



Ref. Enquiry No: PE/PG/KAR/E-4753/2014, Date: 26.03.2015

OFFERS TO BE SUBMITTED IN 2 SETS

Due Date
29-04-2015
By 14:00 PM (IST)

Dear Sir,

**Subject: Open Tender Enquiry for Cable Trays & Accessories as per Technical Specification No. PE- TS- 405-507-E021
Rev 00 of 3 X 660 MW North Karanpura STPP**

BHEL invites offers from reputed vendors (Refer pre-qualifying requirements and other requirements given in tender enquiry letter uploaded on our websites viz. www.bhelpem.com & www.bhel.com) for the complete scope of works defined in our technical specification of subject requirement.

Your offer shall be submitted in two parts strictly as per Clause-2.0 of Instructions to Bidders of GCC Rev.06 **in duplicate (2 sets)**, in sealed covers. Your best quotation/ offer for the above requirement, in line with our terms and conditions, should either be delivered in person or sent by COURIER/ REGISTERED POST, to the following address only:

Tender Box, Tender Room, Ground Floor, PPEI Building(behind Reception Desk)
C/o Apoorv Agrawal, Sr. Engr./PG-III
M/s Bharat Heavy Electricals Ltd.
Project Engineering Management (PEM),
Power Project Engineering Institute (PPEI), HRD & ESI Complex,
Plot No 25, Sector-16 A, Noida-201301,U.P.,INDIA
E-MAIL: apoorvagrawal@bhelpem.co.in
Ph. No. +91 120 4213559, +91 9899003053

It shall be the responsibility of the bidder to ensure that the tender is delivered on or before the due date by 14:00 PM. The offer has to be deposited in tender box only. Part-I bids shall be opened at 14:30 PM on the due date in the presence of authorized representatives of the bidders, who may like to be present.

Note:

Tenderer must submit UN-PRICED Price format duly filled mentioning the word "QUOTED" in place of actual price. The actual price is to be filled in separately and submitted in sealed price bid (in given format only) as per enquiry terms & conditions.

ENQUIRY TERMS AND CONDITIONS:-

1. Bidders to note that General Conditions of Contract GCC Rev06 may be downloaded from <https://www.bhelpem.com/Information.aspx>. Bidders are requested to go through the same while submitting the offer.
2. Enquiry No., due date etc. must be legibly superscripted on the sealed envelopes as per clause no. 2.0 of "Instructions to Bidders" of GCC, Rev. 06.
3. Offers should be submitted in two parts in two separate sealed covers as follows:
Part-I: TECHNO-COMMERCIAL BID Part-II: PRICE BID
For detailed instructions, please see clause no. 2 of "Instructions to Bidders" of GCC Rev. 06.
4. Bidders shall submit their offers meeting the requirements of the following tender documents indicated in GCC Rev. 06 and other Terms and Conditions included in this Enquiry Letter:
 - ANNEXURE-I: To be furnished by the Bidders.
 - ANNEXURE-II: Un-priced copy for Cost of withdrawal of deviation as per Annexure-II of GCC Rev.06.
5. Bidders to note that following form the part of tender documents:
 - General Conditions of Contract (GCC) Rev.06
 - Special Conditions of Contract for 3 X 660 MW North Karanpura STPP
 - Technical Specifications
 - Price formats
 - Financial PQR & Technical PQR
 - NTPC format for Sub – Supplier Questionnaires (Sub QR)

Apoorv Agrawal
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Power Project Engineering Institute,
Plot no. 25, Sector - 16A, Noida (U.P.), INDIA
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Regd. Office
BHEL House Siri Fort
New Delhi-110049



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- NIT
 - Any other document enclosed with NIT
6. Bidder has to submit "NO DEVIATION CERTIFICATE FOR COMMERCIAL TERMS AND CONDITIONS as per General Conditions of Contracts (GCC Rev.06), Special Conditions of Contract and Notice Inviting Tender (NIT)" in case of no deviations.
 7. Bidders to note that offers shall be submitted strictly in accordance with the requirements of the above tender documents. Deviations (Technical as well as Commercial), if any shall be listed out clearly with their techno-commercial offer as per Annexure-II of GCC Rev.06. Also, all the above Tender Documents shall automatically become a part of the Order/Contract after its finalization.
 8. All correspondence thereof, shall be addressed to the undersigned by name & designation and sent at the following address:

Apoorv Agrawal, Sr. Engr./PG-III M/s Bharat Heavy Electricals Ltd. Project Engineering Management (PEM), Power Project Engineering Institute (HRDI), HRD & ESI Complex, Plot No 25, Sector-16 A, Noida-201301,U.P.,INDIA E-MAIL: apoorvagrawal@bhhelpem.co.in Ph. No. +91 120 4368666, +91 9899003053	SANDEEP KUMAR, Sr. Manager/PG-III M/s Bharat Heavy Electricals Ltd. Project Engineering Management (PEM), Power Project Engineering Institute (HRDI), HRD & ESI Complex, Plot No 25, Sector-16 A, Noida-201301,U.P.,INDIA E-MAIL: SANDEEPKUMAR@bhhelpem.co.in Ph. No. +91-120-4368942,+919810331191
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9. Delivery Schedule (Supply) :

Manufacturing of Lot-I quantities: 4 months from Cat-I issued by BHEL.
Subsequent lots: Refer BOM cum price schedule Note 3.

Drawings/ documents submission shall be as per Annexure-II Vol-IIB of technical specification sheet 1 of 1 (page no. 1 of 1). Subsequent revisions to be submitted within one week incorporating all the comments received from BHEL. Any incomplete drawing submitted shall be treated as non-submission with delay to vendor's account.

10. BHEL reserves the right to finalize Prices by conducting RA or by conventional way of price bid opening, which will be decided after techno-commercial evaluation (refer Clause No. 13.0 of Volume-I, GCC Rev. 06). In view of this, Bidder is requested to quote their most competitive prices as no negative price impact on account of non-conduction of RA shall be asked for (Refer terms and conditions of RA).
11. For Supply portion, Indigenous bidders to quote F.O.R. Site price and foreign bidders to quote F.O.B. port price. F.O.R. Site price of foreign bidders shall be calculated by loading their F.O.B. port price as per GCC Rev.06.
12. The evaluation of the offer shall be done based on Total Lump sum Cost to BHEL (i.e. Total F.O.R. site price for supply, Spares etc. with necessary loadings as applicable) as per GCC Rev. 06.
13. Pre-Qualifying Requirement (PQR):-
Bidders are requested to fill up the details in "Technical and Financial Pre-Qualifying Requirement" and also to submit their credentials. Bids of only those bidders shall be evaluated who meet the Technical as well as Financial Pre-Qualifying Requirements (PQR). Credentials of the bidders meeting the pre-qualifying requirements shall be taken up with customer for approval. Price Bid/ RA of only BHEL and customer approved vendors shall be opened/ done.
14. Indigenous bidders have to quote freight charges in terms of percentage (%) of their quoted total Ex-works prices.
15. All corrigenda, addenda, amendments, time extensions, clarifications etc. to the tender will be hosted on BHEL website (www.bhel.com) & BHEL-PEM website (www.bhhelpem.com) only. Bidders should regularly visit websites to keep themselves updated.
16. Foreign bidders quoting along with their Authorised Indian associates to comply BHEL guidelines which are available on <https://www.bhhelpem.com/Tenders.aspx> .

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17. Bidders to note that this is a conditional enquiry (Open Tender) for all bidders, the price bid (Part-II bid) opening/RA will be subject to following criterion: -

a) Approval of bidders by BHEL:

The bidders (who are not registered with BHEL PEM) to download the Supplier Registration Form (SRF) from www.bhel.com or <http://www.bhelpem.com/vendor%20Corner.aspx> (also given with NIT) and submit the same duly filled in along with credentials - experience list, performance certificates and other statutory data to our Vendor Development section with intimation to us.

b) Approval of bidder by Customer:

Approval shall be taken up by BHEL with customer based on the credentials/reference list. Hence Bidders are requested to submit the following upgrading (as part of their credentials) on or before Part-I bid opening/due date:

- i. Bidders are requested to fill up their details in NTPC format for Sub – Supplier Questionnaires (Sub QR) attached with this enquiry
- ii. Company Profile
- iii. Recent Purchase orders copies
- iv. Reference list indicating PO details, customer name, PO date, execution date etc.
- v. Performance certificate issued by the clients.

Thanking You,
For and on behalf of BHEL

Apoorv Agrawal
(Sr. Engr./PG-III/BHEL-PEM)

Enclosures:

1. NIT (this letter itself)
2. Technical Specification
3. Financial PQR
4. Technical PQR
5. Price Schedule for Indigenous Bidders (Prices should be quoted by Indigenous bidders strictly in this format only)
6. Price Schedule for Foreign Bidders (Prices should be quoted by Foreign bidders strictly in this format only)
7. SCC of 3 X 660 MW North Karanpura STPP.
8. NTPC format for Sub – Supplier Questionnaires
9. Supplier Registration Form for Indigenous Supplier/ Supplier Registration Form for Foreign Supplier
10. Annexure-I to Terms & Conditions of Reverse Auction

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Abul

- Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).
1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
 2. Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessarily submit 'online sealed bid' in the Reverse Auction. Non-submission of 'online sealed bid' by the bidder for any of the eligible items for which techno-commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.
 3. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
 4. In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.
 5. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.
 6. Bidders have to fax the Compliance form (annexure IV) before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.
 7. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.
 8. Reverse auction will be conducted on scheduled date & time.
 9. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.

Terms & Conditions of Reverse Auction

10. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, (Annexure VII) as provided on case-to-case basis to Service provider within two working days of Auction without fail.

11. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL's standard practice.

12. Bidders shall be required to read the "Terms and Conditions" section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the 'Business Rules of Reverse Auction', which will be communicated before the Reverse Auction.

13. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as per extant BHEL guidelines, shall be initiated by BHEL and the results of the RA scrapped/ aborted.

14. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.

15. In case BHEL decides to go for reverse auction, the H1 bidder(s) (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.



**FINANCIAL PQR
PROJECT
PACKAGE**

**3X660 MW NORTH KARANPURA STPP STG-I
CABLE TRAYS & ACC.**

A) The bidder needs to score minimum qualifying marks of 15 (total of all the parameters) based on the financial data as per the below Table :

SL NO.	PARAMETER	CRITERIA	MARKS	Maximum Marks	MARKS AWARDED
1	Growth of Net Worth over previous year (%) Average of three years to be worked out	>20% 10-20% 5-10% >0 & < 5% 0 or below	5 4 3 2 0	5	
2	Debt Equity Ratio Long term Debt / (share capital+free reserves)	1:1 1.1 upto 1.5:1 1.6 upto 2.0:1 2.0 & above	5 4 3 2	5	
3	Quick Ratio (Current Assets-Inventories) /Current Liabilities	1:1 1:1 upto 1.5 1:1.5 upto 1.75 1:1.75 upto 2.5 1:>2.5	5 4 3 2 0	5	
4	Growth in Sales over previous year % Average of three years to be worked out	More than 35% 20-35% 10-20% 5-10% >0 & < 5% <0 (negative)	5 4 3 2 1 0	5	
5	PROFIT BEFORE TAX Growth over previous year	More than 20% 10-20% 5-10% >0 & < 5% 0 or below	5 4 3 2 0	5	
6	Whether the bidder has been referred to BIFR/NCLT/any other similar Govt. Agency	Yes No	-5 0	0	
7	Whether the bidder is a potentially sick company	Yes No	-3 0	0	
TOTAL SCORE				25	

a) The bidder has to submit financial accounts (audited, if applicable), for last four years (or from the date of incorporation whichever is less) as on tender due date to review the above data. In case the incorporation of vendor is less than 4 years, the evaluation of Sl N. 1 ,4 and 5 of above will be done based on available information.

b) Net worth means the sum total of the paid up share capital and Free Reserves. Free reserve means all reserves credited out of the profits and share premium account but *does not include reserves credited out of the revaluation of the assets, write back of depreciation provision and amalgamation* . Further any debit balance of Profit and Loss account and miscellaneous expenses to the extent not adjusted or written off, if any, shall be reduced from reserves and surplus.

c) Other Income shall not be considered for arriving at Annual Turnover/Sales.

FINANCIAL PQR**PROJECT**

3X660 MW NORTH KARANPURA STPP STG-I

PACKAGE

CABLE TRAYS & ACC.

B) The bidder also needs to qualify the following criteria:

Average annual financial turnover during the last 3 years, ending 31st
March of the previous financial year, should not be less than Rs.2,48,04,000.00
Rupees Two Crore Forty Eight Lakh(s) Four Thousand Only

NOTES:

1.The Part A of financial pre-qualification of the foreign bidder (other than Indian Bidders) may also be evaluated on the basis of the report from a reputed third party business rating agency like Dun & Bradstreet, Credit reform etc. The foreign bidder is to submit the report from reputed third party.

2.The bidders, who are already registered with BHEL PEM, without any financial limit, need not submit Financial PQR. In case of limit, the registered bidder may submit the documents required for review of limit alone, if the bidder wants re-assessment of the limit. If the bidder gets registered in PEM before Part 2 opening of this tender, then the bidder shall be considered as qualifying FINANCIAL PQR for this tender based on registration in PEM.

3.For evaluation of foreign bidder, exchange rate (TT selling rate of SBI) as on scheduled date of tender opening (Part-I bid in case of two part bid) shall be considered.

BHEL PEM-ELECTRICAL

PRE-QUALIFYING REQUIREMENTS FOR CABLE TRAYS & ACCESSORIES DOC. NO. PE-PQ-999-507-E001, REV. 0

ITEMS : Cable trays & accessories

SCOPE:

Supply : YES; Erection & Commissioning : NO;

A) GENERAL CRITERIA FOR EVALUATION

1. Vendor should have in-house design, fabrication & manufacturing facility.
2. Capability of manufacturing cable trays & accessories for about 40km per month.
- 3a. Vendor has his own galvanization plant.
OR
- 3b. Vendor should get galvanization of cable trays & accessories done from any of BHEL approved galvanizers
- 4a. Manufactured & supplied at least 30 km of cable trays & accessories in single order to 2 different end users.
OR
- 4b. Repeat order received from 2 different end users for cable trays & accessories during last 5 years provided the gap between award of two PO's is minimum 3 years.
OR
- 4c. 1 no. supply experience (as per sl. no. 4a) and 1 no. repeat order (as per sl. no. 4b).
OR
- 4d. Successful execution of a major order (i.e. supply of at least 30 km of cable trays in single order) for NTPC EOC, Noida/ EIL/ NPCIL.

Notes :

- i. Vendor(s) not registered with BHEL-PEM Noida for 'Cable trays & accessories' shall submit relevant documents in support of above mentioned General Criteria.
- ii. For registration of additional works by a vendor already registered with BHEL-PEM Noida for 'Cable trays & accessories', vendor shall submit relevant documents in support of sl. no. 1, 2 & 3 of the above mentioned General Criteria for the proposed additional works.

Atank
31/03/14

Arindam
31/03/14

Arjun
31/3/14

Arjun
31/3/14

M/Arjun
31.3.14

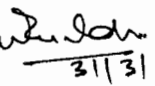
BHEL PEM-ELECTRICAL

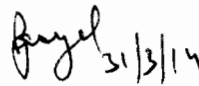
PRE-QUALIFYING REQUIREMENTS FOR CABLE TRAYS & ACCESSORIES DOC. NO. PE-PQ-999-507-E001, REV. 0

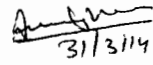
B) PROJECT SPECIFIC CRITERIA AGAINST ENQUIRY

1. Bidder(s) already registered with BHEL-PEM Noida for 'Cable trays & accessories' need not submit credentials for General Criteria indicated above.
2. After satisfactory fulfilment of all the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of the tender.
3. Consideration of offer will be subject to customer's approval of bidder (if applicable).
4. Any other project specific requirement shall be as per Annexure-I and bidder shall submit relevant supporting documents.


AK Rawat
[Technical Convenor]


SK Gurumukhi
[SH-E02]


Rajnish Goyal
[SH-E03]


Anuj Kumar
[SH-E01]


Meena Kesri
[DH-Electrical]

BHEL PEM-ELECTRICAL

**PRE-QUALIFYING REQUIREMENTS FOR CABLE TRAYS & ACCESSORIES
DOC. NO. PE-PQ-999-507-E001, REV. 0**

ANNEXURE – I

PROJECT SPECIFIC CRITERIA AGAINST ENQUIRY

- NIL -

[Section Head]

[DH-Electrical]



MAIN CONTRACTOR'S EVALUATION REPORT
(For Proposed Sub-Supplier)

1. MAIN CONTRACTOR : M/S.....

2. PACKAGE & PROJECT NAME: -----

3. BRIEF SPEC. OF EQUIPMENT / ITEM / :.....
PROCESS WITH MODEL / TYPE/ RATING /
CAPACITY/ SIZE/ TONNAGE ETC. (AS
APPLICABLE)

4. PROPOSED SUB-SUPPLIER'S : -----
NAME & WORKS ADDRESS

5. BASIS OF RECOMMENDATIONS:

a) Main contractor's own supply experience

**REFERENCE LIST (EXPERIENCE FOR THE PARTICULAR TYPE OF EQUIPMENT / ITEM)
OF MAIN CONTRACTOR:**

CUSTOMER NAME, PROJECT NAME	TYPE / RATING / MODEL/ CAPACITY/ SIZE / TONNAGE ETC (AS APPLICABLE)	SUPPLIED QUANTITY	DATE OF SUPPLY	NO. OF YEARS IN OPERATION/ DATE OF COMMISSIONING

b) In absence of own supply experience:

**ENCLOSE MAIN CONTRACTOR'S ASSESSMENT REPORT AS PER THEIR VENDOR
APPROVAL SYSTEM**

NAME: _____ ..DESIG.: _____ SIGN.: _____ Date: _____

List of Encl.: (Pl. Tick)

a. User Certificate

b. Self Assessment Report



SUB-SUPPLIER QUESTIONNAIRE
(To be filled in by the Proposed Sub Supplier)

Name of Equipment / Item / Process with Model/ Type/ Rating / Capacity/ Size/ Tonnage etc. (As applicable):

1. **Name of Proposed Sub-Supplier:** _____

Website: _____

2. **Address of Regd. Office:**

Details of contact person:

Name _____

Mobile no. _____

Desig. _____

E-mail:

3. **Address of Works where Item is being manufactured**

Details of contact person:

Name _____

Mobile no. _____

Desig. _____

E-mail:

Weekly off day

4. **Branch/ Liaison office in Delhi**

Details of contact person:

Name _____

Mobile no. _____

Desig. _____

E-mail:

5. **Details of Proposed Works:**

a. Year of Establishment of present works : _____

b. Year of Commencement of : _____



SUB-SUPPLIER QUESTIONNAIRE
(To be filled in by the Proposed Sub Supplier)

Manufacturing at the above works

c. Details of change in works address in past, if any : _____

d.. Total Covered Area : _____

e. Details of covered area like no. of sheds, : _____
Area of each shed etc.

f. Electric power- Connected load: _____

Electric power- Stand by load & system: _____

6. **Annual Turnover & Profit in past three years** : _____

: _____

7. **Do you have in-house Department for**

a) Design Yes/No

b) Research & Development Yes/No

c) Quality control/Inspection Yes/No

d) After Sales Service Yes/No

8. **Shift works per day** One/Two/Three

9. **Present Manpower Status:**

Division Status	Graduate		Diploma	Skilled	Un-Skilled	Remarks
	Technical	Non-Technical				
Design						
Production						
Quality Control/ Inspection						
After Sales Service						

a. Enclose organization chart of the proposed works. (Y/N) _____

b Enclose Organization chart of QA / QC Deptt. (Y/N) _____

c. Enclose List of Qualified Welders with process etc. (Y/N) _____



SUB-SUPPLIER QUESTIONNAIRE
(To be filled in by the Proposed Sub Supplier)

d. Enclose List of Qualified NDT personnel with area of specialization (Y/N) _____

10. Trade Name of Product (if any) : _____

11. Brief details of items manufactured :

Sl. No.	Item & Material (Type/Size/Rating/Model/ Tonnage , as applicable)	Installed Capacity	Annual Production Capacity	Annual Production for last Three years		
				I	II	III

12. Details of foreign Collaboration, if any:

Sl. No.	Product	Name & Address of Collaborator	Collaboration		
			Scope	Year	Valid upto

13. Furnish Type Test report for the proposed product (if applicable). _____

14. Approval / Certification by National / International standards / accredited agency applicable for the proposed product (if applicable). _____

15. Furnish statutory/mandatory certification for the proposed product (if applicable). _____

16. Furnish supply Experience list of the proposed product. _____
List shall include Item description, (Type/Size/Rating/Model/Tonnage, as applicable), Customer name, Quantity, Year of Supply, and Year of commissioning.

