



भारत हेवी इलेक्ट्रिकल्स लिमिटेड
पारेषण व्यापार समूह
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Addendum-I to NIT

Project : SJVNL Arun-3 Nepal
Item : Supply of Trench Materials - Cable Trays
NIC Tender ID : 2023_BHEL_22642_1 Dtd. 20.02.2023
BHEL NIT Ref. No. : NIT_72110 Dtd. 20.02.2023
Enquiry : Open Tender (Through NIC)
Bid Opening Date : 06.03.2023

The Technical Specifications for above tender have been added and shall be read as Addendum-I of the NIT.

Bidders are requested to submit copy of Addendum-I duly signed & stamped by their authorized signatory and submit along with their technical bid.

All other terms & conditions of the tender specifications remain unchanged.

Kindly acknowledge the receipt.

Yours faithfully,

Santosh Kumar Vishwakarma
Manager, Material Management
BHEL TBG Noida



BHARAT HEAVY ELECTRICALS LIMITED
TRANSMISSION PROJECTS ENGINEERING MANAGEMENT
NEW DELHI

DOCUMENT No.	TB-405-316-009	Rev 0	Prepared	Checked	Appd.
TYPE OF DOC.	TECHNICAL SPECIFICATION	NAME	DP	AS	JK
TITLE	TECHNICAL SPECIFICATION OF GI STRUCTURE HARDWARE FOR 400KV CABLE TRENCH RACK ASSEMBLY	SIGN	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
		DATE	11.01.23	11/1/23	
		GROUP	TBEM		
		W.O. No			
CUSTOMER/CONSULTANT	SJVN Arun-3 Power Development Company (P) Ltd. (SAPDC)				

PROJECT	4x225MW Arun-3 (HEP), Nepal
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Rev	Date	Altered	Checked	Approved				
Distribution				To				
				Copies				

SECTION - 1

SCOPE, SPECIFIC TECHNICAL REQUIREMENTS & QUANTITIES

1.1 SCOPE

The scope of this specification is to specify all details required by a supplier for preparation of shop drawings, fabrication, galvanising and supply of galvanized lattice type steel structures for Arun-3 HEP, Nepal project being executed by BHEL on turnkey basis for M/s SAPDCL.

The detailed scope of work is preparation of shop drawings, fabrication, proto assembly, galvanizing and supply of all cable supporting structures, platform ladders, chequered plates, base plates, stiffener plates, fixtures for supporting items required to complete the job excluding all fixtures, such as anchor fasteners. However, detailed and accurate bill of quantities for anchor fasteners shall be given by the supplier in the drawings & bill of materials of the structure submitted by him. **The detailed structure fabrication drawings shall be provided by BHEL after award of work.**

1.2 SPECIFIC TECHNICAL REQUIREMENTS

The specific technical requirements shall be as per Standard Technical Specification (Refer Section 2).

1.3 BOQ.

As per attached BOQ

1.4 QUANTITY VARIATION

Quantity variation is applicable as per NIT.

Sl no.	BOQ	UOM	Qty
1	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, 2MM THK, HOT DIP GALVANIZED CABLE TRAY 600 MM WIDE	meter	2150
2	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, 2MM THK, HOT DIP GALVANIZED CABLE TRAY 450 MM WIDE	meter	550
3	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, CABLE TRAYS, FITTINGS AND ACCESSORIES - 90° HORIZONTAL BEND FOR CABLE TRAY 600MM WIDE	Nos.	50
4	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, CABLE TRAYS, FITTINGS AND ACCESSORIES - 90° HORIZONTAL BEND FOR CABLE TRAY 450MM WIDE	Nos.	30
5	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, CABLE TRAYS, FITTINGS AND ACCESSORIES - 90° VERTICAL BEND (INSIDE) FOR CABLE TRAY 600MM WIDE	Nos.	30
6	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, CABLE TRAYS, FITTINGS AND ACCESSORIES - 90° VERTICAL BEND (INSIDE) FOR CABLE TRAY 450MM WIDE	Nos.	10
7	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, CABLE TRAYS, FITTINGS AND ACCESSORIES - 90° VERTICAL BEND (OUTSIDE) FOR CABLE TRAY 600MM WIDE	Nos.	30
8	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, CABLE TRAYS, FITTINGS AND ACCESSORIES - 90° VERTICAL BEND (OUTSIDE) FOR CABLE TRAY 450MM WIDE	Nos.	10
9	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, CABLE TRAYS, FITTINGS AND ACCESSORIES - HORIZONTAL TEE FOR CABLE TRAY 600 MM WIDE	Nos.	64
10	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, CABLE TRAYS, FITTINGS AND ACCESSORIES - HORIZONTAL TEE FOR CABLE TRAY 450 MM WIDE	Nos.	12
11	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, CABLE TRAYS, FITTINGS AND ACCESSORIES - HORIZONTAL CROSS FOR CABLE TRAY 600 MM WIDE	Nos.	4
12	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, CABLE TRAYS, FITTINGS AND ACCESSORIES - HORIZONTAL CROSS FOR CABLE TRAY 450 MM WIDE	Nos.	12
13	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, CABLE TRAYS, FITTINGS AND ACCESSORIES - RIGHT HAND REDUCER FOR CABLE TRAY 600 MM WIDE TO 450 MM WIDE	Nos.	2
14	SUPPLY- TRENCH MATERIAL : LADDER TYPE TRAY, CABLE TRAYS, FITTINGS AND ACCESSORIES - LEFT HAND REDUCER FOR CABLE TRAY 600 MM WIDE TO 450 MM WIDE	Nos.	2
15	SUPPLY- TRENCH MATERIAL : BOLTED ASSEMBLY, VERTICAL SUPPORT SINGLE CHANNEL (C1) OF LENGTH 450MM	Nos.	220
16	SUPPLY- TRENCH MATERIAL : BOLTED ASSEMBLY, HORIZONTAL SUPPORT CANTILEVER ARM (CA1) OF LENGTH 650MM ALONGWITH NECESSARY BASE PLATE, BOLTS, NUTS WITH SPRINGS, WASHER ETC REQUIRED FOR FIXING ON VERTICAL SUPPORT CHANNEL	Nos.	220
17	SUPPLY- TRENCH MATERIAL : BOLTED ASSEMBLY, CLAMP CC1 SUITABLE FOR SINGLE CHANNEL FOR FIXING VERTICAL SUPPORT CHANNEL C1 ALONGWITH NECESSARY ANCHOR / RAWL BOLTS/ SPRING NUTS/ WASHER ETC	Nos.	440
18	SUPPLY- TRENCH MATERIAL : PANHEAD SCREWS M6, M6 NUT WITH LONG SPRING FOR FIXING TRAYS ON SUPPORT RACKS	Nos.	440
19	SUPPLY- TRENCH MATERIAL : TRAY FIXING CLAMP (TC1)	Nos.	2160

