	<b>PRE-QUALIFICATION REQUIREMENTS FOR CABLE TRAY SUPPORT SYSTEM- BOLTABLE OF 3X800MW NTPC PATRATU STPP</b>	PE-PQ-434-507-E003
		REVISION NO. 0 DATE 23/07/2022
		Page 1 of 2

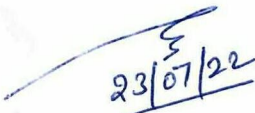


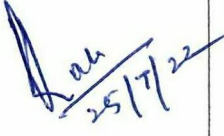
**ITEMS: Single channel, double channel, cantilever arms, clamps & fittings**
**SCOPE: Supply: YES; Erection & Commissioning: NO;**

1.	Availability of type test certificates as per GDCD standard.
2.	Vendor should have in-house fabrication, manufacturing & testing facility (as per GDCD standard).
3.	Capability of manufacturing channels & cantilever arms for 20km per month.
4.	Vendor has his own galvanization plant. OR Galvanizers as mentioned in annexure-1 of Quality plan, part of Technical specification.
5.	Manufactured & supplied at least 40 km of channels (SC1 & DC1) & cantilever arms in one or more orders and at least 20 km in a single order.
6.	Minimum two (2) nos. purchase orders for cable tray support system- bolttable type shall be submitted which should not be more than five (5) years old from the date of techno-commercial bid opening for establishing continuity in business.

**Notes (General points of PQR):**

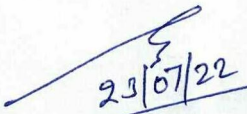
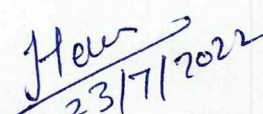


1. Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/Indian subsidiaries shall be evaluated as follows:
  - a. If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.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

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

PREPARED BY	CHECKED BY	REVIEWED BY	APPROVED BY
 23/07/22 <b>GIRISH CHANDRA DY. ENGINEER</b>	 23/7/2022 <b>HEMA KUSHWAHA, SR. MANAGER</b>	 23/7/2022 <b>PRAVEEN DUTTA, AGM</b>	 25/7/22 <b>DEBASISA RATH, AGM (DH)</b>

	<b>PRE-QUALIFICATION REQUIREMENTS FOR CABLE TRAY SUPPORT SYSTEM- BOLTABLE OF 3X800MW NTPC PATRATU STPP</b>	PE-PQ-434-507-E003
		REVISION NO. 0 DATE 23/07/2022
		Page 2 of 2

2. Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of the project.
3. Consideration of offer shall be subject to customer's approval of bidders, if applicable.
4. Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self- attested English translated document should also be submitted.
5. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.
6. After satisfactory fulfilment of the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of tender.

PREPARED BY	CHECKED BY	REVIEWED BY	APPROVED BY
 23/07/22 <b>GIRISH CHANDRA DY. ENGINEER</b>	 23/7/2022 <b>HEMA KUSHWAHA, SR. MANAGER</b>	 23/7/2022 <b>PRAVEEN DUTTA, AGM</b>	 25/7/22 <b>DEBASISA RATH, AGM (DH)</b>

**VOLUME-II**

**TECHNICAL SPECIFICATION**

**FOR**

***GALVANISED CABLE TRAY SUPPORT SYSTEM  
(BOLTABLE TYPE)***

**SPECIFICATION NO: PE-TS-434-507-E013**

***REVISION: 00***



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



**TECHNICAL SPECIFICATION FOR  
CABLE TRAY SUPPORT SYSTEM  
(BOLTABLE TYPE)**

SPECIFICATION NO. PE-TS-434-507-E013

REVISION 00

DATE: 19.07.2022

SHEET 1 OF 1

**CONTENTS**

<b>Sl. No.</b>	<b>DESCRIPTION</b>	<b>NO. OF SHEETS</b>
1.0	TITLE SHEET	01
2.0	CONTENT	01
3.0	COMPLIANCE SHEET	01
4.0	SECTION – I	
4.1	SPECIFIC TECHNICAL REQUIREMENT	02
4.2	ANNEXURE-A	01
4.3	TECHNICAL DATA SHEET-A	01
5.0	SECTION- 'II'	
5.1	STANDARD TECHNICAL REQUIREMENTS	03
5.2	STANDADRD QUALITY PLAN	04
6.0	ANNEXURE-3 (TYPICAL DETAILS OF BOLTABLE TYPE CABLE TRAY SUPPORT MATERIAL & ACCESSORIES)	12
7.0	ANNEXURE-4 (TYPICAL DETAILS OF TYPE TEST PROCEDURE/TEST ARRANGEMENT)	10
8.0	ANNEXURE-C (PRICE VARIATION FORMULAE)	02

TOTAL SHEETS INCLUDING COVER SHEET, CONTENT/SEPARATOR SHEET = 38



**TECHNICAL SPECIFICATION FOR  
GALVANISED CABLE TRAY  
SUPPORT SYSTEM (BOLTABLE  
TYPE)**

SPECIFICATION NO. PE-TS-434-507-E013

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COMPLIANCE CERTIFICATE

REVISION 00

DATE: 20.07.2022

**COMPLIANCE CERTIFICATE**

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

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

-----

BIDDER'S STAMP & SIGNATURE

1151655/2022/PS-PEM-EL



**TECHNICAL SPECIFICATION FOR  
GALVANISED CABLE TRAY  
SUPPORT SYSTEM (BOLTABLE  
TYPE)**

SPECIFICATION NO. PE-TS-434-507-E013

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SECTION I

REVISION 00

DATE: 20.07.2022

SHEET 1 of 3

**SECTION – I**

**SPECIFIC TECHNICAL REQUIREMENTS**



**TECHNICAL SPECIFICATION FOR  
GALVANISED CABLE TRAY  
SUPPORT SYSTEM (BOLTABLE  
TYPE)**

SPECIFICATION NO. PE-TS-434-507-E013

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### 1.0 SCOPE OF ENQUIRY

- 1.1 This enquiry covers Manufacture, Inspection and Testing at Manufacturer's works, proper packing and delivery to site of **Cable Tray Support System (Boltable Type)** conforming to this specification.
- 1.2 It is not the intent to specify herein all the details of design & manufacture of material. However, the material shall, conform in all respects to high standard of design, engineering and workmanship and shall be capable of performing in continuous commercial operation at site conditions.
- 1.3 General technical requirements of the Cable Tray Support System (Boltable Type) are indicated in Section-I. Project specific technical/ quality requirements / changes are listed in Data Sheet-A & Section-II.
- 1.4 The stipulations of Section-I, followed by those of Data Sheet-A shall prevail in case of any conflict between the stipulations of Section-I, Data Sheet - A & Section-II.

### 2.0 BILL OF QUANTITIES:

- 2.1 Quantity requirements shall be as per **Annexure-I (Bill of Quantities (BOQ))** of NIT.

### 3.0 SPECIFIC REQUIREMENTS:

#### 3.1 **Technical:**

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

#### 3.2 **Quality/ Inspection:**

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

#### 3.3 **Bill of Material & Packing List**

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

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**TECHNICAL SPECIFICATION FOR  
GALVANISED CABLE TRAY  
SUPPORT SYSTEM (BOLTABLE  
TYPE)**

SPECIFICATION NO. PE-TS-434-507-E013

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**ANNEXURE – A**

**LIST OF DRAWINGS / DOCUMENTS**

**(REQUIRED TO BE FURNISHED BY SUCCESSFUL BIDDER AFTER AWARD OF CONTRACT)**

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



**TECHNICAL SPECIFICATION FOR  
GALVANISED CABLE TRAY SUPPORT  
SYSTEM (BOLTABLE TYPE)**

SPECIFICATION NO. PE-TS-434-507-E013

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SECTION I

REVISION 01

DATE: 23.04.2022

SHEET 1 OF 1

**DATASHEET A**

**1.0 APPLICABLE STANDARDS:**

- |    |          |  |
|----|----------|--|
| a) | IS: 2062 | For structural steel   |
| b) | IS: 1079 | For hot rolled carbon steel sheet and strip.                         |
| c) | IS: 513  | For cold rolled low carbon steel sheet & strips                      |
| d) | IS: 1730 | For dimensions for steel sheet and strip.                            |
| e) | IS: 1363 | Hexagon head bolts, screws and nuts.                                 |
| f) | IS: 5    | For colours of paint.  |
| g) | IS: 2629 | For hot dip galvanising of steel & surface pre-treatment             |
| h) | IS: 2633 | For testing uniformity of zinc coating                               |
| i) | IS: 6745 | For determination of mass of zinc coating                            |
| j) | IS: 1852 | For rolling and cutting tolerances of hot rolled steel products      |
| k) | IS: 4759 | For Hot dip zinc coating on structural steel & other allied products |

**2.0 CABLE TRAY SUPPORT**

- |    |                    |   |
|----|--------------------|---|
| a) | Tray support type: | Boltable type   |
| b) | Material:          | Hot/ Cold Rolled MS sheet steel for channel SC1/ DC1 and channel portion of cantilever arms |
| c) | Thickness:         | 2.5 mm  |
| d) | Length:            | Standard length of 6 meters   |
| e) | Fabrication :      | At works  |
| f) | Construction:      | Conforming to enclosed drg. [PE-DG-999-507-E013]  |

**3.0 SURFACE TREATMENT:**

Galvanizing:

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

**4.0 TYPE TEST, ROUTINE TEST AND ACCEPTANCE TEST**

For details of routine test, acceptance test and type test, please refer to Annexure 4 (Type test procedure) and QP no. PED-507-00-Q-013/01.

1151655/2022/PS-PEM-EL



**TECHNICAL SPECIFICATION FOR  
GALVANISED CABLE TRAY SUPPORT  
SYSTEM (BOLTABLE TYPE)**

SPECIFICATION NO. PE-TS-434-507-E013

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**SECTION-II**

**STANDARD TECHNICAL REQUIREMENTS**



**TECHNICAL SPECIFICATION FOR  
GALVANISED CABLE TRAY SUPPORT  
SYSTEM (BOLTABLE TYPE)**

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## 1.0 CODES AND STANDARDS

- 2.1 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.
- 2.2 The design, material, construction, manufacture, inspection, testing and performance of cable tray support system (bolttable type) shall conform to the latest revision of relevant standards as per Datasheet-A.
- 2.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

## 2.0 TECHNICAL REQUIREMENTS

- 3.1 Cable Trays Support (bolttable type) shall be supplied as per technical particulars specified in Data Sheet – A.
- 3.3 All finished galvanised MS structural members for cable tray supports shall be free from sharp edges, corners, burs & unevenness.
- 3.4 Necessary fasteners shall be provided with each cable tray support accessory as specified in enclosed drawings.
- 3.5 All welded joints of cable tray support accessories shall be smooth enough to provide a good appearance & shall not cause any injury to working personnel. All welding work shall be done by skilled personnel.

## 4.0 QUALITY ASSURANCE, TESTING & INSPECTION

- 4.1 Bidder shall confirm compliance with the BHEL's Standard Quality Plan (PE-QP-999-507-E007, Rev. 0) as attached with the specification without any deviations. After issuance of purchase order for specific project, the successful bidder shall submit the Quality Plan for BHEL/ ultimate customer's approval. In case bidder has reference Quality Plan agreed with ultimate customer, same can be submitted for specific project after award of contract for BHEL/ ultimate customer's approval. There shall be no commercial implication to BHEL on account of minor changes in Quality Plan during contract stage.
- 4.2 All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved quality plan.
- 4.3 The supplier shall perform all tests necessary to ensure that the material and workmanship conform to the relevant standards and comply with the requirements of the specification. Charges for all these tests for all the equipment & components shall be deemed to be included in the bid price.



**TECHNICAL SPECIFICATION FOR  
GALVANISED CABLE TRAY SUPPORT  
SYSTEM (BOLTABLE TYPE)**

SPECIFICATION NO. PE-TS-434-507-E013

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SECTION II

REVISION 01

DATE: 23.04.2022

Sheet 2 of 2

**5.0 TESTING:**

The tests shall be in accordance with appropriate Indian Standards. The extent of the tests to be performed by the supplier shall include but not be limited to the following:

**5.1 Type tests :**

Cable tray support system (Bolttable Type) shall be of proven type & type tested design conforming to type tests as under:

- a) Load test for Main support channel with cantilever arm fixed on one side
- b) Load test for Main support channel with cantilever arm fixed on both sides
- c) Load test for Channel fixed on Beam/Floor
- d) Load test for channel supported on wall with Cantilever arm
- e) Channel insert test
- f) Channel nut slip characteristics (wherever applicable)
- g) Weld integrity test
- h) Test for galvanizing: Weight, thickness and uniformity of zinc coating shall be determined in accordance with IS: 6745 and IS: 2633 for the values indicated in Data Sheet- A.

Type testing shall be carried out for tests listed at “(a) through (g)” above in line with Type test procedure and drawings attached in Annexure-4. The final type test procedure shall be subjected to BHEL/customer approval.

Type tests listed at (a) through (g) shall be conducted once. However, type test listed at (h) shall be conducted on each lot offered for inspection.

