

Bid Document/ बिड दस्तावेज़

Bid Details/बिड विवरण	
Bid End Date/Time/बिड बंद होने की तारीख/समय	19-08-2024 16:00:00
Bid Opening Date/Time/बिड खुलने की तारीख/समय	19-08-2024 16:30:00
Bid Offer Validity (From End Date)/बिड पेशकश वैधता (बंद होने की तारीख से)	180 (Days)
Ministry/State Name/मंत्रालय/राज्य का नाम	Ministry Of Heavy Industries And Public Enterprises
Department Name/विभाग का नाम	Department Of Heavy Industry
Organisation Name/संगठन का नाम	Bharat Heavy Electricals Limited (bhel)
Office Name/कार्यालय का नाम	10250020-pem, Noida
Total Quantity/कुल मात्रा	16300
Item Category/मद केटेगरी	Cantilever arm for 600mm wide cable trays -750mm, EACH COMPLETE WITH 2 NOs - M12 HEX BOLT and WASHER, 2 NOs - M12 SPRING NUTS, 2 NOS - M6 PAN HEAD SCREWS and WASHER, 2 NOS - M6 SPRING NUTS , Cantilever arm for 600mm wide cable trays -620mm,EACH COMPLETE WITH 2 NOs - M12 HEX BOLT and WASHER, 2 NOs - M12 SPRING NUTS, 2 NOS - M6 PAN HEAD SCREWS and WASHER, 2 NOS - M6 SPRING NUTS , Cantilever arm for 450mm wide cable trays -500mm,EACH COMPLETE WITH 2 NOs - M12 HEX BOLT and WASHER, 2 NOs - M12 SPRING NUTS, 2 NOS - M6 PAN HEAD SCREWS and WASHER, 2 NOS - M6 SPRING NUTS , Cantilever arm for 300mm wide cable trays-320mm,EACH COMPLETE WITH 2 NOs - M12 HEX BOLT and WASHER, 2 NOs - M12 SPRING NUTS, 2 NOS - M6 PAN HEAD SCREWS and WASHER, 2 NOS - M6 SPRING NUTS , Cantilever arm for 150mm wide cable trays-170mm,EACH COMPLETE WITH 2 NOs - M12 HEX BOLT and WASHER, 2 NOs - M12 SPRING NUTS, 2 NOS - M6 PAN HEAD SCREWS and WASHER, 2 NOS - M6 SPRING NUTS , TRAY FIXING CLAMP TC1-COMplete WITH REQUIRED HARDWARES -Spring nuts and washers etc as required for complete installation , 90 degree ANGLE FITTING LA1-COMplete WITH REQUIRED HARDWARES - Spring nuts and washers etc. as required for complete installation
BOQ Title/बीओक्यू शीर्षक	CABLE TRAYS SUPPORT SYSTEM BOLTABLE TYPE
Years of Past Experience Required for same/similar service/उन्हीं/समान सेवाओं के लिए अपेक्षित विगत अनुभव के वर्ष	1 Year (s)

Bid Details/बिड विवरण	
MSE Exemption for Years of Experience and Turnover/ अनुभव के वर्षों से एमएसई छूट	No
Startup Exemption for Years of Experience and Turnover/ अनुभव के वर्षों से स्टार्टअप छूट	No
Document required from seller/विक्रेता से मांगे गए दस्तावेज़	Experience Criteria,Past Performance,Certificate (Requested in ATC),Additional Doc 1 (Requested in ATC),Compliance of BoQ specification and supporting document *In case any bidder is seeking exemption from Experience / Turnover Criteria, the supporting documents to prove his eligibility for exemption must be uploaded for evaluation by the buyer
Past Performance/विगत प्रदर्शन	10 %
Bid to RA enabled/बिड से रिवर्स नीलामी सक्रिय किया	Yes
RA Qualification Rule	H1-Highest Priced Bid Elimination
Type of Bid/बिड का प्रकार	Two Packet Bid
Primary product category	Cantilever arm for 600mm wide cable trays -750mm, EACH COMPLETE WITH 2 NOs - M12 HEX BOLT and WASHER, 2 NOs - M12 SPRING NUTS, 2 NOS - M6 PAN HEAD SCREWS and WASHER, 2 NOS - M6 SPRING NUTS
Time allowed for Technical Clarifications during technical evaluation/तकनीकी मूल्यांकन के दौरान तकनीकी स्पष्टीकरण हेतु अनुमत समय	7 Days
Inspection Required (By Empanelled Inspection Authority / Agencies pre-registered with GeM)	No
Payment Timelines	Payments shall be made to the Seller within 90 days of issue of consignee receipt-cum-acceptance certificate (CRAC) and on-line submission of bills (This is in supersession of 10 days time as provided in clause 12 of GeM GTC)
Evaluation Method/मूल्यांकन पद्धति	Total value wise evaluation

EMD Detail/ईएमडी विवरण

Required/आवश्यकता	No
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ePBG Detail/ईपीबीजी विवरण

Required/आवश्यकता	No
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Splitting/विभाजन

Bid splitting not applied/बोली विभाजन लागू नहीं किया गया.

MII Purchase Preference/एमआईआई खरीद वरीयता

MI Purchase Preference/एमआईआई खरीद वरीयता	Yes
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MSE Purchase Preference/एमएसई खरीद वरीयता

MSE Purchase Preference/एमएसई खरीद वरीयता	Yes
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1. Experience Criteria: In respect of the filter applied for experience criteria, the Bidder or its OEM {themselves or through reseller(s)} should have regularly, manufactured and supplied same or similar Category Products to any Central / State Govt Organization / PSU for number of Financial years as indicated above in the bid document before the bid opening date. Copies of relevant contracts to be submitted along with bid in support of having supplied some quantity during each of the Financial year. In case of bunch bids, the category of primary product having highest value should meet this criterion.

2. Preference to Make In India products (For bids < 200 Crore): Preference shall be given to Class 1 local supplier as defined in public procurement (Preference to Make in India), Order 2017 as amended from time to time and its subsequent Orders/Notifications issued by concerned Nodal Ministry for specific Goods/Products. The minimum local content to qualify as a Class 1 local supplier is denoted in the bid document. If the bidder wants to avail the Purchase preference, the bidder must upload a certificate from the OEM regarding the percentage of the local content and the details of locations at which the local value addition is made along with their bid, failing which no purchase preference shall be granted. In case the bid value is more than Rs 10 Crore, the declaration relating to percentage of local content shall be certified by the statutory auditor or cost auditor, if the OEM is a company and by a practicing cost accountant or a chartered accountant for OEMs other than companies as per the Public Procurement (preference to Make-in -India) order 2017 dated 04.06.2020. Only Class-I and Class-II Local suppliers as per MII order dated 4.6.2020 will be eligible to bid. Non - Local suppliers as per MII order dated 04.06.2020 are not eligible to participate. However, eligible micro and small enterprises will be allowed to participate .The buyers are advised to refer the OM No.F.1/4/2021-PPD dated 18.05.2023.

[OM No.1 4 2021 PPD dated 18.05.2023](#) for compliance of Concurrent application of Public Procurement Policy for Micro and Small Enterprises Order, 2012 and Public Procurement (Preference to Make in India) Order, 2017.

3. Purchase preference will be given to MSEs having valid Udyam Registration and whose credentials are validated online through Udyam Registration portal as defined in Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012 dated 23.03.2012 issued by Ministry of Micro, Small and Medium Enterprises and its subsequent Orders/Notifications issued by concerned Ministry. If the bidder wants to avail themselves of the Purchase preference, the bidder must be the manufacturer / OEM of the offered product on GeM. Traders are excluded from the purview of Public Procurement Policy for Micro and Small Enterprises and hence resellers offering products manufactured by some other OEM are not eligible for any purchase preference. In respect of bid for Services, the bidder must be the Service provider of the offered Service. Relevant documentary evidence in this regard shall be uploaded along with the bid in respect of the offered product or service and Buyer will decide eligibility for purchase preference based on documentary evidence submitted, while evaluating the bid. If L-1 is not an MSE and MSE Seller (s) has / have quoted price within L-1+ 15% (Selected by Buyer) of margin of purchase preference /price band defined in relevant policy, such MSE Seller shall be given opportunity to match L-1 price and contract will be awarded for 25% (selected by Buyer) percentage of total quantity. The buyers are advised to refer the OM No. F.1/4/2021-PPD dated 18.05.2023 [OM No.1 4 2021 PPD dated 18.05.2023](#) for compliance of Concurrent application of Public Procurement Policy for Micro and Small Enterprises Order, 2012 and Public Procurement (Preference to Make in India) Order, 2017. Benefits of MSE will be allowed only if seller is validated on-line in GeM profile as well as validated and approved by Buyer after evaluation of documents submitted.

4. Estimated Bid Value indicated above is being declared solely for the purpose of guidance on EMD amount and for determining the Eligibility Criteria related to Turn Over, Past Performance and Project / Past Experience etc. This has no relevance or bearing on the price to be quoted by the bidders and is also not going to have any impact on bid participation. Also this is not going to be used as a criteria in determining reasonableness of quoted prices which would be determined by the buyer based on its own assessment of reasonableness and based on competitive prices received in Bid / RA process.

5. Past Performance: The Bidder or its OEM {themselves or through re-seller(s)} should have supplied same or

similar Category Products for 10% of bid quantity, in at least one of the last three Financial years before the bid opening date to any Central / State Govt Organization / PSU. Copies of relevant contracts (proving supply of cumulative order quantity in any one financial year) to be submitted along with bid in support of quantity supplied in the relevant Financial year. In case of bunch bids, the category related to primary product having highest bid value should meet this criterion.

6. Reverse Auction would be conducted amongst all the technically qualified bidders except the Highest quoting bidder. The technically qualified Highest Quoting bidder will not be allowed to participate in RA. However, H-1 will also be allowed to participate in RA in following cases:

- If number of technically qualified bidders are only 2 or 3.
- If Buyer has chosen to split the bid amongst N sellers, and H1 bid is coming within N.
- In case Primary product of only one OEM is left in contention for participation in RA on elimination of H-1.
- If L-1 is non-MSE and H-1 is eligible MSE and H-1 price is coming within price band of 15% of Non-MSE L-1
- If L-1 is non-MII and H-1 is eligible MII and H-1 price is coming within price band of 20% of Non-MII L-1

Cantilever Arm For 600mm Wide Cable Trays -750mm, EACH COMPLETE WITH 2 NOS - M12 HEX BOLT And WASHER, 2 NOS - M12 SPRING NUTS, 2 NOS - M6 PAN HEAD SCREWS And WASHER, 2 NOS - M6 SPRING NUTS

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

Technical Specifications/तकनीकी विशिष्टियाँ

Specification Document	View File
BOQ Detail Document	View File

Advisory-Please refer attached BOQ document for detailed consignee list and delivery period.

