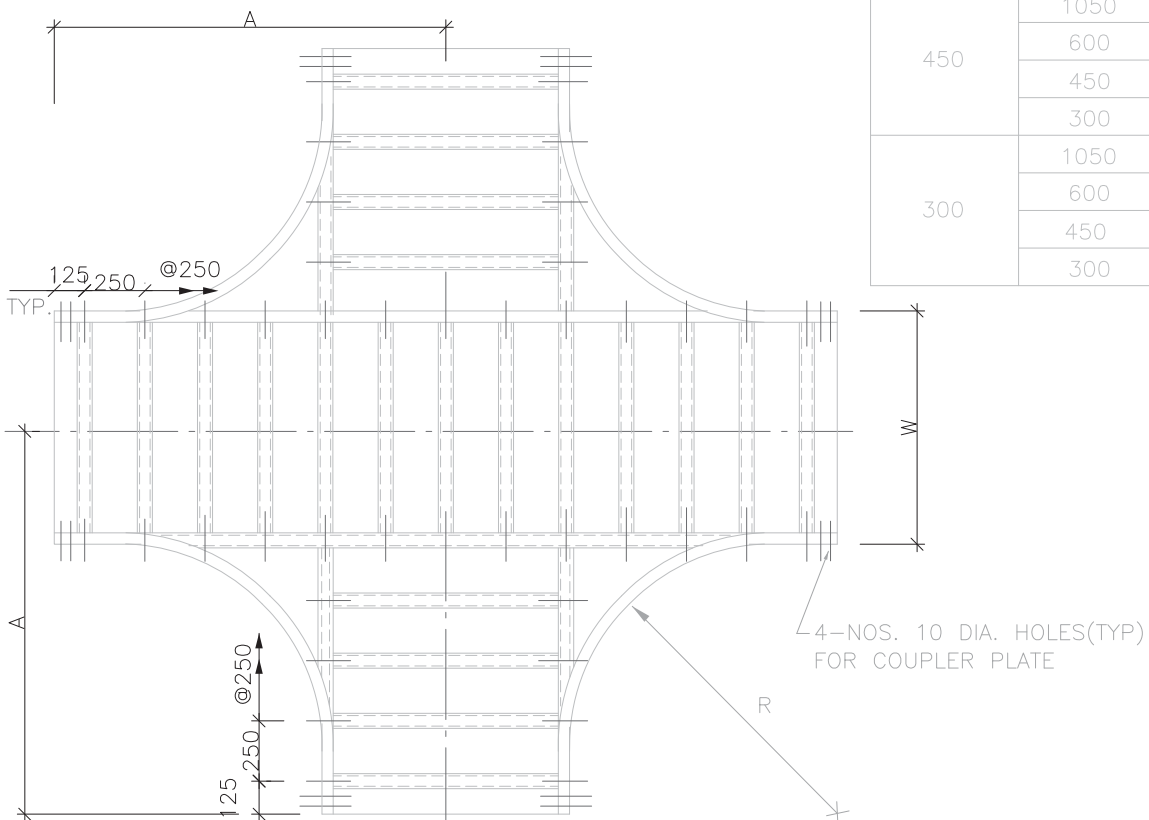
DWG. NO.
PE-TS-998-507-E021

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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	650
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.

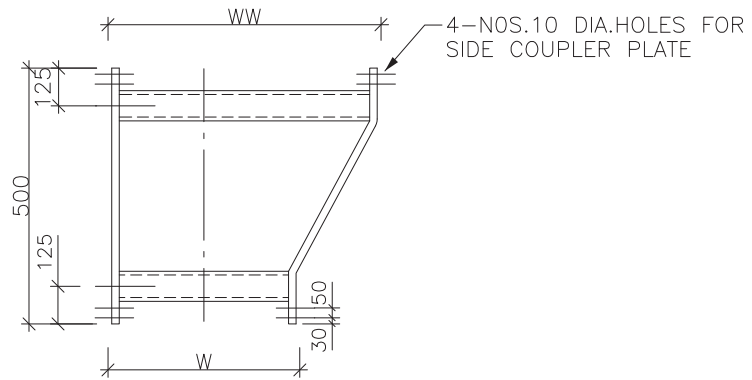
TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE -B)