**5.2 Routine Tests:**

- a) Dimension checks

**5.3 Acceptance Test:**

- a) Dimension checks
- b) Tests for galvanizing

**6.0 PACKING**

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

SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK			REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
					TYPE	M	C/N				M	C	N	
<p>ITEM: (MATERIAL, CLASS, GRADE, RATING, SIZE ETC.) GALVANISED FLEXIBLE CABLE TRAYS SUPPORT SYSTEM</p> <p>STANDARD QUALITY PLAN</p> <p>OP.NO. 0000-999-OOE-S-38 REV.:00 DATE : 01.09.04 PAGE 1 OF 2 VALID UPTO:31.08.07</p> <p>CONFORMING TO CODE: Design as per NTPC Specification</p>														
1.	Flexible cable trays Support Structure	3. 1. In Black Condition a) Weld Quality b) Burs	4.	5. Visual	100%	6. Random	7. Manufacturer's Plant Sid	8. Manufacturer's Plant Sid No Burs	9. Inspection Report	D*	**	10	11	
2.	Finished Galvanized	2. After Galvanising 2.1 General physical inspection including Galvanizing Quality/Defects, Dicotrating, White Rusting etc. 2.2 Dimensional Check & Thickness Check 2.3 Galvanizing Tests a) Coating thickness measurement survey by Elcometer b) Mass of zinc coating c) Uniformity of zinc coating/dip test d) Adhesion Test	Major	Visual	100%	5. Sample/Lot	IS-2629-1985 IS-4759-1996	IS-2629-1985 IS-4759-1996	-do-	P	P	V	W	
			Major	Measurement	-do-	-do-	NTPC/Main Supplier Approved Drg.	NTPC/Main Supplier Approved Drg.	-do-	P	P	W	W	
			Critical	Measurement	IS-4759-1996	-do-	IS-4759-1996 IS-3203-1982	IS-4759-1996 IS-3203-1982	-do-	P	P	W	W	
			Critical	Measurement	-do-	1 coupon sample of each thickness	IS-6745-1972 IS-4759-1996	IS-6745-1972 IS-4759-1996	-do-	P	P	W	W	
			Critical	Measurement	-do-	-do-	IS-2633-1986 IS-4759-1996	IS-2633-1986 IS-4759-1996	-do-	P	P	W	W	
			Critical	Visual	-do-	-do-	IS-2629-1985	IS-2629-1985	-do-	P	P	W	W	


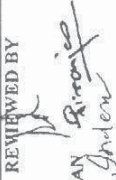
ENGG. DIV./QA&I

1/2



LEGEND: RECORDS IDENTIFIED WITH "TICK" SHALL BE ESSENTIALLY INCLUDED BY THE CONTRACTOR IN QA DOCUMENTATION  
 \*\*M: MANUFACTURER/SUB-SUPPLIER, C: Main Supplier, N: NTPC. INDICATE "P" PERFORM, "W" WITNESS AND "V" VERIFICATION AS APPROPRIATE  
 "CHP" BY NTPC SHALL BE IDENTIFIED IN COLUMN "N" AS "W"

FORMAT NO. QS-01-QAI-P-10/F3-R0

	ITEM: (MATERIAL, CLASS, GRADE, RATING, SIZE ETC.)		STANDARD QUALITY PLAN CONFORMING TO CODE: Design as per NTPC Specification		QP NO. 0000-999-QOE-S-38 REV:00 DATE: 01.09.04 PAGE 2 OF 2 VALID UPTO: 31.08.07		REVIEWED BY S.D.SINGH O.P.NIRANJAN I.J.SINGH		APPROVED BY  ANIL GUPTA NTPC, New Delhi		
	SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY	
1.	2.	3.	4.	5.	6.	7.	8.	9.	M	C	N
									**	10	W
									P	W	W

Note:

- The supplier to ensure procurement of steel from main producers like SAIL/TISCO, Rastriya Ispat/Ispt Ind. Jindal/Essex/Lloyds/IS Co. and Zinc from Hindustan Zinc Ltd.
- Welding shall be done by qualified welders as per supplier system.
- Material shall be galvanized at NTPC approved sources only.
- Pre-treatment of cable trays support system shall be carried out in seven tank process as per IS-2629. All the process parameters e.g. Concentration, temperature, density etc. to be maintained and recorded by the galvaniser.
- The process of pre-treatment shall be verified by NTPC on surveillance basis during inspection of Galvanised Flexible Cable Trays support system.
- (i) Test on Main support Channel shall be done if only C1 channel are in scope of supply and cantilever arms shall be fitted on one side. This test shall be same as test 4 of type test as per tech. Spec.  
 (ii) Test on Main Support Channel shall be done with C2 Channel and cantilever arms fitted on both sides, if C2 channels are in scope of supply. This test shall be same as test 2 A of type tests. Then test at (i) above shall not be repeated.  
 (iii) Nut slip characteristic test (It shall support minimum load of 350 Kg. Before Nut Slips with bolt torque of 65 NM). This test shall be same as test 5 B of type tests.  
 (iv) The procedure for carrying out above test shall be as per details given in Type Tests Specification.

LEGEND: RECORDS IDENTIFIED WITH "TICK" SHALL BE ESSENTIALLY INCLUDED BY THE CONTRACTOR IN QA DOCUMENTATION

\*\*M: MANUFACTURER/SUB-SUPPLIER, C: Main Supplier, N: NTPC. INDICATE "P" PERFORM "W" WITNESS AND "V" VERIFICATION AS APPROPRIATE

"CHP" BY NTPC SHALL BE IDENTIFIED IN COLUMN "N" AS "W"

FORMAT NO. QS-01-QA/FP-10/F3-RO

2/2

ENGG. DIV./QA&I



**ANNEXURE- 1 to Quality Plan****LIST OF NTPC APPROVED GALVANIZERS (FOR NTPC PROJECTS)**

S. NO.	ITEM	VENDOR NAME
1	Galvanising	MJ Engg., Delhi
<del>2</del>	<del>Galvanising</del>	<del>Jamna Metal, Delhi</del>
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
<del>21</del>	<del>Galvanising</del>	<del>DMP projects, Kolkata</del>
<del>22</del>	<del>Galvanising</del>	<del>Patny Systems, Medhak</del>

**NOTES:**

- 1 Additional galvanizer/s, if any, proposed by bidder shall be reviewed and assessed by NTPC/BHEL as per the merits of the case.


**ANNEXURE- 2**  
**3X800 MW NTPC PARTRATU STPP**  
**QUALITY PLAN FOR CABLE TRAY SUPPORT SYSTEM-BOLTABLE**

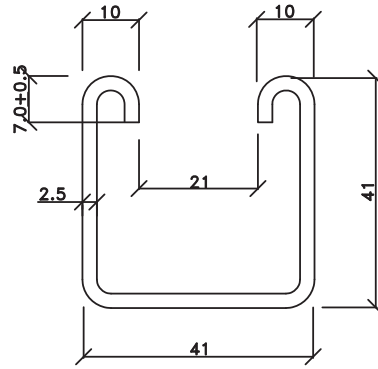
**NOTES:**

1. BHEL reserves the right for conducting repeat test, if required.
2. The latest revisions/year of issue of all the Standards indicated in the QP shall be referred at the time of inspection.

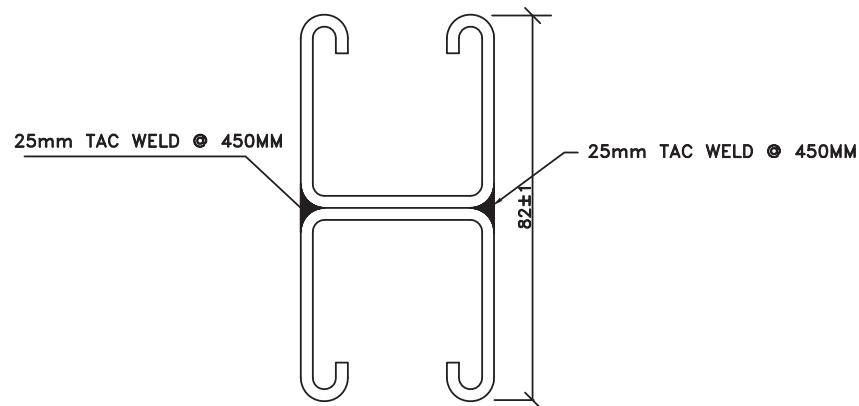
## ANNEXURE-3

TYPICAL DETAILS OF BOLTABLE  
TYPE CABLE TRAY SUPPORT  
MATERIAL & ACCESSORIES

REVISIONS							
		NAME	DATE				
TITLE:				TYPICAL DETAILS OF BOLTABLE TYPE CABLE TRAY SUPPORT MATERIAL & ACCESSORIES	DRAWN	NAME	DATE
DRG. NO.				PE-DG-999-507-E013	DSGN		
					CHKD		
					APPD		
		BHARAT HEAVY ELECTRICALS LTD. PROJECT ENGINEERING MANAGEMENT NOIDA				SH 1 OF 12	



SINGLE CHANNEL SC1



DOUBLE CHANNEL DC1

TWO LENGTHS OF SINGLE CHANNEL

SPOT WELDED BACK TO BACK

NOTE:

AT 75MM C/C

1. ALL DIMENSIONS ARE IN mm.
2. MATERIAL : 2.5MM THICK HOT/ COLD ROLLED M.S. AS PER IS:1079.
3. FINISH : HOT DIP GALVANISED AS PER IS 2629
4. TOLERANCE ON THICKNESS IS AS PER IS 1852
5. ALL FABRICATION TOLERANCE AS PER RELEVANT IS.
6. ZINC COATING SHALL BE MIN. 75 MICRONS/ 610 G/SQ. M.

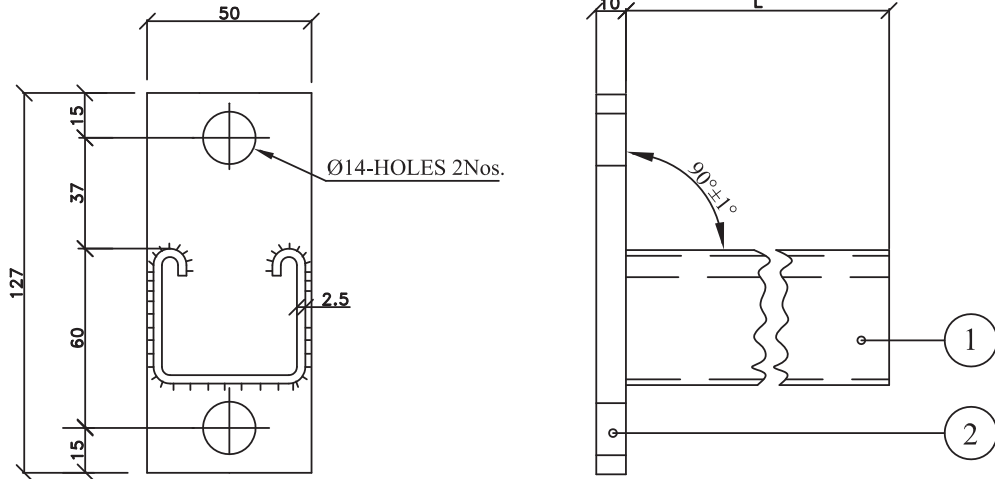


TITLE: TYPICAL DETAILS OF BOLTABLE  
TYPE CABLE TRAY SUPPORT  
MATERIAL & ACCESSORIES

DRG. NO.

PE-DG-999-507-E013

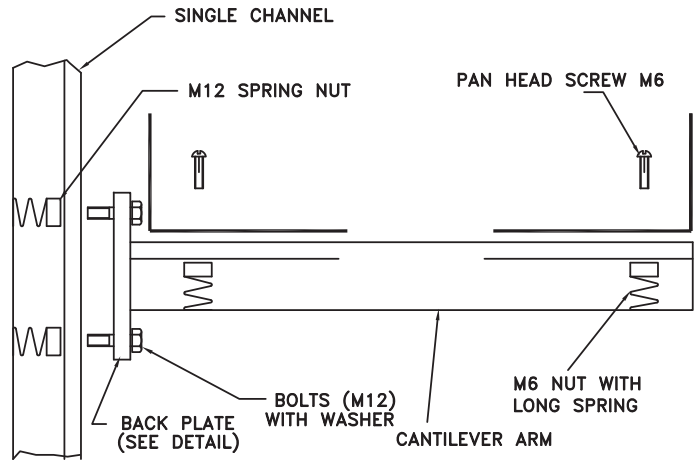
SH 2 OF 12



**CANTILEVER ARMS**

TRAY WIDTH IN MM	CANTILEVER ARM LENGTH (L) IN MM
150	170/200 (FOR OVERHEAD TRAYS)*
300	320/350 (FOR OVERHEAD TRAYS)*
450	500 (FOR OVERHEAD TRAYS)
600	620/650 (FOR OVERHEAD TRAYS)*
600	750 (FOR TRENCH)

\* :- AS SPECIFIED IN BOQ



**TYPICAL ASSEMBLY OF CHANNEL SUPPORTS AND CABLE TRAY**

**M12 HEX BOLT & WASHER-2NOs.**  
**M12 SPRING NUTS-2NOs.**  
**M6 PAN HEAD SCREWS & WASHER-2NOs.**  
**M6 SPRING NUTS-2NOs.**

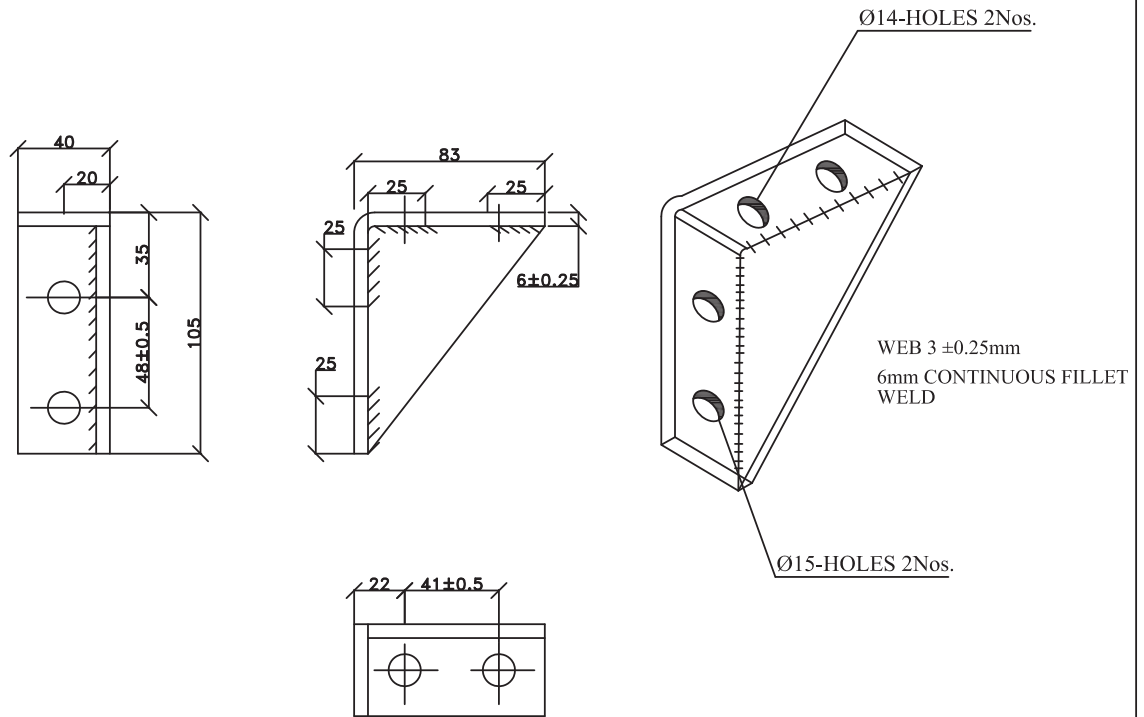
**NOTES :**

1. ALL DIMENSIONS ARE IN mm.
2. ITEM NO.1 MATERIAL : HOT/ COLD ROLLED M.S. AS PER RELEVANT IS.
3. ITEM NO.2 MATERIAL : M.S AS PER IS-2062
4. FINISH : HOT DIP GALVANISED AS PER IS:2629
5. TOLERANCE ON THICKNESS IS AS PER IS:1852
6. ALL FABRICATION TOLERANCE AS PER RELEVANT IS.
7. ZINC COATING SHALL BE MIN. 75 MICRONS/ 610 G/SQ. M.