Consignees/Reporting Officer/परेषिती/रिपोर्टिंग अधिकारी and/ तथा Quantity/मात्रा

S.No./क्र. सं.	Consignee Reporting/Officer/ परेषिती/रिपोर्टिंग अधिकारी	Address/पता	Quantity/मात्रा	Delivery Days/डिलीवरी के दिन
1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	450	60

Cantilever Arm For 600mm Wide Cable Trays -620mm,EACH COMPLETE WITH 2 NOS - M12 HEX BOLT And WASHER, 2 NOS - M12 SPRING NUTS, 2 NOS - M6 PAN HEAD SCREWS And WASHER, 2 NOS - M6 SPRING NUTS

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	1050	60

Cantilever Arm For 450mm Wide Cable Trays -500mm,EACH COMPLETE WITH 2 NOs - M12 HEX BOLT And WASHER, 2 NOs - M12 SPRING NUTS, 2 NOS - M6 PAN HEAD SCREWS And WASHER, 2 NOS - M6 SPRING NUTS

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	1600	60

Cantilever Arm For 300mm Wide Cable Trays-320mm,EACH COMPLETE WITH 2 NOs - M12 HEX BOLT And WASHER, 2 NOs - M12 SPRING NUTS, 2 NOS - M6 PAN HEAD SCREWS And WASHER, 2 NOS - M6 SPRING NUTS

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	300	60

Cantilever Arm For 150mm Wide Cable Trays-170mm,EACH COMPLETE WITH 2 NOs -

M12 HEX BOLT And WASHER, 2 NOs - M12 SPRING NUTS, 2 NOS - M6 PAN HEAD SCREWS And WASHER, 2 NOS - M6 SPRING NUTS

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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TRAY FIXING CLAMP TC1-COMPLETE WITH REQUIRED HARDWARES -Spring Nuts And Washers Etc As Required For Complete Installation

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	7000	60

90 Degree ANGLE FITTING LA1-COMPLETE WITH REQUIRED HARDWARES -Spring Nuts And Washers Etc. As Required For Complete Installation

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	4000	60

Buyer Added Bid Specific Terms and Conditions/क्रेता द्वारा जोड़ी गई बिड की विशेष शर्तें

1. Generic

OPTION CLAUSE: The Purchaser reserves the right to increase or decrease the quantity to be ordered up to 25 percent of bid quantity at the time of placement of contract. The purchaser also reserves the right to increase the ordered quantity by up to 25% of the contracted quantity during the currency of the contract at the contracted rates. Bidders are bound to accept the orders accordingly.

2. Buyer Added Bid Specific ATC

Buyer uploaded ATC document [Click here to view the file.](#)

3. Inspection

Nominated Inspection Agency: On behalf of the Buyer organization, any one of the following Inspection Agency would be conducting inspection of stores before acceptance:
Pre-dispatch Inspection at Seller Premises (applicable only if pre-dispatch inspection clause has been selected in ATC):

At vendors works

Post Receipt Inspection at consignee site before acceptance of stores:
NA

4. Generic

Supplier shall ensure that the Invoice is raised in the name of Consignee with GSTIN of Consignee only.

5. Generic

Bidders are advised to check applicable GST on their own before quoting. Buyer will not take any responsibility in this regards. GST reimbursement will be as per actuals or as per applicable rates (whichever is lower), subject to the maximum of quoted GST %.

6. Generic

While generating invoice in GeM portal, the seller must upload scanned copy of GST invoice and the screenshot of GST portal confirming payment of GST.

Disclaimer/अस्वीकरण

The additional terms and conditions have been incorporated by the Buyer after approval of the Competent Authority in Buyer Organization, whereby Buyer organization is solely responsible for the impact of these clauses on the bidding process, its outcome, and consequences thereof including any eccentricity / restriction arising in the bidding process due to these ATCs and due to modification of technical specifications and / or terms and conditions governing the bid. If any clause(s) is / are incorporated by the Buyer regarding following, the bid and resultant contracts shall be treated as null and void and such bids may be cancelled by GeM at any stage of bidding process without any notice:-

1. Definition of Class I and Class II suppliers in the bid not in line with the extant Order / Office Memorandum issued by DPIIT in this regard.
2. Seeking EMD submission from bidder(s), including via Additional Terms & Conditions, in contravention to exemption provided to such sellers under GeM GTC.
3. Publishing Custom / BOQ bids for items for which regular GeM categories are available without any Category item bunched with it.
4. Creating BoQ bid for single item.

5. Mentioning specific Brand or Make or Model or Manufacturer or Dealer name.
6. Mandating submission of documents in physical form as a pre-requisite to qualify bidders.
7. Floating / creation of work contracts as Custom Bids in Services.
8. Seeking sample with bid or approval of samples during bid evaluation process. (However, in bids for [attached categories](#), trials are allowed as per approved procurement policy of the buyer nodal Ministries)
9. Mandating foreign / international certifications even in case of existence of Indian Standards without specifying equivalent Indian Certification / standards.
10. Seeking experience from specific organization / department / institute only or from foreign / export experience.
11. Creating bid for items from irrelevant categories.
12. Incorporating any clause against the MSME policy and Preference to Make in India Policy.
13. Reference of conditions published on any external site or reference to external documents/clauses.
14. Asking for any Tender fee / Bid Participation fee / Auction fee in case of Bids / Forward Auction, as the case may be.

Further, if any seller has any objection/grievance against these additional clauses or otherwise on any aspect of this bid, they can raise their representation against the same by using the Representation window provided in the bid details field in Seller dashboard after logging in as a seller within 4 days of bid publication on GeM. Buyer is duty bound to reply to all such representations and would not be allowed to open bids if he fails to reply to such representations.

[This Bid is also governed by the General Terms and Conditions/ यह बिड सामान्य शर्तों के अंतर्गत भी शासित है](#)

In terms of GeM GTC clause 26 regarding Restrictions on procurement from a bidder of a country which shares a land border with India, any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. While participating in bid, Bidder has to undertake compliance of this and any false declaration and non-compliance of this would be a ground for immediate termination of the contract and further legal action in accordance with the laws./जेम की सामान्य शर्तों के खंड 26 के संदर्भ में भारत के साथ भूमि सीमा साझा करने वाले देश के बिडर से खरीद पर प्रतिबंध के संबंध में भारत के साथ भूमि सीमा साझा करने वाले देश का कोई भी बिडर इस निविदा में बिड देने के लिए तभी पात्र होगा जब वह बिड देने वाला सक्षम प्राधिकारी के पास पंजीकृत हो। बिड में भाग लेते समय बिडर को इसका अनुपालन करना होगा और कोई भी गलत घोषणा किए जाने व इसका अनुपालन न करने पर अनुबंध को तत्काल समाप्त करने और कानून के अनुसार आगे की कानूनी कार्यवाई का आधार होगा।

---Thank You/धन्यवाद---

Index of Annexures

GeM Tender Enquiry for Cable Trays and Support System for 1x 660 MW Panki Project

Sl. No.	Description	Annexures
1.	BOQ	Annexure I
2.	Land border certificate	Annexure II
3.	Certificate for local Content	Annexure III
4.	Technical PQR	-
5.	Technical Specification incl. PV clause	-

CABLE TRAY SUPPORT SYSTEM- PANKI PROJECT

ANNEXURE -I TO BOQ

CABLE TRAY SUPPORT SYSTEM - BOLTABLE QTY

Item No.	Item Code	Item Description	Unit	Qty.
1		CANTILEVER ARM EACH COMPLETE WITH 2 NOS. - M12 HEX. BOLT & WASHER		
		2 NOS. - M12 SPRING NUTS, 2 NOS. - M6 PAN HEAD SCREWS & WASHER		
		2 NOS. - M6 SPRING NUTS		
1.1	507-34027-A	Cantilever arm for 600mm wide cable trays (750mm)	Nos.	450
1.2	507-34028-A	Cantilever arm for 600mm wide cable trays (620mm)	Nos.	1050
1.3	507-34032-A	Cantilever arm for 450mm wide cable trays (500mm)	Nos.	1600
1.4	507-34029-A	Cantilever arm for 300mm wide cable trays (320mm)	Nos.	300
1.5	507-34030-A	Cantilever arm for 150mm wide cable trays (170mm)	Nos.	1900
2		CLAMPS AND FITTINGS COMPLETE WITH REQUIRED HARDWARES (Spring nuts/ washers etc. as required for complete installation)		
1.1	507-34021-A	TRAY FIXING CLAMP TC1	Nos.	7000
1.2	507-34002-A	90° ANGLE FITTING LA1	Nos.	4000

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.

Annexure II

An undertaking regarding Model Clauses on company letter head only

(To be provided along with bid)

Reference: NIT No.-

Package: - Cable Trays Support Systems - Bolttable

Project: 1x 660 MW Panki TPS

TO WHOM SO IT MAY CONCERN

This is with reference to Ministry of Finance circular dated 23.02.23 reg. restriction under rule 144 (xi) of GFR.

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India. I hereby certify that M/s (bidder name) is not from such a country and is eligible to be considered/participate in tender enquiry for against aforesaid tender enquiry.

Sign & Signature (Not below Director/owner of the company)

Date:

Place:

ANNEXURE III
1x 660 MW Panki TPS

Cable Trays Support Systems- Boltable

Letter head of Company

Ref.....

Date.....

To,
Bharat Heavy Electricals Limited
PEM, PPEI Building, Plot No 25,
Sector -16A, Noida (U.P) -201301

Subject: - Certification regarding local content

Reference: Tender Enquiry No-.....

Package: - Cable Tray Support System

Project: 1x 660 MW Panki TPS

Dear Sir,

We hereby certify that items offered by us of **Cable Trays Support Systems** for above mentioned projectsminimum % of local content) meets the requirement of minimum local content in line with applicable clause of Make In India and the Public Procurement (Preference to Make in India), Order 2017 dated-15.06.2017, 28.05.2018 & 29.05.2019, 04.06.20, 16.09.20 ,1.11.21 and subsequent order dated 19.07.24.

We further confirm that details of location at which the local value addition is made will be our registered works at(address of the works)

Yours very truly

..... (authorized signatory of company)

..... (firm name)

authorized signatory of company



IX660MW PANKI TPS
PRE-QUALIFICATION REQUIREMENTS
FOR CABLE TRAY SUPPORT SYSTEM-
BOLTABLE

PE-PQ-426-507-E003

REVISION NO. 00 DATE 18/07/2024

Page 1 of 2

ITEMS : Single channel, double channel, cantilever arms, clamps & fittings

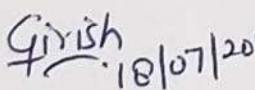
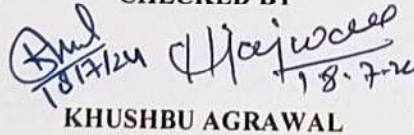
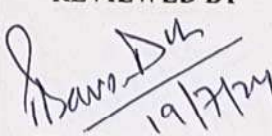

SCOPE: Supply: YES; Erection & Commissioning: NO;


1	Availability of type test certificates as per GDCC standard.
2	Vendor should have in-house fabrication, manufacturing & testing facility (as per GDCC standard).
3	Capability of manufacturing channels & cantilever arms for 2km 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 2 km of channels (SC1 & DC1) & cantilever arms in one or more orders and at least 1 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):

- Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/ Indian subsidiaries shall be evaluated as follows:
 - 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.
 - If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.
 - 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.
 - 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  GIRISH CHANDRA (ADD. ENGINEER-II)	CHECKED BY  KHUSHBU AGRAWAL (Sr.MANAGER)/ NARENDRA NATH JAJWARE (DGM)	REVIEWED BY  PRAVEEN DUTTA (AGM)	APPROVED BY  DEBASIS RATH (GM)
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	IX660MW PANKI TPS	PE-PQ-426-507-E003
	PRE-QUALIFICATION REQUIREMENTS FOR CABLE TRAY SUPPORT SYSTEM- BOLTABLE	REVISION NO. 00 DATE 18/07/2024
		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.