SECTION-2:
TECHNICAL SPECIFICATION

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

1.0 PURPOSE

The Purpose of this specification is finalization of supplier for supply of Cable Trays & Accessories for Arun-3 HEP Project.

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

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
1	Technical Data Sheet for Cable trays & Accessories	Shall be informed later.	Primary
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

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. |

- 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.

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.

7.0 PACKING TRANSPORTATION AND DELIVERY

Packing shall be suitable for export transportation and delivery. The packing list (duly covered in polythene sheet) should be available inside & outside the package.

INDICATION MARKS ON THE BOXES:

Markings shall be provided on the packing indicating position of packing for handling, storage and nature of consignment. The ink used for this purpose as well as for marking dispatch instruction shall be indelible/no washable marking ink.

DESPATCH DETAILS: External front and rear sides of the packing to be planed for writing instructions. Dispatch details such as consignor/consignee address, contract and case details, country of origin, port of delivery, stacking instructions shall be written on one of the side of packing. One copy of packing slip wrapped in polyethylene bag packing slip holder to be nailed on the external surface of the box. One more copy of the packing slip wrapped in polyethylene bag to be kept inside the packaging at the prominent place.

STANDARD TECHNICAL REQUIREMENTS

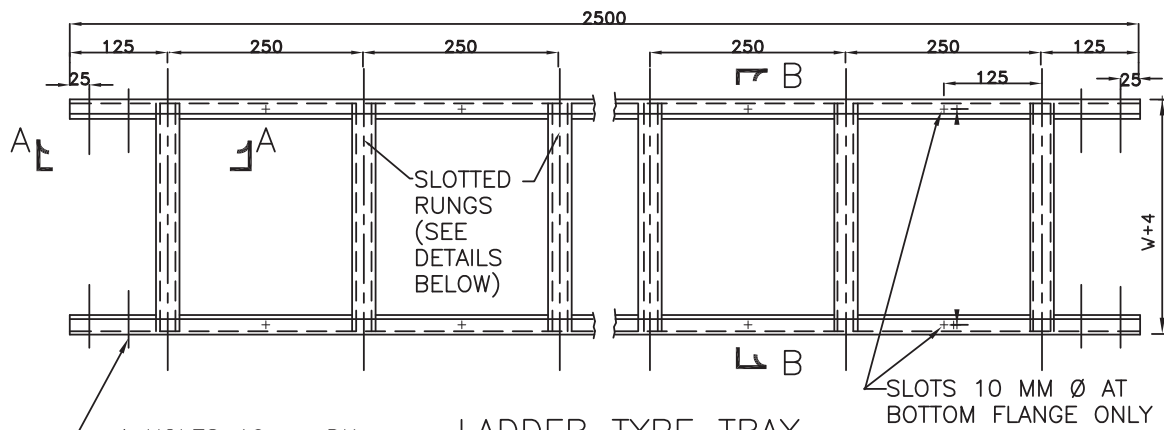
- 1.1 The material shall comply with all currently applicable safety codes and statutory regulations of India as well as of the locality where the material is to be installed.
- 1.2 The design, material, construction, manufacture, inspection, testing and performance of Cable Trays & Accessories shall 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

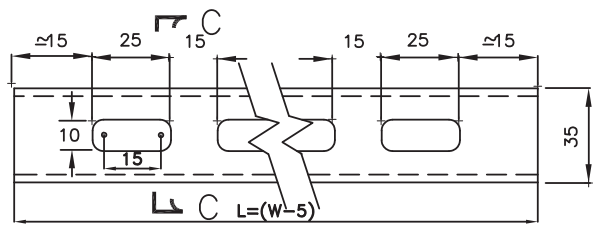
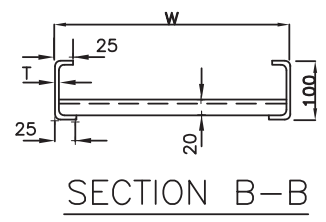
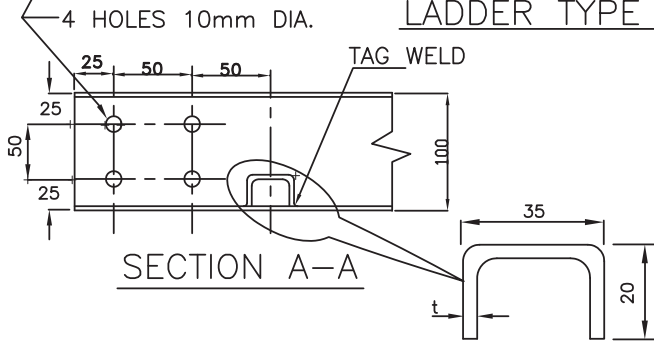
- 2.1 Cable trays & accessories shall be of two types, namely ladder type and perforated type. Technical particulars are specified in Data Sheet-A and drawings enclosed with this specification. Minor fabrication detail changes which do not affect the material /dimensional aspect of the equipment, shall 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

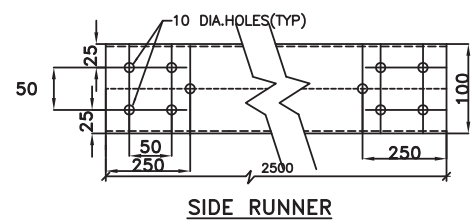
- 3.1 Bidder shall confirm compliance with BHEL'S standard Quality plan .
At contract stage, the successful bidder shall submit the QP for BHEL/ ultimate customer's approval. In case bidder has reference QP agreed with ultimate customer, same can be submitted for specific project after award of contract 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.