**TITLE: TYPICAL DETAILS OF BOLTABLE TYPE CABLE TRAY SUPPORT MATERIAL & ACCESSORIES**

**DRG. NO. PE-DG-999-507-E013**



90 ANGLE FITTING HL1 (HEAVY DUTY TYPE)

*ANCHOR FASTENER-2Nos.  
SPRING NUT & WASHER-2Nos.*

NOTES :

1. ALL DIMENSIONS ARE IN mm.
2. MATERIAL :MILD STEEL AS PER IS-2062
3. FINISH : HOT DIP GALVANISED AS PER IS:2629
4. TOLERANCE ON THICKNESS AS PER IS:1852
5. ALL FABRICATION TOLERANCE AS PER RELEVANT IS.
6. ZINC COATING SHALL BE MIN. 75 MICRONS/ 610 G/SQ. M.

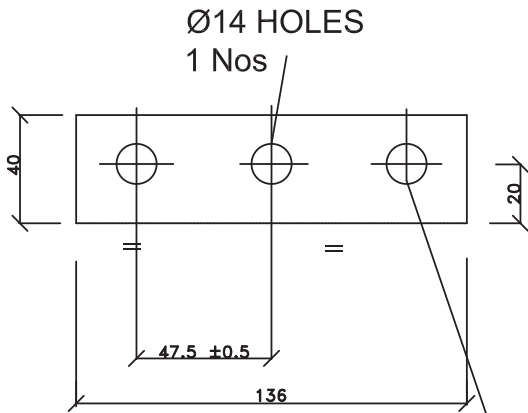
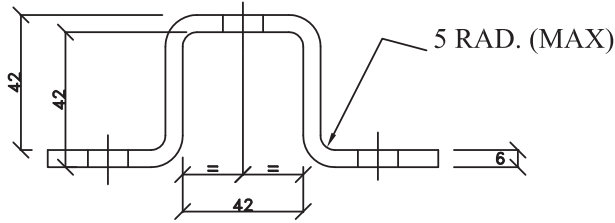
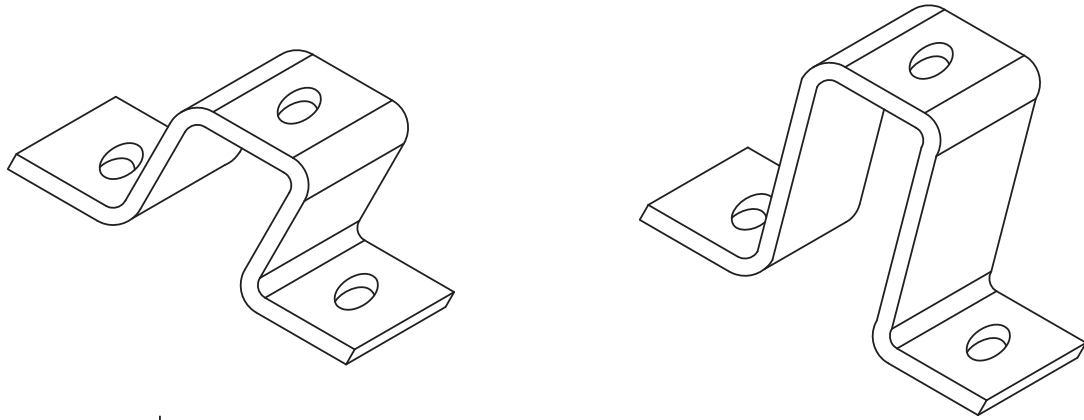


TITLE: TYPICAL DETAILS OF BOLTABLE  
TYPE CABLE TRAY SUPPORT  
MATERIAL & ACCESSORIES

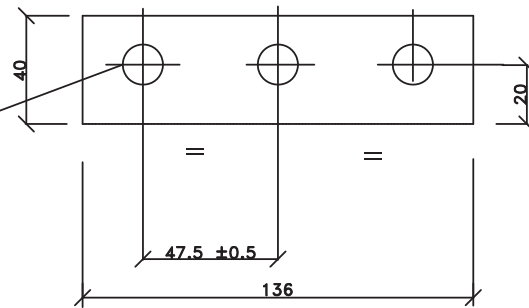
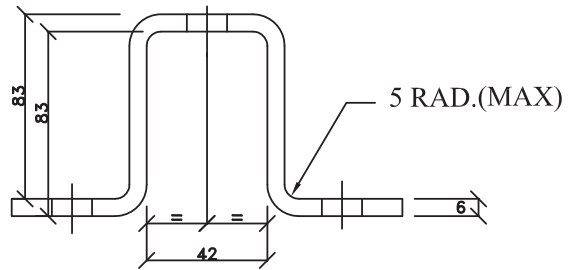
DRG. NO.

PE-DG-999-507-E013

SH 4 OF 12



CLAMP FOR SINGLE CHANNEL CC1



CLAMP FOR DOUBLE CHANNEL CC2

NOTES

1. ALL DIMENSIONS ARE IN mm.
2. MATERIAL :MILD STEEL AS PER IS-2062
3. FINISH : HOT DIP GALVANISED AS PER IS:2629
4. TOLERANCE ON THICKNESS AS PER IS:1852
5. ALL FABRICATION TOLERANCE AS PER RELEVANT IS.
6. ZINC COATING SHALL BE MIN. 75 MICRONS/ 610 G/SQ. M.

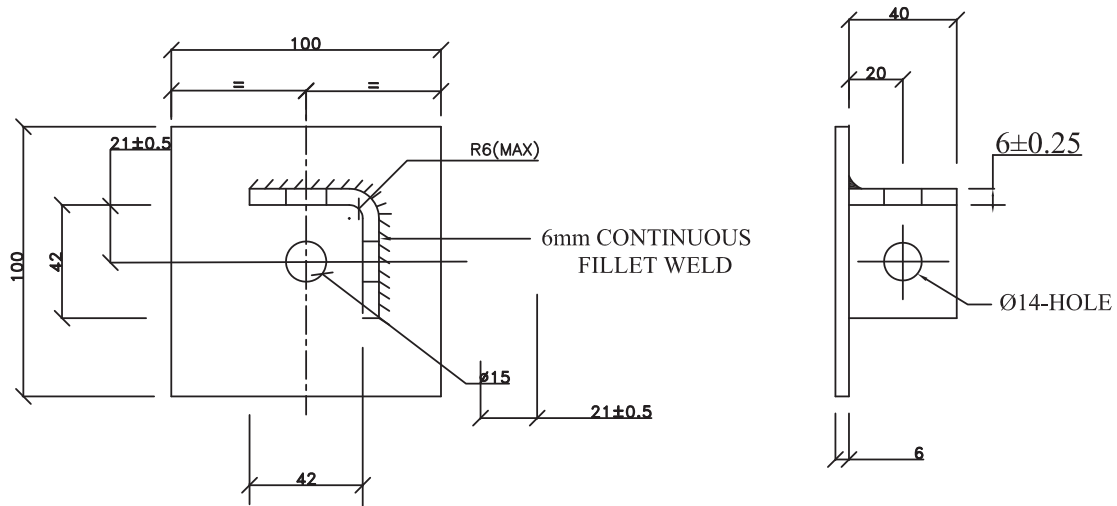
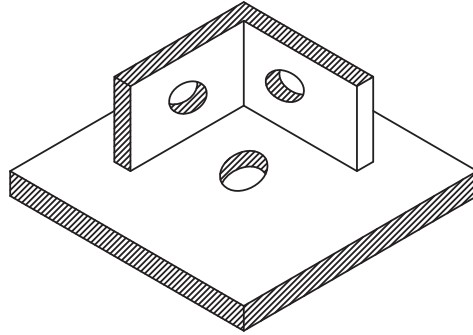
*ANCHOR FASTENER-2NOS.  
SPRING NUT & WASHER-1NO.*



TITLE: TYPICAL DETAILS OF BOLTABLE  
TYPE CABLE TRAY SUPPORT  
MATERIAL & ACCESSORIES

DRG. NO.

PE-DG-999-507-E013



BASE PLATE FOR SINGLE CHANNEL BP1

NOTE

1. ALL DIMENSIONS ARE IN mm.
2. MATERIAL :MILD STEEL AS PER IS-2062
3. FINISH : HOT DIP GALVANISED AS PER IS:2629
4. TOLERANCE ON THICKNESS AS PER IS:1852
5. ALL FABRICATION TOLERANCE AS PER RELEVANT IS.
6. ZINC COATING SHALL BE MIN. 75 MICRONS/ 610 G/SQ. M.

*ANCHOR FASTENER-1NO.  
SPRING NUT & WASHER-1NO.*

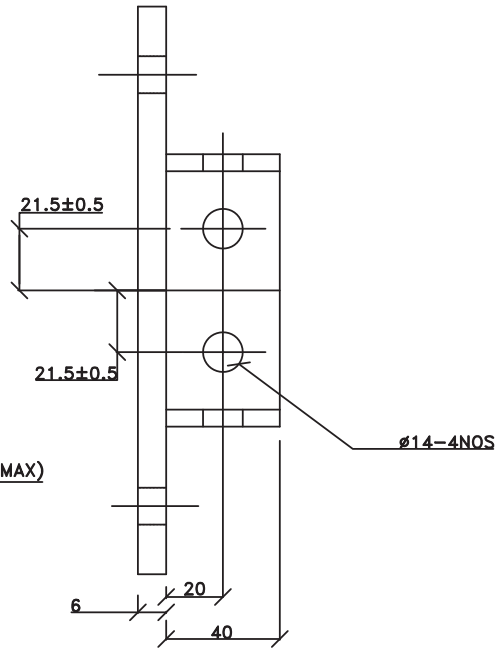
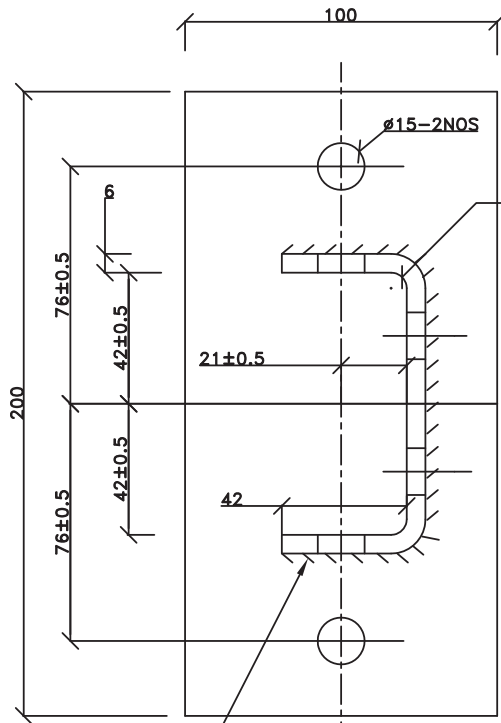
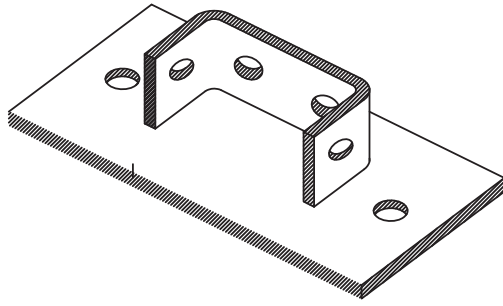


TITLE: TYPICAL DETAILS OF BOLTABLE  
TYPE CABLE TRAY SUPPORT  
MATERIAL & ACCESSORIES

DRG. NO.

PE-DG-999-507-E013

SH 6 OF 12



*ANCHOR FASTENER-2NOS.  
SPRING NUT & WASHER-2NOS.*

BASE PLATE FOR DOUBLE CHANNEL BP2

NOTE

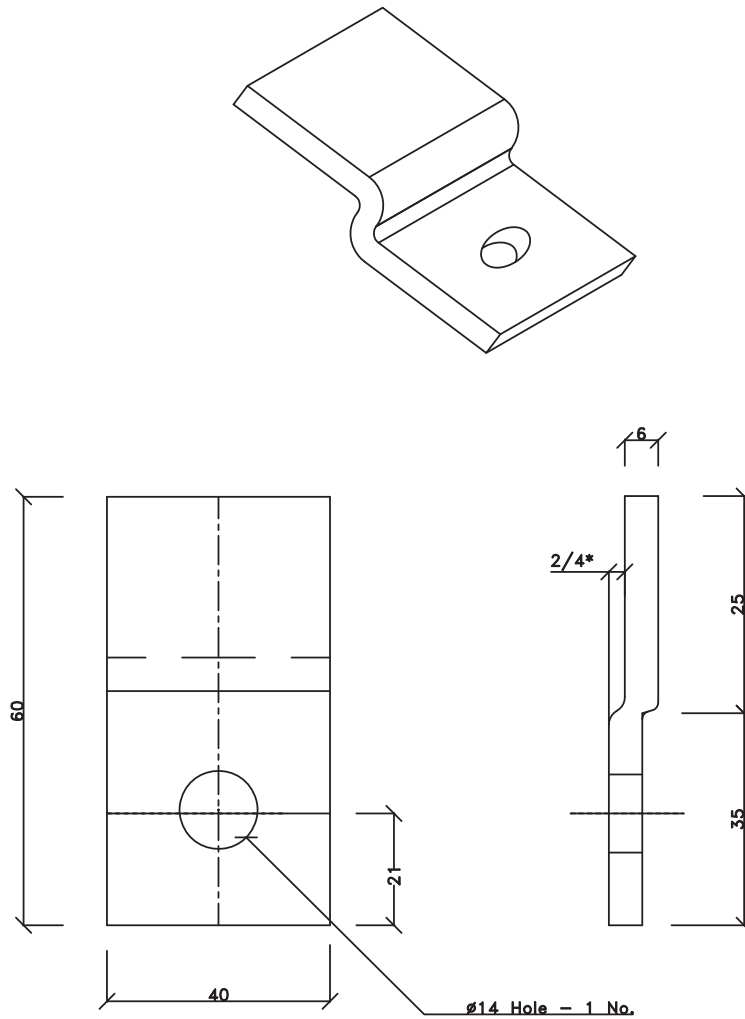
1. ALL DIMENSIONS ARE IN mm.
2. MATERIAL :MILD STEEL AS PER IS-2062
3. FINISH : HOT DIP GALVANISED AS PER IS:2629
4. TOLERANCE ON THICKNESS AS PER IS:1852
5. ALL FABRICATION TOLERANCE AS PER RELEVANT IS.
6. ZINC COATING SHALL BE MIN. 75 MICRONS/ 610 G/SQ. M.