<p>PREPARED BY</p> <p><i>Girish</i> 18/07/2024</p> <p>GIRISH CHANDRA (ADD. ENGINEER-II)</p>	<p>CHECKED BY</p> <p><i>Khushbu</i> 18/7/24</p> <p>KHUSHBU AGRAWAL (Sr.MANAGER)/ NARENDRA NATH JAJWARE (DGM)</p>	<p>REVIEWED BY</p> <p><i>Praveen</i> 19/7/24</p> <p>PRAVEEN DUTTA (AGM)</p>	<p>APPROVED BY</p> <p><i>Debasis</i> 20/7/24</p> <p>DEBASISA RATH (GM)</p>
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1X 660 MW PANKI TPS

VOLUME II

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

BHEL DOC. NO. PE-TS-426-507-E013

REVISION 00



BHARAT HEAVY ELECTRICALS LIMITED

POWER SECTOR

PROJECT ENGINEERING MANAGEMENT

NOIDA (U.P), INDIA-201301



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

SPECIFICATION NO. PE-TS-426-507-E013

REVISION 00

DATE: 17.07.2024

SHEET 1 OF 1

CONTENTS

Sl. No.	DESCRIPTION	NO. OF SHEETS
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)	11
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 = 37



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

SPECIFICATION NO. PE-TS-426-507-E013

VOLUME-II

COMPLIANCE CERTIFICATE

REVISION 00

DATE: 18.07.2024

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.
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



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

SPECIFICATION NO. PE-TS-426-507-E013

VOLUME-II

SECTION I

REVISION 00

DATE: 18.07.2024

SHEET 1 of 3

SECTION – I

SPECIFIC TECHNICAL REQUIREMENTS



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

SPECIFICATION NO. PE-TS-426-507-E013

VOLUME-II

SECTION I

REVISION 00

DATE: 18.07.2024

SHEET 2 of 3

1.0 SCOPE

- 1.1 Manufacture, Inspection and Testing at Manufacturer's works, proper sea worthy packing and delivery to site of Cable Tray Support System (Bolttable Type) conforming to this specification.
- 1.2 Technical requirements of Cable Tray Support System (Bolttable Type) are indicated in Data Sheet-A & Section-II.
- 1.3 The stipulation of Data Sheet-A shall prevail in case of any conflict between the stipulations of Data Sheet-A, Section-I & Section-II.

2.0 BILL OF QUANTITIES

Quantity requirements shall be as per 'BOQ-cum-price schedule' as part of NIT.

3.0 SPECIFIC TECHNICAL REQUIREMENTS

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

4.0 DRAWINGS & DOCUMENTS TO BE SUBMITTED

4.1 Documents required along with Technical offer

Signed and Stamped copies of following documents:-

- Schedule of BOQ cum Price Schedule (Unpriced)
- Compliance certificate
- Schedule of deviations.

4.2 Documents required after award of LOI

Following documents/drawings shall be submitted after placement of order for BHEL & customer's approval:-

Sl. No.	Drawings/Document Description	Drawings / Document Number	Submission date by vendor	Primary/Secondary
1	Technical Data Sheet	PE-V0-426-507-E051	Within 5 days of award of contract	Primary
2	GA Drg of cable tray supports (Bolttable type)	PE-V0-426-507-E052	Within 5 days of award of contract	Primary
3	Type test procedure including Typical details of type test arrangement	PE-V0-426-507-E053	Within 5 days of award of contract	Primary
4	Type test certificates	PE-V0-426-507-E054	Within 5 days after conduction of test	Secondary
5	Quality Plan	PE-V0-426-507-E908	Within 5 days of award of contract	Primary



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

SPECIFICATION NO. PE-TS-426-507-E013

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Sl. No.	Drawings/Document Description	Drawings / Document Number	Submission date by vendor	Primary/Secondary
6.	Boq of Nut Bolt, Anchor Fastener etc for ordered quantity.	PE-V0-426-507-E909	Within 5 days of award of contract	Secondary

Note:-

1. It may please be noted that successful bidder is not to make any fresh submittals at contract stage w.r.t. above mentioned drawings/documents except document against sl.no 04. Data Sheet-A, GA Drg of cable tray supports & Standard Quality Plan as enclosed in the technical specification are to be appended with cover sheet bearing drawing/document number & description as stated above. The signed & stamped for the same shall be submitted by successful bidder to BHEL within one week of award of contract without making any changes in the contents of the drawing/document.
2. Document indicated at clause no. 4.2 above, shall be submitted through document management system (DMS).



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

SPECIFICATION NO. PE-TS-426-507-E013

VOLUME II

SECTION I

REVISION 0

DATE: 18.07.2024

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
ii) Thickness of zinc coating as per IS : 4759
iii) Uniformity of zinc coating as per IS : 2633
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 enclosed 'Type Test Procedure' and 'QP no. 0000-999-QOE-S-38', Rev. 0'.



1X660MW PANKI TPS
TECHNICAL SPECIFICATION FOR CABLE
TRAYS SUPPORT SYSTEM (BOLTABLE
TYPE)

PE-TS-426-507-E013

SECTION II


REVISION 0

DATE: 18.07.2024

SHEET

SECTION – II

STANDARD TECHNICAL SPECIFICATION

	1X660MW PANKI TPS		PE-TS-426-507-E013
	TECHNICAL SPECIFICATION FOR CABLE		SECTION II
	TRAYS SUPPORT SYSTEM (BOLTABLE		REVISION 0
	TYPE)		DATE: 18.07.2024
			SHEET

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 (Boltable 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 (boltable 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/ INSPECTION:

- 4.1 Standard QP (QP NO. 0000-999-QOE-S-38 REV 0) is enclosed for reference. However, 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 QP approval.
- 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.

	1X660MW PANKI TPS		PE-TS-426-507-E013
	TECHNICAL SPECIFICATION FOR CABLE		SECTION II
	TRAYS SUPPORT SYSTEM (BOLTABLE		REVISION 0
	TYPE)		DATE: 18.07.2024
			SHEET

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: -

a) Type tests :

Cable tray support system (Boltable 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-IV. 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.

b) Routine Tests:

(i) Dimension checks

c) Acceptance Test:

(i) Dimension checks

(ii) Tests for galvanizing

6.0 **PACKING**

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

ITEM: (MATERIAL, CLASS, GRADE, RATING, SIZE ETC.) GALVANISED FLEXIBLE CABLE TRAYS SUPPORT SYSTEM		STANDARD QUALITY PLAN				Q.P. NO. 0000-999-QOE-S-38 REV. 00 DATE : 01.09.04 PAGE 1 OF 2 VALID UPTO: 31.08.07		REVIEWED BY S.D.SINGH O.P.NIRANJAN L.J.SINGH		APPROVED BY ANIL K. NTPC				
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK		QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
				5.	6.	7.	8.				9.	10.	11.	
1.	Flexible cable trays Support Structure	1. In Black Condition a) Weld Quality b) Burs	Major	Visual	100%	Random	Manufacturer's Plant Std	IS-2629-1985 IS-4759-1996	Manufacturer's Plant Std No Burs	Inspection Report -do-	P	V	10	11
2.	Finished Galvanizing	2. After Galvanizing 2.1 General physical inspection including Galvanizing Quality/Defects, Diceromating, 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	IS-2629-1985 IS-4759-1996	-do-	P	W	W	0
			Major	Measurement	-do-	-do-	NTPC/Main Supplier Approved Drg.	NTPC/Main Supplier Approved Drg.	NTPC/Main Supplier Approved Drg.	-do-	P	W	W	
			Critical	Measurement	IS-4759-1996	-do-	IS-4759-1996 IS-3203-1982	IS-4759-1996 IS-3203-1982	IS-4759-1996 IS-3203-1982	-do-	P	W	W	
			Critical	Measurement	-do-	1 coupon sample of each thickness	IS-6745-1972 IS-4759-1996	IS-6745-1972 IS-4759-1996	IS-6745-1972 IS-4759-1996	-do-	P	W	W	
			Critical	Measurement	-do-	-do-	IS-2633-1986 IS-4759-1996	IS-2633-1986 IS-4759-1996	IS-2633-1986 IS-4759-1996	-do-	P	W	W	
			Critical	Visual	-do-	-do-	IS-2629-1985	IS-2629-1985	IS-2629-1985	-do-	P	W	W	

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

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

ENG. DIV./QA&I

ITEM: (MATERIAL, CLASS, GRADE, RATING, SIZE ETC.)		STANDARD QUALITY PLAN		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 L.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			
					M	C/N				M	C	N	W
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	
		Proof Load Test as per note 6 Followed by Die Penetration Test (For 600 mm and above cable tray support system)	A	Meas/Visual	One Sample from each offered lot	One Sample from each offered lot	NTPC Technical Specification/ No visible cracks should develop on the weld part on the weld part	NTPC Technical Specification/ No visible cracks should develop on the weld part on the weld part	Inspection Report	P	**	W	

Note :

- The supplier to ensure procurement of steel from main producers like SAIL/ITISCO, Rastriya Ispat/Isptat 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 CI 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-QAI-P-10/F3-R0

ENG. DIV./QA&I

2/2

ANNEXURE to Quality Plan

LIST OF NTPC APPROVED GALVANIZERS (FOR NTPC PROJECTS)

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

NOTES:

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

ANNEXURE-2A to Quality Plan

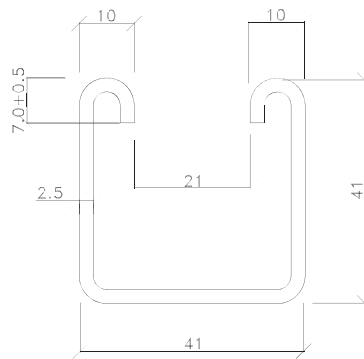
(LIST OF BHEL- PEM APPROVED GALVANIZERS)