LADDER TYPE TRAY



SLOTTED RUNGS
(TO SUIT TRAY WIDTH)



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

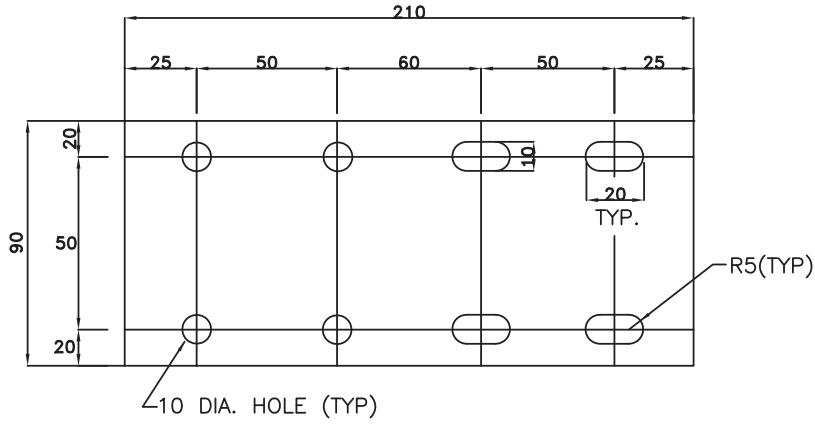
FOR GENERAL NOTES REFER SHEET 14 OF 34



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

DWG. NO.
PE-DG-999-507-E005

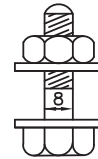
SHT. 02 OF 14 REV. 0



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

(600/450/300/150W TRAYS)

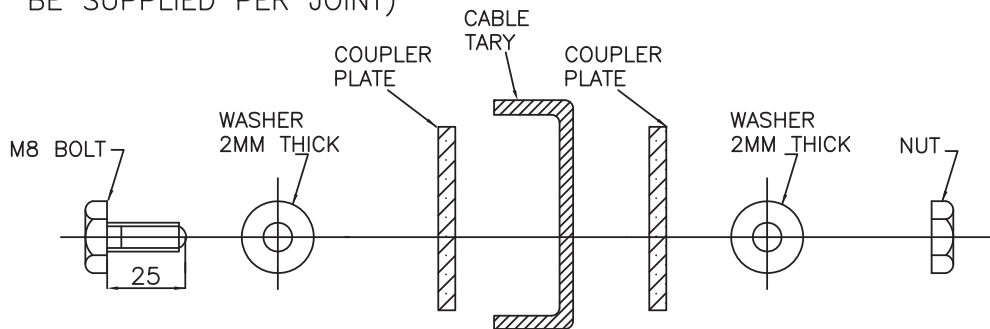
QTY. REQUIRED/TRAY SECTION : 4 NOS.



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

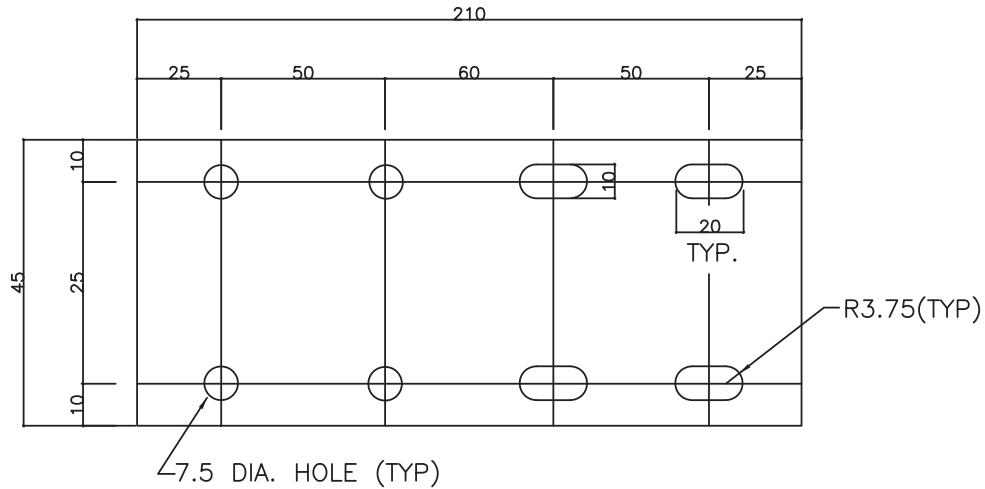
FOR GENERAL NOTES REFER SHEET 14 OF 34



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

DWG. NO.
PE-DG-999-507-E005

SHT. 03 OF 14 REV. 0

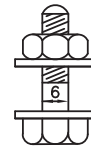


SIDE COUPLER PLATE FOR PERFORATED TYPE TRAYS
(100/50W TRAYS)

QTY. REQUIRED/TRAY SECTION : 4 NOS.