TITLE: TYPICAL DETAILS OF BOLTABLE  
TYPE CABLE TRAY SUPPORT  
MATERIAL & ACCESSORIES

DRG. NO.  
PE-DG-999-507-E013





**TRAY FIXING CLAMP - TC1/ FRP TRAY- FIXING CLAMP**

**NOTES**

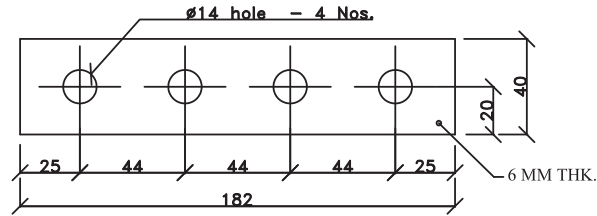
1. ALL DIMENSIONS ARE IN mm.
2. MATERIAL :MILD STEEL AS PER IS-2062
3. FINISH : HOT DIP GALVANISED AS PER IS:2629
4. TOLERANCE ON THICKNESS AS PER IS:1852
5. ALL FABRICATION TOLERANCE AS PER RELEVANT IS.
6. ZINC COATING SHALL BE MIN. 75 MICRONS/ 610 G/SQ. M.

**SPRING NUT & WASHER-1NO.**  
**\* :-2MM FOR TRAY FIXING CLAMP TC1**  
**4MM FOR FRP TRAY- FIXING CLAMP**



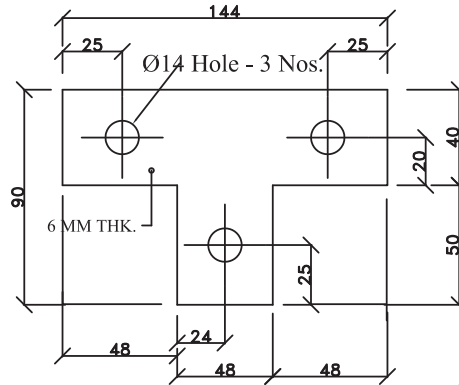
**TITLE: TYPICAL DETAILS OF BOLTABLE  
 TYPE CABLE TRAY SUPPORT  
 MATERIAL & ACCESSORIES**

**BHEL DRAWING NO.  
 PE-DG-999-507-E013**



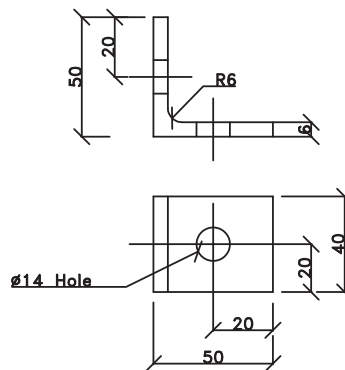
*SPRING NUT & WASHER-4Nos.*

### FLAT PLATE STRAIGHT FITTING PF2



*SPRING NUT & WASHER-3Nos.*

### FLAT PLATE TEE FITTING PF1



*SPRING NUT & WASHER-2Nos.*

### NOTES

### 90° ANGLE FITTING LA1

1. ALL DIMENSIONS ARE IN mm.
2. MATERIAL :MILD STEEL AS PER IS-2062
3. FINISH : HOT DIP GALVANISED AS PER IS:2629
4. TOLERANCE ON THICKNESS AS PER IS:1852
5. ALL FABRICATION TOLERANCE AS PER RELEVANT IS.
6. ZINC COATING SHALL BE MIN. 75 MICRONS/ 610 G/SQ. M.

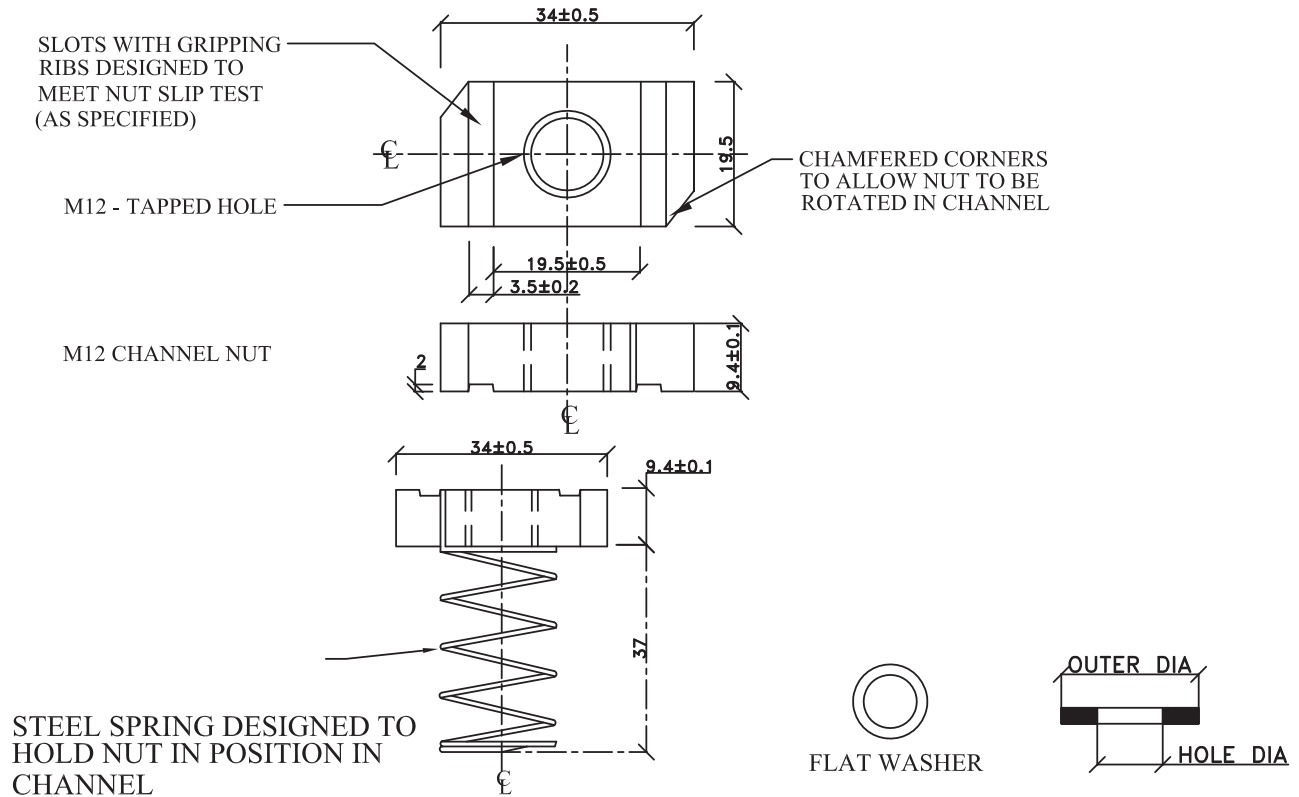


TITLE: TYPICAL DETAILS OF BOLTABLE  
TYPE CABLE TRAY SUPPORT  
MATERIAL & ACCESSORIES

BHEL DRAWING NO.

PE-DG-999-507-E013

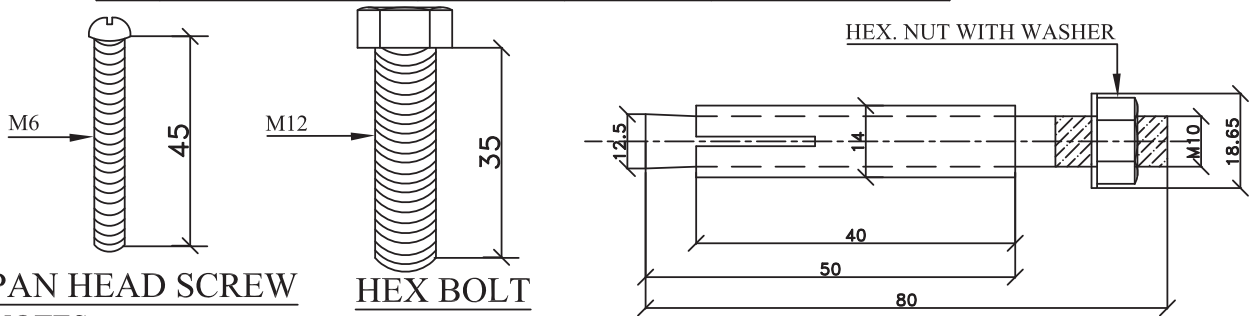
SH 10 OF 12



**SPRING NUT ASSEMBLY TYPICAL DETAILS OF WASHER**

**WASHER SIZE DETAILS**

Sl.No.	BOLT/SCREW SIZE	HOLE DIA (IN MM)	OUTER DIA (IN MM)	WAHER THICKNESS (IN MM)
1	M6 PAN HEAD SCREW	6.4	12	1.6
2	M12 HEXA BOLT	13	24	2.5



**PAN HEAD SCREW**

**HEX BOLT**

**ANCHOR BOLT M10**

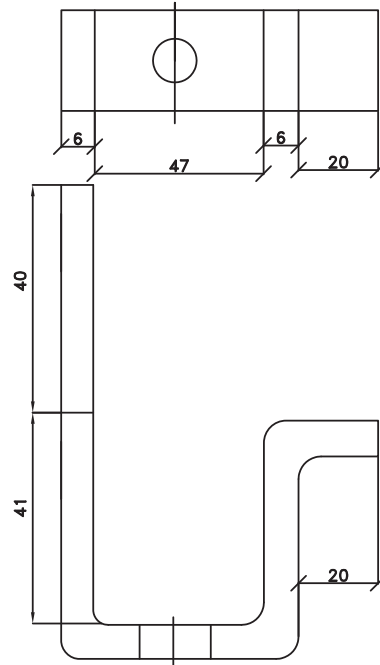
**NOTES:**

1. MATERIAL - MS AS PER IS - 2062.
2. M6 CHANNEL NUT DIMENSIONAL SIMILAR TO M12. EXCEPT HOLE DRILLED AND TAPPED TO M6 PAN HEAD SCREWS.
3. TAPPED HOLE THREADING TO MATCH WITH THREADING OF BOLTS.
4. SURFACE PROTECTION ELECTROGALVANISED / CADMIUM PLATED.
5. ALL DIMENSIONS ARE IN MM.
6. ZINC COATING SHALL BE MIN. 75 MICRONS/ 610 G/SQ. M.

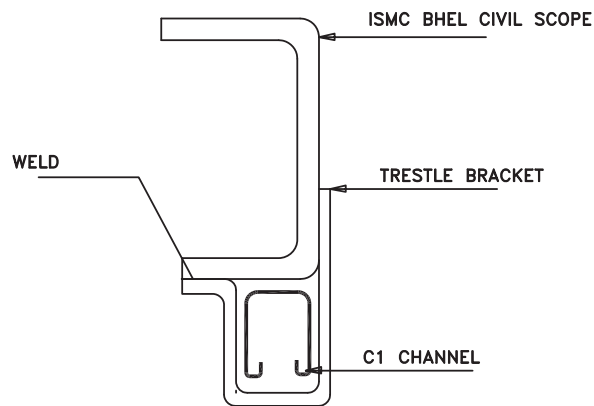


TITLE: **TYPICAL DETAILS OF BOLTABLE TYPE CABLE TRAY SUPPORT MATERIAL & ACCESSORIES**

BHEL DRAWING NO.  
**PE-DG-999-507-E013**



TRESTLE BRAKET



FIXING ARRANGMENT OF TRESTLE BRACKET

NOTES

1. ALL DIMENSIONS ARE IN mm.
2. MATERIAL :MILD STEEL AS PER IS-2062
3. FINISH : HOT DIP GALVANISED AS PER IS:2629
4. TOLERANCE ON THICKNESS AS PER IS:1852
5. ALL FABRICATION TOLERANCE AS PER RELEVANT IS.
6. ZINC COATING SHALL BE MIN. 75 MICRONS/ 610 G/SQ. M.



**TITLE:**  
**TYPICAL DETAILS FOR**  
**CABLE TRAY SUPPORT SYSTEM**

BHEL DRAWING NO.

PE-DG-999-507-E007

REV. 0


SH 12 OF 12

## ANNEXURE-4

TYPICAL DETAILS OF  
TYPE TEST PROCEDURE/  
TEST ARRANGEMENT

REVISIONS				
	NAME	DATE		

<b>TITLE:</b>	<b>DRAWN</b>	<b>NAME</b>	<b>DATE</b>
TYPICAL DETAILS OF TYPE TEST ARRANGEMENT	<b>DSGN</b>		
<b>DRG. NO.</b>	<b>CHKD</b>		
PE-DG-999-507-E114	<b>APPD</b>		

	<b>BHARAT HEAVY ELECTRICALS LTD.</b> <b>PROJECT ENGINEERING MANAGEMENT</b> <b>NOIDA</b>	<b>SH 1 OF 10</b>
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**TYPE TEST PROCEDURE FOR CABLE TRAY SUPPORT SYSTEM [BOLTABLE TYPE]**

**1.0 Type tests on Support System for Cable Trays**

**1.1 TEST 1 A**

On main support channel type-DC1 for cantilever arms fixed on one side only. A 3.5 metre length of main support channel shall be fixed vertically at each end to a rigid structure as per the fixing arrangement as shown in the enclosed drawing PE-DG-999-507-E114 (Sheet 05 of 10). Eight (8) nos. 750/650 mm cantilever arms shall be fixed to the main channel and arm 1 & 2 of shall be uniformly loaded to a working load of 100 kg over the outboard 600mm. Subsequently a point load of 100 kg shall be applied on arm 2. A uniform proof load on all the arms equal to twice the working load shall be then be applied. Deflections shall be measured at the points shown in the enclosed drawings and at the following load intervals:

- i) Working load
- ii) Working load + point load
- iii) Off load
- iv) Proof load + point load
- v) Off load

The deflection measured at working loads shall not exceed 16mm. The permanent deflection after removing the combination of working load and point load shall not exceed 10 mm at the arm tips and 6 mm on the channel. No collapse of the structure shall occur with a combination of proof load and point load applied.

**1.2 TEST 1 B**

Test 1 A shall be repeated with Eight Cantilever arms uniformly loaded and with the same point load on arm 2.