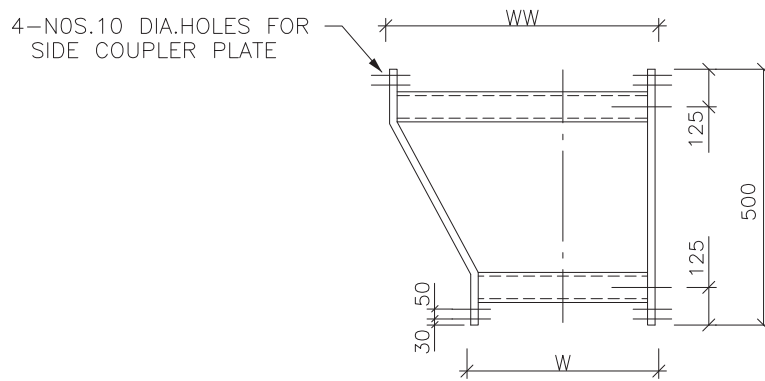
DWG. NO.

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PLAN
LEFT HAND REDUCER



PLAN
RIGHT HAND REDUCER

WIDTH	WW	600	600	450
	W	450	300	300
DEPTH	D	100	100	100

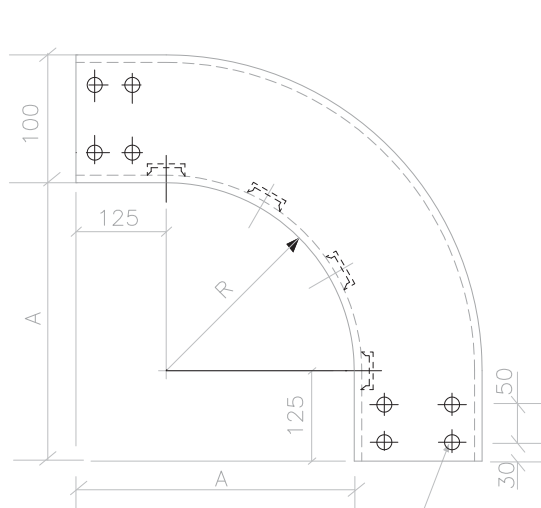
NOTE :-

1. ALL DIMENSIONS ARE IN MM.



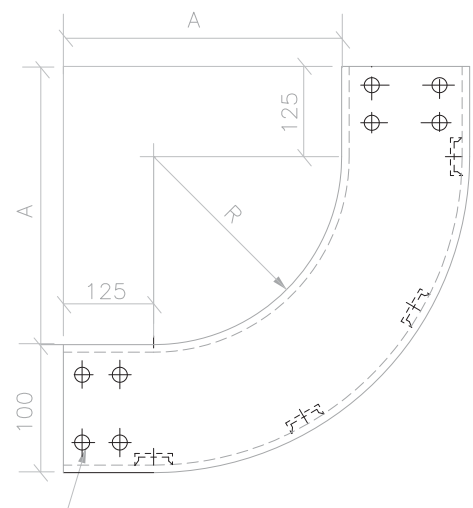
TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE -B)

DWG. NO.
PE-TS-998-507-E021
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ELEVATION
90° VERTICAL ELBOW
(OUTSIDE)

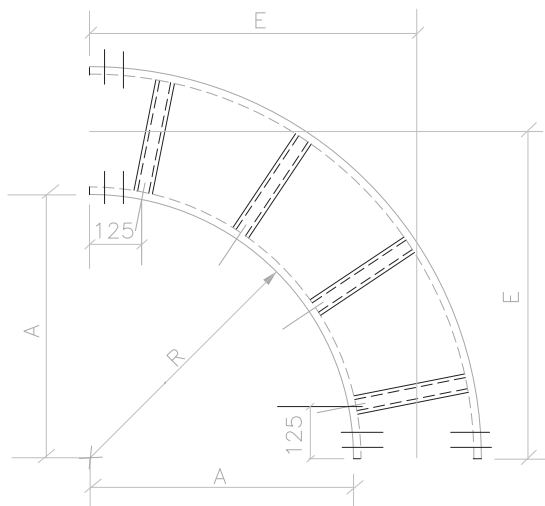
4 NOS. 10 DIA. HOLES
FOR COUPLER PLATE



ELEVATION
90° VERTICAL ELBOW
(INSIDE)

VERTICAL ELBOW		
WIDTH (W)	RADIUS (R)	A
600 450 & 300	1050	1175
	600	725
	450	575
	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 (TYPE -B)