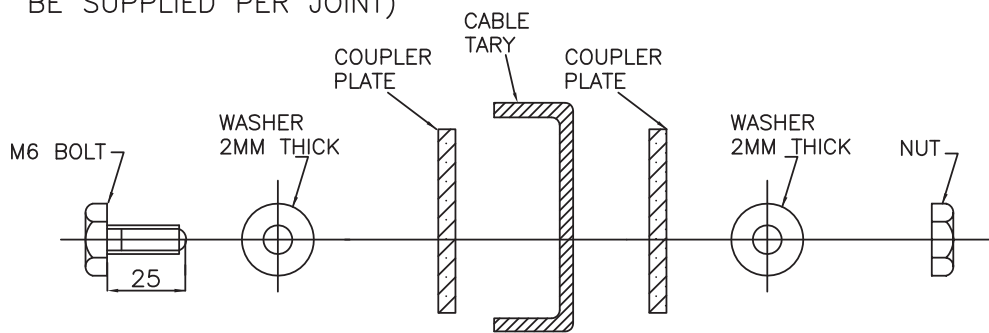


(2 NOS. COUPLER PLATES OF 3 MM THICKNESS TO BE SUPPLIED PER JOINT)



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

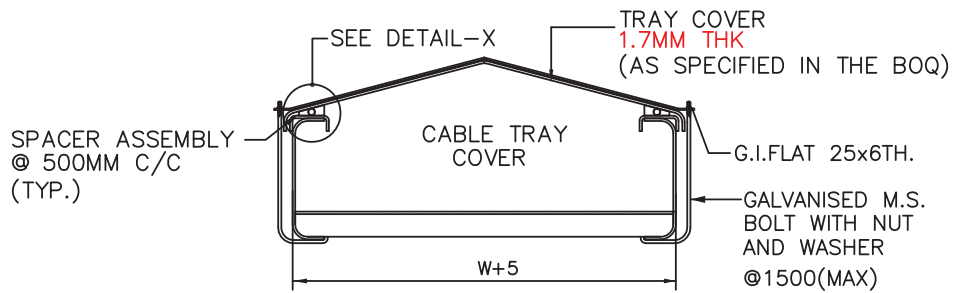
FOR GENERAL NOTES REFER SHEET 14 OF 34



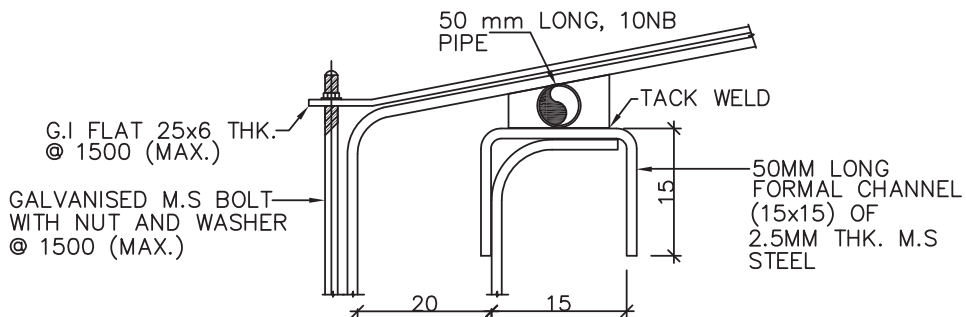
TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES (TYPE-A)

DWG. NO.
PE-DG-999-507-E005

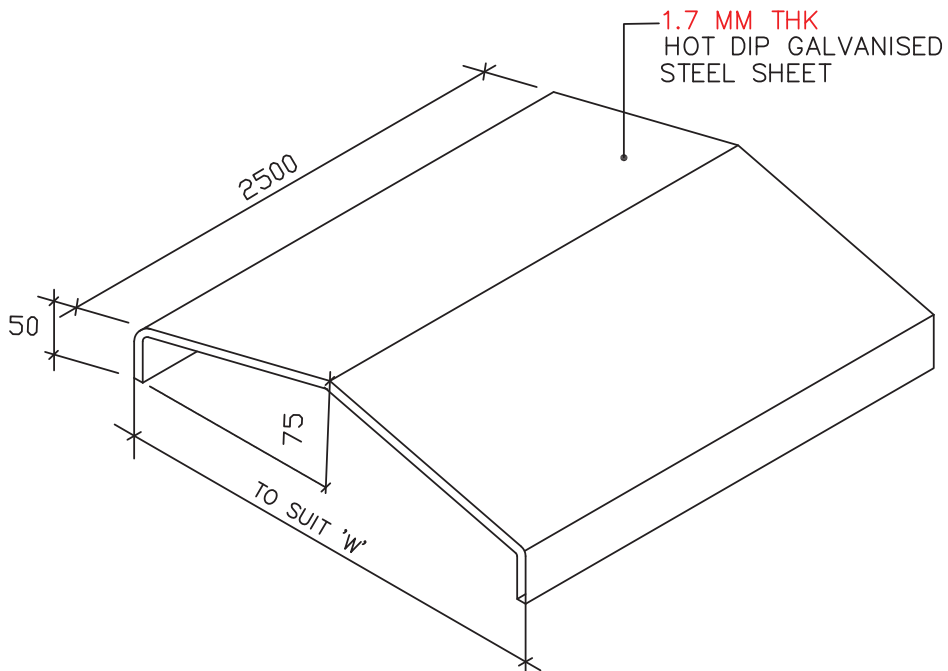
SHT. 04 OF 14 REV. 0



COVER FIXING (TYP.)