17. Enclose End User's operational feedback certificate for the proposed product. _____

18. Enclose list of equipment & machinery specific to the proposed product.
This should include name of equipment, capacity & nos. etc.: _____



SUB-SUPPLIER QUESTIONNAIRE
(To be filled in by the Proposed Sub Supplier)

19. Enclose Process Flow Diagram indicating in-house & outsourced process. _____

20 General manufacturing facilities available:

Sl. No.	Description of machine	Inhouse		Outsourced	
		Capacity	No.	Capacity	No.
a)	Material Handling Mobile Crane Fork Lift Over Head Cranes				
b)	Metal Cutting & Bending				
c)	Casting				
d)	Forging				
e)	Fabrication				
f)	Welding				
g)	Machining				
h)	Heat Treatment				
i)	Surface & Cleaning Sand Blasting Shot Blasting Pickling				
j)	Painting				
k)	Metal Coating				
l)	Packing				
m)	Other, if any				



SUB-SUPPLIER QUESTIONNAIRE
(To be filled in by the Proposed Sub Supplier)

21. **Enclose Testing & Inspection facilities specific to the proposed product:**

- a. In-house _____
- b. Outsourced _____

22. **Storage of finished goods (covered / open).** _____

23 **Enclose list of the source / make with location of major raw material, bought out items and out sourced process** _____

24. **Quality management**

24.1 General

24.1.1. Work Instruction for different processes available. (Y/N).If yes, furnish list.

24.1.2. Evaluation system for raw material/bought out item's supplier is available. (Y/N)

24.1.3. Records generated during inspection maintained & available for review? (Y/N)

24.1.4 Statistical quality control techniques used? (Y/N) if yes please furnish details.

24.1.5 ISO certificate for the works available ? (Y/N) if yes, enclose copy of the certificate _____

24,2 Corrective action

24.2.1 Specifically confirm whether System for identifying & disposition of Non Conformity in the process / product is available. (Y/N) _____

24.2.2 Specifically confirm whether System for Customer complains & their satisfactory disposal is available. (Y/N) _____

24.3. Documentation Control

24.2.1 Procedure available for documentation control (Y/N).

24.3. Control of Inspection, measuring & testing equipments.

24.3.1 Procedure for calibration of testing & measuring instrument available. (Y/N).

25. Any Special Information: _____



SUB-SUPPLIER QUESTIONNAIRE
(To be filled in by the Proposed Sub Supplier)

26. I CERTIFY THAT THE INFORMATION SUPPLIED HEREIN (INCLUDING ALL PAGES ATTACHED) IS CORRECT TO THE BEST OF MY KNOWLEDGE.

SEAL _____
M/S. _____
PLACE _____
DATE _____

SIGNATURE _____
NAME _____
DESIGNATION _____
MOBILE NO _____
EMAIL _____

LIST OF ENCLOSURE:

Certification by Main Supplier: Above information have been verified and found in order / minor changes which have been marked and initialed on this form itself / observed the following discrepancies.

Name : _____ Designation : _____ Signature : _____ Date : _____

NOTE :

- 1. COLUMN SHALL NOT BE LEFT UNFILLED .IN CASE OF NOT APPLICABLE / NOT AVAILABLE, THE SAME SHALL BE INDICATED IN THE PROVIDED SPACE.**
- 2. IN CASE PROVIDED SPACE IS NOT ADEQUATE, INFORMATION SHALL BE PROVIDED AS AN ATTACHMENT.**
- 3. PRODUCT CATALOGUE FOR THE PROPOSED EQUIPMENT ITEM/PROCESS, IF AVAILABLE, SHALL BE ENCLOSED**

PRICE SCHEDULE FOR CABLE TRAYS & ACCESSORIES

3 X660 MW North Karanpura STPP

S. No.	ITEM CODE	ITEM DESCRIPTION	UNIT	TOTAL QUANTITY	LOT-1 QTY.	Unit FOB Price (Indicate currency)	Total Ex-Works Price (Indicate currency)
1	2	3	4	5	6	7	8=5*7
1.0		HOT DIP GALVANISED LADDER TYPE CABLE TRAY COMPLETE WITH COUPLER PLATES, FASTENERS, CLAMPS AND FIXING HARDWARES ETC.					
a)	507-21101-A	CABLE TRAY 2 MM THICK- LADDER TYPE 150W	MTR	4500	3150		
b)	507-21102-A	CABLE TRAY 2 MM THICK- LADDER TYPE 300W	MTR	31000	21700		
c)	507-21104-A	CABLE TRAY 2 MM THICK- LADDER TYPE 600W	MTR	82500	57750		
2.0		HOT DIP GALVANISED PERFORATED TYPE CABLE TRAY COMPLETE WITH COUPLER PLATES, FASTENERS, CLAMPS AND FIXING HARDWARES ETC.					
a)	507-21109-A	CABLE TRAY 2 MM THICK- PERFORATED TYPE 150W	MTR	2000	1400		
b)	507-21110-A	CABLE TRAY 2 MM THICK- PERFORATED TYPE 300W	MTR	4500	3150		
c)	507-21112-A	CABLE TRAY 2 MM THICK- PERFORATED TYPE 600W	MTR	27000	18900		
3.0		CABLE TROUGHS					
a)	507-21199-A	CABLE TROUGH 2 MM THICK 50MM W	MTR	500	350		
b)	507-21200-A	CABLE TROUGH 2 MM THICK 75MM W	MTR	500	350		
4.1		HOT DIP GALVANISED CABLE TRAY ACCESSORIES LADDER TYPE HORIZONTAL 90 DEG. BEND-600mm RADIUS		a			
a)	507-21117-A	LAD HOR 90DEG BEND 2 MM THICK 600 RAD 300W	NOS	120	84		
b)	507-21119-A	LAD HOR 90DEG BEND 2 MM THICK 600 RAD 600W	NOS	650	455		
4.2		LADDER TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (INSIDE)					
a)	507-21123-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 300W	NOS	85	60		
b)	507-21125-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 600W	NOS	185	130		
4.3		LADDER TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (OUTSIDE)					
a)	507-21129-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 300W	NOS	115	81		
b)	507-21131-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 600W	NOS	270	189		
4.4		LADDER TYPE TEES-600mm RADIUS					
a)	507-21135-A	LAD TEES 600MM RADIUS 2 MM THICK 300W	NOS	100	70		
b)	507-21137-A	LAD TEES 600MM RADIUS 2 MM THICK 600W	NOS	1150	805		
4.5		LADDER TYPE CROSS-600mm RADIUS					
a)	507-21141-A	LAD CROSS 600 RAD 2 MM THICK 300W	NOS	10	7		
b)	507-21143-A	LAD CROSS 600 RAD 2 MM THICK 600W	NOS	70	49		
4.6		LADDER TYPE REDUCERS					
a)	507-21148-A	LAD REDUCER (50% LHS/RHS) 2 MM THICK 600-300W	NOS	45	22		
4.7		PERFORATED TYPE HORIZONTAL 90 DEG. BEND-600mm RADIUS					
a)	507-21153-A	PER HOR 90DEG BEND 2 MM THICK 600 RAD 300W	NOS	70	49		
b)	507-21155-A	PER HOR 90DEG BEND 2 MM THICK 600 RAD 600W	NOS	510	357		

4.8		PERFORATED TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (INSIDE)					
a)	507-21159-A	PER VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 300W	NOS	10	7		
b)	507-21161-A	PER VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 600W	NOS	45	32		
4.9		PERFORATED TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (OUTSIDE)					
a)	507-21165-A	PER VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 300W	NOS	120	84		
b)	507-21167-A	PER VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 600W	NOS	75	53		
4.10		PERFORATED TYPE TEES-600mm RADIUS					
a)	507-21171-A	PER TEES 600MM RADIUS 2 MM THICK 300W	NOS	32	22		
b)	507-21173-A	PER TEES 600MM RADIUS 2 MM THICK 600W	NOS	620	434		
4.11		PERFORATED TYPE CROSS-600mm RADIUS					
a)	507-21177-A	PER CROSS 600 RAD 2 MM THICK 300W	NOS	10	7		
b)	507-21179-A	PER CROSS 600 RAD 2 MM THICK 600W	NOS	15	11		
4.12		PERFORATED TYPE REDUCERS					
a)	507-21184-A	PER REDUCER (50% LHS/RHS) 2MM THICK 600-300W	NOS	35	25		
5.0		HPT DIP GALVANISED CABLE TRAY COVER COMPLETE WITH FORMED CHANNEL, PIPE, GI FLAT, BOLTS WITH NUTS & WASHERS & FIXING HARDWARES ETC. (1.6mm THICK GALVANISED MS SHEET)					
a)	507-21189-A	COVER 1.6MM THK-NON PERFORATED GALV MS 150W	MTR	500	0		
b)	507-21190-A	COVER 1.6MM THK-NON PERFORATED GALV MS 300W	MTR	500	0		
c)	507-21192-A	COVER 1.6MM THK-NON PERFORATED GALV MS 600W	MTS	500	0		
6.0		TOTAL VALUE (1.0 to 5.0)					

NOTES:

- 1 The quantities will be released for manufacture in more than one lot. Lot-I quantities, which are indicated above, shall be released for manufacture along with LOI.
- 2 Manufacturing of Lot-I quantities shall be done after the approval of technical and quality documentation and supply of same shall be completed within four months of date of approval of documents.
- 3 Subsequent lots shall be cleared for manufacture based on progress of engineering and site requirements. A lead-time of three months shall be given for completion of supply of each lot from the date of clearance of the quantities.
- 4 The total quantity variation shall be limited from -30% to +30 % of the total contract value derived on the basis of the Order Quantities.
- 5 Raw materials:- Steel shall be procured from SAIL / TISCO / ISPATIND/JINDAL/ ESSAR/BHUSHAN STEEL/RINL or authorised re-rollers of SAIL.
- 6 The number of coupler plates, washers, bolts & nuts shall be as per Data Sheet- A attached with the specification.

PRICE SCHEDULE FOR CABLE TRAYS & ACCESSORIES

3 X660 MW North Karanpura STPP

S. No.	ITEM CODE	ITEM DESCRIPTION	UNIT	TOTAL QUANTITY	LOT-1 QTY.	Unit Ex-Works Price (Rs.)	Total Ex-Works Price (Rs.)	ED Nil against PAC	(CST @__% against form 'C' & 'E1/E2') or VAT@__% (Rs.)	Freight including Service Tax in terms of percentage (%) of Ex-Works Price (Rs.)	TOTAL F.O.R. Site Price (Rs.)
1	2	3	4	5	6	7	8=5*7	9	10	11	12=8+9+10+11
1.0		HOT DIP GALVANISED LADDER TYPE CABLE TRAY COMPLETE WITH COUPLER PLATES, FASTENERS, CLAMPS AND FIXING HARDWARES ETC.									
a)	507-21101-A	CABLE TRAY 2 MM THICK- LADDER TYPE 150W	MTR	4500	3150						
b)	507-21102-A	CABLE TRAY 2 MM THICK- LADDER TYPE 300W	MTR	31000	21700						
c)	507-21104-A	CABLE TRAY 2 MM THICK- LADDER TYPE 600W	MTR	82500	57750						
2.0		HOT DIP GALVANISED PERFORATED TYPE CABLE TRAY COMPLETE WITH COUPLER PLATES, FASTENERS, CLAMPS AND FIXING HARDWARES ETC.									
a)	507-21109-A	CABLE TRAY 2 MM THICK- PERFORATED TYPE 150W	MTR	2000	1400						
b)	507-21110-A	CABLE TRAY 2 MM THICK- PERFORATED TYPE 300W	MTR	4500	3150						
c)	507-21112-A	CABLE TRAY 2 MM THICK- PERFORATED TYPE 600W	MTR	27000	18900						
3.0		CABLE TROUGHS									
a)	507-21199-A	CABLE TROUGH 2 MM THICK 50MM W	MTR	500	350						
b)	507-21200-A	CABLE TROUGH 2 MM THICK 75MM W	MTR	500	350						
4.1		HOT DIP GALVANISED CABLE TRAY ACCESSORIES LADDER TYPE HORIZONTAL 90 DEG. BEND-600mm RADIUS		a							
a)	507-21117-A	LAD HOR 90DEG BEND 2 MM THICK 600 RAD 300W	NOS	120	84						
b)	507-21119-A	LAD HOR 90DEG BEND 2 MM THICK 600 RAD 600W	NOS	650	455						
4.2		LADDER TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (INSIDE)									
a)	507-21123-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 300W	NOS	85	60						
b)	507-21125-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 600W	NOS	185	130						
4.3		LADDER TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (OUTSIDE)									
a)	507-21129-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 300W	NOS	115	81						
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4.4		LADDER TYPE TEES-600mm RADIUS									
a)	507-21135-A	LAD TEES 600MM RADIUS 2 MM THICK 300W	NOS	100	70						
b)	507-21137-A	LAD TEES 600MM RADIUS 2 MM THICK 600W	NOS	1150	805						
4.5		LADDER TYPE CROSS-600mm RADIUS									
a)	507-21141-A	LAD CROSS 600 RAD 2 MM THICK 300W	NOS	10	7						
b)	507-21143-A	LAD CROSS 600 RAD 2 MM THICK 600W	NOS	70	49						
4.6		LADDER TYPE REDUCERS									
a)	507-21148-A	LAD REDUCER (50% LHS/RHS) 2 MM THICK 600-300W	NOS	45	22						
4.7		PERFORATED TYPE HORIZONTAL 90 DEG. BEND-600mm RADIUS									
a)	507-21153-A	PER HOR 90DEG BEND 2 MM THICK 600 RAD 300W	NOS	70	49						
b)	507-21155-A	PER HOR 90DEG BEND 2 MM THICK 600 RAD 600W	NOS	510	357						

4.8		PERFORATED TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (INSIDE)								
a)	507-21159-A	PER VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 300W	NOS	10	7					
b)	507-21161-A	PER VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 600W	NOS	45	32					
4.9		PERFORATED TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (OUTSIDE)								
a)	507-21165-A	PER VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 300W	NOS	120	84					
b)	507-21167-A	PER VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 600W	NOS	75	53					
4.10		PERFORATED TYPE TEES-600mm RADIUS								
a)	507-21171-A	PER TEES 600MM RADIUS 2 MM THICK 300W	NOS	32	22					
b)	507-21173-A	PER TEES 600MM RADIUS 2 MM THICK 600W	NOS	620	434					
4.11		PERFORATED TYPE CROSS-600mm RADIUS								
a)	507-21177-A	PER CROSS 600 RAD 2 MM THICK 300W	NOS	10	7					
b)	507-21179-A	PER CROSS 600 RAD 2 MM THICK 600W	NOS	15	11					
4.12		PERFORATED TYPE REDUCERS								
a)	507-21184-A	PER REDUCER (50% LHS/RHS) 2MM THICK 600-300W	NOS	35	25					
5.0		HPT DIP GALVANISED CABLE TRAY COVER COMPLETE WITH FORMED CHANNEL, PIPE, GI FLAT, BOLTS WITH NUTS & WASHERS & FIXING HARDWARES ETC. (1.6mm THICK GALVANISED MS SHEET)								
a)	507-21189-A	COVER 1.6MM THK-NON PERFORATED GALV MS 150W	MTR	500	0					
b)	507-21190-A	COVER 1.6MM THK-NON PERFORATED GALV MS 300W	MTR	500	0					
c)	507-21192-A	COVER 1.6MM THK-NON PERFORATED GALV MS 600W	MTS	500	0					
6.0		TOTAL VALUE (1.0 to 5.0)								

NOTES:

- 1 The quantities will be released for manufacture in more than one lot. Lot-I quantities, which are indicated above, shall be released for manufacture along with LOI.
- 2 Manufacturing of Lot-I quantities shall be done after the approval of technical and quality documentation and supply of same shall be completed within four months of date of approval of documents.
- 3 Subsequent lots shall be cleared for manufacture based on progress of engineering and site requirements. A lead-time of three months shall be given for completion of supply of each lot from the date of clearance of the quantities.
- 4 The total quantity variation shall be limited from -30% to +30 % of the total contract value derived on the basis of the Order Quantities.
- 5 Raw materials:- Steel shall be procured from SAIL / TISCO / ISPATIND/JINDAL/ ESSAR/BHUSHAN STEEL/RINL or authorised re-rollers of SAIL.
- 6 The number of coupler plates, washers, bolts & nuts shall be as per Data Sheet- A attached with the specification.

	Annexure-III GUIDELINES TO FOREIGN SUPPLIERS FOR FILLING UP SUPPLIER REGISTRATION FORM	Document No.	AA:MM:SR:01
		Revision No.	01 amdt.01
		Page No.	I of II

1. Registration Form no. SRF(F)01 may be obtained from BHEL website www.bhel.com.
2. Any clarification with respect to procedure for registration may be obtained from the Supplier Development Cell of respective BHEL unit.
3. All columns are to be filled up properly in the space provided for. Wherever it is not applicable, mention it as "Not Applicable". The form is to be signed by the authorised signatory and submitted in original.
4. Please attach separate sheet if the space provided is insufficient. For any other information also, separate sheet may be attached.
5. Any information / clarification required by BHEL during processing of registration must be given expeditiously.
6. Please ensure that all required enclosures are attached with the filled up Supplier Registration Form and list of enclosures is given as required.
7. Please fill up the check- list given on next page and send along with the Supplier Registration Forms to BHEL.
8. Please note that if you are registered and participate in Tender process and qualify to get order from BHEL, your performance based on Quality of your product, delivery performance and service rendered will be evaluated inline with Chapter VI.

	Annexure-III CHECK-LIST FOR FOREIGN SUPPLIERS REGISTRATION FORM	Document No.	AA:MM:SR:01
		Revision No.	01 amdt.01
		Page No.	II of II

S.N.	Check-Point	Yes/No
1.0	Information against all points in the Supplier Registration Form has been given.	
2.0	Authorisation letter has been enclosed (in case of Indian representative)	
3.0	Banker's certificate has been enclosed	
4.0	Are you an ISO: 9001 accredited supplier?	
4.1	If yes, have you enclosed copy of ISO 9001 accreditation certificate & "Table of Contents" of your Quality Manual?	
4.2	If no, have you enclosed written down procedure / manual of Quality Management System?	
5.0	Have you enclosed experience list/ performance certificate (as per sl. 3.0 of the form SRF(F) 01)	
6.0	List of enclosures has been furnished (as per Sl 5.0 of the form SRF(F) 01)	
7.0	All the parts of the form & enclosures have been signed by Authorised Signatory.	
8.0	D&B Report/ Credit Reform report etc. has been attached.	

Date :

Signature & seal

(Authorised Signatory)

Note : This check list is to be attached with the filled up Supplier Registration Form.

BHARAT HEAVY ELECTRICALS LIMITED , INDIA

ANNEXURE-III

FORM NO. SRF(F)01 : (FOREIGN SUPPLIER)

Page 2 of 2 amdt.01

- 1.8 YEAR OF COMMENCEMENT OF BUSINESS :
- 1.9 PRODUCTION CAPACITY PER ANNUM (details of major manufacturing/ testing facilities to be given) :
- 1.10 PARTICULARS OF PRODUCTS INCLUDING SPECIFICATION AND RANGE OFFERED FOR REGISTRATION : (ATTACH BROCHURES AND CATALOGUES)
- 1.11 NAME (S) OF BANKERS :
- 1.12 BANKER'S CERTIFICATE AS TO CREDITWORTHINESS OF THE CLIENT (Enclose Certificate) :
- 1.13 PORT OF LOADING :
- 1.14 NEAREST AIRPORT :
- 1.15 Report from D&B/ Credit Reform etc. (As per Cl. 7.1 of Chapter V) (**MANDATORY**):

2.0 FINANCIAL INFORMATION : (FOR LAST 3 YEARS)

PARAMETER	YEAR -1	YEAR -2	YEAR -3
ANNUAL TURN OVER			
PROFIT AFTER TAX			

(COPY OF AUDITED ANNUAL ACCOUNTS FOR LAST 3 YEARS TO BE ENCLOSED)

3.0 QUALITY MANAGEMENT SYSTEM :

- 3.1 IS THE COMPANY ISO:9001 CERTIFIED : YES / NO
- 3.1.1 IF YES, ENCLOSE COPY OF CERTIFICATE & TABLE OF CONTENTS OF QUALITY MANUAL.
- 3.1.2 IF NO, ENCLOSE QUALITY MANANGEMENT SYSTEM OR WRITTEN DOWN PROCEDURE

4.0 EXPERIENCE LIST/ PERFORMANCE CERTIFICATE FOR OFFERED / SIMILAR ITEMS :

(ATTACH LIST OF PRESENT CUSTOMERS WITH NAME & ADDRESS FOR OFFERED / SIMILAR TYPE & SIZE OF ITEM / EQUIPMENT FOR WHICH REGISTRATION HAS BEEN SOUGHT AND WITH WHOM YOU HAVE CONTINUOUS BUSINESS SINCE LAST THREE YEARS)

5.0 ANY OTHER INFORMATION :

6.0 LIST OF ENCLOSURES :

(BROCHURES, CATALOGUES, TECHNICAL LITERATURE ETC.)

Signature & Seal

AUTHORISED SIGNATORY

E – Mail


NAME :

TELEPHONE : (Landline):

DESIGNATION :

Mobile :

DATE :

	Annexure-II GUIDELINES TO INDIAN SUPPLIERS FOR FILLING-UP SUPPLIER REGISTRATION FORM	Document No.	AA:MM:SR:01
		Revision No.	01amdt.01
		Page No.	I of II

- Registration Form may be obtained from BHEL website www.bhel.com.
- Any clarification with respect to procedure for registration may be obtained from the Supplier Development Cell of respective BHEL unit.