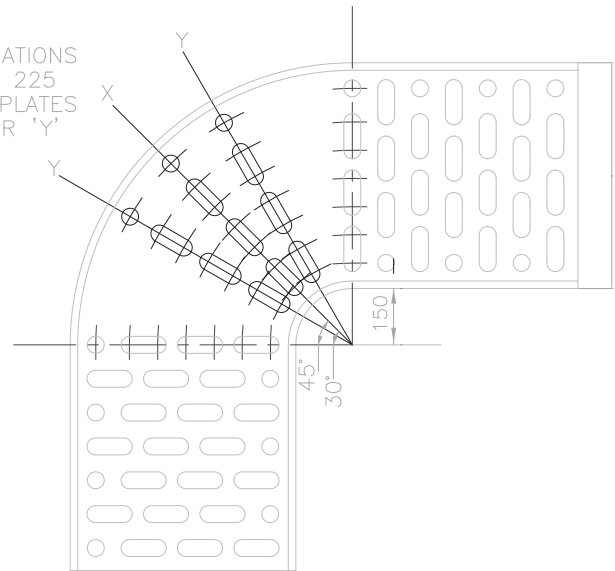
DWG. NO.

PE-TS-998-507-E021

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PERFORATION
PUNCHED FROM
THIS SIDE

ADDITIONAL PERFORATIONS
REQUIRED ON 100, 225
& 300 MM WIDTH PLATES
ALONG LINES 'X' OR 'Y'

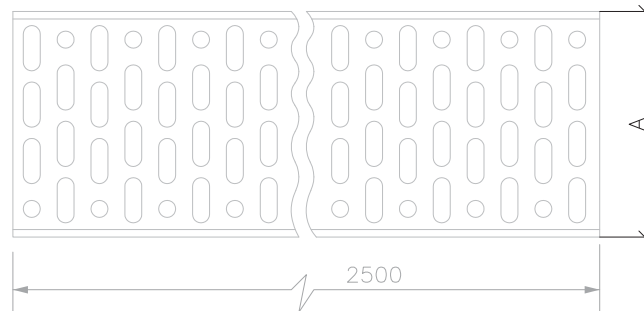


END ELEVATION

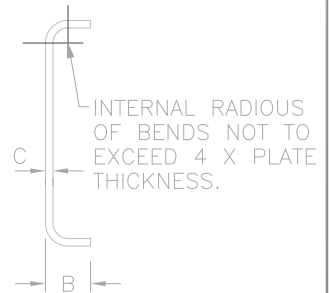
PLAN

DIMENSIONS IN MM	
WIDTH-A	DEPTH-B
100	50
50	
300	100
450	100
600	100

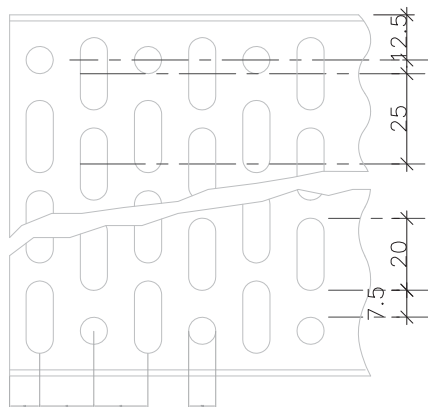
90° HORIZONTAL ELBOW



PLAN



END ELEVATION



DETAILS OF PERFORATION

STRAIGHT LENGTH

NOTES :

1. ALL CUTTING & FORMING OPERATIONS TO BE COMPLETED PRIOR TO GALVANIZING.
2. FINISHED TRAYS TO BE FREE FROM BURRS AND SHARP EDGES.
3. ALL DIMENSIONS ARE IN MM.

PERFORATED TYPE CABLE TRAY

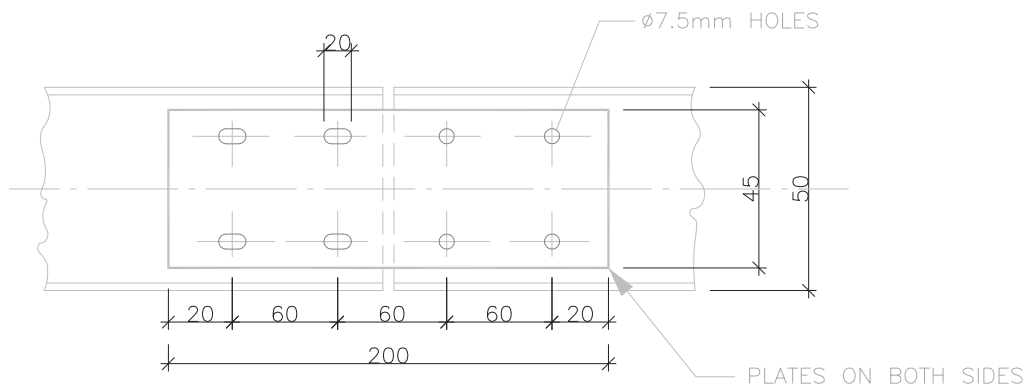
TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE -B)