DETAIL-X



CABLE TRAY COVER

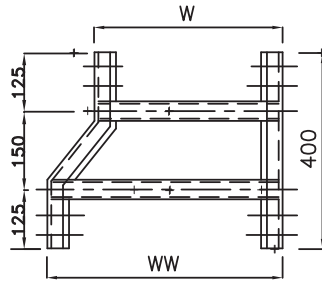
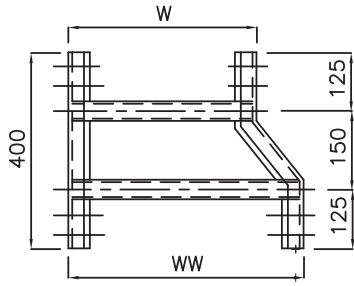
FOR GENERAL NOTES REFER SHEET 14 OF 34



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

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PE-DG-999-507-E005

SHT. 05 OF 14 REV. 0

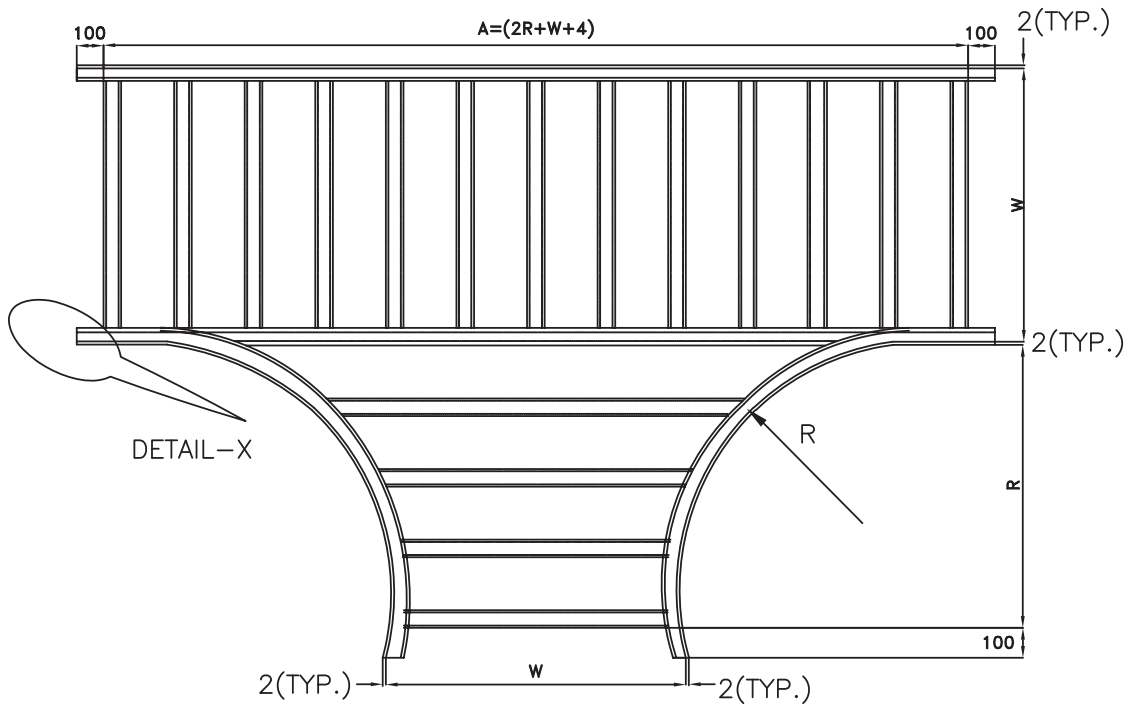


WW	W	DEPTH
600	450	100
600	300	100
600	150	100
450	300	100
300	150	100

LEFT HAND REDUCER

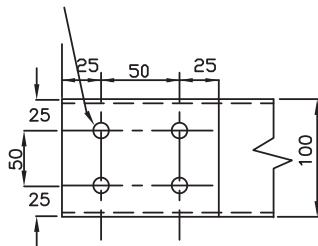
RIGHT HAND REDUCER

LADDER TYPE



DETAIL-X

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

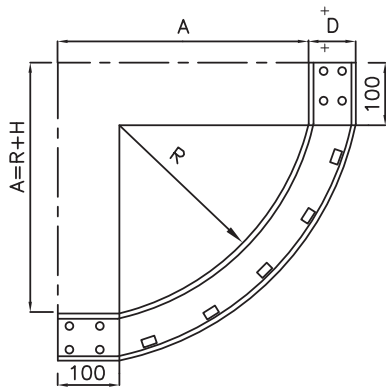
FOR GENERAL NOTES REFER SHEET 14 OF 34



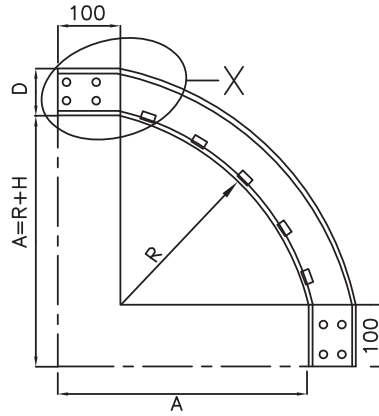
TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES (TYPE-A)

DWG. NO.
PE-DG-999-507-E005

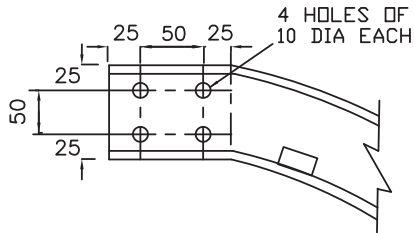
SHT. 06 OF 14 REV. 0



INSIDE TYPE



OUTSIDE TYPE

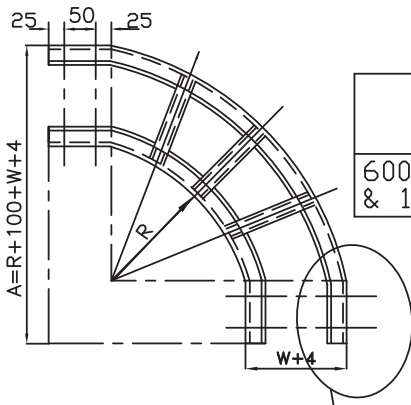


ENLARGED VIEW OF "X"

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			
600, 450, 300 & 150	600	100	150	300	450	600
			854	1004	1154	1304