- The Supplier Registration Form has four parts:

Part A	Organisational Information	Form no. SRF(I)01 – page 1 to 10
Part B	Quality System	Form no. SRF(I)01 - page 11 to 12
Part C	Technical Competence	Form no. SRF(I)01 page 13 (if sent by BHEL)
Part D	Score Sheet (to be filled by BHEL)	Form no. SRF(I)01 page 14 to 17

The set of formats to be filled by different category of suppliers is as follows:

Sl.No	Supplier Category	Formats
1.	Indian Suppliers (manufacturers)	- Organisational Information - Quality System - Technical Competence
2.	Indian Stockist/ Trader/ Distributor/ Dealer/ Authorised Agent/ Channel partner/ Indian Sales office or Subsidiary of registered foreign principal	- Organisational Information SRF(I)01- Part A (page 1 to 10 except Sl. No. 5.1, 5.2, 6.6, 6.7, 7 & 8)

- All columns are to be filled up properly in the space provided for. Wherever it is not applicable, please mention "Not Applicable". The form is to be signed by the authorised signatory.
- A separate sheet may be attached if the space provided is insufficient or additional information is to be given. Please put proper identification tag on the separately attached sheet.
- Any information / clarification required by BHEL during evaluation must be given expeditiously.
- Please ensure that all required enclosures are attached with the filled up Supplier Registration Form and list of enclosures is given as required.
- Incomplete forms will be rejected.
- Please note that if you are registered and participate in Tender process and qualify to get order from BHEL, your performance based on Quality of your product, delivery performance and service rendered will be evaluated inline with Chapter VI.
- Please fill up the check- list given below and send along with the Supplier Registration Forms to BHEL.

	Annexure-II Check List for Indian Supplier Registration Form	Document No.	AA:MM:SR:01
		Revision No.	01amdt.01
		Page No.	II of II

Sl.No.	Check-Point	Yes/No
1.	Information against all points under “Organizational Information” (Part-A) has been given.	
2.	All enclosures and supporting documents have been enclosed.	
3.	Summary list of enclosures has been furnished as per S.N.10 of Organisational Information form no. SRF (I) 01 & S.N 12 of Quality system form no. SRF (I) 01.	
4.	Are you an ISO 9001 accredited supplier?	
5.	If yes, have you enclosed "Table of Contents" of your Quality Manual and copy of ISO 9001 accreditation certificate?	
6.	Have you filled up Quality System format given in Part B?	
7.	Technical requirements, specifications, drawings, standards have been received from BHEL before filling up Technical Competence, Part C.	
8.	All the parts of the form & enclosures have been signed by Authorised Signatory.	
9.	Have you attached EFT details. (Certified by the bank)	

Date :

Signature & seal

(Authorised Signatory)

Note: This check list is to be attached with the filled up Supplier Registration Form.

**BHARAT HEAVY ELECTRICALS LIMITED
SUPPLIER REGISTRATION FORM**

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II
Page 1 of 17 amdt.01

PART- A : ORGANISATIONAL SOUNDNESS

ALL COLUMNS SHOULD BE PROPERLY FILLED IN THE SPACE PROVIDED FOR, WHEREVER IT IS NOT APPLICABLE, PLEASE WRITE "NOT APPLICABLE". INCOMPLETE OR INCORRECT FORMS MAY NOT BE CONSIDERED. **PLEASE ATTACH SEPARATE SHEET, IF SPACE AVAILABLE IS INADEQUATE. INFORMATION WITH * MARKS IS SCOREABLE.**

ALL THE PAGES OF THE FORM ARE TO BE SIGNED ALONGWITH SEAL BY THE AUTHORISED SIGNATORY

ORGANISATIONAL INFORMATION			
NAME AND CORRESPONDENCE ADDRESS OF THE SUPPLIER SEEKING REGISTRATION :-			
1.0 PRODUCTS / SYSTEMS / SERVICES FOR WHICH REGISTRATION IS APPLIED FOR :			
SL. NO.	DESCRIPTION	SIZE & RANGE	MFG. STD/ IS / DIN /BS ETC.
SUPPLIER'S AUTHORISED SIGNATORY		BHEL CERTIFIED ASSESSOR	

**BHARAT HEAVY ELECTRICALS LIMITED
SUPPLIER REGISTRATION FORM**

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II

Page 2 of 17

ORGANISATIONAL INFORMATION

2.0 GENERAL INFORMATION :

2.1 NAME OF THE WORKS/DIVISION :

ADDRESS :

E - Mail :

TELEPHONE : Landline

Mobile

FAX :

2.2 NAME OF CHIEF EXECUTIVE /
PROPRIETOR / PARTNER & ADDRESS :

2.3 DETAILS OF AUTHORISED SIGNATORY FOR SEEKING CLARIFICATION :

NAME :

DESIGNATION :

E - Mail :

TELEPHONE : Landline

Mobile

FAX :

SUPPLIER'S AUTHORISED SIGNATORY

BHEL CERTIFIED ASSESSOR

**BHARAT HEAVY ELECTRICALS LIMITED
SUPPLIER REGISTRATION FORM**

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II
Page 3 of 17 amdt.01

ORGANISATIONAL INFORMATION

3.0 OWNERSHIP INFORMATION : DOCUMENTS TO BE FURNISHED

3.1 GOVT. OF INDIA UNDERTAKING:

OR

STATE GOVT. UNDERTAKING :

OR

LIMITED COMPANY, :

MEMORANDUM AND
ARTICLES OF ASSOCIATION

OR

PRIVATE COMPANY :

MEMORANDUM AND
ARTICLES OF ASSOCIATION

OR

CO-OPERATIVE SOCIETY, :

SOCIETY RULES AND
BYE LAWS

OR

PARTNERSHIP FIRM, :

PARTNERSHIP DEED

OR

PROPRIETORSHIP, :

PROFESSION TAX REGN.
AND MUNICIPAL REGN.

ANY OTHER (SPECIFY) :

3.2 NATURE OF BUSINESS :

(MANUFACTURING UNIT/
ENGG CONSULTANT/ EPC CONTRACTOR)

(AGENTS/ DISTRIBUTORS/STOCKISTS/DEALERS/
TRADERS/ INDIAN SUBSIDIARY/ CHANNEL PARTNER – attach authorization
certificate of principal)

3.3 YEAR OF ESTABLISHMENT :

* 3.4 YEAR OF COMMENCEMENT OF BUSINESS :

SUPPLIER'S AUTHORISED SIGNATORY

BHEL CERTIFIED ASSESSOR

**BHARAT HEAVY ELECTRICALS LIMITED
SUPPLIER REGISTRATION FORM**

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II

Page 4 of 17

ORGANISATIONAL INFORMATION

4.0 REGISTRATION PARTICULARS

(FURNISH DETAILS AND ENCLOSE COPY OF CERTIFICATE FOR THE FOLLOWING)

4.1 PERMANENT ACCOUNT NO :
4.2 CENTRAL SALES TAX REGN NUMBER :
4.3 STATE SALES TAX / TIN NUMBER :
4.4 EXCISE DUTY REGN NUMBER :
4.5 EXCISE CONTROL CODE NUMBER :
4.6 SERVICE TAX REGN NUMBER :
4.7 CATEGORY AS PER MSMED ACT : MICRO/ SMALL/ MEDIUM
REGN NO. :
VALID UPTO :
(Attach Certificate)

5.0 TOTAL ORGANISATIONAL STRENGTH : (ATTACH ORGANISATION CHART)

	GRADUATE	DIPLOMA	SKILLED	NON-SKILLED
ENGINEERING :				
MANUFACTURING :				
QUALITY :				
COMMERCIAL / SERVICE AFTER SALES :				
OTHERS :				
TOTAL :				
* 5.1 POWER BACKUP : (GIVE DETAILS)	YES/ NO			

* 5.2 DOES THE COMPANY SELL ITS PRODUCT DIRECTLY : YES/ NO

SUPPLIER'S AUTHORISED SIGNATORY

BHEL CERTIFIED ASSESSOR

**BHARAT HEAVY ELECTRICALS LIMITED
SUPPLIER REGISTRATION FORM**

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II

Page 5 of 17

ORGANISATIONAL INFORMATION

6.0 OTHER PARTICULARS :

(FURNISH DETAILS AND ENCLOSE DOCUMENTARY EVIDENCE/ COPY OF CERTIFICATE FOR THE FOLLOWING)

* 6.1 IF THE COMPANY IS ALREADY REGISTERED WITH ANY OF BHEL UNITS, GIVE :

6.1.1. BHEL UNIT'S NAME :

6.1.2. SUPPLIER REGN. CODE NO. :

6.1.3. ITEMS FOR WHICH REGISTERED & THEIR SPECIFICATION
(ENCLOSE PROOF OF SUCCESSFUL EXECUTION OF
ONE OR MORE PURCHASE ORDERS) :

* 6.2 IS THE COMPANY APPROVED BY
ASME / NTPC / NPC / EIL / DGS&D / RAILWAYS /
IBR / LLOYDS ETC FOR INTENDED
MATERIAL CATEGORY? : YES / NO
(ENCLOSE DOCUMENTARY EVIDENCE)

* 6.3 IS THE COMPANY ISO 9001 APPROVED? : YES / NO
(ENCLOSE CERTIFICATE & TOC OF QUALITY SYSTEM) :

* 6.4 IS THE COMPANY AN ISO 14000 APPROVED? : YES / NO
(ENCLOSE CERTIFICATE) :

* 6.5 IS THE COMPANY OHSAS - 18000 APPROVED?: YES / NO
(ENCLOSE CERTIFICATE)

* 6.6 TECHNICAL COLLABORATOR :
(FOREIGN OR INDIGENOUS)
(ENCLOSE DOCUMENTARY EVIDENCE)

* 6.7 R&D SET UP

6.8 DIRECTORS / PARTNERS, IF RELATED TO ANY
BHEL EMPLOYEE.
NAME :
STAFE NO. :
DESIGNATION :
Unit & DEPARTMENT :
RELATIONSHIP :

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**BHARAT HEAVY ELECTRICALS LIMITED
SUPPLIER REGISTRATION FORM**

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II

Page 6 of 17

ORGANISATIONAL INFORMATION

6.9 IF ANY EX-BHEL PERSONNEL IS EMPLOYED BY THE COMPANY, MENTION HIS / HER DETAILS OF LAST POSTING.

NAME :
STAFF NO. :
DESIGNATION :
UNIT & DEPARTMENT :
DATE OF LEAVING SERVICE :

6.10 COMPANY'S WEEKLY HOLIDAYS :

WORKS OFFICE

6.11 EXPERIENCE LIST:

(ATTACH LIST OF PRESENT CUSTOMERS WITH NAME & ADDRESS FOR OFFERED / SIMILAR TYPE & SIZE OF ITEM / EQUIPMENT FOR WHICH REGISTRATION HAS BEEN SOUGHT AND WITH WHOM YOU HAVE CONTINUOUS BUSINESS SINCE LAST THREE YEARS . ALSO ATTACH PERFORMANCE CERTIFICATES ISSUED BY ANY TWO CLIENTS FOR SUCCESSFUL EXECUTION OF THE CONTRACTS FOR LAST TWO YEARS- FOR PEM)

*6.12 DETAILS OF PENDING LEGAL ISSUES ON CONTRACTUAL ASPECTS WITH CUSTOMER , IF ANY

6.13 The following information of Bank Account of the Company, duly endorsed by the Bank (required for Electronic Fund Transfer –EFT/RTGS) is to be submitted

1. Name of the Company
2. Name of Bank
3. Name of Bank Branch
4. City/Place
5. Account Number
6. Account type
7. IFSC code of the Bank Branch
8. MICR Code of the Bank Branch
9. Details of other Bankers (for reference purpose only)

NOTE :

(i) Suppliers who have already submitted the above information are requested to submit a copy of the same.

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**BHARAT HEAVY ELECTRICALS LIMITED
SUPPLIER REGISTRATION FORM**

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II

Page 7 of 17

ORGANISATIONAL INFORMATION

7.0 MANUFACTURING FACILITIES:

***7.1 LIST OF MANUFACTURING FACILITIES/EQUIPMENTS (INCLUDING MATERIAL HANDLING FACILITY)**

SL. NO	DESCRIPTION OF MACHINE/EQUIPMENT	QUANTITY	MAKE & YEAR OF INSTALLATION	REMARKS

IN CASE OF SPACE LIMITATION, PLEASE ENCLOSE ANNEXURE / CATALOGUE WITH TAG

*** 7.2 IF IN-HOUSE MFG FACILITIES NOT AVAILABLE, INFORM SOURCE OF MFG. DETAILS ALONGWITH THEIR FACILITIES & EXPERIENCE**

SL. NO	PROCESS OUTSOURCED	NAME OF THE COMPANY	DESCRIPTION OF MACHINE / EQUIPMENT	REMARKS

IN CASE OF SPACE LIMITATION ENCLOSE ANNEXURE / CATALOGUE WITH TAG

*** 7.3 RATIO OF OUTSOURCED COST TO TOTAL PRODUCTION VALUE:**

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**BHARAT HEAVY ELECTRICALS LIMITED
SUPPLIER REGISTRATION FORM**

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II

Page 8 of 17

ORGANISATIONAL INFORMATION

8.0 INSPECTION & TESTING FACILITIES:

*** 8.1 LIST OF INSPECTION & TESTING FACILITIES / EQUIPMENT**

SL. NO	DESCRIPTION OF FACILITY/ EQUIPMENT & CAPACITY	NOS.	MAKE & YEAR OF MANUFACTURING	LAST DATE OF CALIBERATION

IN CASE OF SPACE LIMITATION ENCLOSE ANNEXURE / CATALOGUE WITH TAG

*** 8.2 IF IN-HOUSE TESTING FACILITIES NOT AVAILABLE, INDICATE SOURCE OF TESTING ALONGWITH THEIR FACILITIES & EXPERIENCE**

SL. NO	TEST	SOURCE OF TESTING	DESCRIPTION OF FACILITY/ EQUIPMENT & CAPACITY	APPROVAL OF EQUIPMENT/ PROCESS/PERSONNEL QUALIFICATION

IN CASE OF SPACE LIMITATION ENCLOSE ANNEXURE / CATALOGUE WITH TAG

Note:

In case of outsourcing of major testing such as NDT, Electrical & Mechanical Testing, no marks will be awarded. However, material composition testing by chemical method from recognized laboratory shall not attract negative marking

SUPPLIER'S AUTHORISED SIGNATORY

BHEL CERTIFIED ASSESSOR

BHARAT HEAVY ELECTRICALS LIMITED SUPPLIER REGISTRATION FORM

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II

Page 9 of 17

ORGANISATIONAL INFORMATION					
FINANCIAL INFORMATION FOR THE PREVIOUS FOUR YEARS					
9.0	Parameter	Year 1	Year 2	Year 3	Year 4
		(Years in ascending order, Money value in Rs. Lakhs)			
* 9.1	NET WORTH (Share Capital +Reserves)				
	Growth over previous year (%)	-----			
9.2	LONG TERM DEBT / LOAN				
* 9.3	DEBT EQUITY RATIO				
	Long term Debt (4.2) Net worth (4.1)				
9.4	INVESTMENT IN: Land & Building				
	Plant & Machinery				
	Other Fixed Assets				
9.5*	NET CURRENT ASSETS				
	a) Cash on hand				
	1 b) Account receivable				
	c) Inventories				
	Total				
	CURRENT LIABILITY				
	a) Sundry creditors				
	2 b) Interest accrued but not due				
	c) Other liabilities				
	Total				
* 9.6	* QUICK RATIO				
	3 $\frac{CA - INVENT. \{9.5(1)-9.5(1)c\}}{Current liability \{9.5 (2)\}}$				
* 9.7	SALES				
	Growth over previous year (%)	-----			
* 9.8	PROFIT BEFORE TAX				
* 9.9	Growth over previous year (%)	-----			
* 9.8	Whether the supplier has been referred to BIFR / NCLT / any other Govt agency (If YES , enclose details)				YES / NO
* 9.9	Whether the supplier is a potential sick company.(If YES , enclose details)				YES / NO
<p>NOTE: 1. Copies of annual accounts (Balance Sheet) for the last four years (or from date of incorporation which ever is less) along with audit report are to be submitted. The above details shall be highlighted in the Balance Sheet.</p> <p>2. Status of Tax assessments done under various laws (Income Tax, VAT/Sales Tax, Excise & Service Tax, Custom) and details of disputes pending, if any, with these authorities to be submitted.</p>					
SUPPLIER'S AUTHORISED SIGNATORY			BHEL CERTIFIED ASSESSOR		

BHARAT HEAVY ELECTRICALS LIMITED SUPPLIER REGISTRATION FORM

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II

Page 10 of 17

ORGANISATIONAL INFORMATION

10. LIST OF ENCLOSURES (Tags to be put on enclosures) :

- (i) MEMORANDUM AND ARTICLES OF ASSOCIATION / SOCIETY RULES AND BYE LAWS / PARTNERSHIP DEED/ PROFESSION TAX REGN & MUNICIPAL REGN. : YES / NO
- (ii) Copy of certificate of following:-
- PERMANENT ACCOUNT NO : YES / NO
 - CENTRAL SALES TAX REGN NUMBER : YES / NO
 - STATE SALES TAX / TIN NUMBER : YES / NO
 - EXCISE DUTY REGN NUMBER : YES / NO
 - EXCISE CONTROL CODE NUMBER : YES / NO
 - SERVICE TAX REGN NUMBER : YES / NO
 - REGN NUMBER OF CATEGORY AS PER MSMED ACT : YES / NO
- (iii) ORGANISATION CHART : YES / NO
- (iv) If registered with any other BHEL Unit,
- LETTER OF REGISTRATION WITH BHEL UNIT : YES / NO
 - PROOF OF SUCCESSFUL EXECUTION OF ONE OR MORE PURCHASE ORDERS : YES / NO
- (v) Letter of approval from ASME / NTPC / NPC / EIL / DGS&D / RAILWAYS / IBR / LLOYDS ETC : YES / NO
- (vi) Accreditation certificate for
- ISO: 9001 : YES / NO
 - TOC of Quality System Manual : YES / NO
 - ISO : 14000 : YES / NO
 - OHSAS , ISO 18000 : YES / NO
- (vii) Letter regarding technical collaboration : YES / NO
- (viii) Experience List / Performance certificate : YES / NO
- (ix) Balance Sheet for the last four years along with audit Report : YES / NO
- (x) Principal's authorization in case of dealers/ agents : YES / NO
- (xi) EFT Bank's certificate : YES / NO

I /WE GIVE THE UNDERTAKING THAT BHEL DRAWINGS & SPECIFICATIONs SHALL NOT BE USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL AND/ OR FOR SUPPLY OF ANY MATERIAL, PRODUCT OR SERVICES DIRECTLY OR INDIRECTLY TO ANY OTHER CUSTOMER.

Maximum Marks = 50

Negative Marks = -13

Minimum Qualifying marks = 30

SUPPLIER'S AUTHORISED SIGNATORY

BHEL CERTIFIED ASSESSOR

**BHARAT HEAVY ELECTRICALS LIMITED
SUPPLIER REGISTRATION FORM**

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II

Page 11 of 17

FORM NO. SRF(I) 01

Part B (QUALITY SYSTEM):

Sl. No	PARAMETERS	SYSTEM IN EFFECT (Tick if exists & provide evidences if ticked in written procedure)		RECORDS (Tick if available & submit evidences)	REMARKS
		Written Procedure	Practice		
1*	Incoming Material Control System				Furnish a copy of system and organization.
2*	In process control				Furnish at least one work instruction & record of process control parameter
3*	Manufacturing / Testing Procedure Qualification				Procedure Qualification specification may be submitted
4*	Personnel qualification for 3 above.				Record of Personnel qualification (PQR) to be submitted
5*	Calibration system				Submit list of instrument & their calibration status
6*	System of Identification & Traceability of materials, tools, jigs, fixtures & processed components, etc.				Copy of procedure to be submitted
7*	System of Storage, Preservation , Painting & packing				Copy of procedure to be submitted
8*	System of NCR disposition & corrective preventive action				Two copies of NCR & CAPA
9*	Customer complaints handling system				Submit list of customer complaints & status for the last three years
10*	Safety measures				Submit copy of safety system & Record of accidents for last three years
11	Any other quality initiative				

SUPPLIER'S AUTHORISED SIGNATORY

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**BHARAT HEAVY ELECTRICALS LIMITED
SUPPLIER REGISTRATION FORM**

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II

Page 12 of 17

FORM NO. SRF(I) 01

Part B (QUALITY SYSTEM):

12. LIST OF ENCLOSURES

- (i) Copy of system of control incoming materials and organization chart
- (ii) Copy of at least one process control work instruction
- (iii) Record of process control parameter
- (iv) Copy of at least one Procedure Qualification specification
- (v) Record of Personnel qualification (PQR)
- (vi) List of instrument & their calibration status
- (vii) Copy of procedure for Identification & Traceability of materials, tools, jigs, fixtures & processed components, etc.
- (viii) Copy of procedure for Storage/ preservation/ painting & packing
- (ix) Copies of two NCRs and their CAPA.
- (x) List of customer complaints & status for the last three years
- (xi) Copy of safety system
- (xii) Record of accidents for last three years

Maximum Marks = 25

Minimum Qualifying marks = 15

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BHEL CERTIFIED ASSESSOR

BHARAT HEAVY ELECTRICALS LIMITED SUPPLIER REGISTRATION FORM

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II

Page 13 of 17 amdt.01

FORM NO. SRF(I)01

Part C : TECHNICAL COMPETENCE

Technical competence shall be evaluated in two parts viz. common competence and product/material category specific competence.