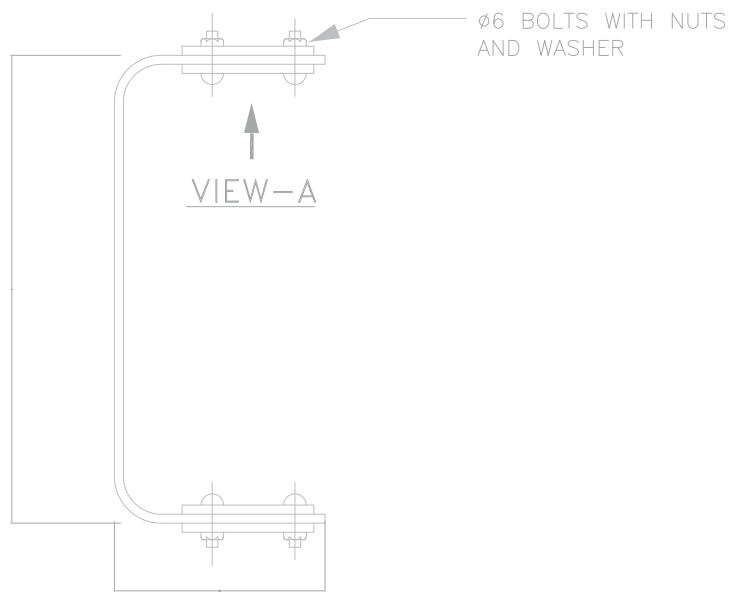
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PE-TS-998-507-E021

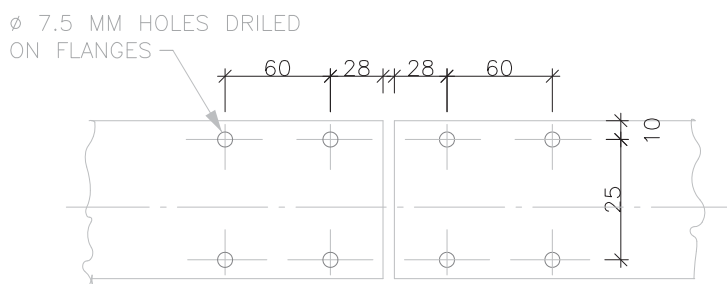
REV.00 SHT. 08 OF 11



VIEW-A



END ELEVATION



COUPLING PLATE

PERFORATED TRAY JOINING BY
COUPLING PLATES

NOTES:-

1. COUPLING PLATES 3 MM THICK M.S.
2. ALL DIMENSIONS ARE IN MM.

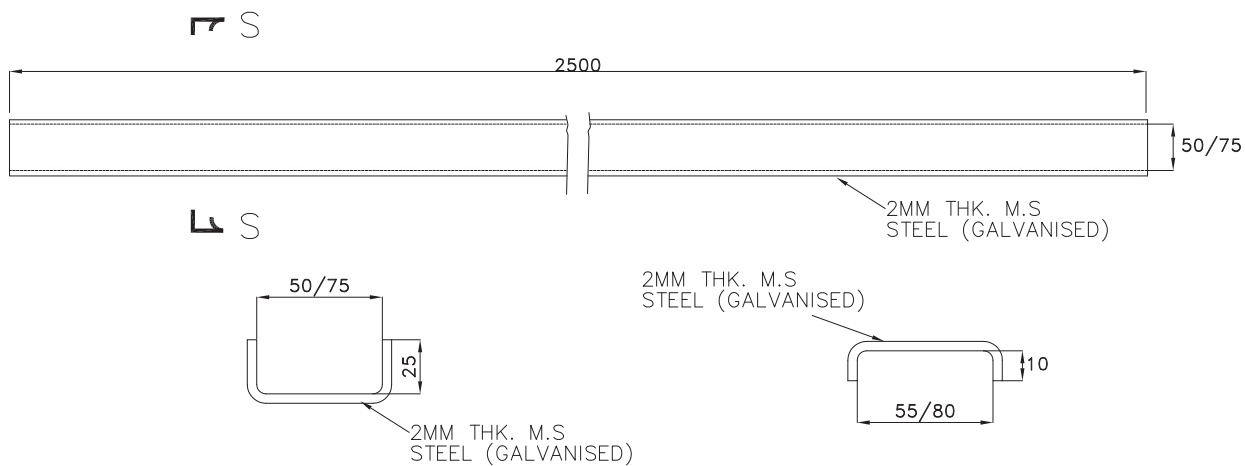
TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE -B)



DWG. NO.