90° HORIZONTAL BEND - LADDER TYPE

LADDER TYPE ACCESSORIES

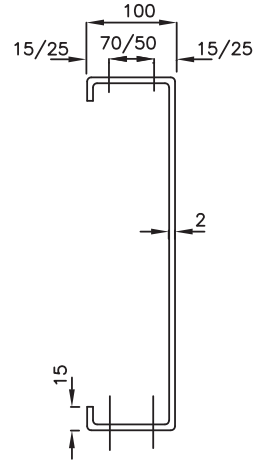
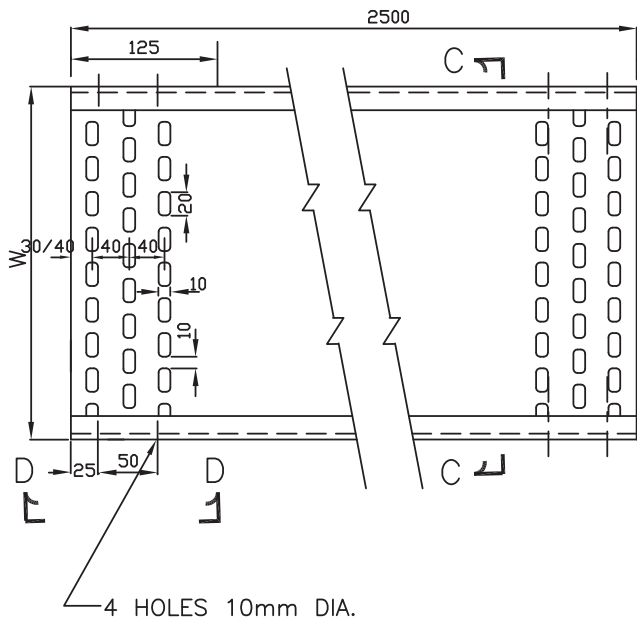
FOR GENERAL NOTES REFER SHEET 14 OF 34



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

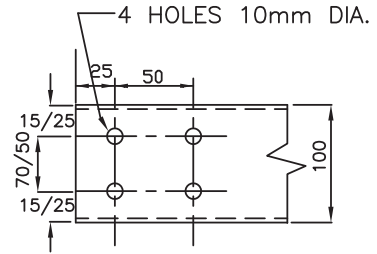
DWG. NO.
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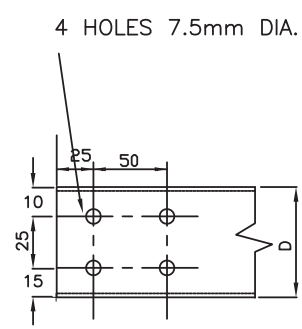
SECTION-C-C

600/450/300/150 TRAYS



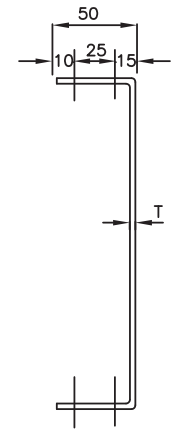
SECTION-DD

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

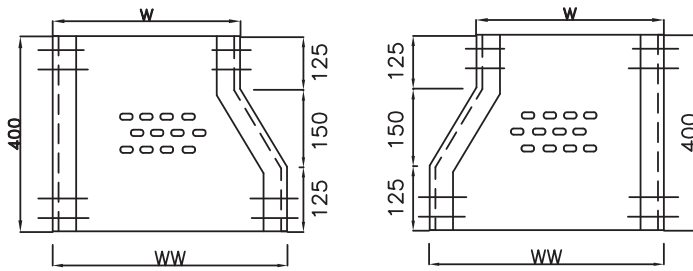
FOR GENERAL NOTES REFER SHEET 14 OF 34



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

DWG. NO.
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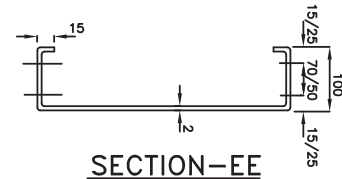
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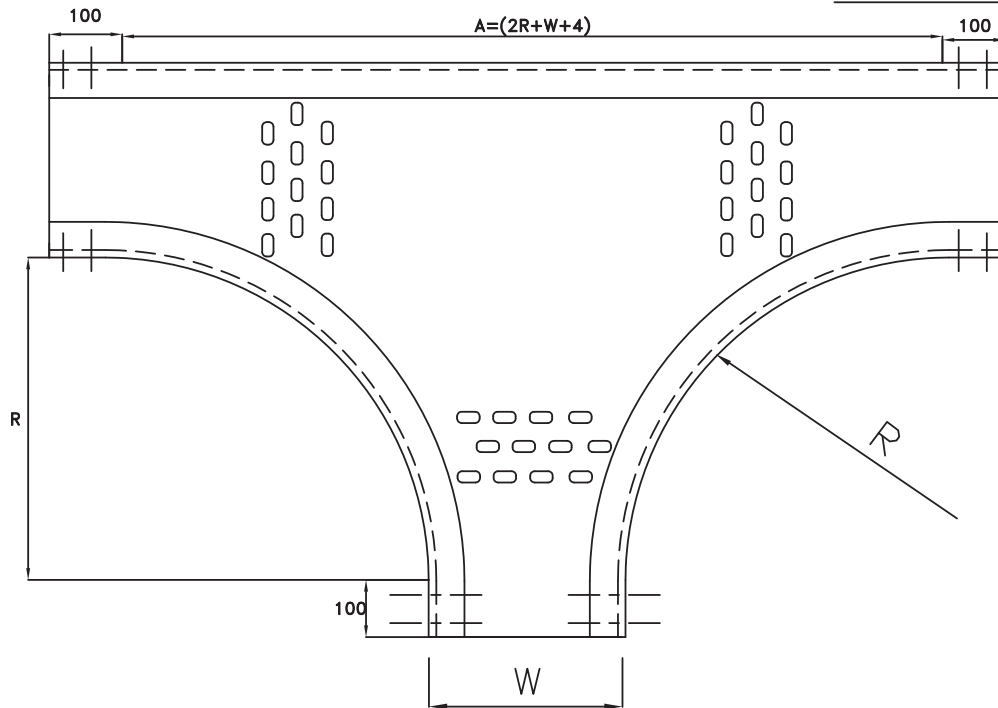
WW	W	DEPTH
600	450	100
600	300	100
600	150	100
450	300	100
300	150	100