**2.0 TEST 2**

**On Main support channel type – DC1 for cantilever arms fixed on both sides**

**2.1 TEST 2 A**

A 3.5 m length of main support channel DC1 for cantilever arms fixing on both sides shall be fixed at each end to rigid structure as per the fixing arrangement as shown in the enclosed drawing PE-DG-999-507-E114(Sheet 06 of 10). Six (6) nos. 750/650 mm cantilever arms shall be attached to each sides and each arm uniformly loaded to a working load of 100 kg over the outboard 600 mm. A point load of 100 kg shall then be applied to arm 2, followed by a uniform proof load of twice the working load on all the arms, deflection shall be measured at points shown in the enclosed drawings at the following load intervals.

- i) Working load
- ii) Working load + point load
- iii) Offload
- iv) Proof load + point load
- v) Offload

The deflection measured at working loads shall not exceed 16mm. The permanent deflection after removing the combination of working load and point load shall not exceed 10 mm at the arm tips and 6 mm on the channel. No collapse of the structure shall occur with a combination of proof load and point load applied.

## 2.2 TEST 2 B

Test 2 A shall be repeated with the assembly but with an asymmetrical load on the DC1 column and point load applied to arm 8 as shown in the enclosed drawing PE-DG-999-507-E114 (Sheet 07 of 10). The 100 kg and 200 kg uniformly distributed loads shall be applied to the upper three arms on one side and the lower three arms on the opposite side.

## 3.0 TEST 3

### Tests on Channel Fixed on Beam/Floor

A length of main support channel section shall be fixed to steel structure/ floor and have loads applied as shown in the drawing no. PE-DG-999-507-E114 (sheet 08 of 10) enclosed and as detailed below:

### 3.1 TEST 3 A

A length of steel structure shall be rigidly supported. It should be fitted on a metre length of channel section using beam clamps welded/bolted. A point load of 1200 kg shall be applied to the centre point via two brackets. No distortion or pulling of the components shall take place.

### 3.2 TEST 3 B

With the components assembled in Test 3A, two perpendicular point loads of 600 kg shall be simultaneously applied at positions 150 mm either side of the centre line, no distortion or pulling of the components shall take place.

### 3.3 TEST 3 C

With the components assembled as in Test 3 A, a perpendicular point load of shall be applied at a point 150 mm on one side of the centre line.

The load shall be gradually increased to the maximum value that can be applied without causing distortion or pulling of the components. This value shall be recorded.

## 4.0 TEST 4: CHANNEL INSERT (If applicable)

2.5 metre of SC1 Channel fixed to the concrete wall / steel structure as per actual site installation conditions. 6 nos. of 750/650 mm cantilever arms shall be fixed to the SC1 Channel as shown in enclosed drawing PE-DG-999-507-E114 (sheet 09 of 10). Each arm uniformly loaded to a working load of 100 kg over the out board 600 mm. A point load of 100 kg shall then be applied to arm 2, followed by a uniform proof load of twice the working load on all the arms; deflection shall be measured at points shown in the enclosed drawing at the following load intervals:

- i) Working load
- ii) Working load + point load
- iii) Offload
- iv) Proof load + point load
- v) Offload

The deflection measured at working loads shall not exceed 16mm. The permanent deflection after removing the combination of working load and point load shall not exceed 10 mm at the arm tips and 6 mm on the channel. No collapse of the structure shall occur with a combination of proof load and point load applied.

## 5.0 TEST 5:

**Channel nut slip characteristics (If applicable)****TEST 5 A1, 5 A2, and 5 A3:**

A length of channel SC1 section 200 mm long shall have fitted brackets with the two bolts fixing as shown in enclosed drawing PE-DG-999-507-E114 (sheet 10 of 10).

With loads applied at the position shown in drawing enclosed nut slip shall be determined with bolt torque of 30 NM, 50 NM and 65 NM. No fewer than three measurements shall be made for each torque setting.

A minimum loading of 720 kg shall be obtained before nut slip with bolt torque of 65 NM.

**TEST 5 B1, 5 B2, and 5 B3:**

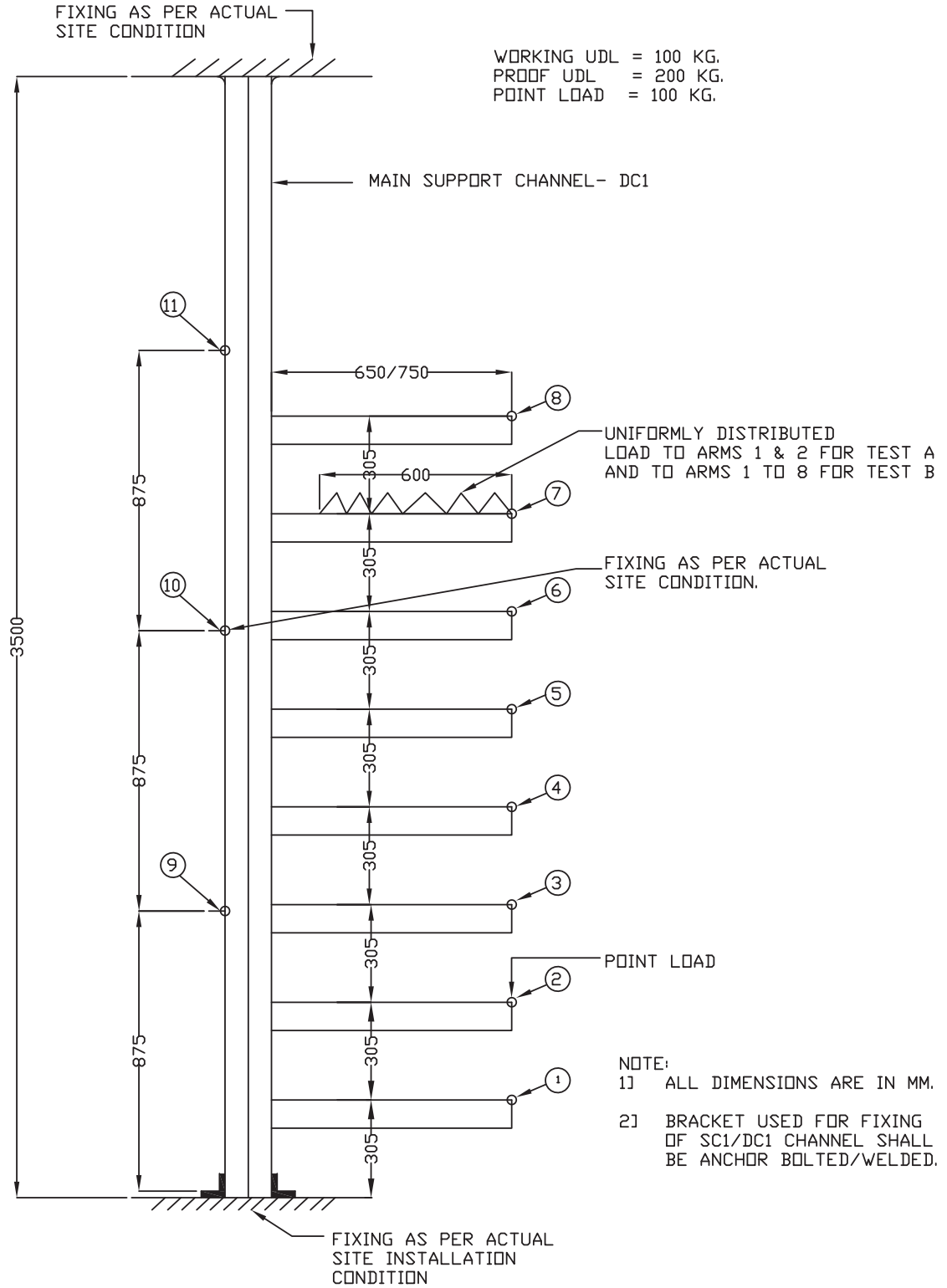
The length of channel SC1 section 200 mm long shall have fitted bracket with the one bolt fixing as shown in enclosed drawing PE-DG-999-507-E114 (sheet 10 of 10).

With loads applied at the position shown in drawing enclosed nut slip shall be determined with bolt torque of 30 NM, 50 NM and 65 NM. No fewer than three measurements shall be made for each torque setting.

A minimum loading of 350 kg shall be obtained before nut slip with a bolt torque of 65 NM.

**6.0 TEST 6:****Weld Integrity Test**

After the deflection test as per test 1A, 1B, 2A, 2B and 4 above weld integrity shall be checked by magnetic particle inspection to detect sub- surface cracks developed, if any.



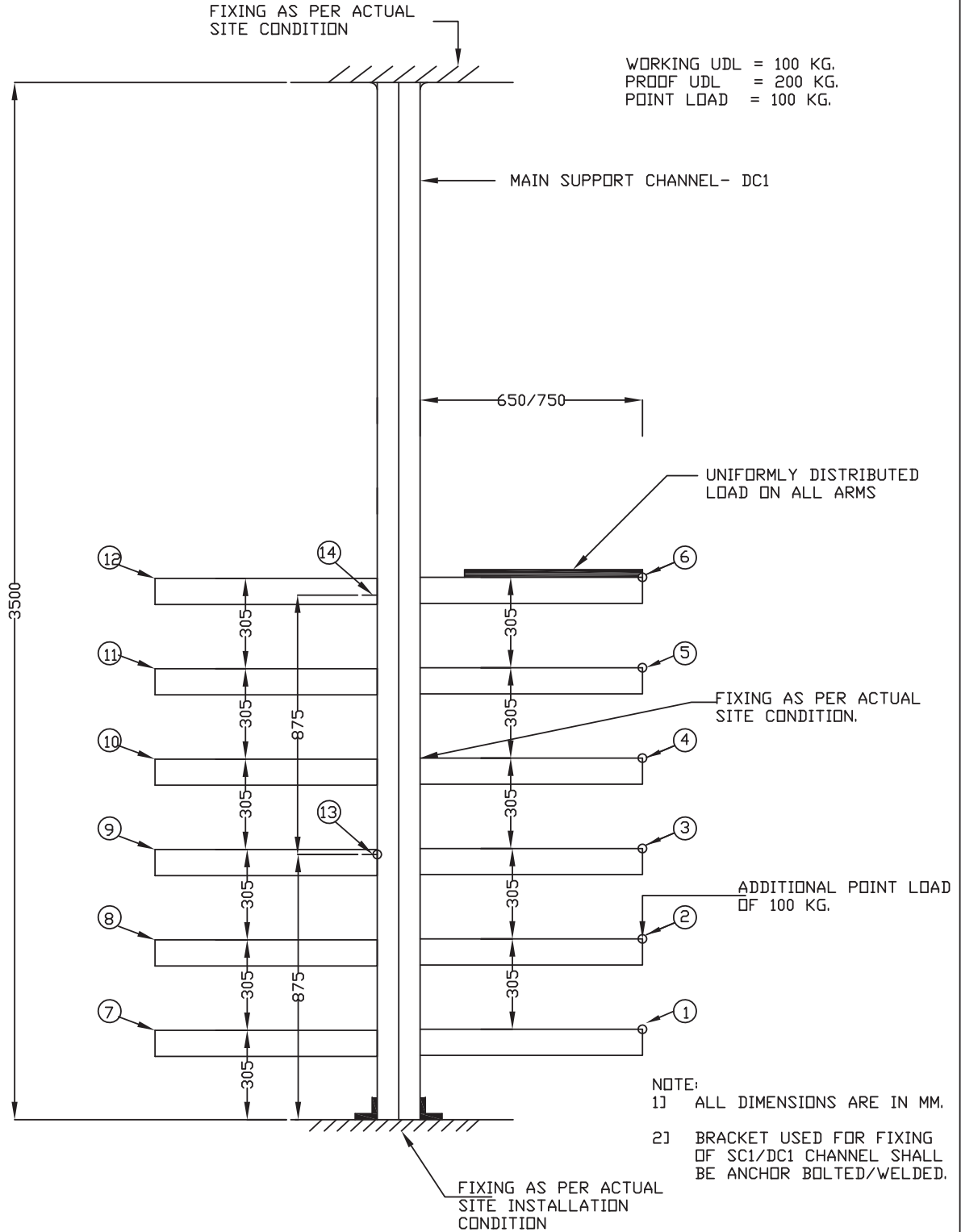
DEFLECTION MEASURING POINTS.

**TEST : 1A & 1B: MAIN SUPPORT CHANNEL  
 (CANTILEVER ARM ON ONE SIDE)**



TITLE: TYPICAL DETAILS OF  
 TYPE TEST ARRANGEMENT

DRG. NO.  
 PE-DG-999-507-E114



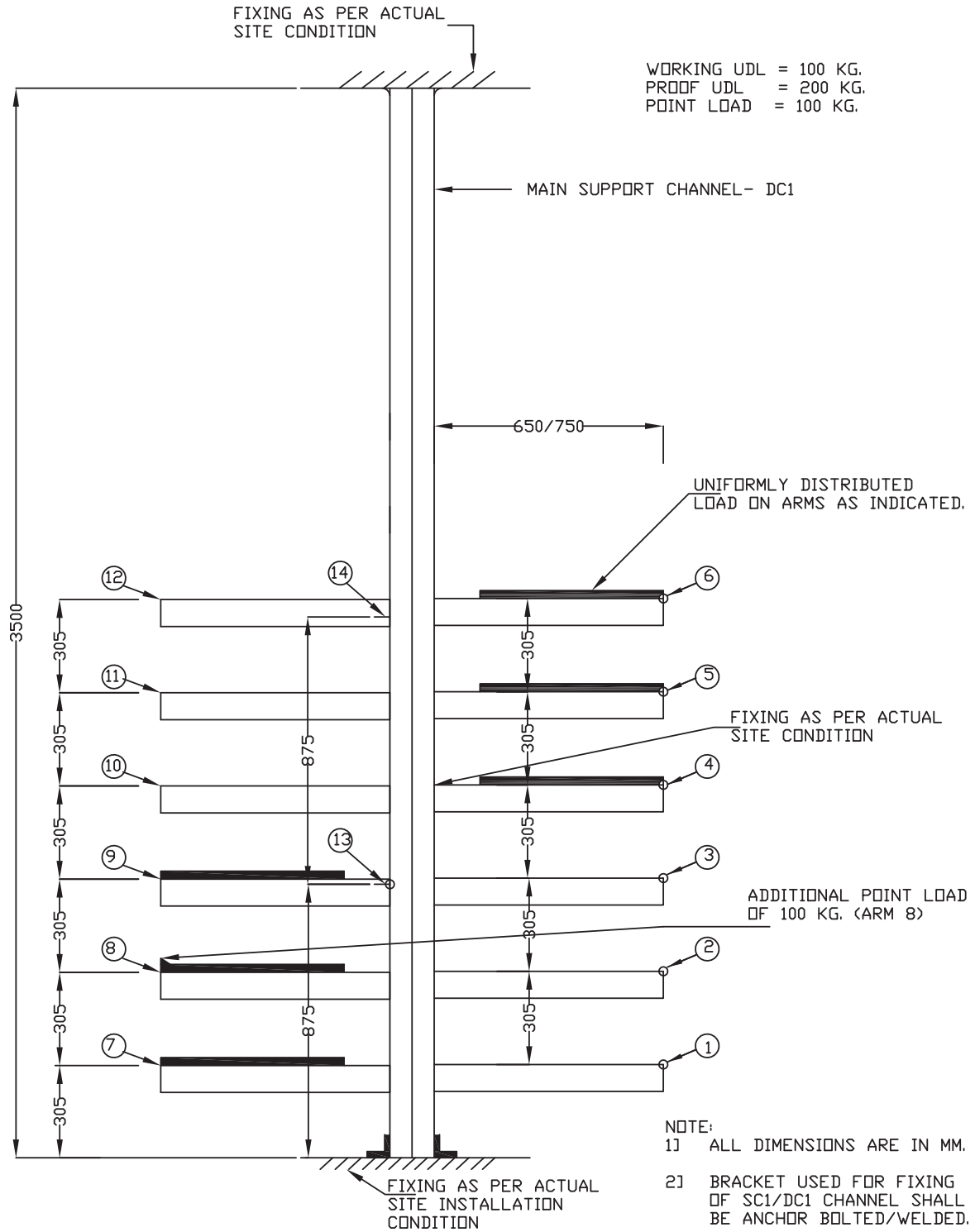
Q DEFLECTION MEASURING POINTS.