PE-TS-998-507-E021

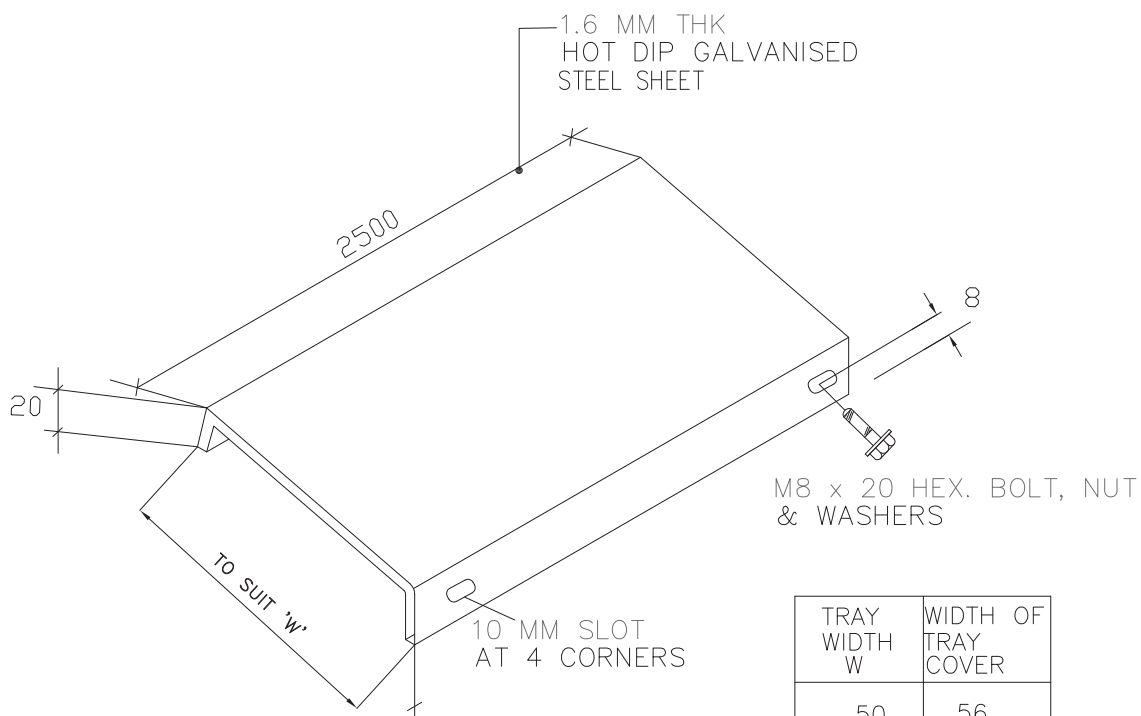
REV. 00 SHT. 09 OF 11



SECTION S-S

COVER FOR CABLE TROUGHS

CABLE TROUGHS



TRAY WIDTH W	WIDTH OF TRAY COVER
50	56
100	106
150	156

CABLE TRAY COVER FOR 50, 100 & 150W TRAY

FOR GENERAL NOTES REFER SHEET 14 OF 14



TYPICAL DETAILS OF CABLE TRAYS AND
ACCESSORIES (TYPE-B)

DWG. NO.
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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, 3MM AND 1.7MM RESPECTIVELY.
2. THE CABLE TRAYS AND ACCESSORIES SHALL BE HOT DIP GALVANISED AS PER IS 2629. THE MASS OF ZINC COATING SHALL BE 610 gm/sqm FOR 2MM THICK PRODUCT AND 460 gm/sqm FOR 1.7/1.6 MM THICK PRODUCT. THICKNESS SHALL BE 75 MICRONS (MINIMUM), 86 MICRONS (AVERAGE) FOR 2.0 MM THICK PRODUCT AND 55 MICRONS (MINIMUM), 65 MICRONS (AVERAGE) FOR 1.7/ 1.6 MM THICK PRODUCT .
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.
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, 50W
19. THE DEPTH OF 600W, 450W, 300W & 150W TRAYS & ACCESSORIES SHALL BE 100MM AND DEPTH OF 100W & 50W TRAY SHALL BE 50MM.



TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES (TYPE -B)

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