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

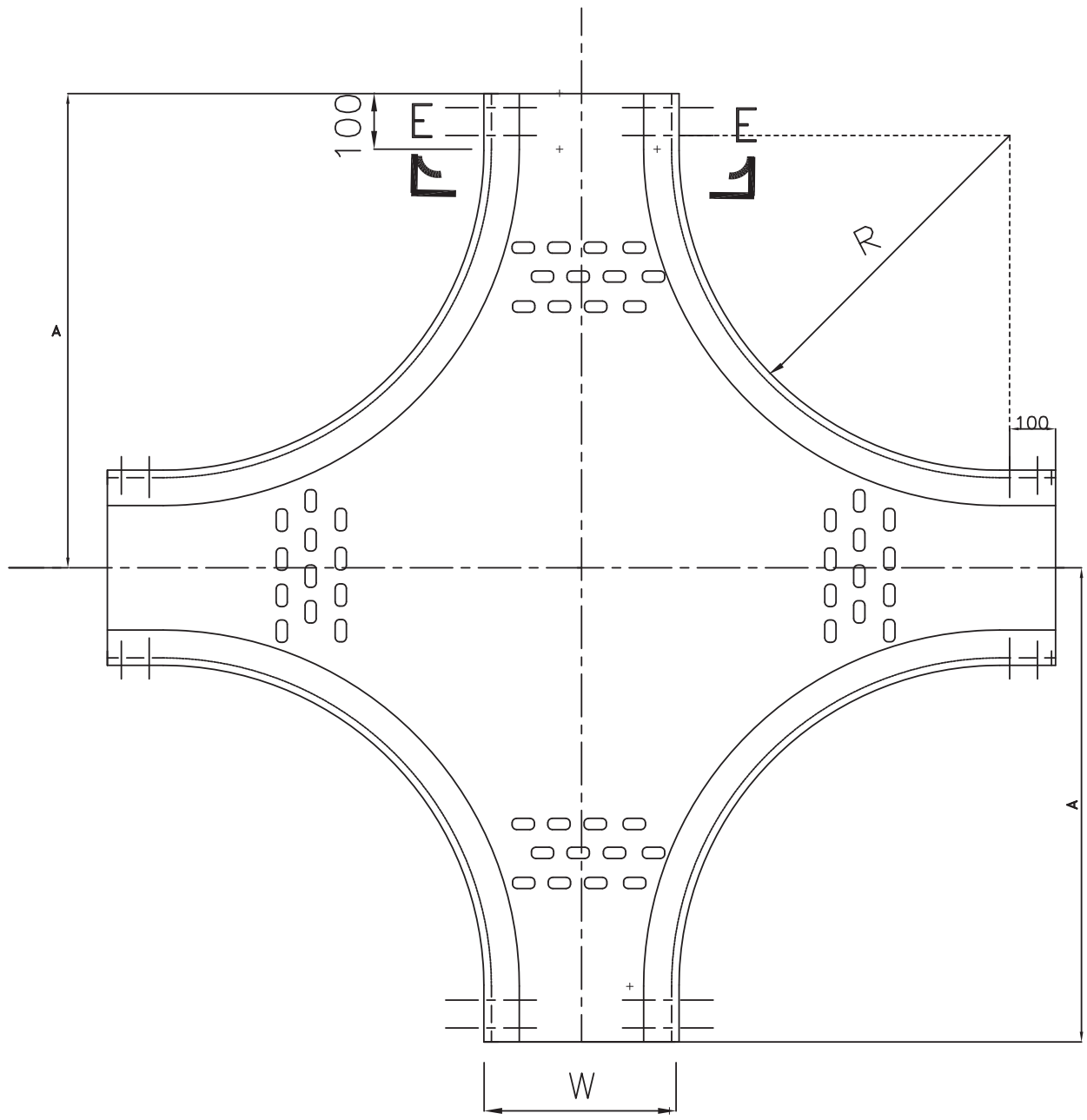
FOR GENERAL NOTES REFER SHEET 14 OF 34



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

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CROSS

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

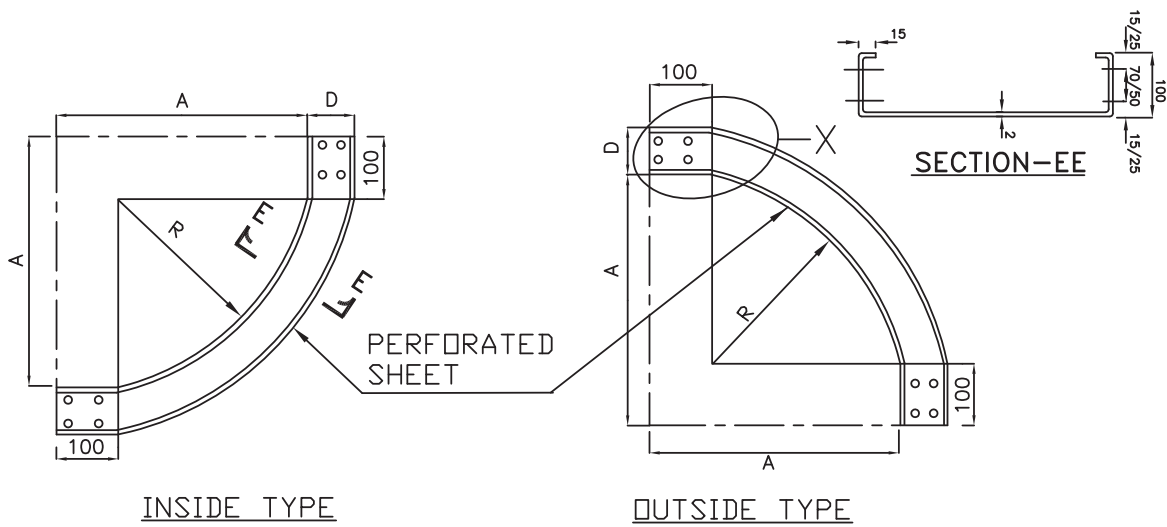
FOR GENERAL NOTES REFER SHEET 14 OF 34



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

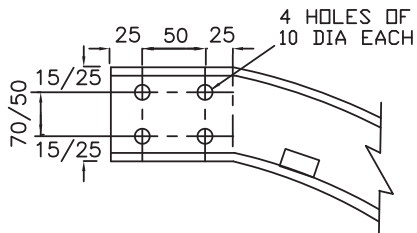
DWG. NO.
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INSIDE TYPE