**TEST : 2A: MAIN SUPPORT CHANNEL  
 (CANTILEVER ARM ON BOTH SIDES)**



TITLE: **TYPICAL DETAILS OF  
 TYPE TEST ARRANGEMENT**

DRG. NO.  
**PE-DG-999-507-E114**



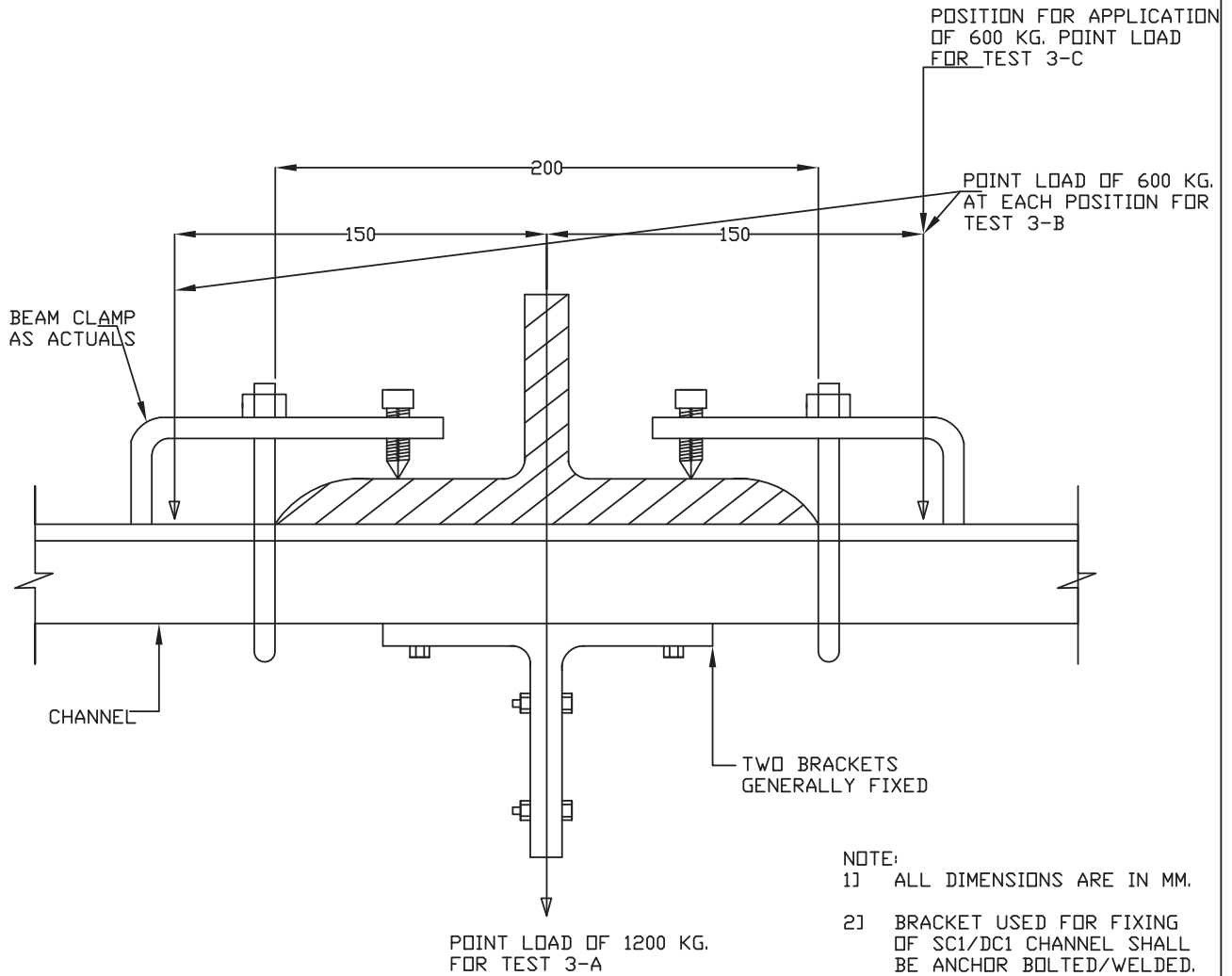
DEFLECTION MEASURING POINTS.

**TEST : 2B: MAIN SUPPORT CHANNEL  
(ASYMMETRIC LOADING)**



TITLE: TYPICAL DETAILS OF TYPE TEST ARRANGEMENT

DRG. NO. PE-DG-999-507-E114



**TEST : 3A, 3B, 3C: CHANNEL FIXED ON BEAM/FLOOR.**

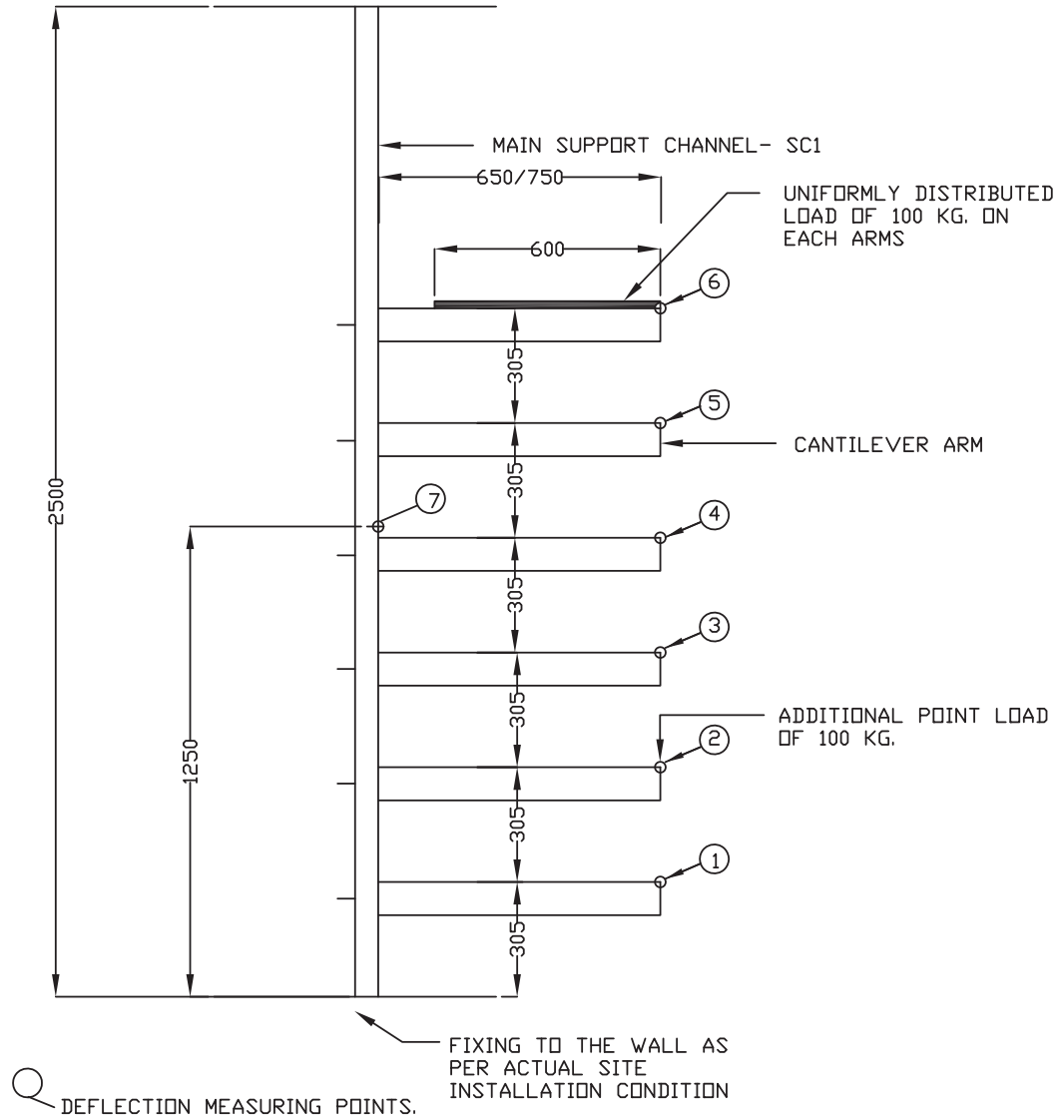


TITLE: TYPICAL DETAILS OF TYPE TEST ARRANGEMENT

DRG. NO. PE-DG-999-507-E114

FIXING AS PER ACTUAL SITE CONDITION

WORKING UDL = 100 KG.  
PROOF UDL = 200 KG.  
POINT LOAD = 100 KG.



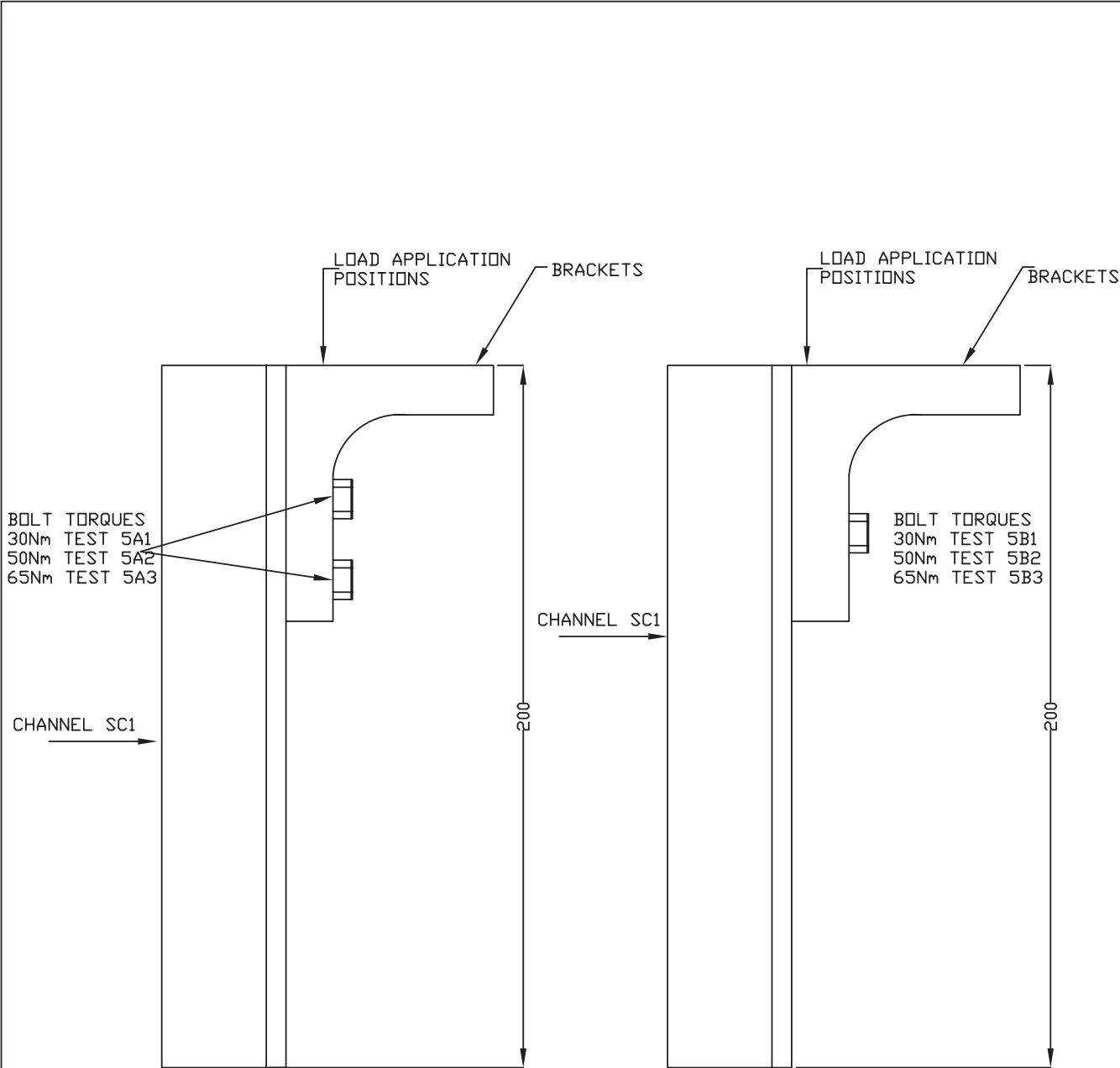
NOTE:  
1] ALL DIMENSIONS ARE IN MM.

**TEST : 4: CHANNEL INSERT**



TITLE: TYPICAL DETAILS OF  
TYPE TEST ARRANGEMENT

DRG. NO.  
PE-DG-999-507-E114



ASSEMBLY USING M12 X 25MM LONG  
HEX. HD. SCREWS LOCK WASHER AND  
M12 CHANNEL NUT WITH SPRING

**TEST : 5A1, 5A2, 5A3:**  
**CHANNEL NUT SLIP CHARACTERISTIC**

ASSEMBLY USING M12 X 25MM LONG  
HEX. HD. SCREWS LOCK WASHER AND  
M12 CHANNEL NUT WITH SPRING

**TEST : 5B1, 5B2, 5B3:**  
**CHANNEL NUT SLIP CHARACTERISTIC**

NOTE:  
1] ALL DIMENSIONS ARE IN MM.