(i) COMMON TECHNICAL COMPETENCE (Max Marks: 10)

TECHNICAL COMPETENCE (where design specification is given by BHEL)	MARKING RANGE	SUPPLIER RESPONSE (ALONG WITH SUPPORTING DOCUMENTS)	MARKS BY BHEL
1. Supplier understands the product specification.	(0-3)		
2. Supplier understands the inspection requirements.	(0-2)		
3. Supplier has process capability to achieve the product specification/dimensional requirement.	(0-3)		
4. Supplier has experienced manpower to carry out the job.	(0-2)		
TOTAL MARKS OUT OF POSSIBLE (10) = ---			

OR

TECHNICAL COMPETENCE (where performance specification is given by BHEL)	MARKING RANGE	PROCEDURE		SYSTEM IN EFFECT		RECORDS	
		SUPPLIER RESPONSE (ALONG WITH SUPPORTING DOCUMENTS)	MARKS BY BHEL	SUPPLIER RESPONSE (ALONG WITH SUPPORTING DOCUMENTS)	MARKS BY BHEL	SUPPLIER RESPONSE (ALONG WITH SUPPORTING DOCUMENTS)	MARKS BY BHEL
1. Design capability	(0-3)						
2. Adequacy of quality assurance plan	(0-2)						
3. Process capability for components	(0-3)						
4. Adequate of testing	(0-2)						
TOTAL MARKS OUT OF POSSIBLE (10)							
Average of Total (Total/3) = -----							

(ii) PRODUCT/ MATERIAL CATEGORY SPECIFIC TECHNICAL COMPETENCE

(Max Marks: 15)

Unit MISCC to structure the parameters to be considered for the technical competence depending on material category. The score of individual parameter selected is to be decided by MISCC. MISCC shall identify the requirement of enclosures to be furnished by supplier
Product:

Sl. No	Material category	Tech Parameter	Supplier's response	Remarks

To be filled up only on receipt of technical requirements/ specification, drawings, standards from BHEL and to be sent to BHEL for further scrutiny. Enclose documentary evidence where ever required.

LIST OF ENCLOSURES:

Maximum Marks = 25

Minimum Qualifying marks = 15

SUPPLIER'S AUTHORISED SIGNATORY

BHEL CERTIFIED ASSESSOR

BHARAT HEAVY ELECTRICALS LIMITED SUPPLIER REGISTRATION FORM

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II

Page 14 of 17 amdt.01

Part D : SCORE SHEET

1. ORGANISATIONAL SOUNDNESS (for Manufacturers):

S.N.	PARAMETER	CRITERIA	Maxm. Marks	Marks Awarded
1.	Whether all relevant information like ownership, PAN no., sales tax no., excise duty no., etc. submitted	Yes: 2 No: 0	2	
2.	3.4 YEAR OF COMMENCEMENT OF BUSINESS	More than 5 years : 2 1-5 years : 1 Less than 1 year : 0	2	
3.	5.1 POWER BACKUP	Yes : 1 No : 0	1	
4.	5.2 DOES THE COMPANY SELL ITS PRODUCT DIRECTLY	Yes : 1 No : 0	1	
5.	6.1 REGISTERED WITH ANY OF BHEL UNITS	Yes (same item) : 2 Yes (another item) : 1 No : 0	2	
6.	6.2 APPROVAL BY ASME/ NTPC/ NPC/ EIL/ DGS&D/ RAILWAYS/ IBR/ LLOYDS ETC	Yes : 2 No : 0	2	
7.	6.3 ISO 9001 ACCREDITATION	Yes : 3 No : 0	3	
8.	6.4 ISO 14000 ACCREDITATION	Yes : 1 No : 0	1	
9.	6.5 OHSAS - 18000 ACCREDITATION	Yes : 1 No : 0	1	
10.	6.6 TECHNICAL COLLABORATOR : (FOREIGN OR INDIGENOUS)	Yes : 1 No : 0	1	
11.	6.7 R & D SET UP	Yes : 1 No : 0	1	
12.	6.12 PENDING LEGAL ISSUES ON TECHNO – COMMERCIAL ASPECTS WITH CUSTOMER	Yes : -5 No : 0	0	
13.	7.1 & 7.2 MANUFACTURING FACILITIES INCLUDING OUTSOURCING	Adequate : 3 Substantial : 2 Inadequate : 0	3	
14.	7.3 RATIO OF OUTSOURCED COST TO TOTAL PRODUCTION VALUE	Less than 10% : 2 10 to 30 % : 1 More than 30% : 0	2	
15.	8.1 INSPECTION & TESTING FACILITIES	Adequate : 2 Substantial : 1 Inadequate : 0	2	
16.	8.2 OUTSOURCING OF MAJOR TESTING FACILITY (Refer Note)	Yes : 0 No : 1	1	
	TOTAL		25	

1. ORGANISATIONAL SOUNDNESS (for Indian Stockist/ Trader/ Distributor/ Dealer/ Authorised Agent/ Channel partner/ Indian Sales office or Subsidiary of registered foreign principal):

S.N.	PARAMETER	CRITERIA	Maxm. Marks	Marks Awarded
1.	Whether all relevant information like ownership, PAN no., sales tax no., etc. submitted (clause 6.0 of chapter V to be referred in this regard)	Yes: 7 No: 0	7	
2.	3.4 YEAR OF COMMENCEMENT OF BUSINESS	More than 3 years : 2 1-3 years : 1 Less than 1 year : 0	2	
3.	6.1 REGISTERED WITH ANY OF BHEL UNITS	Yes (same item) : 2 Yes (another item) : 1 No : 0	2	
4.	6.2 APPROVAL BY ASME/ NTPC/ NPC/ EIL/ DGS&D/ RAILWAYS/ IBR/ LLOYDS ETC	Yes : 2 No : 0	2	
5.	6.3 ISO 9001 ACCREDITATION	Yes : 2 No : 0	2	
6.	6.12 PENDING LEGAL ISSUES ON TECHNO – COMMERCIAL ASPECTS WITH CUSTOMER	Yes : -5 No : 0	0	

BHEL CERTIFIED ASSESSOR

BHARAT HEAVY ELECTRICALS LIMITED SUPPLIER REGISTRATION FORM

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II
Page 15 of 17 amdt.01

Part D: SCORE SHEET

2. FINANCIAL INFORMATION (for Manufacturers):

S.N.	PARAMETER	CRITERIA	Maximum Marks	Marks Awarded
1.	9.1 Growth of Net Worth over previous year (%) Average of three years to be worked out	More than 20 % : 5 10 – 20 % : 4 5 – 10 % : 3 > 0 & < 5 % : 2 0 or below : 0	5	
2.	9.3 DEBT EQUITY RATIO <u>Long term Debt (9.2)</u> Net worth (9.1)	1 : 1 : 5 1.1 upto 1.5 : 1 : 4 1.6 upto 2.0 : 1 : 3 2.0 & above : 1 : 2	5	
3.	9.5 QUICK RATIO <u>CA - INVENTORIES {9.5(1)-9.5(1)c}</u> Current liability {9.5 (2)}	1 : 1 : 5 1 : 1 upto 1.5 : 4 1 : 1.5 upto 1.75 : 3 1 : 1.75 upto 2.5 : 2 1 : > 2.5 : 0	5	
4.	9.6 Growth in Sales over previous year (%) Average of three years to be worked out	More than 35% : 5 20 -35 % : 4 10 – 20 % : 3 5 – 10 % : 2 > 0 & < 5 % : 1 0 or negative : 0	5	
5.	9.7 PROFIT BEFORE TAX Growth over previous year (%)	More than 20 % : 5 10 – 20 % : 4 5 – 10 % : 3 > 0 & < 5 % : 2 0 or below : 0	5	
6.	9.8 Whether the supplier has been referred to BIFR / NCLT/ any other similar Govt agency	Yes: -5 No : 0	0	
7.	9.9 Whether the supplier is a potentially sick company	Yes: -3 No : 0	0	
TOTAL			25	

Note: If the supplier is new in business and does not have past data, then the evaluation will be done on the basis of information provided by him and will be decided by MISCC.

2. FINANCIAL INFORMATION (for Indian Stockist/ Trader/ Distributor/ Dealer/ Authorised Agent/ Channel partner/ Indian Sales office or Subsidiary of registered foreign principal):

S.N.	PARAMETER	CRITERIA	Maximum Marks	Marks Awarded
1.	9.6 Growth in Sales over previous year (%) Average of three years to be worked out	More than 35% : 5 20 -35 % : 4 5 - 20 % : 3 >0 - 5 % : 2 0 or negative : 0	5	
2.	9.7 PROFIT BEFORE TAX Growth over previous year (%)	More than 20 % : 5 5 – 20 % : 4 >0 – 5 % : 3 0 or below : 0	5	

BHEL CERTIFIED ASSESSOR

BHARAT HEAVY ELECTRICALS LIMITED SUPPLIER REGISTRATION FORM

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II

Page 16 of 17

Part D : SCORE SHEET

3. QUALITY SYSTEM :

S.N.	PARAMETER	CRITERIA	Maxm. Marks	Marks Awarded
1.	Incoming Material control System	System availability : Yes: 1 No : 0	1	
		Availability of Organisation chart Yes: 1 No : 0	1	
2.	Process control	Work instruction available: Yes: 1 No : 0	1	
		Record of process Control : Available : 2 Partial record : 1 Not available: 0	2	
3.	Manufacturing / Testing Procedure Qualification	Procedure Qualification Specification : Adequate : 3 In adequate: 1 Not available : 0	3	
4.	Personnel qualification	Record of PQR: Adequate : 3 In adequate: 1 Not available : 0	3	
5.	Calibration system	Adequate : 3 In adequate: 1 Not available : 0	3	
6.	System of Identification & Traceability of materials, tools, jigs, fixtures & processed components, etc.	Procedure available : Adequate : 2 In adequate: 1 Not available : 0	2	
7.	System of Storage/ preservation/ painting & packing	Procedure available : Adequate : 2 In adequate: 1 Not available : 0	2	
8.	System of NCR disposition & corrective preventive action	Two copies of NCR & CAPA Available :2 Not available : 0	2	
9.	Customer complaints handling system	System available : Yes: 1 No : 0	1	
		Complaints registered & resolved :2 Complaints registered & partially resolved : 1 Complaints not registered or not resolved : 0	2	
10.	Safety measures	System available : Yes: 1 No : 0	1	
		Record available : Yes: 1 No : 0	1	
TOTAL			25	

BHEL CERTIFIED ASSESSOR

BHARAT HEAVY ELECTRICALS LIMITED SUPPLIER REGISTRATION FORM

FORM NO. SRF(I) 01 (INDIAN SUPPLIER)

ANNEXURE-II
Page 17 of 17 amdt.01

Part D : SCORE SHEET

4. TECHNICAL COMPETENCE

Column no. 1 to 4 to be filled by MISCC before sending to supplier. Column no. 5 to be filled by BHEL certified Assessor after evaluation of supplier response.

Sl. No (1)	Parameter (2)	Scoring criteria (3)	Maximum Marks (4)	Marks obtained (5)
	TOTAL		25	

SUMMARY:

Sl. No	Criteria	Maxm Marks	Qualifying marks *	Marks obtained	Recommendation for registration
1.	Organisational Soundness	50	30		Recommended : Permanent code /Development code/ Trial code Not recommended
	Financial Information				
2.	Quality System	25	15		
3.	Technical Competence	25	15		
	TOTAL	100	60		

***Minimum Qualifying Score in Each category shall be 60%.**

REGISTRATION CRITERIA:

Sl. No	Score	Recommendation
1.	More than 90	Supplier is to be registered and given Permanent code, Normally no visit is called for.
2.	>75 <=90	Supplier may be visited if recommended by MISCC or to be registered and given permanent code.
3.	>=60 <=75	Supplier may carry out suggested improvements if advised by MISCC Supplier's visit is mandatory. Trial/ Development code may be given.
4.	Less than 60	Not to be registered

Signatures: MISCC and Supplier Evaluation Team (in case of visit)

1)

2)

3)

4)

5)

6)

BHEL CERTIFIED ASSESSOR



BHEL-PEM, NOIDA

**SPECIAL CONDITIONS OF CONTRACT (SCC) REV 00
3X660MW NTPC NORTH KARANPURA STPP (EPC)**

1. **Project Name** : 3X660MW NTPC NORTH KARANPURA STPP (EPC)
2. **Consignee Address** : CONSTRUCTION MANAGER/BHEL SITE
NTPC NORTH KARANPURA STPP, (3X660MW)
NEAR TANDWA TOWN, DISTT. : CHATRA
JHARKHAND
- Notes :** 1) **Consignee address in LR should be strictly as per above.**
2) **Vendor to note that to effect "Sale in Transit", BHEL shall issue "Delivery Note" to the Transporter for transferring the ownership from BHEL to the customer (NTPC). Delivery Note shall be carried by transporter along with other dispatch documents.**
3. **Buyer and Paying Authority** : **A) For Inter-state sales (where CST is applicable):**
1) BHEL-PEM, Noida for those packages for which PO is placed by PEM.
2) BHEL-PSER, Kolkata for those packages for which PO is placed by BHEL-PSER.
B) For Intra-state sales (where VAT is applicable):
Paying Authority shall be same as referred above. However, Buyer Authority shall be informed later.
Detail requirements are enclosed as Annexure-I which are to be followed strictly.
4. **Mode of Dispatch** : As per GCC. For Road dispatch, it is Vendor's responsibility to ensure availability of trucks well in advance for dispatch of material to meet contractual delivery requirement.
5. **Road Permit Requirement** : Required
6. **Transit Insurance** : In BHEL Scope (Policy details shall be provided **LATER**).
Prior Dispatch intimation shall be issued to Insurance Company about the value of consignment, dispatch details, along with one set of documents consisting of LR / RR copy, Packing List/ Challan indicating the items dispatched (with their weights). A copy of above should be sent to the following:
a) BHEL Site office (Address same as Consignee address)
b) BHEL-PEM, Plot no 25, Sec 16-A, Noida 201301 (**For Supply Packages**)
c) BHEL-PSER, Kolkata (**For Turnkey Packages**)
7. **BHEL-PEM TIN NO.** : 09765702874 (To be used for PO issued by BHEL-PEM)
8. **BHEL-PSER, TIN NO.** : 19200936019 (To be used for PO issued by BHEL-PSER, Kolkata)
9. **Unloading at Site** : 1) **For Supply Packages:** In the scope of **BHEL Site**.
(The Supplier shall furnish LR wise Gross Wt. of the consignment for the purpose of handling the consignment by BHEL Site Contractor)
Please note that unloading of materials at Site sometimes may take 3-4 days. Transporters to be advised suitably before dispatch of materials in this regards.
2) **For Turnkey Package:** In the scope of **Vendor**.
10. **Storage at Site** : 1) **For Supply Packages:** In the scope of **BHEL Site**.
2) **For Turnkey Package:** In the scope of **Vendor**.
11. **Movement of Material Within Site** : 1) **For Supply Packages:** In the scope of **BHEL Site**.
2) **For Turnkey Package:** In the scope of **Vendor**.
12. **Inspection Agency** : Inspection of packages shall be carried out by agency as per below Inspection category of packages:
1) **Cat-I:** Inspection shall be done jointly or separately by **NTPC and BHEL** .
2) **Cat-II:** Inspection shall be done by BHEL only.
3) **Cat-III:** Certificate of Compliance shall be furnished by Vendor.
Please note, for Cat I & II items BHEL reserve the right to carry inspection by themselves or through nominated third party. For Inspecting Agency for various items, vendor may refer to Quality Plan.
13. **Material Dispatch Clearance Certificate (MDCC) Issuing Agency** : For Cat-I item, MDCC shall be issued by NTPC and it's the responsibility of vendor to arrange MDCC from them, and **original MDCC** shall be attached with Invoice by Vendor for claiming payment from BHEL. For Cat- II & Cat-III items, MDCC shall be issued by BHEL

14. **Dispatch Documents Required (to be furnished by)** : **A) For customer billing by PEM, the supplier shall provide the following documents to BHEL-PEM in 4 sets :**

- 1) Copy of Vendor Invoice (Original VAT Invoice required in case of VAT).
- 2) Original LR
- 3) Copy of Packing List indicating Quantity/ Gross weight/ Net weight and NTPC approved BBU item no. wherever applicable against each item dispatched.
- 4) MDCC (Original NTPC MDCC, if applicable)
- 5) CHP issued by NTPC – Original (if applicable)
- 6) Insurance intimation copy
- 7) Test certificate/Inspection Reports- Original (for Cat II & Cat III Packages)

B) For Vendor payments documents mentioned in GCC shall be applicable. However, original money receipt for Freight payment is not required.

15. **Dispatch Markings** : Each package/Drum delivered under the Contract shall be marked by Supplier as per details listed below and such marking must be distinct and in English language.

- 1) Name and address of the consignee (as given in Sl. no 2)
- 2) Dispatched by: (Vendor name) : A/c BHEL PEM, Noida or BHEL-PSER,Kolkata as the case may be.
- 3) LR No
- 4) Package No / Total Package No eg: 1 of N, 2 of N; where N=Total no of packages in a particular consignment.
- 5)Type of Supply: **"Main equipment supply"/ "Mandatory Spares "/ "Commisioning Spares"** as the case may be.

Besides above, necessary packing shall bear a special marking "TOP" "BOTTOM","DO NOT TURN OVER","KEEP DRY","HANDLE WITH CARE", etc.

16. **Taxes & Duties** : a) All Bidders to note that this is a **Mega ICB Project** which qualifies for deemed export benefits & other benefits under Mega Power project policy of Government of India. Applicable documents such as **Project Authority Certificate (PAC)** will be issued. For this Project, **Zero % Custom Duty (against PAC)** shall be applicable on the Import Contents of the supplier.

b) The Bidder to indicate the Import contents if any i.e. list of the imported 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 including ceiling limit, if any, in NIT.Bidder has to pass on the benefit of availing Zero % custom duty in price offered to BHEL.

c) All bidders to note being a Mega ICB Project, Excise Duty shall not be included in their prices to BHEL as per the nature of the project. PAC shall be issued to main vendor for their self-manufactured item only, to avail benefit of Nil ED. Concessional CST presently 2 % against Form 'C' & 'EI/E2' or VAT as applicable is to be considered in their quoted prices. Concessional CST/ VAT shall be considered for evaluation of offers to arrive at the L1 bidder. The benefit of Nil Excise duty and concessional CST must be passed on to BHEL in their offer.

The benefit of Nil Excise duty and concessional rate of CST must be passed on to BHEL in their offer.

VAT on intra-state dispatch shall be paid subject to conditions specified in Annexure-Entry tax:-If any, shall be payable by ultimate customer(NTPC) directly to sales tax authority. Hence the same should not be considered in the offer.

17. **Final Drawings/ Documents Submission** : Final documentation submission shall be as per GCC. Numbers of copies required to be submitted is as under:

1. As built/ Final Drawing: 8 Sets (Hard Copy)+4 Nos.(CD)
2. O&M Manuals: 6 Sets(Hard Copy)+ 4 Nos.(CD)
3. PG test Report: 6 Sets (Hard Copy)+ 4 Nos.(CD)
4. QA Documents : 4 Sets (Hard Copy)+ 4 Nos.(CD)

	Prepared by	Checked by	Reviewed by	Vetted by Finance	Approved by
Name:	Sumit Agrawal	Sandeep Kumar	PK Gupta	Swati Kashyap	SB Naithani
Designation:	Sr. Engr./PGIII	Sr. Mgr-PGIII	AGM-PGIII	Sr. AO	DH/MSX&P/PG-III
Signature:					
Date:	3/19/14	3/19/2014	3/19/14	3/19/2014	3/19/2014

vetted for taxes & duties Swati



BHEL-PEM, NOIDA
3X660MW NTPC NORTH KARANPURA STPP (EPC)
Requirements to be fulfilled for Intra-State Sales


In order to avail the benefit of input tax credit available to BHEL in case of VAT leviable on intra-state transaction between BHEL and vendor, & to fulfill the compliances as per requirements of applicable State's VAT law, the following modality shall be applicable:


BHEL has identified a nodal agency in each State to take care of VAT compliances in the State in which project is located. For the subject project nodal agency shall be: **Inform Later**

Nodal agency is defined as Buyer and BHEL/ PEM shall be paying agency in such cases, where VAT is applicable.