SL. NO.	ITEM	VENDOR NAME	ADDRESS
1	Galvanising	Jenco Industrial Corporation	Chincholi Bunder Khkar Road Near Link Road Devruwadi Malad (W) Mumbai 400064
2	Galvanising	National Galvanizing Company	66, Barrackpore Kamarhatt Trunck Road Calcutta-700058
3	Galvanising	Sigma Galvanising Pvt. Ltd.	Plot No.C-169, TTC, MIDC Ind Area Navin Mumbai-400705
4	Galvanising	B.P. Projects PVT LTD	167A, Vivekananda Road Kolkata-700006
5	Galvanising	Standard Galvanisers	Makardah Road, Kabar Para, Bankra, Howarah -711403
6	Galvanising	Steel Products	National Highway No. 6, Chamrail, Kona, Howrah-711114
7	Galvanising	Unitech Fabricators & Engineers Pvt. Ltd.	Village- Ajab Nagar, P.O. -Molla Simlla, P.S. - Singur, Dist - Hoogly, Pin-712223
8	Galvanising	Shivam Engineers & Fabricators	A0-282-284, Industrial Area, South Side of G.T. Road, Ghaziabad, U.P.
9	Galvanising	B.G. Shirke Construction Technology Pvt. Ltd	72-76, Mundhawa, Pune - 401 036
10	Galvanising	Galbro Ispat Galvanizers Pvt. Ltd.	GUT 11 AND 12, OPP. Kudus Steel,Rolling Mill, Wada, Thane , Mumbai
11	Galvanising	Eros Metals	G-97, MIDC, Bhutibori , Nagpur
12	Galvanising	Industrial Perforation (India) Pvt. Ltd.	Ganganagr, Katakhal, Kolkata-700132
13	Galvanising	Indmark Formtech Pvt. Ltd.	Phase - 3, E - 11 / 1, M. I. D. C., Chakan, Pune - 410 501, Maharashtra, India.
14	Galvanising	Namdhari Industrial Traders Pvt. Ltd.	Village Latton Dana, Chandigarh Road, Ludhiana
15	Galvanising	Neha Galvaniser	Jalan Industrial Estate, Gate No-1, 1st Right Choise Lane, Near N.G-6, Jangalpur, PO Domjur Howrah - 700071, West Bengal, India
16	Galvanising	Patny Systems (P) Ltd.	Unit-IV, Sy No. -228/9, Plot No. 6, IP Kuchavaram, Toopran(M) Dist.- Medak, Telegana - 502336
17	Galvanising	Parmar Metal Company	Survey No.207,Veraval (Shapar) Dist. Rajkot, India.
18	Galvanising	Passive Infra Projects Pvt. Ltd	8th KM Stone, Sampla Kharkhoda Road, Hassangarh, Rohtak, Haryana
19	Galvanising	Rukmani Electrical & Fabricators Pvt, Ltd.	Urla Industrial Area, Urla Sarora Road, Raipur- 493 221 (Chhattisgarh) Shankharidaha Baniyarah, Jalan Industrial Complex, Gate no.3, Lane no. 4, Domjur, Howrah , W.B .- 71141
20	Galvanising	DMP Projects Pvt.Ltd.	Dulagarh Industrial Park , PS-Sankrail , Howrah -711302
21	Galvanising	Vinfab Engineers India Private Limited	Gut no. 224/1 &2 Bhiwandi Wada State Highway, Village khupri, Dist. Thane, Maharashtra -421303
22	Galvanising	Saral Projects & Processors	B-1, Industrial Area, Site-II, Amawan Road Rae Bareli
23	Galvanising	Jamna Metal Company	D - 1513, DSIDC, Narela Industrial Area Delhi - 110040, India
24	Galvanising	Brahampuri Steels Limited	172 (F) Industrial Area, Jhotwara, Jaipur-302013
25	Galvanising	Indiana Gratings PVT. LTD	F-5, MIDC Jejuri, Pune-412 303

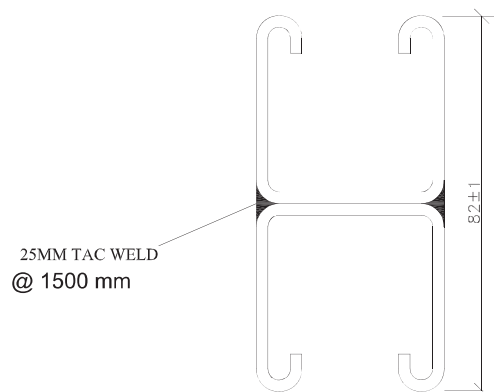
NOTES:

1. ANY CHANGE IN THE ABOVE LIST SHALL BE INFORMED AT THE TIME OF SPECIFIC PROJECT REQUIREMENT AND NO COMMERCIAL IMPLICATION SHALL BE ALLOWED ON THIS ACCOUNT.

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



SINGLE CHANNEL SC1

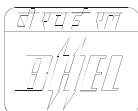


DOUBLE CHANNEL DC1

TWO LENGTHS OF SINGLE CHANNEL

NOTE:

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.

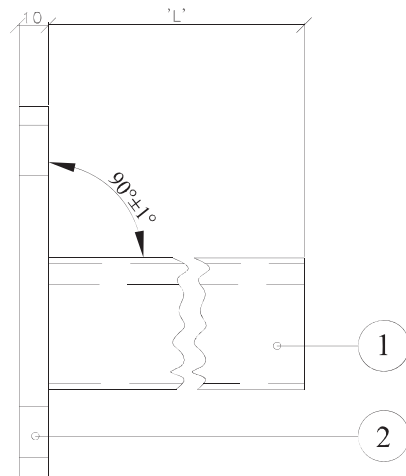
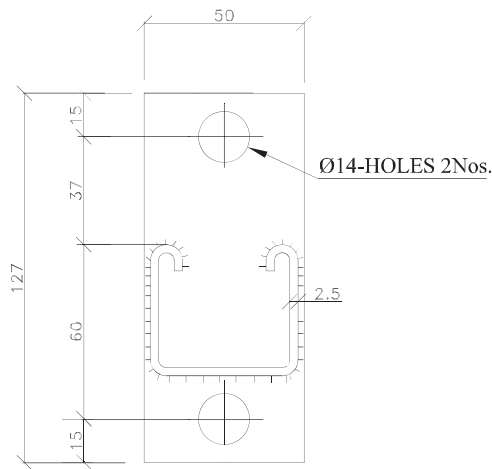


TITLE: TYPICAL DETAILS OF BOLTABLE
TYPE CABLE TRAY SUPPORT
MATERIAL & ACCESSORIES

DRG. NO.

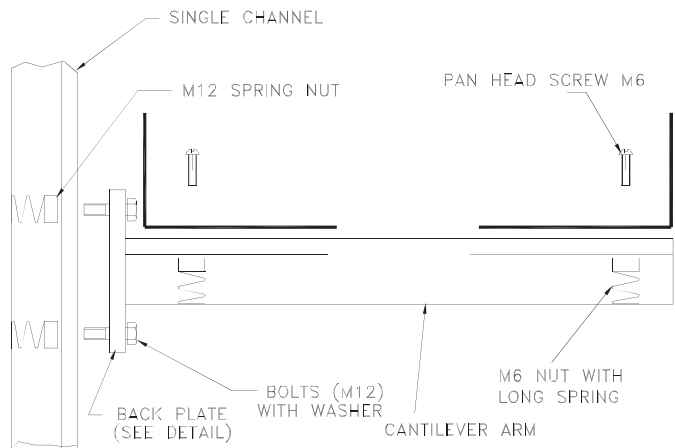
PE-DG-999-507-E013

SH 2 OF 12



CANTILEVER ARMS

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

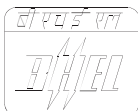


TYPICAL ASSEMBLY OF CHANNEL SUPPORTS AND CABLE TRAY

*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-1079/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.

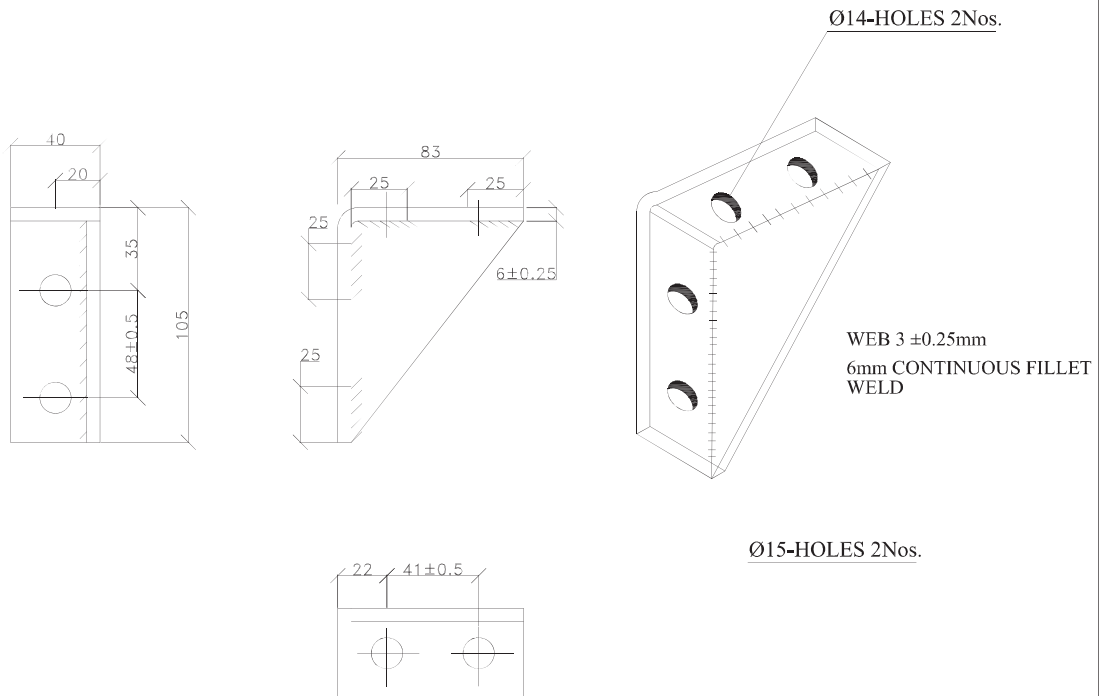


TITLE: TYPICAL DETAILS OF BOLTABLE
TYPE CABLE TRAY SUPPORT
MATERIAL & ACCESSORIES

DRG. NO.

PE-DG-999-507-E013

SH 3 OF 12

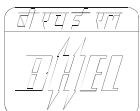


90 ANGLE FITTING HL1 (HEAVY DUTY TYPE)

*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.