TITLE: TYPICAL DETAILS OF  
TYPE TEST ARRANGEMENT

DRG. NO.  
PE-DG-999-507-E114

CABLE TRAY SUPPORT SYSTEM- PATRATU PROJECT**CABLE TRAY SUPPORT SYSTEM - BOLTABLE QTY**

Item No.	Item Code	Item Description	Unit	Indented qty.
1	507-34016-A	SINGLE CHANNEL SC1 (IN STANDARD LENGTH OF 6M PER PIECE)	Metres	7100
2	507-34012-A	DOUBLE CHANNEL DC1 (IN STANDARD LENGTH OF 6M PER PIECE)	Metres	5400
3		CANTILEVER ARM EACH COMPLETE WITH NOS. - M12 HEX. BOLT & WASHER 2		
		2 NOS. - M12 SPRING NUTS NOS. - M6 PAN HEAD SCREWS & WASHER 2		
		2 NOS. - M6 SPRING NUTS		
3.1	507-34028-A	Cantilever arm for 600mm wide cable trays (620mm)	Nos.	24800
3.2	507-34029-A	Cantilever arm for 300mm wide cable trays (320mm)	Nos.	6400
3.3	507-34030-A	Cantilever arm for 150mm wide cable trays (170mm)	Nos.	6300
4		<b>CLAMPS AND FITTINGS</b> COMPLETE WITH REQUIRED HARDWARES (Spring nuts/ washers etc. as required for complete installation)		
4.1	507-34010-A	CLAMP FOR SINGLE CHANNEL CC1	Nos.	6000
4.2	507-34011-A	CLAMP FOR DOUBLE CHANNEL CC2	Nos.	3900
4.3	507-34021-A	TRAY FIXING CLAMP TC1	Nos.	25000
4.4	507-34005-A	BEAM CLAMP BC1	Nos.	200

## NOTES:

- 1.Total Quantity indicated above shall be known as Order Quantities. The total quantity variation shall be as per NIT.
- 2.The unit prices shall apply for adjustment of variation in quantity.



## Price Variation Formulae

ANNEXURE-C

Prices shall be variable as per following PVC formulae: -

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

Wherein,

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

P<sub>o</sub> = Price quoted/confirmed.

SBIR<sub>o</sub> = Price of Steel Billets- Retail (refer notes)  
**This price is as applicable on the 1st working day of the month, one month prior to the date of tendering.**

Zn<sub>o</sub> = Price of Electrolytic high grade zinc (refer notes)  
This price is as applicable on the 1st working day of the month, one month prior to the date of tendering.

W<sub>o</sub> = All India average consumer price index number for industrial workers, as published by the Labour Bureau, Ministry of Labour, Govt. of India (Base: 2016 = 100) (Refer notes)  
This index number is as applicable on the first working day of the month, **three months** prior to the date of tendering.

SBIR = Price of Steel Billets-Retail (refer notes)  
**This price is as applicable on the 1st working day of the month, two months prior to the date of delivery.**

Zn = Price of Electrolytic high grade zinc (refer notes)  
**This price is as applicable on the 1st working day of the month, two months prior to the date of delivery.**

W = All India average consumer price index number for industrial workers, as published by the Labour Bureau, Ministry of Labour, Govt. of India (Base: 2016 = 100) (refer notes)  
This index number is as applicable on the first working day of the month, **four months** prior to the date of delivery.

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



**Price Variation Formulae**

**ANNEXURE-C**

**Notes:**

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



PEM / PG-III, BHEL, Noida

**SPECIAL CONDITIONS OF CONTRACT (SCC) Rev-0**

**3 x 800 MW PVUNL PATRATU TPP PHASE-I (Job No. 434)**

These Conditions shall be read and construed along with General Conditions of Contract (GCC) rev.06 & GST related Corrigendum to GCC rev.06, to be enclosed along with the tender enquiry. In case of any conflict or inconsistency, the conditions given in SCC shall prevail over the GCC and its corrigendum.

Sl No.	Title	Description
1.	Project Name	3 x 800 MW PVUNL PATRATU TPP PHASE-I (EPC)
2.	Nature of project & Type of Bidding	Non-Mega & ICB (International Competitive Bidding )
3.	Customer Order Ref No	01/PVUNL-CS-9585-001-2/NOA-FC dated 08.03.2018 01/PVUNL-CS-9585-001-2/NOA-SC dated 08.03.2018 01/PVUNL-CS-9585-001-2/NOA-TC dated 08.03.2018
4.	BHEL's Customer	PATRATU VIDYUT UTPADAN NIGAM LIMITED (subsidiary of NTPC Limited in joint venture with JBVNL )
5.	PVUNL GST No.	20AAICP3718K1ZH
6.	Customer Consultants	No consultant
7.	Consignee Address (Bill To)	For supply package: BHEL, Power Sector-Project Engineering Management, Power Project Engineering Institute, Plot No. 25, Sector-16A, Noida, Uttar Pradesh-201301. <b>GSTIN: 09AAACB4146P2ZC</b>  <b>For turnkey packages (where BHEL-PEM will issue only the LOA and Purchase Order shall be issued by BHEL-PSWR):</b> Construction Manager, BHEL site office, Patratu Vidyut Utpadan Njigam Ltd , PO: PTPS , Patratu , Ramgarh , Jharkhand - 829119 <b>BHEL PSWR GSTIN No.- 27AAACB4146P1ZF</b>
8.	Delivery Address (Ship To)	Construction Manager, Bharat Heavy Electricals Limited, Patratu Vidyut Utpadan Njigam Ltd, PO: PTPS , Patratu , Ramgarh , Jharkhand - 829119
9.	BHEL Site Office Address	Construction Manager, Bharat Heavy Electricals Limited, Patratu Vidyut Utpadan Njigam Ltd , PO: PTPS , Patratu , Ramgarh , Jharkhand - 829119
10.	Location of Plant	Site is Located just outside the coal belt of South Karanpura in Ramgarh District of Jharkhand State. The nearest Railway Station is Patratu which is at a distance of about 4 km on Barkakhana-Barwadih Railway line.  <b>District: Ramgarh (state- Jharkhand)</b> <b>Next big cities to site: Ranchi</b> <b>Nearest Railway Station: - Patratu</b> <b>Nearest Airport: Ranchi (45 km by road from site)</b>
11.	Mode of Dispatch	Air, Road, Rail & Sea Transportation  For indigenous supplies: By Rail/Road on door delivery and freight pre-paid basis. For imported supplies: On C&F basis. Transit Insurance will be in BHEL scope
12.	Road Permit /E-waybill	Road Permit / E-way bill, to be arranged by Supplier/ transporter/ BHEL (as per GOI mandate).
13.	BHEL GSTIN Details	For supply packages: BHEL-PEM is registered in the State of Uttar Pradesh with GSTIN 09AAACB4146P2ZC

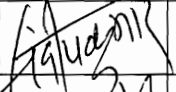
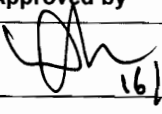
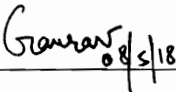
Gaurav 08/5/18

		<b>For Turnkey packages: BHEL PSWR GSTIN No.- 27AAACB4146P1ZF</b>
14.	Transit Insurance	<p>In BHEL Scope.</p> <p>For each dispatch, vendor shall inform the following to the Underwriter under intimation to BHEL-PEM and BHEL Site office:</p> <ul style="list-style-type: none"> <li>(i) Policy No.</li> <li>(ii) Consignee Name.</li> <li>(iii) Consignment Details (items with their weights and value (in INR).</li> <li>(iv) Project Name and P.O. No.</li> <li>(v) LR No. and date, Dispatch origin and destination details, Invoice No.</li> </ul> <p>Vendors to intimate the underwriters quoting the insurance Policy No. as mentioned in Purchase Order.</p>
15.	Dispatch intimation	<p>Yes in writing, Not less than 30 (Thirty) days prior to date of shipment and dispatch details to be sent to:</p> <p style="padding-left: 40px;">BHEL Site office (As mentioned in Sl. No. 9) BHEL PEM Noida (As mentioned in NIT)</p> <p>At the point of dispatch, vendor must furnish docs required as given below through Email / Fax</p> <ul style="list-style-type: none"> <li>i. Vendor's invoice</li> <li>ii. LR / RR / GR / Courier Receipt</li> <li>iii. Packing List/ Challan indicating the items dispatched (with their weights)</li> <li>iv. Insurance intimation letter informing the underwriters about the dispatches</li> <li>v. MDCC (of BHEL / NTPC) as applicable</li> <li>vi. Photograph of packing / boxes showing dispatch marking as per Sl. No. 26</li> </ul>
16.	Document required for Vendor's payment.	<p><b>For materials originating from Indian territory</b></p> <p>For claiming the payment against dispatch, MRC &amp; Freight, documents as mentioned in GCC rev 06 &amp; its corrigendum shall be submitted by vendor to BHEL. Original money receipt must be submitted for Freight payment.</p> <p><b>Packing List</b> must comply to Clause No. 19.3 of <del>General Commercial Terms &amp; Conditions</del> of GCC rev.06. Description of items in packing list shall be as per PO such that proper correlation between PO &amp; packing list must be furnished.</p> <p>Soft copy of documents for claiming payment shall be submitted by vendor as advance copy.</p> <p><b>For materials originating from non-Indian Territory</b></p> <p>Three (3) original and Three (3) copies of clean bill of lading or One (1) clean original Airway Bill &amp; Three (3) copies, in case of air freight.</p> <p>One (1) original and Three (3) copies of signed Invoices</p> <p>One (1) original and Three (3) copies of Packing List (clearly showing number of packages, gross weight and net weight).</p> <p>Three (3) copies of certificate of country of origin.</p> <p>Copy of MDCC from BHEL / NTPC (as applicable)</p> <p>Three (3) copies of inspection certificate, if any, issued by the customer/his authorized representative.</p> <p>Three (3) of certificate from the vendor to the effect that drawings and catalogues for customs clearance purpose have been kept with the packages for shipment.</p> <p>Three (3) copies of certificate from the vendor to the effect that the contents in each case are not less than that entered in the invoices and guaranteed as new and as per the relevant technical specifications.</p> <p>Shipping Specification – One (1) copy.</p> <p>Quality Certificate – One (1) copy.</p> <p>Approved Test Certificates, if any. - Three (3) copies.</p> <p>Guarantee Certificate – One (1) Original + One (1) copy.</p>

		Inspection Reports – One (1) Original + One (1) copy. PVC Calculation and copy of all applicable indices, if PVC applicable. – Two (2) copies.
17.	Material Receipt Certificate (MRC)	A) For supply packages- BHEL-PEM will arrange MRC from BHEL site B) For Turnkey (Supply + Erection & Commissioning) – Original MRC duly signed by customer (PVUNL) & BHEL site is to be arranged by Vendor.
18.	Buyer and Paying Authority	For packages where PEM will issue the Purchase Order: <b>BHEL PEM</b> will be the paying authority. For packages where BHEL-PEM will issue only the LOA and Purchase Order shall be issued by BHEL-PSWR: <b>BHEL Patratu Site will be the paying Authority.</b>
19.	Demurrage charges	Demurrage charges shall be paid by supplier/ vendor only to the transporter. No claim shall be acceptable to BHEL in this regard.
20.	Unloading, Storage & Movement of material at site	a) By BHEL site office for supply packages. b) By vendors for Turnkey i.e. Supply and E&C packages
21.	Concessional custom duty against Essentiality certificate (EC)	The project has been qualified through Project Import route. Accordingly, the benefits applicable to PI project would be granted for this project In this regard applicable documents such as Essentiality certificate will be issued by NTPC (ultimate customer). Under this, Concessional rate of Customs Duty shall be applicable on the Import Contents of the supplier respectively. Based on the above EC, Customs Duty Benefits will be passed on to the vendor. The Bidder to indicate the Import contents i.e. list of the item, Currency of Import and Country of Import including CIF value in their offers. BHEL shall inform, the availability of CIF value for a particular package, if any, at the time of NIT. The benefits availed in Concessional Customs Duty must be passed on to BHEL in their offer.  Vendor shall inform BHEL and provide the necessary documents to obtain required certificates from BHEL to avail exemption. Obtaining custom duty benefit in line with the Essentiality Certificate issued shall be in vendor's scope.
22.	Taxes & Duties (For Domestic Vendor)	As per General Conditions of Contract (GCC rev 06) & GST related Corrigendum to GCC rev.06
23. a	Taxes & Duties (For Order Directly to Foreign Bidders)- supply packages	In case of foreign vendors, quoted prices & Dispatches shall be on C & F (Port-Chennai) basis and the Taxes & duties in the country of dispatch shall be borne by Foreign vendor.
23. b	Taxes & Duties (For Order Directly to Foreign Bidders)- Turnkey packages	Complete responsibility of import including (but not limited to) import clearance, all taxes and duties in the country of export (origin), <b>all taxes and duties in India shall be to vendor's account.</b>
24.	Inspection Agency	BHEL/ BHEL approved 3rd party inspection agencies and/or NTPC/ Customer Agency as applicable.
25.	Inspection procedure for Domestic supplies	<u>For Domestic supplies</u> Vendor shall raise inspection call at least 15 business days in advance on BHEL CQS website to applicable inspection agency (as mentioned in PO/LOI or to be informed later) and submit copy of inspection call to BHEL-PEM for arranging NTPC inspection/Joint inspection on the proposed date, as applicable. MDCC shall be issued on the basis of clear inspection report (CQIR).  <u>For Foreign supplies</u> In case of Foreign supplies, if NTPC approved 3rd party inspection agency does not participate in the inspection, test certificates & inspection reports duly accepted by the agreed Inspection agency shall be submitted in soft copy to BHEL-PEM. The same shall be reviewed by PEM and then, sent to NTPC for clearance. The dispatch clearance (MDCC) by NTPC/ BHEL as applicable shall be given to the foreign supplier or representative in India after acceptance of above test certificates.