OUTSIDE TYPE



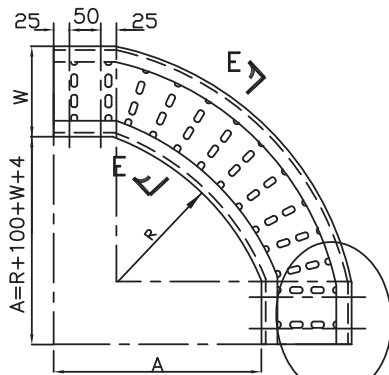
ENLARGED VIEW OF "X"

VERTICAL ELBOW 90 DEG UP/DOWN

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

90° VERTICAL BEND - PERFORATED TYPE

HORIZONTAL ELBOW 90 DEG



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

X (AS ABOVE)

90° HORIZONTAL BEND - PERFORATED TYPE

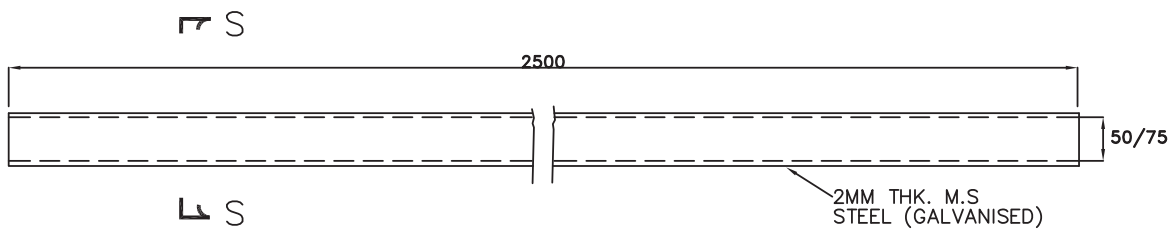
FOR GENERAL NOTES REFER SHEET 14 OF 34



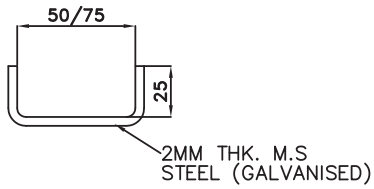
TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES (TYPE-A)

DWG. NO.
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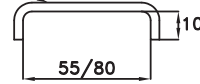


SECTION S-S



SECTION S-S

2MM THK. M.S STEEL (GALVANISED)



COVER FOR CABLE TROUGHS

CABLE TROUGHS

FOR GENERAL NOTES REFER SHEET 14 OF 34



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

DWG. NO.
PE-DG-999-507-E005

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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/m AND THICKNESS SHALL BE 75 MICRONS (MINIMUM).
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.
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SECTION - 3

PROJECT DETAILS AND GENERAL SPECIFICATIONS

3.0 GENERAL

This section stipulates the General Technical Requirements under the contract and will form an integral part of the Technical Specification.

The provisions under this section are intended to supplement general requirements for the materials, equipment and services covered under other sections and is not exclusive. However, in case of conflict between the requirements specified in this section and requirements specified under other sections, the requirements specified under respective sections shall hold good.

3.1 SITE INFORMATION

SL.NO.	DESCRIPTION	
3.2.1	PROJECT INFORMATION	
	a) Customer	SAPDC
	b) Name of Consultant : SJVN	SJVN
	b) Project	4x225MW , Arun-3 HEP ,Nepal
	c) Project location	Latitude 27o30'N – 27o -35'N Longitude 87o -12'E – 88o-20'E
	d) Transport facilities Nearest Railway Station/Gauge Distance from Railway Station	ROAD
	e) Access roads	

3.2 STANDARDS

All materials shall comply in all respect with the requirement of the latest edition of the relevant codes as listed in Section 2.

3.3 UNIT

Metric (System International) units of measurements shall be used in all drawings.

3.4 CATEGORIES OF APPROVAL

CATEGORY I This means that the documents/drawings is approved.

CATEGORY II This means that the document/drawing is approved with comments i.e. some corrections are required but the contractor can go ahead for manufacturing after incorporating comments.

CATEGORY III This means that the document/drawing is not approved i.e major revisions are required and the contractor cannot proceed with the manufacture.

3.5 PURCHASE ORDER NUMBER

The P.O No. shall be mentioned on all documents and drawings.

Sr. No.	Component, Operation & Characteristics	Applicable Standard	Remark
1	2	3	4
C	Cable Tray		
1	Incoming Material		
1.1	M.S. Sheet/ Stainless Steel Channels/ Angels		
	Physical Properties, Chemical Properties, Check for Waiveness, Dimension, Lamination	DRG/ TS	V
2	In Process Stage		
2.1	Fabrication		
	Surface Defects, Deburring, Dimensions, Welding Quality, DPT	DRG/ ASME Sec IX, ASME Sec VII	V
3	Final Inspection		
	Dimesions, Galvanizing test, Mass of Zinc Coating, Thickness and uniformity of Coating, Adhesion test	IS 2629	W

LEGENDS	
TS: TECHNICAL SPECIFICATIONS	REL. TS/ DRG/ Rel STD.: RELEVANT STANDARD
V: VERIFICATION OF REPORTS/TCs	DRG: DRAWING
W: CUSTOMER HOLD POINT (CHP)	

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