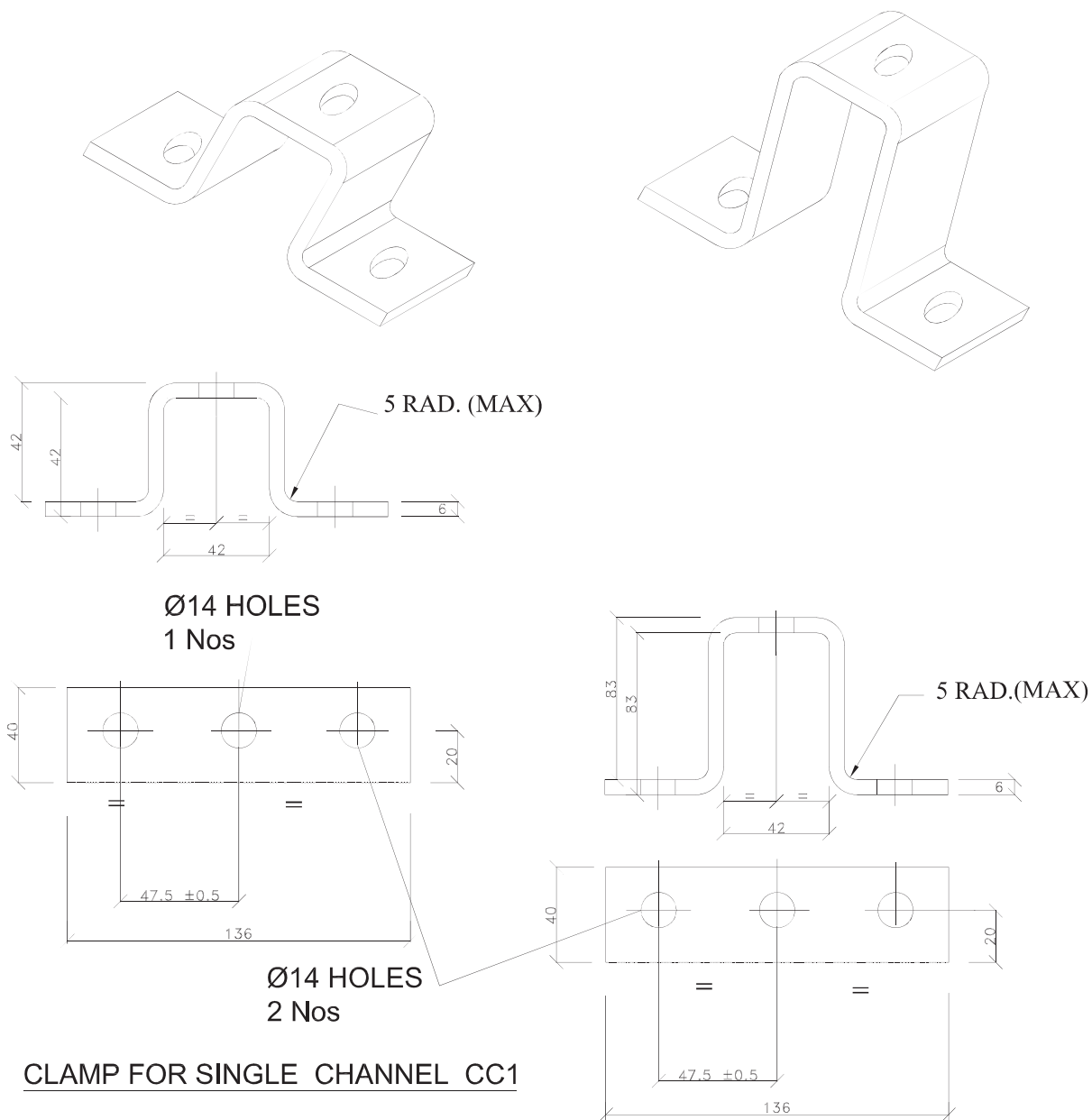


TITLE: TYPICAL DETAILS OF BOLTABLE
TYPE CABLE TRAY SUPPORT
MATERIAL & ACCESSORIES

DRG. NO.

PE-DG-999-507-E013

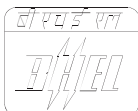
SH 4 OF 12



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.

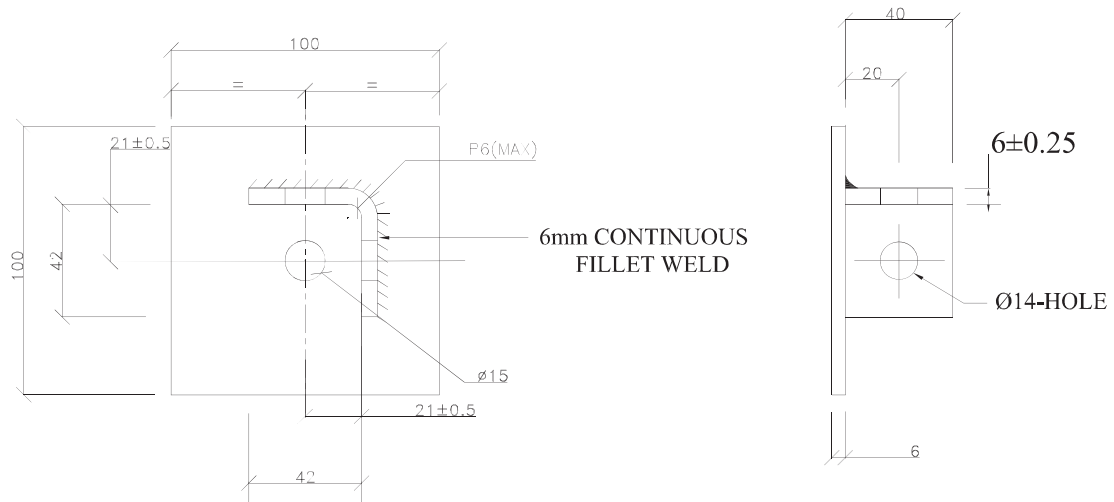
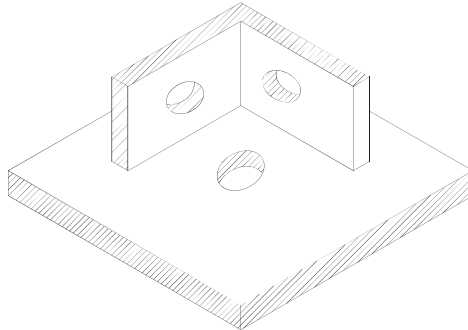


TITLE: TYPICAL DETAILS OF BOLTABLE
TYPE CABLE TRAY SUPPORT
MATERIAL & ACCESSORIES

DRG. NO.

PE-DG-999-507-E013

SH 5 OF 12

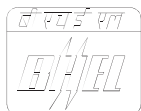


BASE PLATE FOR SINGLE CHANNEL BP1

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.*

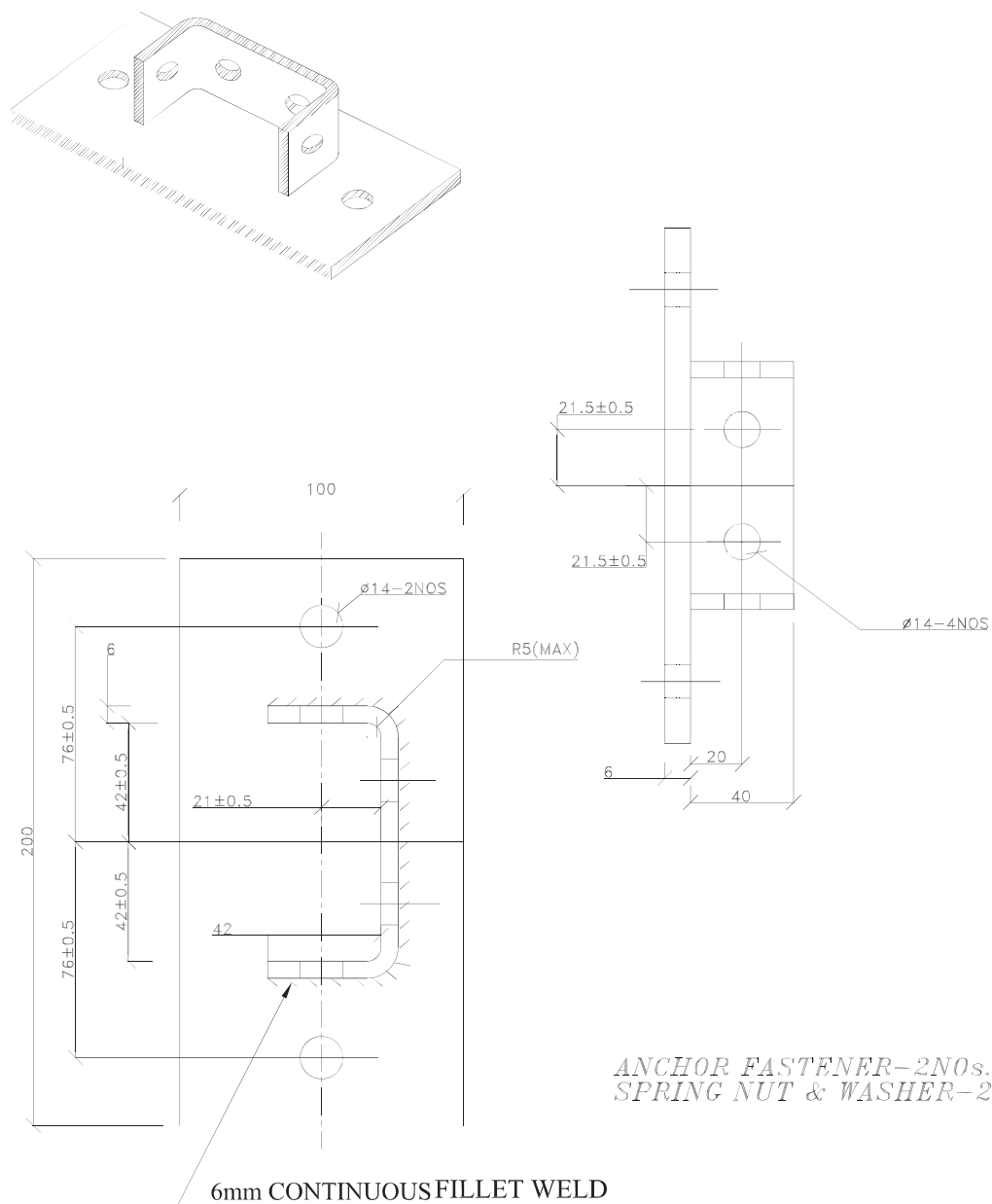


TITLE: TYPICAL DETAILS OF BOLTABLE
TYPE CABLE TRAY SUPPORT
MATERIAL & ACCESSORIES

DRG. NO.

PE-DG-999-507-E013

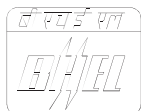
SH 6 OF 12



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.