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26.	Packing, Identification & marking [if not specified in NIT]	<p>Each box shall be marked with Capital Letters in "Red" indicating the <b>PEM SUPPLY (Main Supply/ Commissioning Spares/ Mandatory Spares) for 3 x 800 MW PVUNL PATRATU TPP.</b></p> <p><b>NOTE:</b> Main supply item and items for commissioning spares must be packed separately. Each package delivered under the Contract shall be marked by supplier and such marking must be distinct and in English language (all previous irrelevant markings being carefully obliterated). Such marking shall show the description and quantity of contents, the name and address of consignee, the Gross weight and Net weight of the package, the name of the Supplier, PEM P.O. reference number, with a distinctive number of mark sufficient for purposes of identification. Besides above necessary, packing shall bear a special marking 'TOP', 'BOTTOM', 'DO NOT TURN OVER', "KEEP DRY", "HANDLE WITH CARE", etc</p> <p><b>IMPORTANT: -</b></p> <ul style="list-style-type: none"> <li>• Two copies of respective standard manufacturer's erection instruction/operation instruction manual shall be kept in each package / container for immediate reference by BHEL site and same shall be reflected in packing slip also</li> <li>• The Packing list details for the consignment must be put inside the Box/Boxes.</li> </ul> <p>Items like pumps, Valves, Hoists, Cranes etc shall essentially have O&amp;M Manuals and E&amp;C guidelines duly enclosed in the packing box. Certificate to such effect shall also be reflected in packing slip.</p> <p>Mandatory spares shall be properly packed separately in separate box painted in Red, indicating <b>Mandatory Spares in bold letters</b> and each spare shall be properly tagged giving details i.e. item number of the equipment in line with the CUSTOMER approved BBU for Mandatory spares &amp; Number per item (to match the description given in the packing slip) to facilitate their proper identification by PVUNL/ NTPC. One Copy of Packing list must be put inside the Box along with Manufacturing drawing no. reference, Catalogue reference etc.</p>
27.	Submission of Final Drgs/Docs alongwith O&M Manual, Type Test Certificates (if any)	As per GCC rev.06/ Technical Specification/Kick-off meeting.

	Prepared by	Checked by	Reviewed by	Vetted by	Approved by
Name	Ganwan Garg	/		/	 16/05/18
Designation	Sr. Engr/ PG III	DGM/ PG III	DGM/ PG III	Finance	AGM & DH/ PG III
Signature	 08/5/18				DEEPAK GUPTA

**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 \_\_\_\_\_

\_\_\_\_\_ (hereinafter referred to as "Contract"). 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 panel of Independent External Monitor(s) (IEMs), 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. The Bidder(s)/ Contractor(s) commits himself to observe the following principles during 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 Indian Penal Code (IPC) and Prevention of Corruption 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 shall await their decision in the matter.

### **Section 3 - Disqualification from tender process and 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, terminate the contract, if already awarded, exclude from future business dealings and/ 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 (s) from the tender process before award / order acceptance according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.
- 4.2 If the Principal is entitled to terminate the Contract according to Section 3, or terminates the Contract in application of Section 3 above, the Bidder(s)/ Contractor (s) transgression through a violation of Section 2 above shall be construed breach of contract and the Principal shall be entitled to demand and recover from the Contractor an amount equal to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher, as damages, in addition to and without prejudice to its right to demand and recover compensation for any other loss or damages specified elsewhere in the contract.

**Section 5 - Previous Transgression**

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 (three) 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 or action can be taken as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

**Section 6 - Equal treatment of all Bidder (s)/ Contractor (s) / Sub-contractor (s)**

- 6.1 The Principal will enter into Integrity Pacts with identical conditions as this Integrity Pact with all Bidders and Contractors.
- 6.2 In case of Sub-contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-contractor(s) and ensure that all Sub-contractors also sign the Integrity Pact.
- 6.3 The Principal will disqualify from the tender process all Bidders who do not sign this Integrity Pact or violate its provisions.

**Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors**

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 panel of Independent External Monitor (s) (IEMs) for this Integrity Pact. The task of the IEMs is to review independently and objectively, whether and to what extent the parties comply with the obligations under this Integrity Pact.
- 8.2 The IEMs are 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 IEMs shall be provided access to all documents/ records pertaining to the Contract, for which a complaint or issue is raised before them as and when warranted. However, the documents/records/information having National Security implications and those documents which have been classified as Secret/Top Secret are not to be disclosed.
- 8.4 The Principal will provide to the IEMs 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 IEMs the option to participate in such meetings.

- 8.5 The advisory role of IEMs is envisaged as that of a friend, philosopher and guide. The advice of IEMs would not be legally binding and it is restricted to resolving issues raised by a 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 or during execution of Contract, the matter should be examined by the full panel of IEMs jointly, 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 the CMD, BHEL at the earliest. They may also send their report directly to the CVO, in case of suspicion of serious irregularities requiring legal/ administrative action. Only in case of very serious issue having a specific, verifiable Vigilance angle, the matter should be reported directly to the Commission. IEMs will tender their advice on the complaints within 30 days.
- 8.8 The CMD, BHEL shall decide the compensation to be paid to the IEMs and its terms and conditions.
- 8.9 IEMs 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 Principal should be looked into by the CVO of the Principal.
- 8.10 If the IEMs have 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 IEMs may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.11 After award of work, the IEMs shall look into any issue relating to execution of Contract, if specifically raised before them. As an illustrative example, if a Contractor who has been awarded the Contract, during the execution of Contract, raises issue of delayed payment etc. before the IEMs, the same shall be examined by the panel of IEMs. Issues like warranty/ guarantee etc. shall be outside the purview of IEMs.
- 8.12 However, the IEMs may suggest systemic improvements to the management of the Principal, if considered necessary, to bring about transparency, equity and fairness in the system of procurement.
- 8.13 The word 'Monitor' would include both singular and plural.

## **Section 9 - Pact Duration**

- 9.1 This Integrity Pact shall be operative from the date this Integrity Pact 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. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.
- 9.2 If any claim is made/ lodged during currency of this Integrity Pact, the same shall be binding and continue to be valid despite the lapse of this Pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

**Section 10 - Other Provisions**

- 10.1 This Integrity Pact is subject to Indian Laws and exclusive jurisdiction shall be of the competent Courts as indicated in the Tender or Contract, as the case may be.
- 10.2 Changes and supplements as well as termination notices need to be made in writing.
- 10.3 If the Bidder(s)/ Contractor(s) is a partnership or a consortium or a joint venture, this Integrity Pact shall be signed by all partners of the partnership or joint venture or all consortium members.
- 10.4 Should one or several provisions of this Integrity Pact turn out to be invalid, the remainder of this Integrity Pact 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 Integrity Pact with the Principal would be competent to participate in the bidding. In other words, entering into this Integrity Pact would be a preliminary qualification.
- 10.6 In the event of any dispute between the Principal and Bidder(s)/ Contractor(s) relating to the Contract, in case, both the parties are agreeable, they may try to settle dispute through Mediation before the panel of IEMs in a time bound manner. In case, the dispute remains unresolved even after mediation by the panel of IEMs, either party may take further action as the terms & conditions of the Contract. The fees/expenses on dispute resolution through mediation shall be shared by both the parties. Further, the mediation proceedings shall be confidential in nature and the parties shall keep confidential all matters relating to the mediation proceedings including any settlement agreement arrived at between the parties as outcome of mediation. Any views expressed, suggestions, admissions or proposals etc. made by either party in the course of mediation shall not be relied upon or introduced as evidence in any further arbitral or judicial proceedings, whether or not such proceedings relate to the dispute that is the subject of mediation proceedings. Neither of the parties shall present IEMs as witness in any Alternative Dispute Resolution or judicial proceedings in respect of the dispute that was subject of mediation.

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 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) \_\_\_\_\_  
 \_\_\_\_\_

**Clause on IP in the tender**

**Integrity Pact (IP)**

- (a) 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) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

SI	IEM	Email
1.	Shri Otem Dai, IAS (Retd.)	<a href="mailto:iem1@bhel.in">iem1@bhel.in</a>
2.	Shri Bishwamitra Pandey, IRAS (Retd.)	<a href="mailto:iem2@bhel.in">iem2@bhel.in</a>
3.	Shri Mukesh Mittal, IRS (Retd.)	<a href="mailto:iem3@bhel.in">iem3@bhel.in</a>

- (b) 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.
- (c) 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 any of the above IEM(s). All correspondence with the IEMs shall be done through email only.

**Note:**

*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's officials whose contact details are provided below:*

Details of contact person(s):

(1)  
Name: \_\_\_\_\_  
Deptt: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: (Landline/ Mobile) \_\_\_\_\_  
\_\_\_\_\_  
Email: \_\_\_\_\_  
Fax: \_\_\_\_\_

(2)  
Name: \_\_\_\_\_  
Deptt: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: (Landline/ Mobile) \_\_\_\_\_  
\_\_\_\_\_  
Email: \_\_\_\_\_  
Fax: \_\_\_\_\_

## Guidelines for Remote Inspection of PEM BOIs

### 1) OBJECTIVE:

To lay down the procedure for carrying out Remote Inspection of Bought-out Items (BOIs) for PEM suppliers wherever applicable.

### 2) SCOPE:

It will cover suppliers for packages of PEM BOIs for various project requirements.

Invitation is sent to the suppliers for remote inspection on applications like MS Teams, Webex, etc. by BHEL.

### 3) MINIMUM REQUIREMENTS AT SUPPLIER'S WORKS:

- i. Uninterrupted internet services
- ii. Good internet bandwidth (Min 100 Mbps)
- iii. Good resolution camera (2 nos) – one preferably CCTV (static at one place) and one hand hold (moving)
- iv. Smart phone with minimum 8MPi camera front and back both with optical zoom facility suitable for using web applications like Webex, MicroSoft (MS) Teams, etc.
- v. Computer and Scanner with good resolution
- vi. Digital signatures of supplier's Quality Engineer
- vii. Availability of web applications like Webex, MicroSoft (MS) Teams, as required.
- viii. All Test certificates, internal test reports, calibration reports, etc. for the items offered for inspection.
- ix. Availability of the above to be submitted to BHEL two days in advance before inspection.
- x. Dedicated team from supplier side for facilitating inspection requirements.
- xi. For ensuring proper visibility, the suggested Portable lighting sources (torch/ electric LED bulb of minimum 15 W) with no glare is to be ensured at offered job, location for remote inspection/testing. This is to be verified before start of the inspection.
- xii. The GPS location co-ordinates or any method to locate inspection location shall be captured indicating the location of the Vendor-Premises of remote inspection/testing.

### 4) MINIMUM REQUIREMENTS AT BHEL and CUSTOMER LOCATION :

- i. Uninterrupted internet services
- ii. Suitable internet bandwidth
- iii. Digital signatures wherever required.
- iv. Availability of web applications like Webex, MS Teams, etc. as required.
- v. Clearance from customer for conducting remote inspection

### 5) PROCEDURE:

- i. Supplier will raise the inspection call in BHEL - CQIR portal.
- ii. Supplier shall ensure availability of minimum requirements at supplier's works as mentioned above at point 3.

- iii. Before starting the inspection, the supplier shall submit the documents (TCs, internal test reports and calibration certificates as per approved QAP) two days before the date of inspection for review by BHEL and supplier shall coordinate with BHEL and if found satisfactory, inspection shall be considered for remote.
  - iv. Prior to commencement of remote inspection a pre inspection meeting shall be organised by BHEL inspector with supplier to ascertain the readiness for remote inspection.
- 6) During inspection, supplier shall share the location on Google maps for verifying the address of the manufacturer. Location may be captured by BHEL as screenshot.
- i. Inspection shall be on the basis of approved Quality Plans and associated reference documents mentioned.
  - ii. For witnessing inspection, supplier shall bring the mobile video camera near to the surface of the equipment or as per requirement of the inspector for clarity in viewing the test/ equipment which shall be the responsibility of supplier. Supplier shall ensure that proper lighting is available during live video streaming.
  - iii. Before start of the inspection, inspector shall ensure that all instruments shall have valid calibration report. Supplier shall ensure use of digital instruments preferably for inspection to the extent possible.
  - iv. Details of suppliers's dedicated team handling the remote inspection shall also be incorporated in the CQIR.
  - v. All details of inspection/ testing referred documents shall be mentioned in the CQIR. Recording of remote inspection shall be maintained by the BHEL inspector and this recording (unedited) shall be maintained at BHEL system for a minimum period of 3 years or till the warranty period whichever is later.
  - vi. PEM (Engineering) shall accord final technical clearance, in case of any deviation in inspected item noticed during inspection.
  - vii. Inspection shall be conducted by PEM-Q&BE assigned inspector along with PEM-Engg (if required). CQIR shall be prepared and maintained by PEM-Q&BE.
  - viii. PG will issue MDCC on the basis of acceptance of inspected items along with accepted packing photographs as per contract provisions.
- 7) **UNDERTAKING BY VENDOR:** Material inspected through remote inspections is meeting all technical requirements of BHEL. In case of any discrepancy from the above procedure/ material inspected, if found later, vendor will replace the materials without any cost implication to BHEL.
- 8) Vendor shall provide the signed and stamped of the above guidelines to BHEL as a token of acceptance.

**Project : 3x800MW PATRATU TPP PHASE-1**

**Package : CABLE TRAY SUPPORT SYSTEM-BOLTABLE TYPE**

**GEM Bid no.**

<b>Item Number</b>	<b>Item Title</b>	<b>Item Description</b>	<b>Item Quantity</b>	<b>Unit of Measure</b>	<b>Consignee ID</b>	<b>Delivery Period (In number of days)</b>	<b>Quote/Unquote</b>
1	507-34016-A	SINGLE CHANNEL SC1 (IN STANDARD LENGTH OF 6M PER PIECE). Also refer Technical specification	7100	Metres	PATRATU_CON1	999	
2	507-34012-A	DOUBLE CHANNEL DC1 (IN STANDARD LENGTH OF 6M PER PIECE). Also refer Technical specification	5400	Metres	PATRATU_CON1	999	
3	507-34028-A	Cantilever arm for 600mm wide cable trays (620mm). Also refer Technical specification	24800	Nos	PATRATU_CON1	999	
4	507-34029-A	Cantilever arm for 300mm wide cable trays (320mm). Also refer Technical specification	6400	Nos	PATRATU_CON1	999	
5	507-34030-A	Cantilever arm for 150mm wide cable trays (170mm). Also refer Technical specification	6300	Nos	PATRATU_CON1	999	
6	507-34010-A	CLAMP FOR SINGLE CHANNEL CC1. Also refer Technical specification	6000	Nos	PATRATU_CON1	999	
7	507-34011-A	CLAMP FOR DOUBLE CHANNEL CC2. Also refer Technical specification	3900	Nos	PATRATU_CON1	999	
8	507-34021-A	TRAY FIXING CLAMP TC1. Also refer Technical specification	25000	Nos	PATRATU_CON1	999	
9	507-34005-A	BEAM CLAMP BC1. Also refer Technical specification	200	Nos	PATRATU_CON1	999	