Vendors' original tax invoice for intra State transactions is one of the important documents for availing Input Tax credit. In this regard the following may be noted by all vendors for strict compliance:

- 1) As a general rule, a tax invoice must be original, must contain vendor's TIN No with full address, invoice no & date, product description with unit rate, quantity, value, VAT rate, VAT amount, gross value of bill, **buyer i.e. BHEL's address with TIN**, (as given above) special marking like "Original" and/or "valid for input credit"/ Buyer can take credit against this" etc. as per applicable State VAT law.
- 2) Please note that BHEL's address and TIN to be mentioned in vendors tax invoice shall be **principal place of business & applicable TIN of nodal agency of BHEL, as given above. In no case the vendors, invoices shall be addressed to BHEL PEM nor shall they contain PEM TIN.** However for payment purposes, the invoice must mention BHEL-PEM Noida/BHEL PSER-Kolkata, as paying authority (as applicable).
- 3) As original tax invoice of vendors is to be furnished to nodal unit for assessment/VAT audit purposes, another one Original invoice is required to be submitted by vendors for retaining with PEM bank payment voucher.
- 4) Where the supplies are made from within the same state where the project is located, the vendor has to provide VAT invoice for such supplies even if the price quoted is all inclusive.
- 5) Original tax invoice along with extra copy of Original Tax invoice in line with respective state VAT law shall be essential document to be submitted by vendor for claiming payment.
- 6) Vendor shall also furnish a certificate/statement/document as prescribed under applicable State VAT law. Please note that some of the States requires additional certificate/documents e.g. Haryana requires certificate in form C-4 in addition to original tax invoice.
- 7) Please note that reimbursement/payment of VAT shall be subject to furnishing of Vat compliant tax invoice and other certificate/document as per applicable State VAT law.
- 8) Tax invoice must show Vat rate & VAT amount separately and in no case all inclusive prices is to be shown in the tax invoice since input credit is not admissible in case VAT is not indicated separately.
- 9) In case vendor is unable to furnish Vat compliant tax invoice & other certificate/document, VAT shall not be reimbursed by BHEL.


31/9/14


31/09/2014.

NORTH KARANPURA STPP (3 X 660MW)

EPC PACKAGE

VOLUME – IIB

**TECHNICAL SPECIFICATION
FOR
CABLE TRAYS & ACCESSORIES**

**SPECIFICATION NO : PE-TS-405-507-E021
REVISION : 0**



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



**NORTH KARANPURA STPP (3 X 660MW)
EPC PACKAGE**

**TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES**

SPECIFICATION NO. PE-TS- 405-507-E021

VOLUME II B

SECTION ---

REVISION 0

DATE: 12.01.2015

SHEET 1 OF 1

CONTENTS

Sl. No.	DESCRIPTION	NO. OF SHEETS
1.0	INSTRUCTIONS TO BIDDERS	01
2.0	PREAMBLE	01
3.0	SECTION – 'A' (SCOPE OF ENQUIRY)	02
4.0	SECTION – 'B' (PROJECT INFORMATION)	07
5.0	SECTION – 'C' (SPECIFIC TECHNICAL REQUIREMENTS)	02
5.1	ANNEXURE-I (BOQ CUM PRICE SCHEDULE)	02
5.2	ANNEXURE-II (LIST OF DRAWINGS /DOCUMENTS TO BE SUBMITTED BY SUCCESSFUL BIDDER)	01
5.3	ANNEXURE-III (VENDOR DRAWING/DOCUMENT SCHEDULE)	01
5.4	ANNEXURE- IV (NTPC QUALITY ASSURANCE PLAN)	01
6.0	SECTION- 'D'	
6.1	STANDARD TECHNICAL SPECIFICATION	03
6.2	DATA SHEET -A	02
7.0	STANDARD QUALITY PLAN	04
8.0	TYPICAL DETAILS OF CABLE TRAYS & ACCESSORIES (DRAWING NO. PE-DG-405-507-E005)	11
	TOTAL NO. OF SHEETS (INCLUDING COVER SHEET & CONTENT SHEET)	= 42

IT IS CONFIRMED THAT OUR TECHNICAL OFFER COMPLIES WITH THE SPECIFICATION IN TOTAL & THAT THERE ARE NO TECHNICAL DEVIATIONS.

BIDDER'S STAMP & SIGNATURE



**NORTH KARANPURA STPP (3 X 660MW)
EPC PACKAGE**

**TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES**

SPECIFICATION NO. PE-TS-405-507-E021

VOLUME II B

SECTION ---

REVISION 0

DATE: 12.01.2015

SHEET

1

OF

1

INSTRUCTIONS TO BIDDERS FOR PREPARING TECHNICAL OFFER

1. Two signed and stamped copies of the following shall be furnished by all bidders as technical offer :
 - a. Unpriced Price Schedule (Annexure-I: BOQ, as enclosed with the specification).
 - b. A copy of this sheet ("Instructions to Bidders for Preparing Technical Offer").
 - c. A copy of previous sheet ("Contents").
2. No other technical submittal such as copies of type test certificates, data sheets, write-up, drawing, technical literature, etc. is required during tender stage. Any such submission, even if made, shall not be considered as part of offer.
3. No comments/ additions/ deletions shall be made by the bidder on the signed & stamped copy of the specification. Any such changes made by the bidder shall not be considered.
4. Confirmations/ comments (if any) regarding delivery schedules shall be furnished as part of the commercial offer. Any reference in the technical offer / covering letter shall not be considered by BHEL.
5. 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.
6. Any changes made by the bidder in the price schedule with respect to the item description/ quantities, notes etc. from those given in Annexure-I of specification [Bill Of Quantities] shall not be considered (i.e., technical description, quantities, notes etc. as per specification shall prevail).

BIDDER'S STAMP & SIGNATURE



**NORTH KARANPURA STPP (3 X 660MW)
EPC PACKAGE**

**TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES**

SPECIFICATION NO. PE-TS-405-507-E021

VOLUME II B

SECTION ---

REVISION 0

DATE: 12.01.2015

SHEET 1 OF 1

PREAMBLE

1.0 The tender document contains two (2) volumes. The bidder shall meet the requirements of all the two volumes.

1.1 Volume-I (CONDITIONS OF CONTRACT)

This consists of four parts as below:-

- Volume-IA : This part contains instructions to bidders for making bids to BHEL.
Volume-IB : This part contains general commercial conditions of the tender & includes provision that vendor is responsible for the quality of item supplied by their sub-vendors.
Volume-IC : This part contains special conditions of contract.
Volume-ID : This part contains commercial conditions for erection & commissioning site work, as applicable.

1.2 Volume-II TECHNICAL SPECIFICATIONS

Technical requirements are stipulated in Volume-II which comprises of:-

- Volume-IIA : General Technical Conditions
Volume-IIB : Technical Specification including Drawings, if any.

1.2.1 Volume-IIB

This volume is sub-divided into following sections:-

- Section-A : This section outlines the scope of enquiry.
Section-B : This section provides "Project Information".
Section-C : This section indicates technical requirements specific to the contract, not covered in Section-D.
Section-D : This section comprises of technical specifications of equipments complete with data sheet A.

Data Sheet - A specifies data and other requirements pertaining to the Equipment.

2.0 The requirements mentioned in Section-C / Data Sheets-A of section-D shall prevail and govern in case of conflict between the same and the corresponding requirements mentioned in the descriptive portion in Section-D.



**NORTH KARANPURA STPP (3 X 660MW)
EPC PACKAGE**

**TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES**

SPECIFICATION NO. PE-TS- 405-507-E021

VOLUME II B

SECTION A

REVISION 0

DATE: 12.01.2015

SHEET 1 OF 2

SECTION – A

SCOPE OF ENQUIRY



**NORTH KARANPURA STPP (3 X 660MW)
EPC PACKAGE**

**TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES**

SPECIFICATION NO. PE-TS- 405-507-E021

VOLUME II B

SECTION A

REVISION 0

DATE: 12.01.2015

SHEET 2 OF 2

SCOPE OF ENQUIRY

- 1.0 This specification covers the Design, Manufacture, Inspection and Testing at Manufacturer's works, proper packing and delivery to site of Cable Trays & Accessories as mentioned in different sections of this specification for NORTH KARANPURA STPP (3 X 660MW).
- 2.0 It is not the intent to specify herein all the details of design & manufacture. However, the equipment shall conform in all respects to high standards of design engineering and workmanship and shall be capable of performing in continuous commercial operation at site conditions.
- 3.0 The general terms and conditions, instructions to bidders and other attachment referred to elsewhere are hereby made part of the tender specification.
- 4.0 The bidder shall be responsible for and governed by all requirements stipulated hereinafter.
- 5.0 Bidder shall confirm total compliance to the specification without any deviations from technical/quality assurance requirements stipulated.
- 6.0 The documents shall be in English Language and MKS system of units.



NORTH KARANPURA STPP (3 X 660MW)
EPC PACKAGE

TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES

SPECIFICATION NO. PE-TS-405-507-E021

VOLUME NO. : II-B

SECTION : B

REV NO. : 0 DATE : 12.01.2015

SHEET : 1 OF 2

SECTION - B

PROJECT INFORMATION

1.00.00

BACKGROUND

North Karanpura Super Thermal Power Project (3x660 MW), a pit head coal based thermal power project, is located in Hazaribagh and Chatra districts of Jharkhand State. Basic inputs i.e. coal, water and land have already been tied up. The project is proposed for the States & Union Territories of Northern, Western and Eastern Regions and the State of Jharkhand.

The capacity of the project is 1980 MW comprising of three (3) units of 660 MW each.

1.01.00

Location and Approach

The power project is proposed to be located near Tandwa town in Chatra districts in the state of Jharkhand on Hazaribagh-Chatra State highway at a distance of about 50 kms from Hazaribagh city. The nearest commercial airport is Ranchi at a distance of 150 kms from project site. The nearest railhead Khalari Railway Station on Ranchi-Garhwa section of Eastern Railways is about 40 kms from project site.

Major rail/road distances from the project site are as under:

<u>City</u>		<u>Distance Approx. (kms)</u>
Ranchi	:	150
Khalari	:	40

The site is located near Tandwa town having latitude and longitude of about 23° 50' N to 23° 52' N and 84° 59' E to 85° 2' E respectively. The Vicinity Plan of the project is placed at **Annexure-I**.

Further to the information given in this sub-section, Bidders are also advised to visit the project site and collect data on local site conditions.

1.02.00

Land

About 2245 acres of land is being acquired for the project. About 1500 acres of land is under possession/legal possession and out of 1500 acres, about 890 acres of land is to be used for plant, ash dyke and initial enabling township. No additional land is envisaged to be acquired in plant area. About 15 acres of land is envisaged to be acquired in Hazaribagh city for Township.

Commissioner, Chatra vide dated 25.05.1999 and 14.06.2000 has given in-principle clearance for NKSTPP.

1.03.00

Water

Make up water available for this project would be about 22 cusec and will be arranged by constructing a dam/reservoir across river Garhi.

1.04.00

Fuel (Coal)


1.04.01

Coal Requirement, Availability and Linkage

Coal requirement for the project is estimated as 10.6 Million Tonne/Annum (MTPA), considering a GCV of 3800 kcal/kg. Ministry of Coal vide letter dated 21.10.99 accorded in-principle coal linkage of 10.00 MTPA subject to ratification by Standing Linkage Committee-Long Term (SLC (LT)), of MOC. SLC (LT) in its meeting held on 15.12.2000 firmed up the coal linkage of 10.24 MTPA for the project. Subsequently, the coal linkage was withdrawn by SLC (LT) in its meeting held on 22/23.10.08.

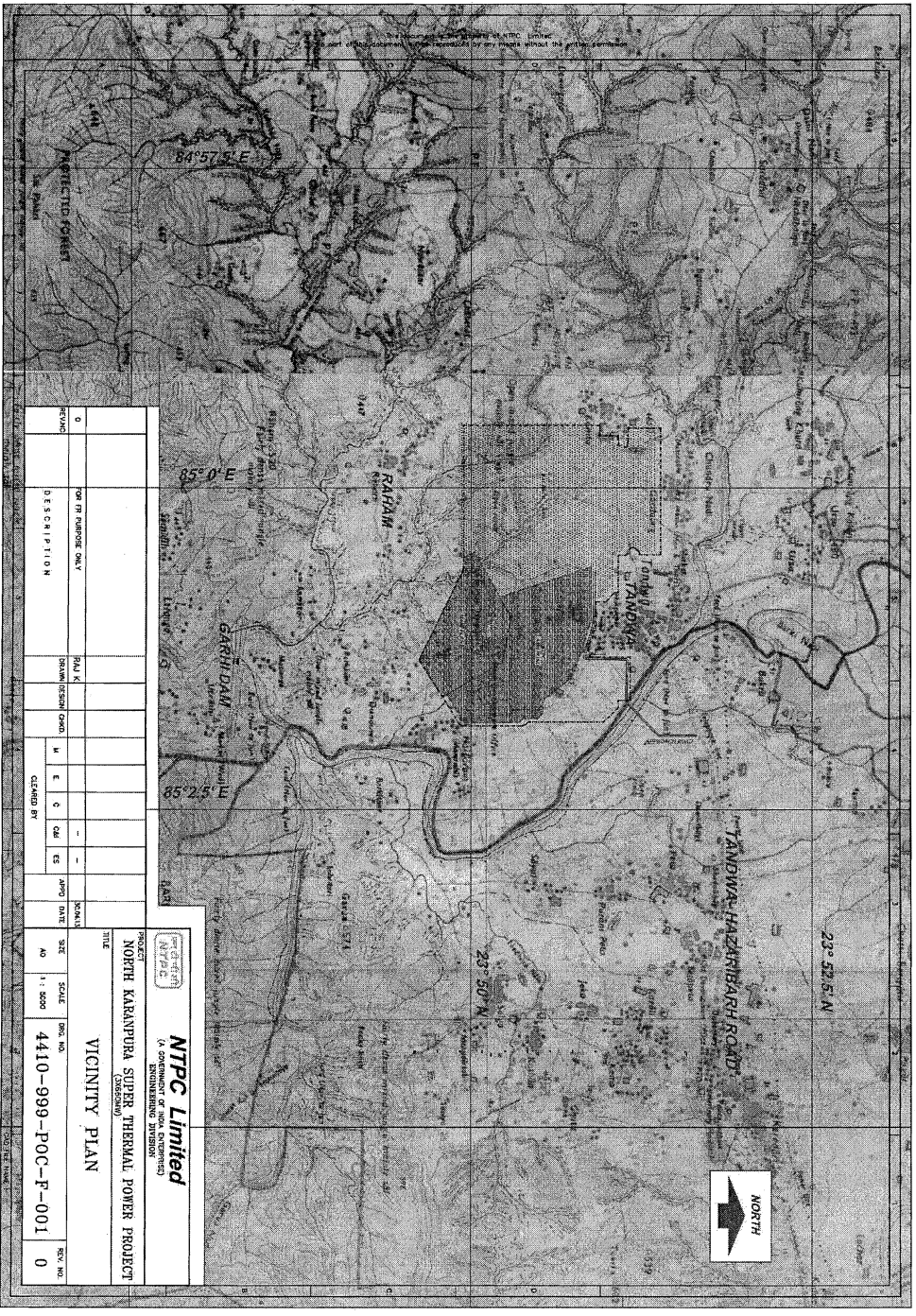
CLAUSE NO.	PROJECT INFORMATION		
1.04.02	<p>Cabinet Committee on Investment (GOI) in its meeting on 20.02.13 decided in-principle to restore the original coal linkage granted to NKSTPP (i.e. from Magadh Coal Block) with the stipulation that the coal supply will commence during the 13th Five Year Plan. MOC vide letter dated 09.05.2013 restored the coal linkage with the stipulation that the coal supply will commence during the 13th five year plan.</p>		
1.04.02	<p>Coal Transportation</p> <p>Coal from Magadh block of North Karanpura Coalfields is proposed to be transported to the project site through conveyor belt system. One external coal handling plant and one internal coal handling plant are envisaged.</p>		
1.05.00	<p>Meteorological Data</p> <p>Important meteorological data from nearest observatory at Hazaribag is placed at Annexure-II.</p>		
1.06.00	<p>Plant Water Scheme</p> <p>The Plant water scheme is described below.</p>		
1.06.01	<p>Condenser Cooling System</p> <p>It is proposed to adopt Air Cooled Condenser for the project.</p>		
1.06.02	<p>Equipment Cooling Water (ECW) System (Unit Auxiliaries)</p> <p>All plant auxiliaries shall be cooled by De-mineralized water (DM) in a closed circuit. The primary circuit DM water shall be cooled through heat exchangers by auxiliary cooling water system. The hot secondary circuit cooling water shall be cooled in the cooling towers and shall be returned back to the system.</p>		
1.06.03	<p>Ash Water System</p> <p>It is proposed to have HCSD (High concentration Slurry Disposal) system for combined fly ash and bottom ash. No recirculation of ash water from ash disposal area is envisaged.</p>		
1.06.04	<p>Other Miscellaneous Water Systems</p> <p>(a) Raw water shall be used for meeting the Fly ash and bottom ash system requirement etc.</p> <p>(b) The service water shall be taken from clarified water tank of Pretreatment plant. Service water (wash water) collected from various areas shall be treated using oil water separators, tube settlers, coal settling pits etc. as per requirement and treated water from liquid effluent treatment plant shall be recycled back to the service water system for re-use.</p> <p>(c) The drinking water requirement of the plant shall be provided from water treatment plant.</p>		
<p>NORTH KARANPURA STPP (3 X 660 MW) EPC PACKAGE</p>	<p>TECHNICAL SPECIFICATION SECTION – VI, PART-A BID DOC. NO.:CS-4410-001-2</p>	<p>SUB-SECTION-IB PROJECT INFORMATION</p>	<p>PAGE 2 OF 10</p>



CLAUSE NO.	PROJECT INFORMATION			
1.07.00	<p>(d) Steam Cycle make-up water, makeup to the primary circuit of ECW (unit auxiliaries) system, boiler fill water and makeup to the hydrogen generation plant shall be provided from Demineralising plant.</p> <p>(e) The quality of Raw water is enclosed with this sub-section as Annexure-III.</p> <p>Criteria for Earthquake Resistant Design of Structures and Equipment</p> <p>All power plant structures and equipment, including plant auxiliary structures and equipment shall be designed for seismic forces as given in the Part - B of this section.</p>			
1.08.00	<p>Criteria for Wind Resistant Design of Structures and Equipment</p> <p>All structures and equipment of the power plant, including plant auxiliary structures and equipment, shall be designed for wind forces as given as given in Part B of this section.</p>			
<p>NORTH KARANPURA STPP (3 X 660 MW) EPC PACKAGE</p>	<p>TECHNICAL SPECIFICATION SECTION – VI, PART-A BID DOC. NO.:CS-4410-001-2</p>	<p>SUB-SECTION-IB PROJECT INFORMATION</p>	<p>PAGE 3 OF 10</p>	



VICINITY PLAN





CLIMATOLOGICAL TABLE

CLIMATOLOGICAL TABLE
 1951 से 1981 तक के दिनों के आधारे
 BASED ON OBSERVATIONS FROM 1951 TO 1981


स्थान : हज़ारबाग
 STATION : Hazarbagh


उचाई 381 मीटर से ऊपर
 HEIGHT 381 METRES A.S.L.