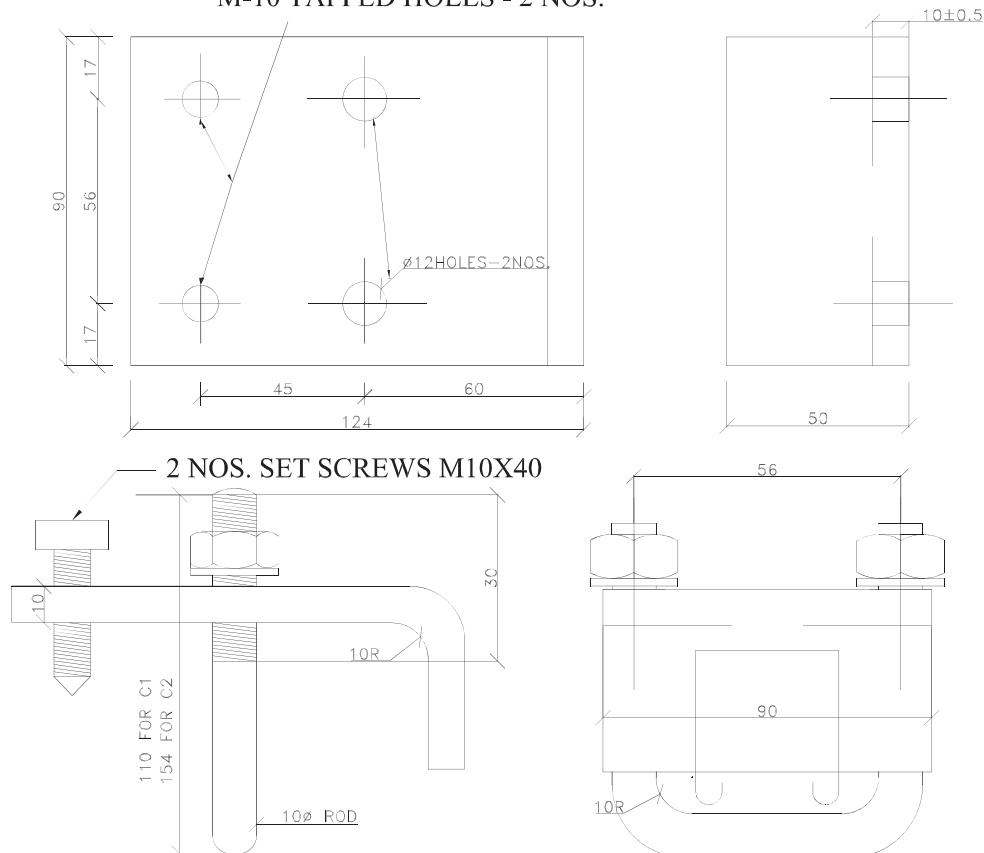
TITLE: TYPICAL DETAILS OF BOLTABLE
TYPE CABLE TRAY SUPPORT
MATERIAL & ACCESSORIES

DRG. NO.

PE-DG-999-507-E013

SH 7 OF 12

M-10 TAPPED HOLES - 2 NOS.

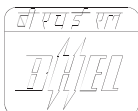


BEAM CLAMP - BC1

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.

*M-10 U-BOLT WITH
2Nos PLAIN WASHERS & NUTS
110 mm FOR SC 1
154 mm FOR DC1
2 NOS. SET SCREWS M10X40*

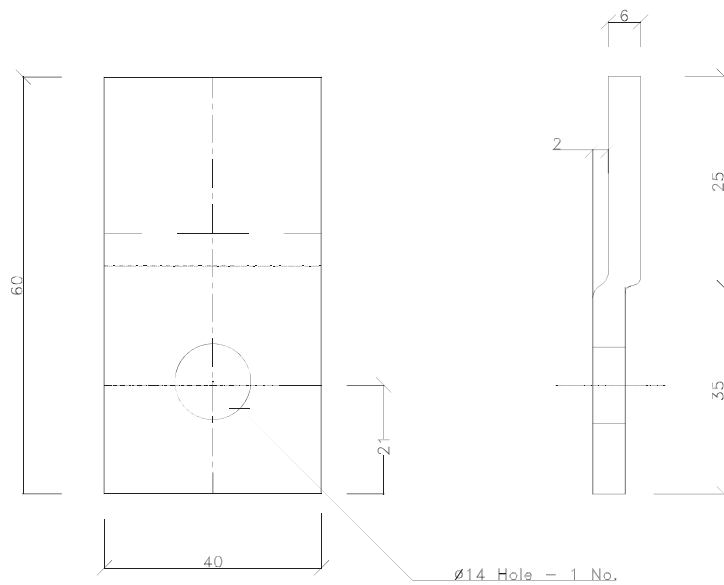
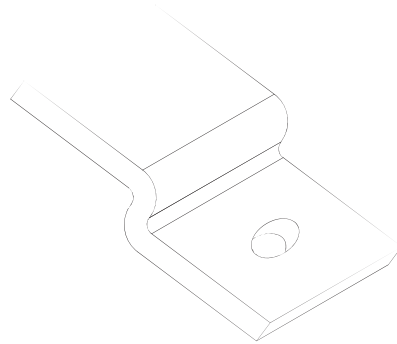


TITLE: TYPICAL DETAILS OF BOLTABLE
TYPE CABLE TRAY SUPPORT
MATERIAL & ACCESSORIES

BHEL DRAWING NO.

PE-DG-999-507-E013

SH 8 OF 12

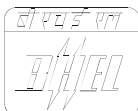


TRAY FIXING CLAMP - TC1

NOTES

SPRING NUT & WASHER-1 NO.

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.

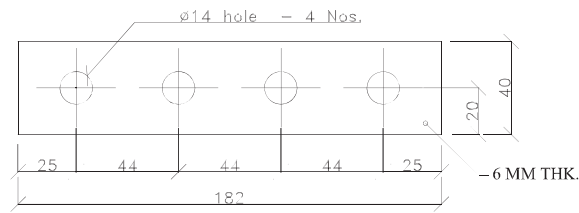


TITLE: TYPICAL DETAILS OF BOLTABLE
TYPE CABLE TRAY SUPPORT
MATERIAL & ACCESSORIES

BHEL DRAWING NO.

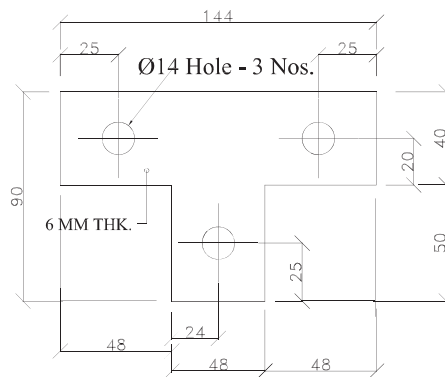
PE-DG-999-507-E013

SH 9 OF 12



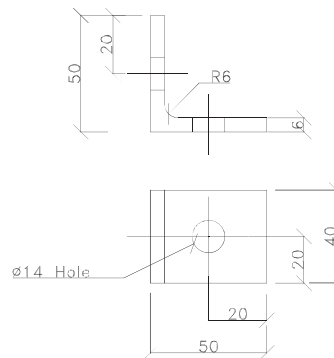
SPRING NUT & WASHER-4Nos.

FLAT PLATE STRAIGHT FITTING PF2



SPRING NUT & WASHER-3Nos.

FLAT PLATE TEE FITTING PF1

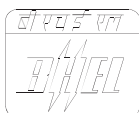


SPRING NUT & WASHER-2Nos.

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.

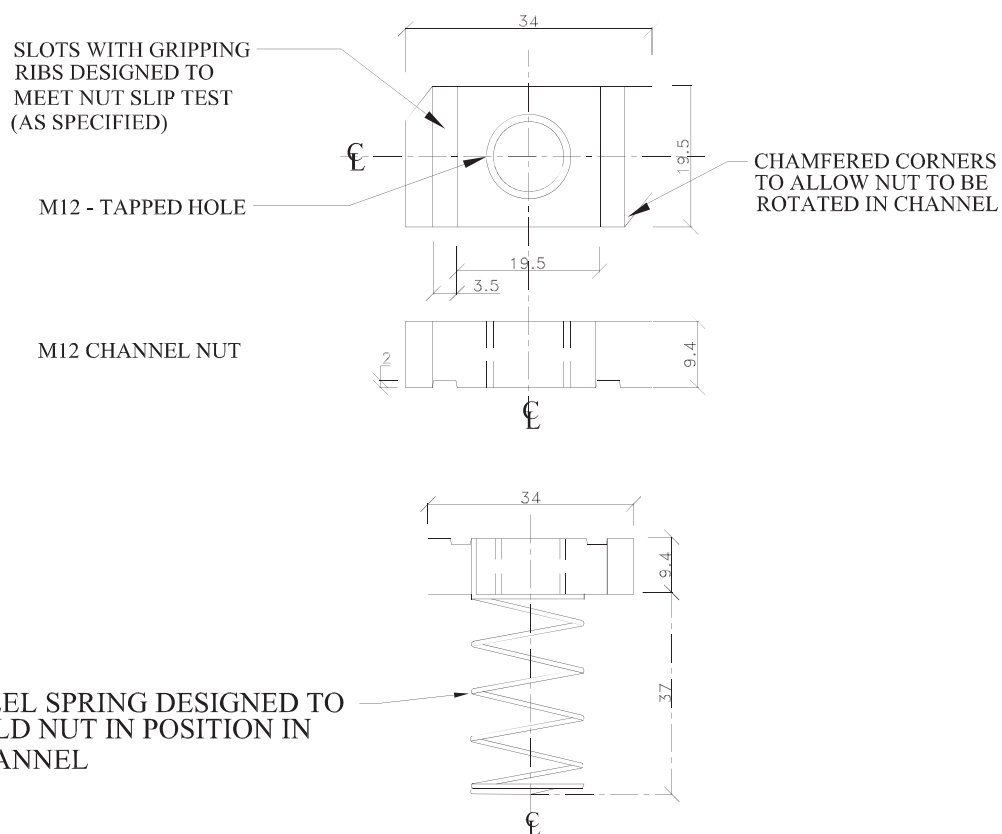


TITLE: TYPICAL DETAILS OF BOLTABLE
TYPE CABLE TRAY SUPPORT
MATERIAL & ACCESSORIES

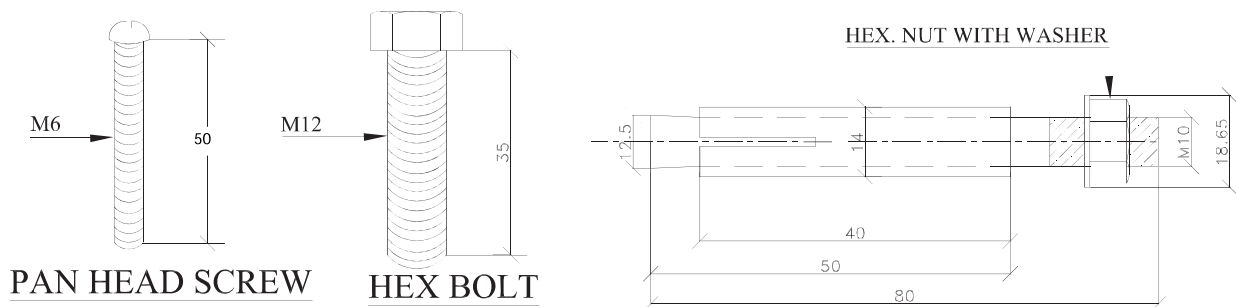
BHEL DRAWING NO.

PE-DG-999-507-E013

SH 10 OF 12



SPRING NUT ASSEMBLY



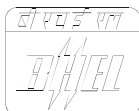
PAN HEAD SCREW

HEX BOLT

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.

ANCHOR BOLT M10

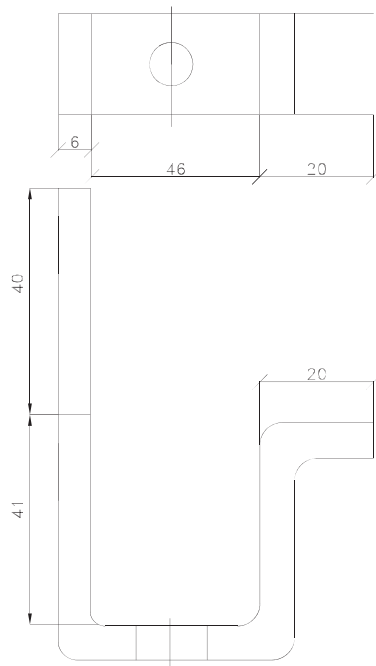


TITLE: TYPICAL DETAILS OF BOLTABLE
TYPE CABLE TRAY SUPPORT
MATERIAL & ACCESSORIES

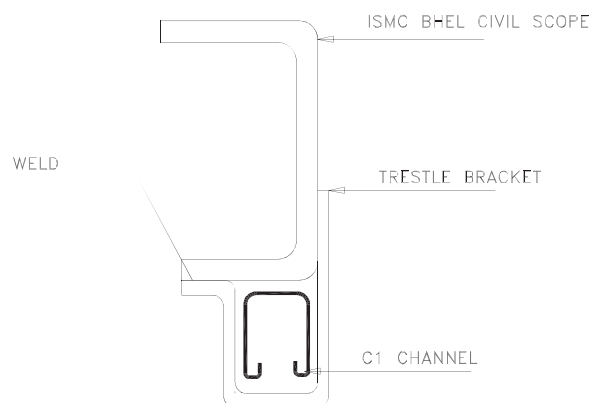
BHEL DRAWING NO.

PE-DG-999-507-E013

SH 11 OF 12



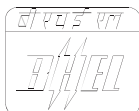
TRESTLE BRAKET



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					
TITLE:				TYPICAL DETAILS OF TYPE TEST ARRANGEMENT		DRAWN	NAME	DATE
DRG. NO.				PE-DG-999-507-E114		DSGN		
						CHKD		
						APPD		
				BHARAT HEAVY ELECTRICALS LTD. PROJECT ENGINEERING MANAGEMENT NOIDA				
				SH 1 OF 10				

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.

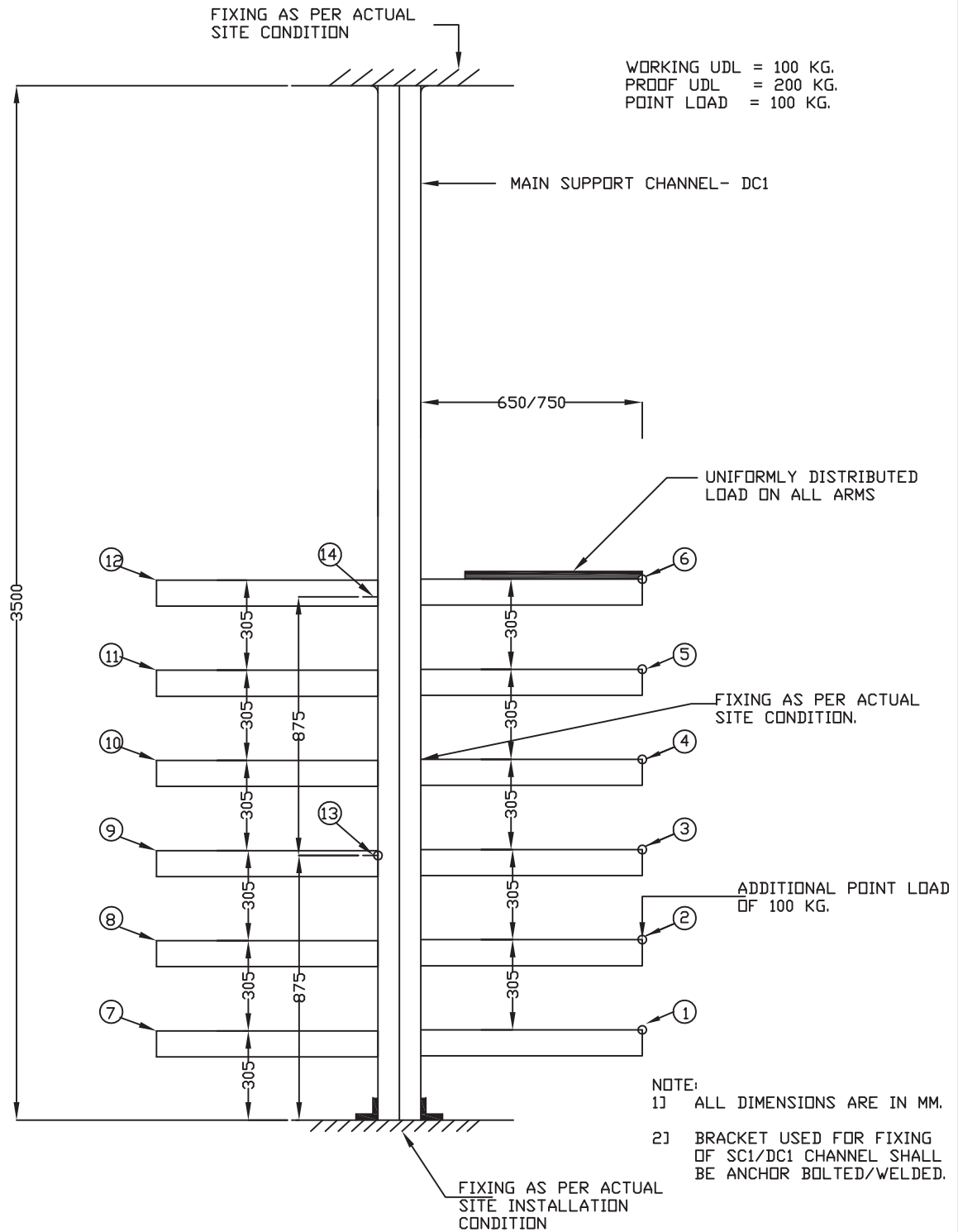
A minimum loading of 350 kg shall be obtained before nut slip with a bolt torque of 65 NM.

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.



Q DEFLECTION MEASURING POINTS.

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

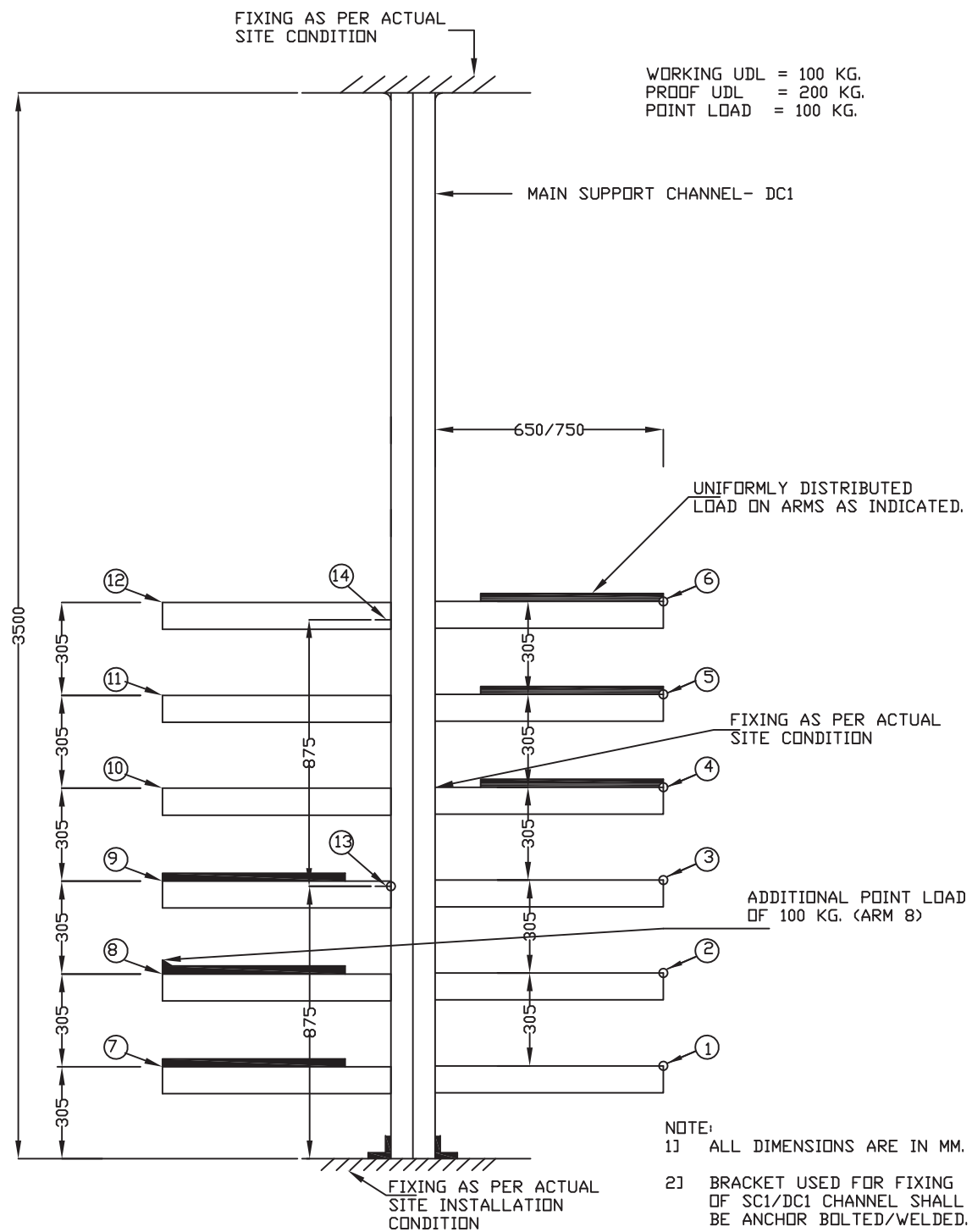


**TITLE: TYPICAL DETAILS OF
TYPE TEST ARRANGEMENT**

DRG. NO.

PE-DG-999-507-E114

SH 6 OF 10



Q DEFLECTION MEASURING POINTS.