रेखांक 23°54' N LONG. 85°22' E
 LAT. 23°54' N LONG. 85°22' E

वर्षा मापमान
 RAINFALL

MONTH	STATION PRESSURE		WET BULB GLOBE TEMPERATURE		DAILY MEAN		HIGHEST AND LOWEST IN THE MONTH		EXTREMES		HUMIDITY		CLOUD AMOUNT		NO. OF MONTHS WITH RAINFALL		TOTAL RAINFALL YEARLY	TOTAL RAINFALL MONTHLY	HEAVIEST RAINFALL IN 24 HOURS	DATE AND YEAR	MEAN WIND SPEED
	mm Hg	mb	°C	°F	°C	°F	°C	°F	°C	°F	%	RELATIVE HUMIDITY	ALL CLOUDS	LOW CLOUDS	MONTHS	TOTAL					
JAN	941.6	12.7	10.9	21.6	22.6	9.3	28.7	4.8	40.6	31	0.9	07	1880	1.4	0.5	17	113.0	4.4	68.1	22	1945
FEB	945.7	17.8	12.3	25.7	25.7	12.0	30.5	6.9	33.8	22	1.7	08	1974	1.2	0.4	14	117.3	4.6	83.5	29	1927
MAR	944.0	23.4	15.0	30.8	30.8	16.6	31.9	11.4	38.9	27	6.7	04	1896	1.5	0.5	17	156.3	6.1	44.2	20	1949
APR	941.0	28.0	18.2	35.7	35.7	21.3	30.3	16.4	41.7	22	10.6	01	1956	1.5	0.5	14	181.5	7.1	80.5	22	1925
MAY	937.0	30.7	21.1	37.8	37.8	24.0	41.5	19.3	43.0	18	15.8	22	1877	2.5	0.9	2.5	187.2	7.4	84.1	27	1987
JUN	933.4	34.3	21.2	34.1	34.1	24.1	40.1	21.0	48.8	14	18.3	02	1975	5.3	1.9	8.2	174.6	6.9	91.1	27	1987
JUL	930.4	38.4	23.5	34.1	34.1	24.1	40.1	21.0	48.8	14	18.3	02	1975	5.8	2.1	8.2	174.6	6.9	91.1	27	1987
AUG	933.1	25.6	23.8	29.5	29.5	23.0	33.2	21.4	38.6	08	19.3	13	1975	6.5	2.4	16.2	774.5	30.5	246.2	24	1911
SEP	930.5	28.8	24.1	29.1	29.1	22.7	31.5	21.3	44.2	02	20.0	20	1975	6.5	2.4	16.2	692.2	27.2	221.7	04	1953
OCT	924.5	25.2	20.7	29.1	29.1	22.7	31.5	21.3	44.2	02	20.0	20	1975	6.4	2.4	16.2	708.1	27.8	188.1	17	1938
NOV	931.5	25.4	24.3	29.1	29.1	22.7	31.5	21.3	44.2	02	20.0	20	1975	6.4	2.4	16.2	692.2	27.2	221.7	04	1953
DEC	935.1	25.0	23.5	29.0	29.0	22.2	31.5	20.4	33.3	24	17.3	29	1980	5.1	1.9	11.5	530.9	21.3	167.4	25	1953
ANNUAL MEAN	942.6	23.9	20.4	28.5	28.5	18.9	31.3	14.3	34.0	04	9.7	12	1872	2.9	1.3	86.6	4738.9	186.3	143.4	24	1924
ANNUAL MEAN	947.0	26.2	15.5	25.8	25.8	13.3	28.3	9.0	34.7	01	4.4	35	1958	1.2	0.5	5.6	180.0	7.1	95.0	06	1924
ANNUAL MEAN	946.2	15.7	11.8	23.1	23.1	9.3	35.2	5.1	29.4	20	0.5	24	1950	1.1	0.4	5.2	81.3	3.2	39.4	15	1935
ANNUAL MEAN	942.1	13.7	13.1	23.1	23.1	9.3	35.2	5.1	29.4	20	0.5	24	1950	1.3	0.5	5.2	81.3	3.2	39.4	15	1935
ANNUAL MEAN	941.1	23.3	18.3	29.3	29.3	18.1	41.9	3.8	48.6	05	19.2	10	1981	3.0	1.1	67.2	2146.0	84.6	249.2	22	1935
ANNUAL MEAN	928.0	25.9	19.1	27	27	26	26	26	83	35	17.7	23	1983	3.3	1.2	69.3	1893	74.9	99	33	1935
ANNUAL MEAN	28	28	28	27	27	28	28	28	83	27	27	23	29	29	29	29	98	89	99	33	1935

CLAUSE NO.	PROJECT INFORMATION																			
1.00.00	General Requirements																			
1.01.00	For the purpose of design of equipment/systems, an ambient temperature of 50 deg. Centigrade and relative humidity of 95% shall be considered. The equipment shall operate in a highly polluted environment. However, for equipment in air conditioned areas, design ambient temperature shall be 35 deg.C, if 2x100% air conditioning system is provided.																			
1.02.00	All equipments shall be suitable for rated frequency of 50Hz with a variation of +3% & -5%, and 10% combined variation of voltage and frequency unless specifically brought out in the specification. The step-up voltage level for the project shall be 400 KV. The turbo generator unit will be connected to its own step-up transformers for feeding power into the EHV grid. The overall system shall be designed considering voltage variation of +/- 5% and fault level of 50kA for 400KV and 40kA for 220 KV system. Under black start condition the minimum fault level of 1000 MVA shall be considered at 400KV voltage level and voltage variation at 400kV may be considered as +/-10% till system stabilization.																			
1.03.00	Contractor shall provide fully compatible electrical system, equipments, accessories and services for the entire station/plant in his scope as well as those specifically required by the Employer.																			
1.04.00	All the equipment, material and systems shall, in general, conform to the latest edition of relevant National and International Codes & Standards, especially the Indian Statutory Regulations.																			
1.05.00	<p>The auxiliary AC voltage supply arrangement shall have 33 kV, 11 kV, 3.3KV and 415V systems. It shall be designed to limit voltage variations as given below under worst operating condition:</p> <table border="0" data-bbox="343 1052 1396 1220"> <tr> <td>a)</td> <td>33KV/11KV/3.3KV (MV)</td> <td>+/- 6%</td> </tr> <tr> <td>b)</td> <td>415 V/240 V</td> <td>+/- 10%</td> </tr> <tr> <td>c)</td> <td>220V DC</td> <td>-15% to +10% However the nominal continuous DC power supply shall be 240V.</td> </tr> </table>				a)	33KV/11KV/3.3KV (MV)	+/- 6%	b)	415 V/240 V	+/- 10%	c)	220V DC	-15% to +10% However the nominal continuous DC power supply shall be 240V.							
a)	33KV/11KV/3.3KV (MV)	+/- 6%																		
b)	415 V/240 V	+/- 10%																		
c)	220V DC	-15% to +10% However the nominal continuous DC power supply shall be 240V.																		
1.06.00	<p>The voltage level for motors shall be as follows:</p> <table border="0" data-bbox="343 1276 1364 1534"> <tr> <td>a)</td> <td>Upto 0.2 KW</td> <td>:</td> <td>Single phase 240V AC / 3 phase 415V AC</td> </tr> <tr> <td>b)</td> <td>Above 0.2 KW and upto 200 KW</td> <td>:</td> <td>3 phase, 415V AC</td> </tr> <tr> <td>c)</td> <td>Above 200 KW and upto 1500 KW</td> <td>:</td> <td>3 phase, 3.3 kV AC</td> </tr> <tr> <td>d)</td> <td>Above 1500 KW</td> <td>:</td> <td>11 kV</td> </tr> </table> <p>The bidder may adopt 415V/3.3 KV for the drives rated in the range of 160-210 KW.</p> <p>For CHP conveyor motor's rating above 160 kW, 3.3 KV, three phase AC supply is to be used.</p> <p>The voltage rating of the drives indicated above is for basic guideline. Minor variations in above can be accepted on case to case basis based on techno-economic considerations of the various sub-systems.</p> <p>Voltage rating for special purpose motors viz, VFD and screw compressors, shall be as per manufacturer's standard. All the motors ratings on Stacker/ reclaimer shall be 415V ac supply only.</p>				a)	Upto 0.2 KW	:	Single phase 240V AC / 3 phase 415V AC	b)	Above 0.2 KW and upto 200 KW	:	3 phase, 415V AC	c)	Above 200 KW and upto 1500 KW	:	3 phase, 3.3 kV AC	d)	Above 1500 KW	:	11 kV
a)	Upto 0.2 KW	:	Single phase 240V AC / 3 phase 415V AC																	
b)	Above 0.2 KW and upto 200 KW	:	3 phase, 415V AC																	
c)	Above 200 KW and upto 1500 KW	:	3 phase, 3.3 kV AC																	
d)	Above 1500 KW	:	11 kV																	
<p align="center">NORTH KARANPURA STPP (3 X 660 MW) EPC PACKAGE</p>	<p align="center">TECHNICAL SPECIFICATIONS SECTION – VI, PART-B</p>	<p align="center">SUB-SECTION-B0 GENERAL ELECTRICAL SPECIFICATION</p>	<p align="center">PAGE 1 OF 11</p>																	

CLAUSE NO.	PROJECT INFORMATION			
1.07.00	<p>The preferred AC control supply voltage shall be 110V for all 415 V non breaker controlled feeders. Control supply voltages other than above may be offered by bidder based on the bidder's standard proven practice.</p>			
1.08.00	<p>The designed fault levels for 11 KV & 3.3 KV systems shall be restricted to 40 kA rms for 1 second and 50 kA rms for 1 second for 415 V systems. The 33 KV system equipments shall have a minimum short circuit fault withstand rating of 12.5 kA for 1 second.</p>			
1.09.00	<p>The nominal voltage of main DC system shall be 220V. DC batteries shall be designed for continuous float operation with trickle charge, hence all the associated components like batteries, battery chargers, DC motors, relays, contactors, timers etc shall be suitable for continuous operation at the maximum continuous battery float voltage including suitable temperature correction factors. The operational limits of variation of DC voltage is (+)10 % to (-)15%.</p> <p>In addition, the bidder may propose 110V, 48V or 24V systems as per requirements of control and instrumentation of his equipment and design.</p>			
1.10.00	<p>The Contractor shall furnish calculations of maximum loading and fault levels under the most onerous conditions for the various equipment/systems as defined else where in the specification to prove adequacy of their parameters. In case any equipment or system is found to be inadequate, it shall be changed/ modified without any additional liability to the Employer.</p>			
<p>NORTH KARANPURA STPP (3 X 660 MW) EPC PACKAGE</p>		<p>TECHNICAL SPECIFICATIONS SECTION – VI, PART-B</p>	<p>SUB-SECTION-B0 GENERAL ELECTRICAL SPECIFICATION</p>	<p>PAGE 2 OF 11</p>



**NORTH KARANPURA STPP (3 X
660MW), EPC PACKAGE**

**TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES**

SPECIFICATION NO. PE-TS-405-507-E021

VOLUME II B

SECTION C

REVISION 0

DATE: 12.01.2015

SHEET 1 OF 2

SECTION -C

SPECIFIC TECHNICAL REQUIREMENTS



NORTH KARANPURA STPP (3 X
660MW), EPC PACKAGE

TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES

SPECIFICATION NO. PE-TS-405-507-E021

VOLUME II B

SECTION C

REVISION 0

DATE: 12.01.2015

SHEET 2 OF 2

1.0 SCOPE OF ENQUIRY

- 1.1 This enquiry covers the supply of **Cable Trays & Accessories** conforming to this specification.
- 1.2 General technical requirements of the Cable Trays & Accessories are indicated in Section-D. Project specific technical/ quality requirements / changes are listed in Section-C.
- 1.3 The stipulations of Section-C, followed by those of Data Sheet-A shall prevail in case of any conflict between the stipulations of Section-C, Data Sheet - A & Section-D.

2.0 BILL OF QUANTITIES:

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

3.0 SPECIFIC REQUIREMENTS:

3.1 Technical:

S. No.	Reference clause No. of Section D (if any)	Specific Requirement/ Change

3.2 Quality/ Inspection:

S. No.	Reference clause No. of Section D (if any)	Specific Requirement/ Change
1	4.4	One piece each of 2.5m length of cable tray of 300mm & above shall be taken as sample from each offered lot. It shall be supported at both end & loaded with uniform load of 76 kg/meter along the length of cable tray. The maximum deflection at the mid-span of each size shall not exceed 7mm.
2	4.3	Additional requirement in cl. No 4.3: <u>Routine Tests</u> a) Routine tests as per specification and applicable standards shall be carried out on all



NORTH KARANPURA STPP (3 X
660MW), EPC PACKAGE

TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES

SPECIFICATION NO. PE-TS-405-507-E021

VOLUME II B

SECTION C


REVISION 0

DATE: 12.01.2015

SHEET 3 OF 2

		<p>equipment/items covered in the specification.</p> <p>b) Physical & dimensional check on all equipment as per approved drawings/standards.</p> <p>c) HV/IR as applicable.</p> <p>d) Check/measurement of thickness of paint/zinc coating/nickel-chrome plating as per specification & applicable standard.</p> <p><u>Acceptance Tests</u></p> <p>a) Galvanising Tests as per applicable standards</p> <p>b) Welding checks</p> <p>c) Deflection tests on cable trays</p>
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NTPC quality assurance plan has been attached as ANNEXURE- IV. Bidder to furnish the quality Plan accordingly.

	TECHNICAL SPECIFICATION FOR CABLE TRAY & ACCESSORIES	SPECIFICATION NO. PE-TS-405-507-E021	
		VOLUME IIB	
		SECTION ----	
		REVISION 0	DATE:-12.01.2015
		SHEET of 2	

ANNEXURE - I

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


Sr. No.	ITEM CODE	ITEM DESCRIPTION	UNIT	Ordered quantity	LOT-1 QTY.	UNIT PRICE (EX WORKS) Rs.	TOTAL PRICE (EX-WORKS) Rs.
1.0		HOT DIP GALVANISED LADDER TYPE CABLE TRAY COMPLETE WITH COUPLER PLATES, FASTENERS, CLAMPS AND FIXING HARDWARES ETC.					
a)	507-21101-A	CABLE TRAY 2 MM THICK- LADDER TYPE 150W	MTR	4500	3150		
b)	507-21102-A	CABLE TRAY 2 MM THICK- LADDER TYPE 300W	MTR	31000	21700		
c)	507-21104-A	CABLE TRAY 2 MM THICK- LADDER TYPE 600W	MTR	82500	57750		
2.0		HOT DIP GALVANISED PERFORATED TYPE CABLE TRAY COMPLETE WITH COUPLER PLATES, FASTENERS, CLAMPS AND FIXING HARDWARES ETC.					
a)	507-21109-A	CABLE TRAY 2 MM THICK- PERFORATED TYPE 150W	MTR	2000	1400		
b)	507-21110-A	CABLE TRAY 2 MM THICK- PERFORATED TYPE 300W	MTR	4500	3150		
c)	507-21112-A	CABLE TRAY 2 MM THICK- PERFORATED TYPE 600W	MTR	27000	18900		
3.0		CABLE TROUGHS					
a)	507-21199-A	CABLE TROUGH 2 MM THICK 50MM W	MTR	500	350		
b)	507-21200-A	CABLE TROUGH 2 MM THICK 75MM W	MTR	500	350		
		HOT DIP GALVANISED CABLE TRAY ACCESSORIES					
4.1		LADDER TYPE HORIZONTAL 90 DEG. BEND-600mm RADIUS					
a)	507-21117-A	LAD HOR 90DEG BEND 2 MM THICK 600 RAD 300W	NOS	120	84		
b)	507-21119-A	LAD HOR 90DEG BEND 2 MM THICK 600 RAD 600W	NOS	650	455		
4.2		LADDER TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (INSIDE)					
a)	507-21123-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 300W	NOS	85	60		
b)	507-21125-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 600W	NOS	185	130		
4.3		LADDER TYPE VERTICAL 90 DEG. BEND-600mm RADIUS (OUTSIDE)					
a)	507-21129-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 300W	NOS	115	81		
b)	507-21131-A	LAD VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 600W	NOS	270	189		
4.4		LADDER TYPE TEES-600mm RADIUS					
a)	507-21135-A	LAD TEES 600MM RADIUS 2 MM THICK 300W	NOS	100	70		
b)	507-21137-A	LAD TEES 600MM RADIUS 2 MM THICK 600W	NOS	1150	805		
4.5		LADDER TYPE CROSS-600mm RADIUS					
a)	507-21141-A	LAD CROSS 600 RAD 2 MM THICK 300W	NOS	10	7		
b)	507-21143-A	LAD CROSS 600 RAD 2 MM THICK 600W	NOS	70	49		
4.6		LADDER TYPE REDUCERS					
a)	507-21148-A	LAD REDUCER (50% LHS/RHS) 2 MM THICK 600-300W	NOS	45	22		
4.7		PERFORATED TYPE HORIZONTAL 90 DEG. BEND-600mm RADIUS					
a)	507-21153-A	PER HOR 90DEG BEND 2 MM THICK 600 RAD 300W	NOS	70	49		
b)	507-21155-A	PER HOR 90DEG BEND 2 MM THICK 600 RAD 600W	NOS	510	357		

	TECHNICAL SPECIFICATION FOR CABLE TRAY & ACCESSORIES	SPECIFICATION NO. PE-TS-405-507-E021	
		VOLUME IIB	
		SECTION ----	
		REVISION 0	DATE:-12.01.2015
		SHEET of 2	

Sr. No.	ITEM CODE	ITEM DESCRIPTION	UNIT			UNIT PRICE (EX WORKS) Rs.	TOTAL PRICE (EX-WORKS) Rs.
4.8		PERFORATED TYPE VERTICAL 90 DEG. BEND- 600mm RADIUS (INSIDE)					
a)	507-21159-A	PER VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 300W	NOS	10	7		
b)	507-21161-A	PER VER 90DEG BEND 2 MM THICK 600 RAD-INSIDE 600W	NOS	45	32		
4.9		PERFORATED TYPE VERTICAL 90 DEG. BEND- 600mm RADIUS (OUTSIDE)					
a)	507-21165-A	PER VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 300W	NOS	120	84		
b)	507-21167-A	PER VER 90DEG BEND 2 MM THICK 600 RAD-OUTSIDE 600W	NOS	75	53		
4.10		PERFORATED TYPE TEES-600mm RADIUS					
a)	507-21171-A	PER TEES 600MM RADIUS 2 MM THICK 300W	NOS	32	22		
b)	507-21173-A	PER TEES 600MM RADIUS 2 MM THICK 600W	NOS	620	434		
4.11		PERFORATED TYPE CROSS-600mm RADIUS					
a)	507-21177-A	PER CROSS 600 RAD 2 MM THICK 300W	NOS	10	7		
b)	507-21179-A	PER CROSS 600 RAD 2 MM THICK 600W	NOS	15	11		
4.12		PERFORATED TYPE REDUCERS					
a)	507-21184-A	PER REDUCER (50% LHS/RHS) 2MM THICK 600-300W	NOS	35	25		
5.0		HPT DIP GALVANISED CABLE TRAY COVER COMPLETE WITH FORMED CHANNEL, PIPE, GI FLAT, BOLTS WITH NUTS & WASHERS & FIXING HARDWARES ETC. (1.6mm THICK GALVANISED MS SHEET)					
a)	507-21189-A	COVER 1.6MM THK-NON PERFORATED GALV MS 150W	MTR	500	0		
b)	507-21190-A	COVER 1.6MM THK-NON PERFORATED GALV MS 300W	MTR	500	0		
c)	507-21192-A	COVER 1.6MM THK-NON PERFORATED GALV MS 600W	MTS	500	0		

NOTES:

- The quantities will be released for manufacture in more than one lot. Lot-I quantities, which are indicated above, shall be released for manufacture along with LOI.
- Manufacturing of Lot-I quantities shall be done after the approval of technical and quality documentation, and supply of same shall be completed within four months of date of approval of documents.
- Subsequent lots shall be cleared for manufacture based on progress of engineering and site requirements. A lead-time of three months shall be given for completion of supply of each lot from the date of clearance of the quantities.
- The total quantity variation shall be limited from -30 % to +30 % of the total contract value derived on the basis of the Order Quantities.
- Raw materials: - Steel shall be procured from SAIL / TISCO / ISPATIND/JINDAL/ ESSAR/BHUSHAN STEEL/RINL or authorised re-rollers of SAIL.
- The number of coupler plates, washers, bolts & nuts shall be as per Data Sheet- A attached with the specification.

	NORTH KARANPURA STPP (3 X 660MW), EPC PACKAGE TECHNICAL SPECIFICATION FOR CABLE TRAYS & ACCESSORIES	SPECIFICATION NO. PE-TS-405-507-E021	
		VOLUME II B	
		SECTION ----	
		REVISION 0	DATE: 12.01.2015
		SHEET	1 OF 1

ANNEXURE – II

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

Sl. No.	Drawings/Document Description	Drawings / Document Number	Submission Schedule
1.	Technical Data Sheet for Cable Trays & Accessories	PE-V0-405-507-E011	Within one week of award of contract
2.	GA drawings of Cable Trays & Accessories	PE-V0-405-507-E012	Within one week of award of contract
3.	Quality Plan for Cable Trays & Accessories	PE-V0-405-507-E902	Within one week of award of contract

Note:-

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. Data Sheet-A, Standard Quality Plan/Reference Quality Plan agreed with end customer & Typical details of Cable trays & Accessories 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.

CLAUSE NO.

GENERAL TECHNICAL REQUIREMENTS Annexure-III



S.No	Description of Drgs/Docs	No of Prints	No of ROMs/DVDs/Portable Hard Disk	CD
1	Drawings, Data sheets, Design calculations, Purchase specifications and other documents			
	First submission and submission with major changes			
	▪ Layout (A0&A1 sizes)	4	-	
	▪ Other Drawings/Documents (A0&A1 sizes)	2	-	
	▪ P&ID (All sizes)	4	-	
	a) Final drawings/documents (Directly to site)	6	2	
	b) "As Built" Drawing/Documents (Directly to site)	6	2	
	c) Analysis reports of Equipments / piping /structures components/system employing software packages as detailed in the specifications.	2	2	
2	Erection Manual (Directly to site)	4 sets	2	
3	Operation & Maintenance manual			
	i) First Submission	1 set	--	
	ii) Final Submission (Directly to site)	4 sets	2	
4	Plant Hand Book			
	i) First Submission	1	1	
5	Commissioning and Performance Test Procedure manual			
	i) First Submission	1 set	--	
	ii) Final Submission (Directly to site)	4 sets	2	

NORTH KARANPURA STPP
(3X660 MW)
EPC PACKAGE

TECHNICAL SPECIFICATION
SECTION - VI, PART-C
BID DOC.NO.:CS-4410-001-2

GENERAL TECHNICAL
REQUIREMENTS
Annexure-VI

PAGE
83 OF 100

098

CLAUSE NO.