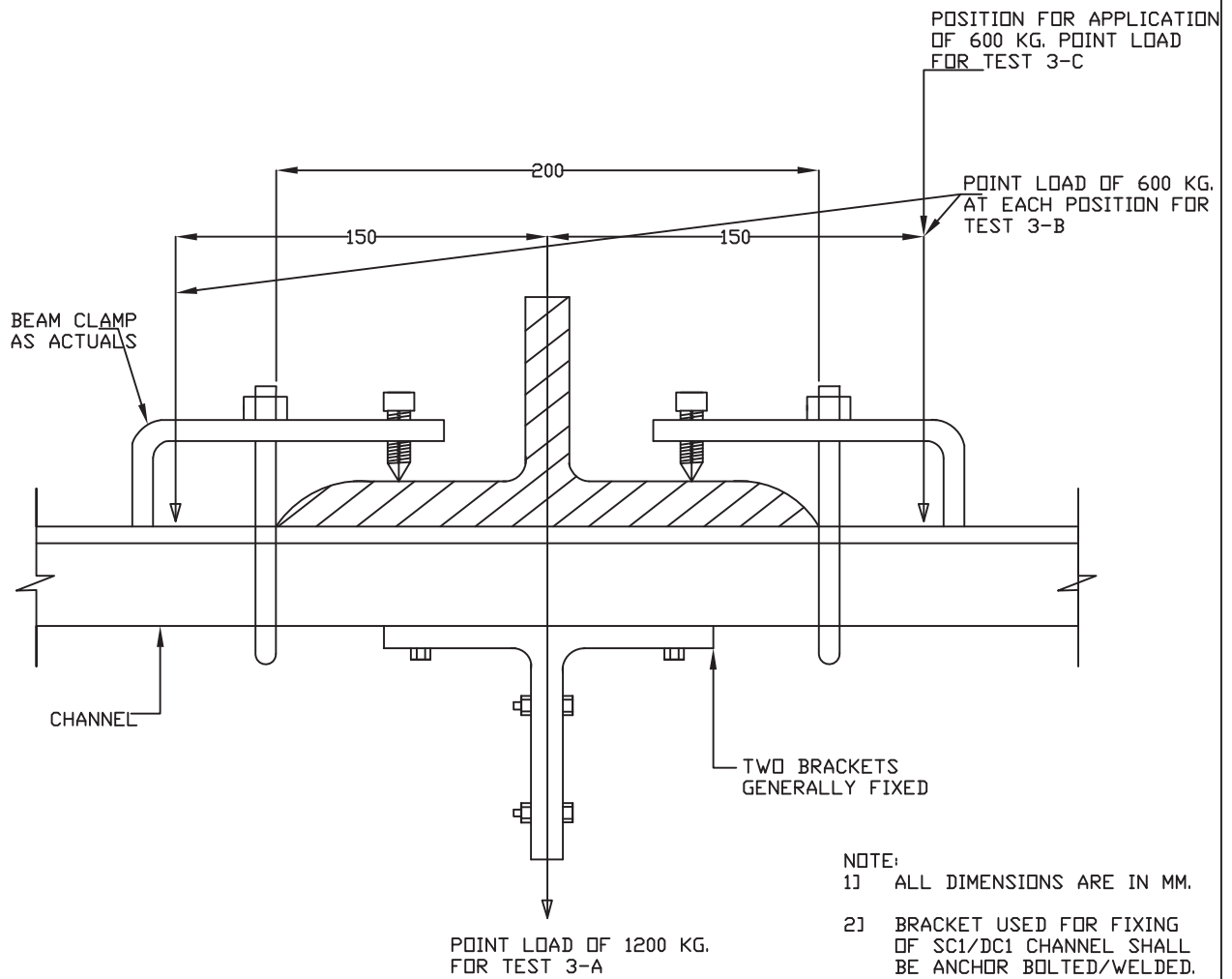
**TEST : 2B: MAIN SUPPORT CHANNEL
(ASYMMETRIC LOADING)**



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

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

SH 7 OF 10



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



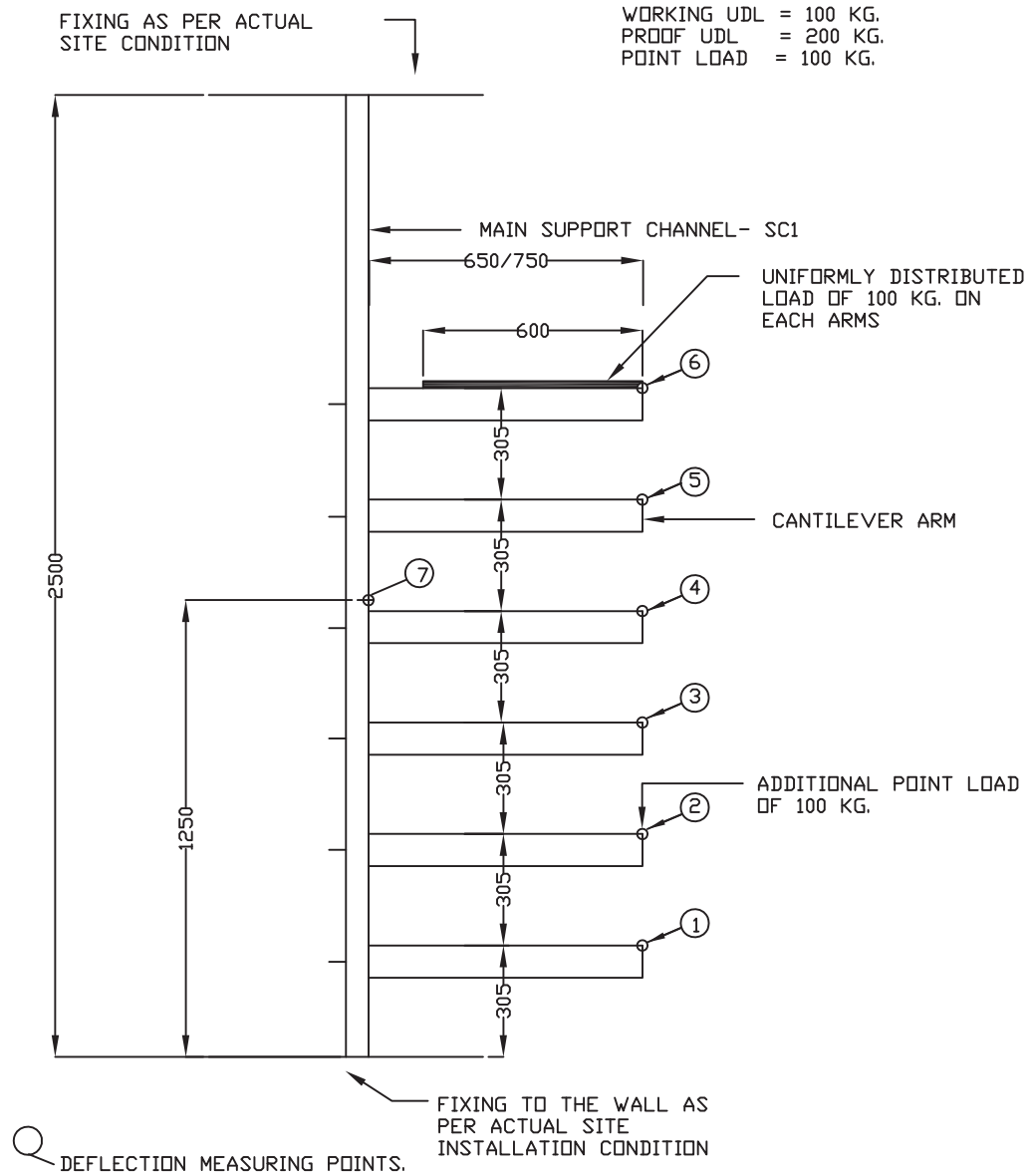
TITLE:

**TYPICAL DETAILS OF
TYPE TEST ARRANGEMENT**

DRG. NO.

PE-DG-999-507-E114

SH 8 OF 10



NOTE:
1] ALL DIMENSIONS ARE IN MM.

TEST : 4: CHANNEL INSERT



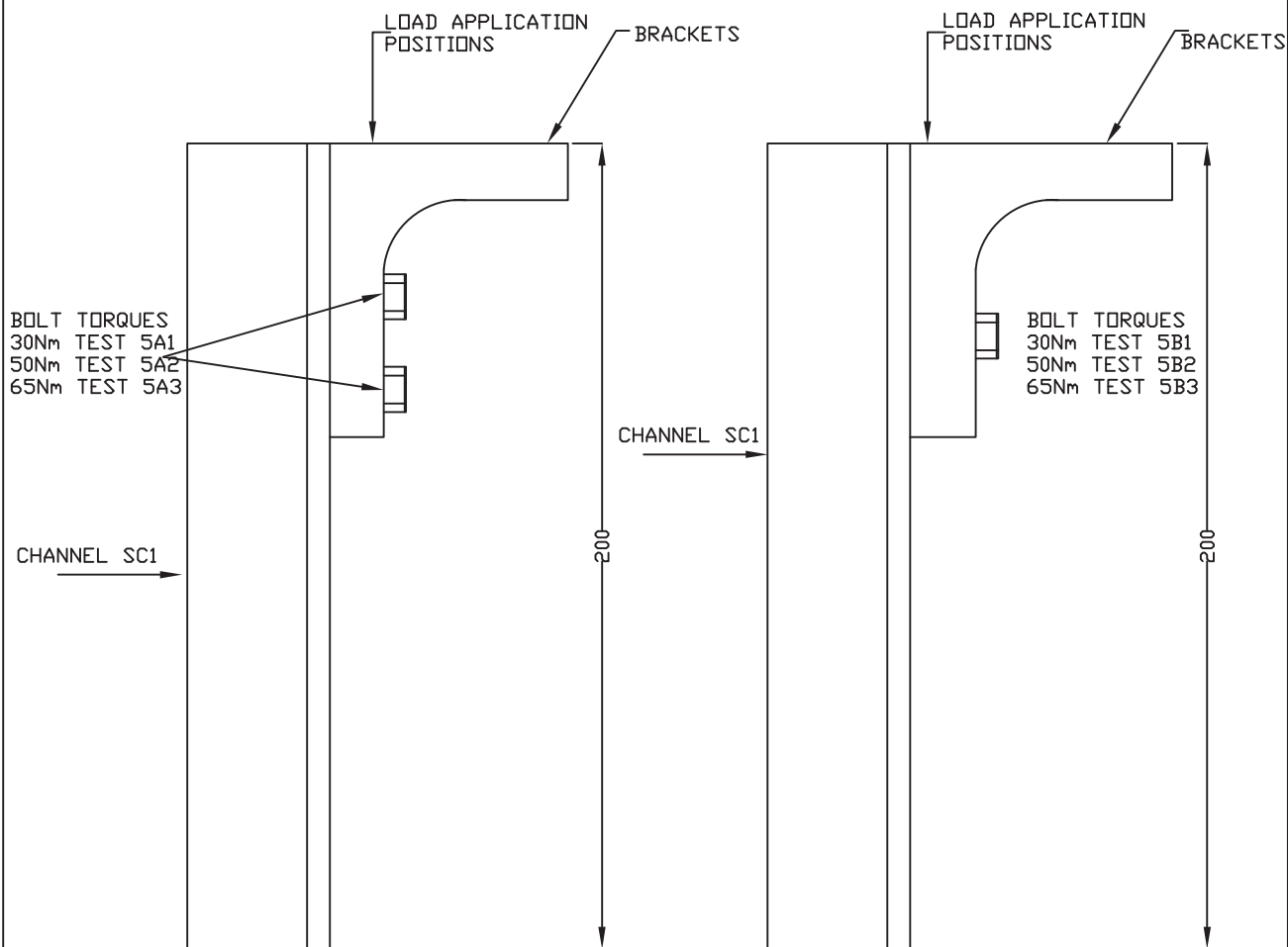
TITLE:

TYPICAL DETAILS OF
TYPE TEST ARRANGEMENT

DRG. NO.

PE-DG-999-507-E114

SH 9 OF 10



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

SH 10 OF 10



Price Variation Formulae

ANNEXURE-C

Prices shall be variable as per following PVC formulae: -

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

Wherein,

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

P_o = Price quoted/confirmed.

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

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

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

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

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

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

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

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

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

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

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

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

The date of delivery is the date on which 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.