QUALITY ASSURANCE



CABLING, EARTHING, LIGHTNING PROTECTION

ATTRIBUTES / CHARACTERISTICS	Dimension	Paint shade, paint thickness, adhesion	Pre-treatment of sheet	IP protection	Proof load*	Surface finish	Deflection test*	HV & IR	Galvanise Test (If Applicable)	Functional	Bought out items/Bill of material	Routine tests as per relevant standard & specification	Acceptance tests as per relevant standard & specification	Constructional feature as per NTPC
ITEMS/COMPONENTS / SUB SYSTEMS														
Wall Mounted-Lighting Panel (IS-513, IS:5, IS:2629, 2633, 6745)	Y	Y	Y	Y		Y		Y	Y	Y	Y	Y	Y	Y
Switch box/junction box/ Receptacles Panel (IS-513, IS:5, IS:2629, 2633, 6745)	Y	Y	Y	Y		Y		Y	Y	Y	Y	Y	Y	Y
Cable glands(BS-6121)	Y											Y		
Cable lug(IS-8309)	Y											Y		
Lighting wire(IS-694)	Y											Y		
Flexible conduits	Y											Y		Y
Conduits(Galvanise & Epoxy) IS-9537 & IS-2629,2633 ,6745	Y		Y								Y	Y		Y
RCC Hume Pipe (IS-458)												Y		
Cable termination & straight through joint (VDE-0278)	Y											Y		Y
Cable Trays, Flexible supports system & accessories IS-513, 2629,2633,6745	Y		Y		Y	Y	Y	Y	Y	Y		Y	Y	Y
Trefoil clamp	Y													Y
GI flats for earthing & lighting protection (IS 2062, 2629, 6745,2633)	Y		Y						Y			Y		Y
GI wire (IS-280)	Y											Y		
Fire Sealing System (BS -476)												Y	Y	Y

.Note:1.This is an indicative list of tests /checks. The manufacturer is to furnish a detailed Quality Plan indicating the practice and procedure along with relevant supporting documents.

2.* Deflection Test on cable trays and Proof Load test on cable trays support system will be as per details given in the NTPC technical specification & approved MQP. The above acceptance tests shall be done only on one sample from each size of offered lot.

3. Make of all items will be subject to NTPC approval.



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

SPECIFICATION NO. PE-TS-999-507-E021

VOLUME II B

SECTION D

REVISION 1

DATE: 26/08/2011

SHEET 1 OF 3

SECTION-D

STANDARD TECHNICAL SPECIFICATION



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

SPECIFICATION NO. PE-TS-999-507-E021

VOLUME II B

SECTION D

REVISION 1

DATE: 26/08/2011

SHEET 2 OF 3

1.0 SCOPE OF ENQUIRY

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

2.0 CODES & STANDARDS

2.1 The material, constructional features and various processes involved in manufacture shall comply with latest revision of relevant Indian Standards.

2.2 The design, material, construction, manufacture, inspection, testing and performance of Cable Trays & Accessories shall conform to the latest revision of relevant standards and codes of practices mentioned in Data Sheet - A.

2.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

3.0 DESIGN REQUIREMENTS AND CONSTRUCTIONAL FEATURES

3.1 All items listed in the BOQ –Cum-Price Schedule for Cable Trays & Accessories (Annexure - I of the specification) shall be manufactured as per Datasheet-A and project drawings enclosed with this specification. Minor fabrication detail changes which do not affect the material / dimensional aspect of the equipment, shall be to BHEL / owner's approval without any commercial implications.

3.2 Cable Trays & Accessories, Tray Covers and Fittings:

3.2.1 Cable trays & accessories shall be of two types, namely ladder type and perforated type as specified in Data Sheet A and drawings enclosed with this specification.

3.2.2 Coupler plates shall be provided for connecting tray ends to other straight trays, horizontal elbows, vertical elbows, tees, cross, reducers etc.

3.2.3 Necessary fasteners shall be provided along with each length of cable tray as specified in drawings enclosed. The number of coupler plates, washers, nuts & bolts to be supplied shall be as per Data Sheet – A.

3.2.4 The width of the tray covers (where provided) shall be suitable for the width of trays. Suitable bolting arrangement shall be supplied for attaching the cover to the cable trays, elbows, reducers, tees etc. as per the drawing enclosed.

3.2.5 All welded joints shall be smooth enough to provide a good appearance and shall not cause any injury to working personnel or any damage to the cable laid directly on it. All welding work shall be done by skilled personnel.

4.0 QUALITY / INSPECTION:

4.1 BHEL's Standard QP (QP NO. PED-507-00-Q-005/04) 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



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

SPECIFICATION NO. PE-TS-999-507-E021

VOLUME II B

SECTION D

REVISION 1

DATE: 26/08/2011

SHEET 3 OF 3

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 equipments & components shall be deemed to be included in the bid price.

4.4 Load Test:-

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

5.0 PACKING

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

6.0 DELIVERY

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

7.0 DOCUMENTATION

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

a) A copy of sheet "Contents" with bidder's signature & company stamp

b) A copy of sheet "Instructions to bidders for preparing Technical offer" with bidder's signature & company stamp.

c) Unpriced copy of "Annexure-I (BOQ – Cum- Price Schedule for Cable Trays & Accessories)" with bidder's signature & company stamp.

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

7.2 Documents to be submitted by successful bidder after award of contract shall be as per Annexure-II.

7.3 Vendor drawing / document schedule for the project shall be as per Annexure – III.



**NORTH KARANPURA STPP (3 X
660MW) EPC PACKAGE**

**TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES**

SPECIFICATION NO. PE-TS-405-507-E021

VOLUME II B

SECTION D

REVISION 0

DATE: 12.01.2015

SHEET 1 of 2

DATASHEET-A

1.0 APPLICABLE STANDARDS

- a) IS: 1079 For hot rolled carbon steel sheet and strip.
b) IS: 1730 For dimensions for steel sheet and strip.
c) IS: 1363 Hexagon head bolts, screws and nuts.
d) IS: 2629 For hot dip galvanising of steel & surface pre treatment.
e) IS: 2633 For testing of zinc coating.
f) IS: 6745 For determining of mass of zinc coating.
g) IS: 1367 Galvanised Coating on threaded Fasteners.
(Part-XIII)
h) IS: 1852 For Rolling and Cutting Tolerances of hot rolled steel products.
i) IS: 9595 For thickness of welding of carbon & carbon manganese steels

2.0 CABLE TRAYS & ACCESSORIES

- 2.1 Material : Hot Rolled Mild Steel
- 2.2 Type : Ladder Type
Perforated Type
Cable trough
- 2.3 Standard Length of
Straight Length of
Cable Trays : 2.5 meters
- 2.4 Standard Width (mm) : Cable Trays : 600 300 150
Cable Trough: 75 50
- 2.5 Construction : Conforming to enclosed drawing [PE-DG-405-507-E005]
- 2.6 Bending Radius
of Accessories(in mm) : 600 mm
- 2.7 Tolerance in length/width
/ height : + /- 2 mm

3.0 FITTINGS

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

4.0 TRAY COVERS

- a) Type : Non-Perforated Type
b) Material : Hot Rolled Mild Steel
c) Width : Suitable for width of cable trays
d) Tolerance in length/
width/height : Same as cable trays



**NORTH KARANPURA STPP (3 X
660MW) EPC PACKAGE**

**TECHNICAL SPECIFICATION FOR
CABLE TRAYS & ACCESSORIES**

SPECIFICATION NO. PE-TS-405-507-E021

VOLUME II B

SECTION D

REVISION 0

DATE: 12.01.2015

SHEET 2 of 2

4.0 SHEET THICKNESS

- a) For cable trays & Accessories : 2.0 mm
b) For cable tray cover : 1.6 mm
c) For Coupler plate : 3.0 mm
d) Tolerance in Thickness : (+/- 0.2 mm)


6.0 SURFACE TREATMENT


- a) Pre-treatment : IS 2629 before galvanisation
b) Type : Hot dip galvanisation
c) Applicable Standard : IS 2629
d) Minimum thickness : 75 microns (minimum)
e) Min. weight of Zinc deposit : 610 grams 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 Test as per IS 2629.

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

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

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

		QUALITY PLAN			CUSTOMER :NTPC			PROJECT: NORTH KARANPURA STPP (3 X 660MW) EPC PACKAGE			SPECIFICATION :		
					BIDDER/ VENDOR			QUALITY PLAN NUMBER PED-507-00-Q-005/04			NUMBER : PE-TS-405-507-E021		
		SHEET 1 OF 2		SYSTEM CABLING			ITEM : CABLE TRAYS & ACCESSORIES			SECTION VOLUME III			REMARKS
SL. NO.	COMPONENT/OPERATION	CHARACTERISTIC CHECK	CAT.	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY			REMARKS	
									P	W	V		
1	2	3	4	5	6	7	8	9	10			11	
1.0	RAW MATERIAL												
1.1	ROLLED SHEET	1.CHEM.& PHY. PROPERTIES	MA	VERIFICATION OF TC'S	100%	IS1079	IS1079	MILL TC	3/2	-	-	Steel shall be procured from SAIL/TISCO/RINL/BHUSAN/JINDAL/ESSAR/ISPAT/authorised SAIL re-rollers	
		2.DIMENSIONS	MA	MEASUREMENT	100%	IS-1730/ BHEL SPEC	IS-1730/ BHEL SPEC	QC RECORD	3/2	-	-		
		3.SURFACE FINISH	MA	VISUAL	100%	IS-1079/ BHEL SPEC.	IS-1079/ BHEL SPEC.	QC RECORD	3/2	-	-		
1.2	ZINC	CHEM.COMP.	MA	CHEM TEST	EACH HEAT	IS-209	IS-209	QC RECORD	3/2	-	1/2		
2.0	IN-PROCESS											Inspection at black stage by BHEL/BHEL authorised inspection agency. Sample size for witnessing shall be 2 Nos/LOT of each size & type.	
2.1	FABRICATION	1.DIMENSIONS	MA	MEASUREMENT	100%	APPD.DRG.	APPD.DRG.	QC RECORD	2	1	-		
		2.WELDING QUALITY	MA	VISUAL	100%	GOOD WELDING PRACTICE	FREE FROM DEFECTS & SLAG	QC RECORD	2	1	-		
		3.SURFACE FINISH	MA	VISUAL	100%	BHEL SPEC	BHEL SPEC	QC RECORD	2	-	1		
		4.RIGIDITY (CABLE TRAYS)	MA	DEFLECTION TEST	* Refer Remarks Column	BHEL SPEC.	BHEL SPEC	QC RECORD	2	-	1	* One piece each of 2.5 m length of cable tray of each type of 300 mm & above shall be taken as sample from each offered lot.	
2.2	SURFACE PREPARATION	1.CLEANING PICKLING & RINSING & FLUXING	MA	MEASUREMENT	PERIODIC IN EACH SHIFT	IS:2629	IS:2629	QC RECORD	2	-	-		
		2. SURFACE QUALITY	MA	VISUAL	100%	IS:2629	IS:2629	QC RECORD	2	-	-		
BHEL			PARTICULARS			BIDDER/VENDOR							
			NAME										
			SIGNATURE										
			DATE						BIDDER'S/VENDORS COMPANY SEAL				

		QUALITY PLAN			CUSTOMER : NTPC			PROJECT: NORTH KARANPURA STPP (3 X 660MW) EPC PACKAGE		SPECIFICATION :		
		SHEET 2 OF 2			BIDDER/ VENDOR :			QUALITY PLAN NUMBER PED-507-00-Q-005/04		NUMBER : PE-TS-405-507-E021		
		SYSTEM CABLING			ITEM : CABLE TRAYS & ACCESSORIES			SPECIFICATION : TECHNICAL SPECIFICATION FOR CABLE TRAYS & ACCESSORIES			SECTION VOLUME III	
SL. NO.	COMPONENT/OPERATION	CHARACTERISTIC CHECK	CAT.	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY			REMARKS
									P	W	V	
1	2	3	4	5	6	7	8	9	10			11
2.3	GALVANISING	1.TEMPERATURE OF ZINC BATH 2.DROSS 3.RATE OF IMMERSION 4.SURFACE QUALITY	MA MA MA MA	TEMPERATURE INDICATOR VISUAL VISUAL VISUAL	CONTINUOUS PERIODIC 100% 100%	IS-2629 IS 2629 IS 2629/ MFR'S PRACTICE IS 2629	IS-2629 IS 2629 IS2629/ MFR'S PRACTICE FREE FROM BURRS ROUGHNESS, SLAG FLUX, STAIN, ETC.	QC RECORD QC RECORD QC RECORD QC RECORD	2/3 2/3 2/3 2/3	- - - -	- - 2 -	If vendor doesn't have his own galvanizing plant duly approved by BHEL PEM; then galvanizing shall be carried out at BHEL-PEM approved other galvanizing plants as per Annexure-2.
3.0	FINISHED ITEMS											
3.1	(CABLE TRAY, ACCESSORIES & HARDWARES)	1.DIMENSIONS 2.SURFACE FINISH 3.RIGIDITY (FOR TRAYS) 4.MASS OF ZINC COATING 5.UNIFORMITY OF ZINC COATING 6.THICKNESS OF ZINC COATING 7.ADHESION	MA MA MA MA MA MA MA	MEASUREMENT VISUAL DEFLECTION TEST CHEM. TEST CHEM. TEST ELCOMETER MECH.TEST	IS-2500 (PART 1) LEVEL S-4 IS-2500 (PART 1) LEVEL S-4 * Refer Remarks Column IS-4759/ BHEL SPEC IS-4759/ BHEL SPEC IS-4759/ BHEL SPEC IS-4759	APPD. DRG BHEL SPEC BHEL SPEC IS-6745/ BHEL SPEC IS-2633 BHEL SPEC IS-2629	APPD. DRG FREE FROM BURRS, SLAG, ROUGHNESS, FLUX, STAIN, ETC. BHEL SPEC BHEL SPEC. IS-2633 BHEL SPEC	INSP.REPORT INSP.REPORT INSP.REPORT INSP.REPORT INSP.REPORT INSP.REPORT	2 2 2 2 2 2 2	1 1 1 1 1 1 1	- - - - - - -	Fasteners shall be of reputed make. * One piece each of 2.5 m length of cable tray of each type of 300 mm & above shall be taken as sample from each offered lot. MAXIMUM DEFLECTION SHALL NOT EXCEED 7MM ON UNIFORM LOADING OF 100 KG/M
NOTE : INSTRUCTIONS FOR FILLING QUALITY PLAN IS ATTACHED AS ANNEXURE - 1.												
BHEL			PARTICULARS			BIDDER/VENDOR						
			NAME									
			SIGNATURE									
			DATE									BIDDER'S/VENDORS COMPANY SEAL

ANNEXURE – 1

INSTRUCTIONS FOR FILLING QUALITY PLAN

The Quality Plan shall include all the Quality Control Measures and Checks adopted by the Vendor to ensure that the material/component/assembly/services supplied by him meet/will meet the requirements as per specifications and good practices. They shall include all stages of operation such as materials, processes, manufacture, assembly, packing and despatch. The following guide lines may be noted:

- Column 1- Serial Number
- Column 2- Component/Operation- The component and/or operation being checked shall be given here.
- Column 3- Characteristics check- The characteristics being checked shall be given here, e.g., chemical composition, mechanical properties, leak tightness, surface defects etc..
- Column 4- Category -'CR' stands for critical characteristic - affecting safety of equipment and personnel
'MA' stands for major Characteristic - affecting safety of equipment and personnel
'MI' stands for minor characteristic - affecting appearance etc.
- Column 5- Type/Method of check e.g. chemical analysis tensile testing, hydraulic test, visual examination radiography etc.
- Column 6- Extent of check, such as, 100, 10, 1 percent etc.
- Column 7- Reference Documents - Documents, such as technical specification, drawings, standard specifications (IS, BS ETC.) procedure, etc. according to which check is done.
- Column 8- Acceptance Norms - Standards etc. according to which acceptability or otherwise of the characteristics being checked is decided.
- Column 9- Format of Record - Formats, log sheets, reports, etc. in which the observations are recorded. Standard log sheets, reports, formats etc. of the Vendors shall be numbered and such reference numbers shall be included here.
- Column 10- Agency - The agency which performs the test/instruction shall be written in sub-column 'W'
The agency which verifies test certificates/inspection records and carries out audit check of the components/operation shall be written in sub-column 'V'

The agencies are codified as 1,2 & 3

'1' stands for (BHEL)

'1' * means the operation shall be cleared by BHEL before the start of the next operation.

'2' Stands for Vendor

'3' stands for sub-Vendor of the Vendor and so on.

Example :

Entry '3' in column 'P' means test./inspection to be performed by sub-Vendor's QC

Entry '2' in column 'W' means test./inspection to be witnessed by Vendor's QC

Entry '1' in column 'V' means verification shall be done by BHEL and next stage to be started only after the hold point is cleared by BHEL

Column11- Remarks - Any special remarks shall be given here.

NOTES :

1. In absence of correlation with the test certificate(s) (e.g. material identification) samples shall be drawn by BHEL and all tests as per relevant specifications shall be carried out in their presence or in recognized Government Laboratory.
2. When materials and components are initially identified and stamped by BHEL QS engineer, the identification marks shall be preserved till despatch. Wherever this is not possible, the identification mark shall be transferred to the components in the presence of BHEL QS Engineer unless otherwise agreed.
3. For castings and forgings integral test specimens shall be provided, When this is not possible for casting, they shall be poured in the presence of BHEL QS Engineer unless otherwise, if witnessing of test by BHEL is called for.
4. When welders qualified by reputed inspection agencies or statutory bodies are not available, qualification tests shall be conducted in the presence of BHEL QS Engineer.
5. This Quality Plan is liable to be modified as per the requirements of approved drawings and changes in technical specifications/drawings. If there are contradictions in respect of column 7 & 8 between this Quality Plan and the approved drawings specifications, the latter shall prevail.
6. Wherever inspection by BHELs Purchaser/Third Party/Statutory authorities are mandatory, this shall be complied with.
7. Inspection reports, log sheets, test reports/certificate. etc. shall be furnished to BHEL at the appropriate stages or at the time of final inspection, as required.
8. This Quality Plan is also applicable to spares, if any, under scope of supply of Vendor.
9. The quality plan shall be submitted in minimum 4 copies with a soft copy of the same or in line with contract requirements.

ANNEXURE -2 of Quality Plan

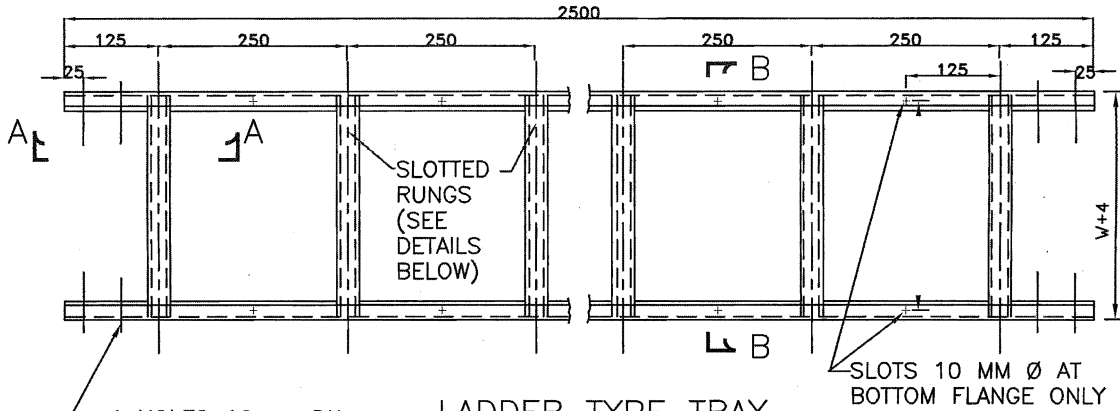
(LIST OF BHEL- PEM APPROVED GALVANIZERS)

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 GALVANISING 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	M/s Shivam Engineers & Fabricators	A0-282-284, Industrial area, South side of G.T. road, Ghaziabad, U.P.
9	GALVANISING	M/s B.G. Shirke Construction Technology Pvt. Ltd.	Office & factory : 72-76, Mundhawa, Pune -401 036
10	GALVANISING	M/s Galbro Ispat Galvanizers Pvt. Ltd.	Gut 11 and 12, Opp. Kudus Steel Rolling mill, Wada, Thane , Mumbai
11	GALVANISING	M/s Eros Metal works (P) Ltd	Unit-1: Main plant, MIs Eros Metal works (G-5, MIDC, Hingna Road Nagpur) Unit-2: Galvanizing Unit, MIs Eros Infrastructures Pvt. Ltd. (G-97, MIDC, Butibori, Nagpur)

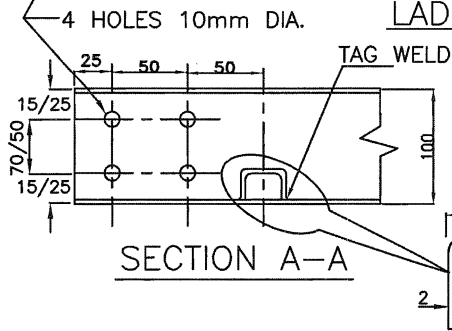
Note:- The above list doesn't include the list of BHEL - PEM approved galvanizing plants owned by BHEL - PEM registered vendor of cabling items.

TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES

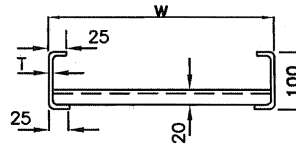
NTPC DWG. NO. 4410-001-215-PVE-B-003						
REV. 01	DATE	ALTD HK	CHD MS	APPD RG		
OWNER: NATIONAL THERMAL POWER CORPORATION						
1. REVISED IN LINE WITH CUSTOMER'S COMMENTS DTD. 05.11.2014. 2. CHANGES MARKED WITH						
3X660 MW NORTH KARANPURA STPP						
405		BHARAT HEAVY ELECTRICALS LTD. POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA				
CONTRACT						
DISTRIBUTION		DEPT CODE	DRN	NAME AV	SIGN -sd-	DATE 21.03.14
		E	DSGN	AV/HK	-sd-	21.03.14
			CHD	AKR	-sd-	21.03.14
			APPD	AK	-sd-	21.03.14
		TITLE			DRAWING NO.	
		TYPICAL DETAILS OF			PE-DG-405-507-E005	
		CABLE TRAYS AND ACCESSORIES			SHEET 1 OF 11	
					REV. 01	



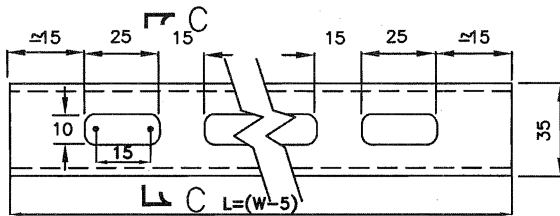
LADDER TYPE TRAY



SECTION A-A

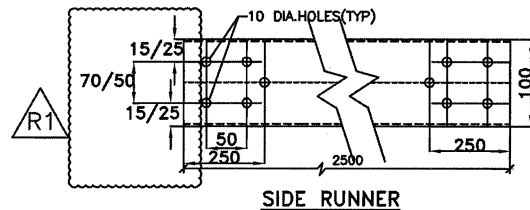


SECTION B-B



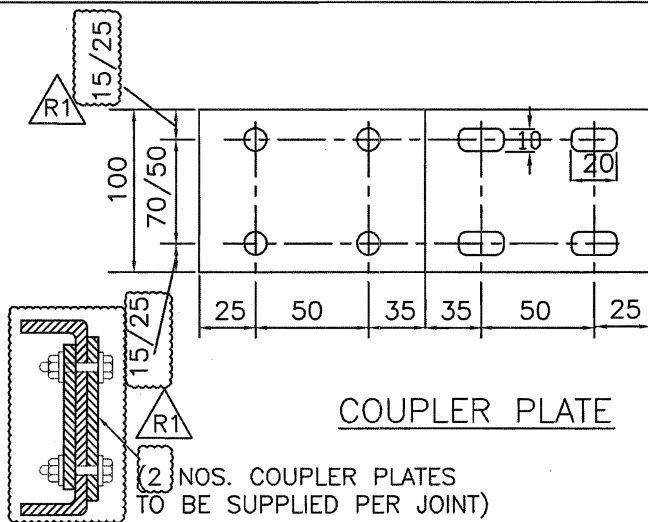
SLOTTED RUNGS

(TO SUIT TRAY WIDTH)



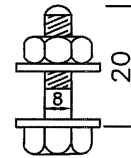
SIDE RUNNER

LADDER TYPE TRAY



COUPLER PLATE

COUPLER PLATE
(3mm THICK)



8 NUMBERS BOLTS
8mm DIA 20mm LONG
WITH NUTS AND
WASHERS ARE TO BE
SUPPLIED WITH EACH
COUPLER PLATE



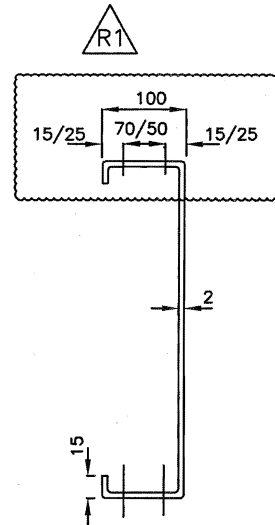
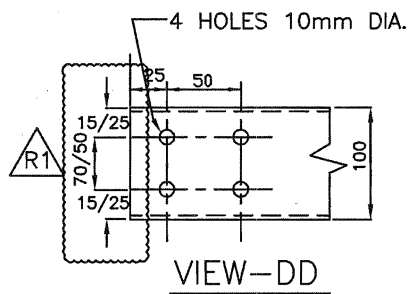
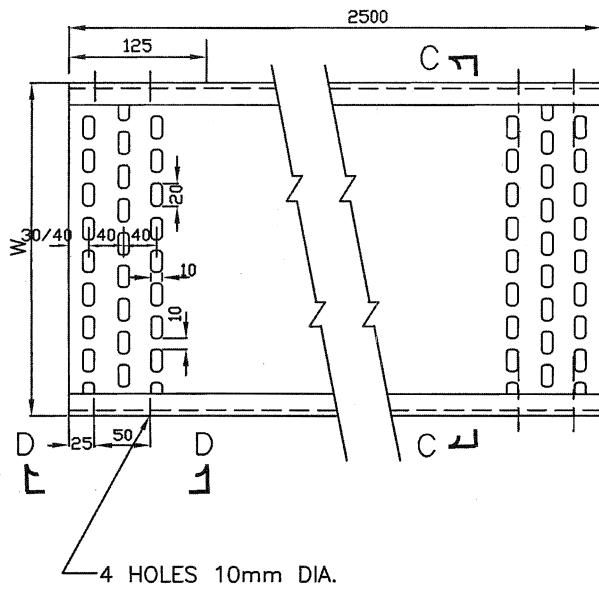
TYPICAL DETAILS OF
CABLE TRAYS AND ACCESSORIES

DRAWING NO.

PE-DG-405-507-E005

SH 2 OF 11

REV 01



PERFORATED TYPE TRAY

SEE GENERAL NOTES IN SHEET 10.



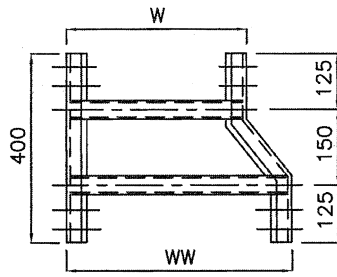
TYPICAL DETAILS OF
CABLE TRAYS AND ACCESSORIES

DRAWING NO.

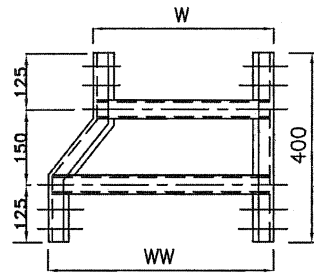
PE-DG-405-507-E005

SH 3 OF 11

REV 01



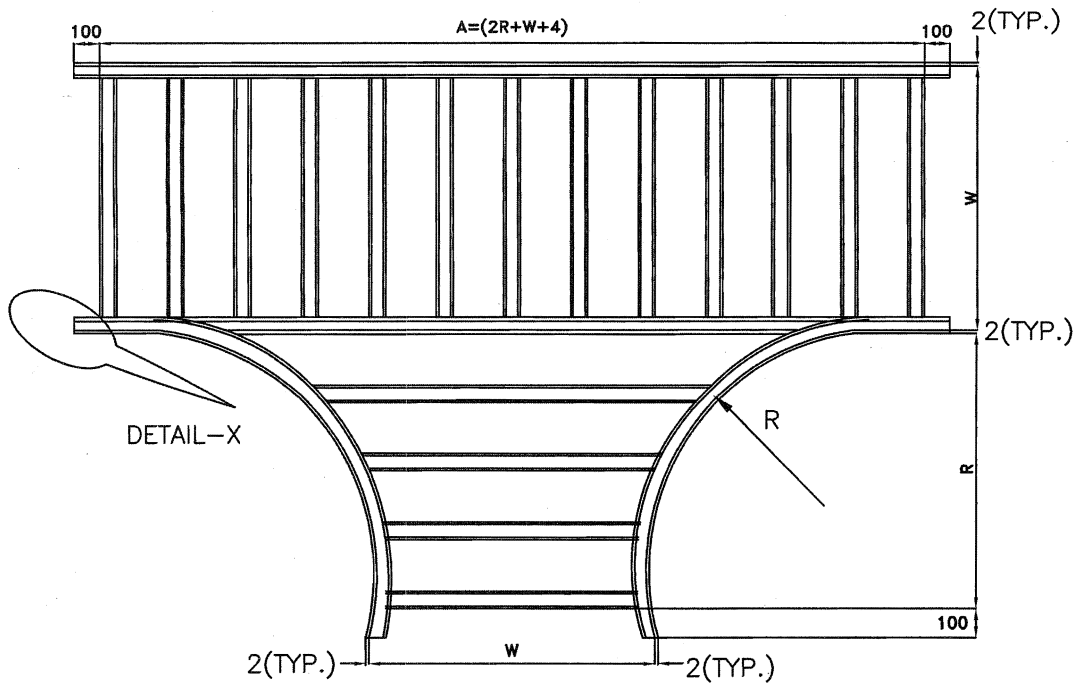
LEFT HAND REDUCER



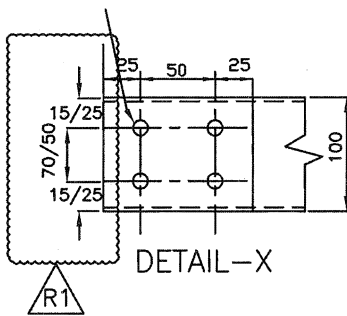
RIGHT HAND REDUCER

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

LADDER TYPE



10mm DIA. HOLES



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

SEE GENERAL NOTES IN SHEET 10.

LADDER TYPE



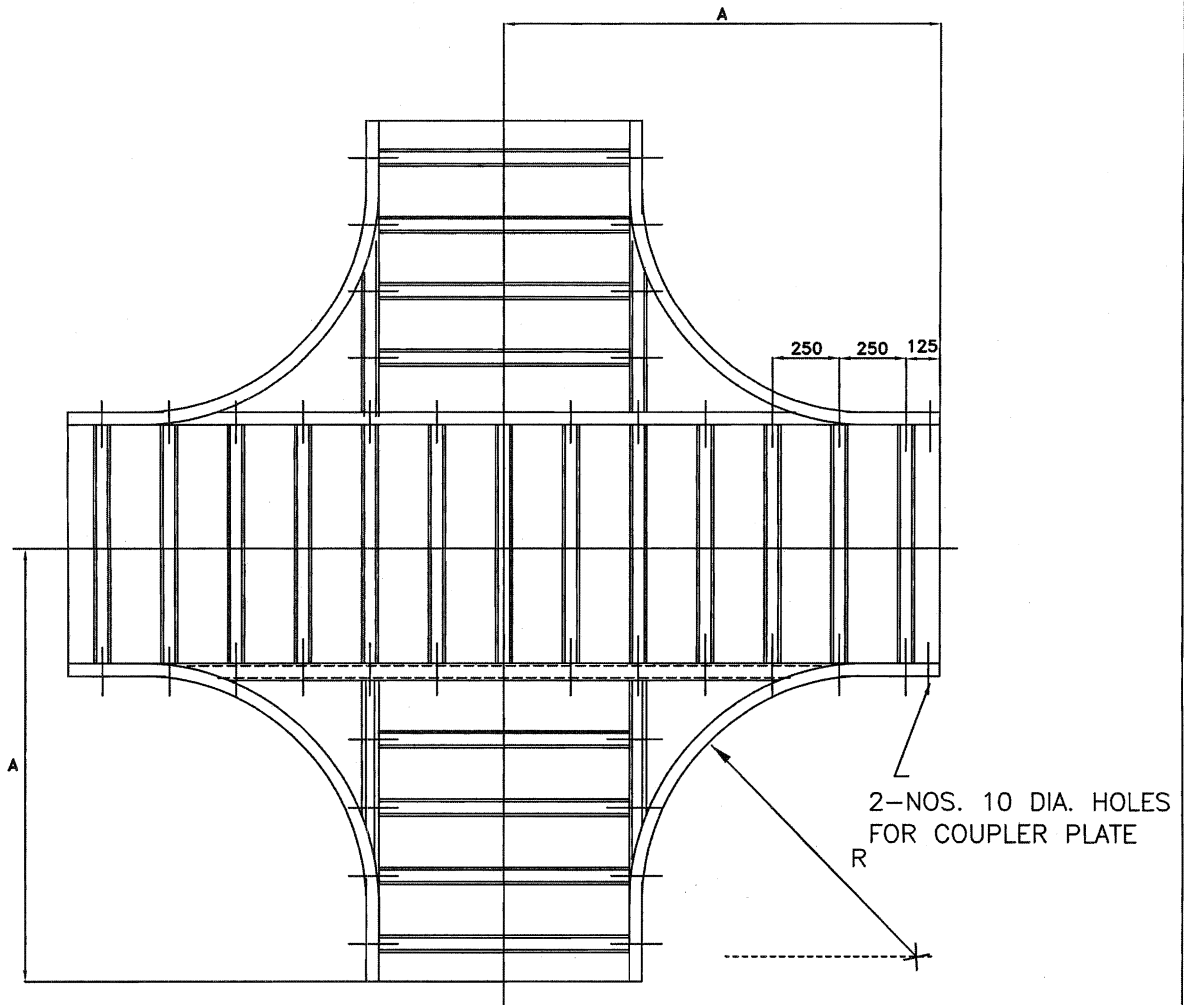
TYPICAL DETAILS OF
CABLE TRAYS AND ACCESSORIES

DRAWING NO.

PE-DG-405-507-E005

SH 4 OF 11

REV 01



HORIZONTAL CROSS-PLAN

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



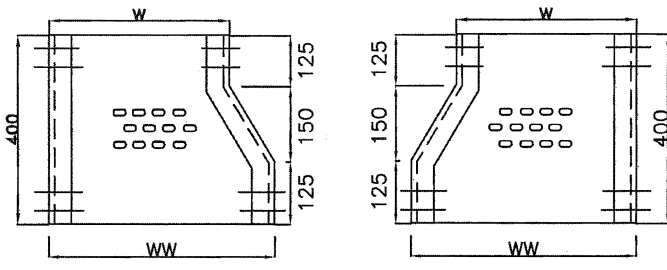
**TYPICAL DETAILS OF
CABLE TRAYS AND ACCESSORIES**

DRAWING NO.

PE-DG-405-507-E005

SH 5 OF 11

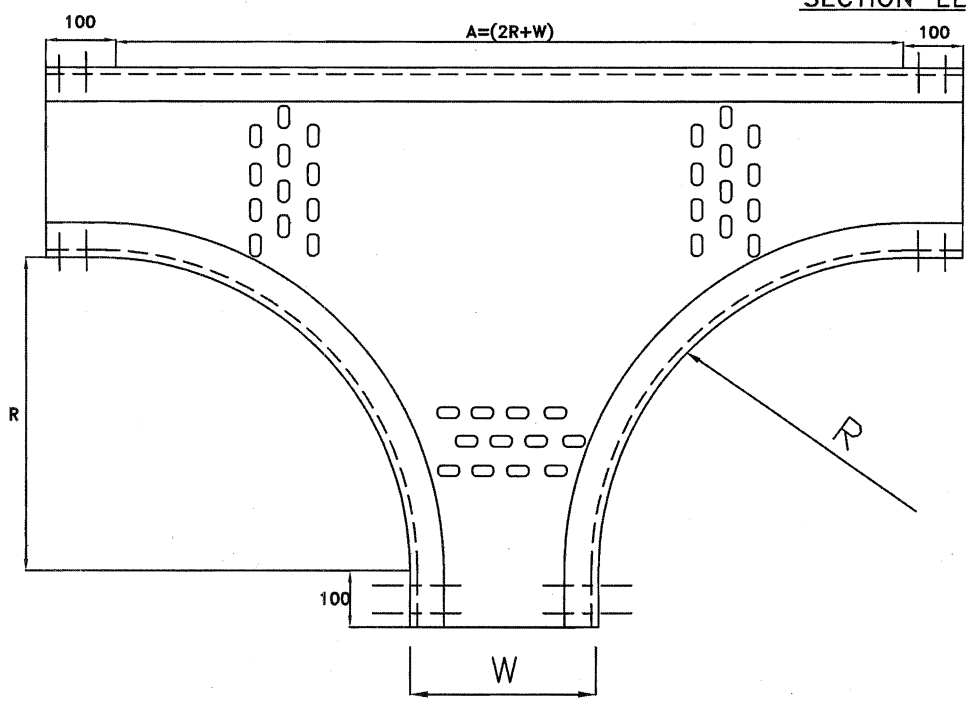
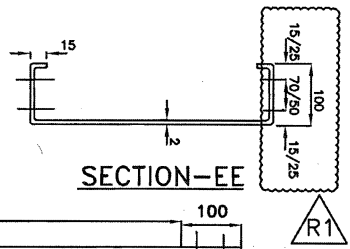
REV 01



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

LEFT HAND REDUCER RIGHT HAND REDUCER

PERFORATED TYPE

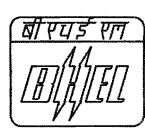


TEE

WIDTH W	BENDING RADIUS R	DEPTH	A		
			W		
			150	300	600
150, 300 & 600	600	100	1350	1500	1800

SEE GENERAL NOTES IN SHEET 10.

PERFORATED TYPE



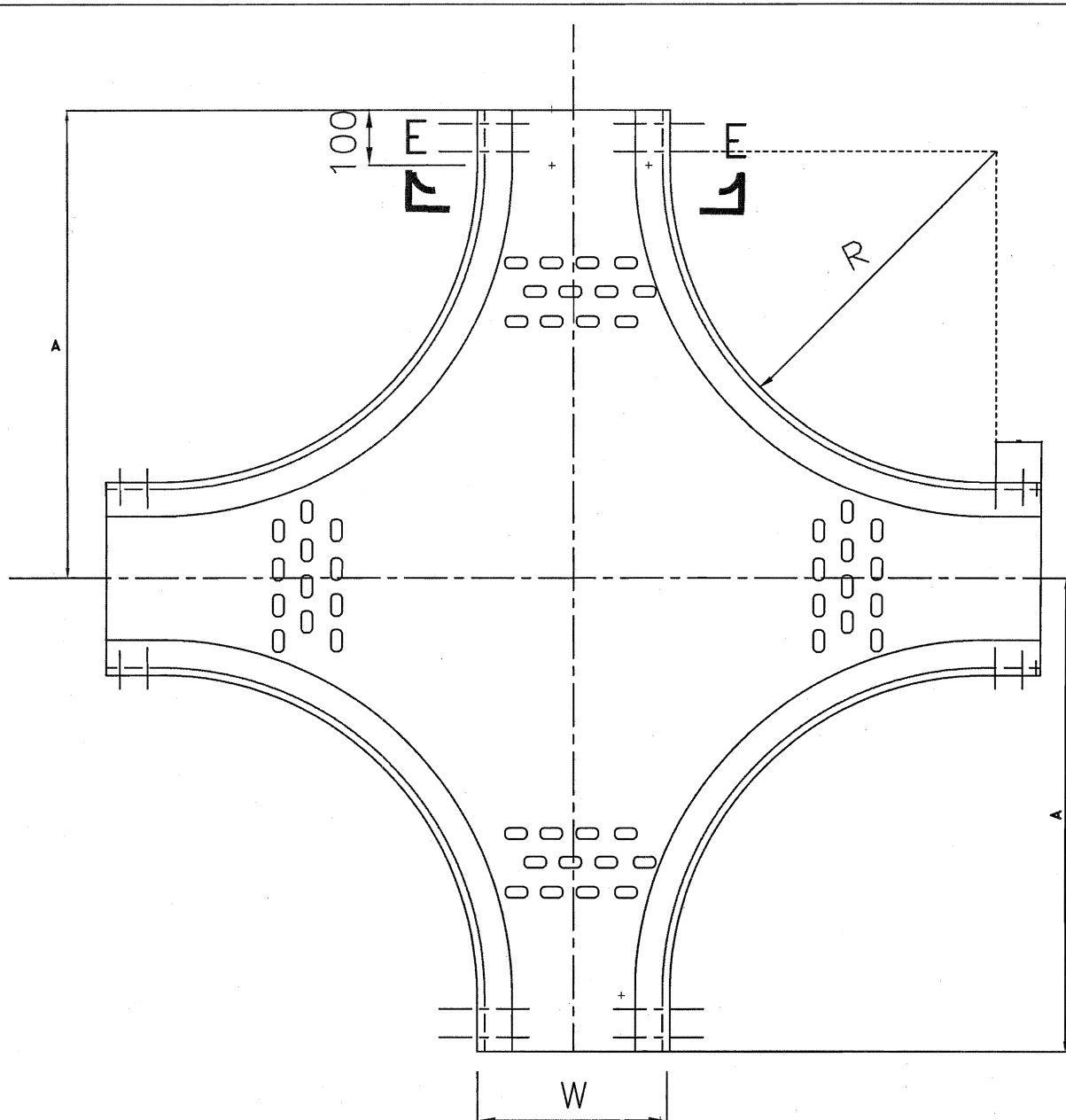
TYPICAL DETAILS OF
CABLE TRAYS AND ACCESSORIES

DRAWING NO.

PE-DG-405-507-E005

SH 6 OF 11

REV 01



CROSS

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



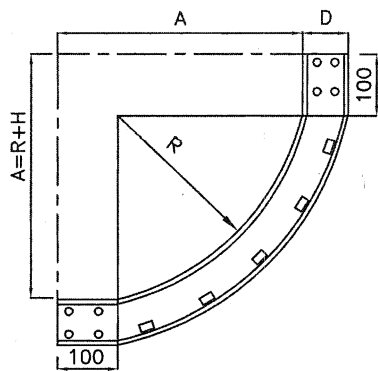
TYPICAL DETAILS OF
CABLE TRAYS AND ACCESSORIES

DRAWING NO.

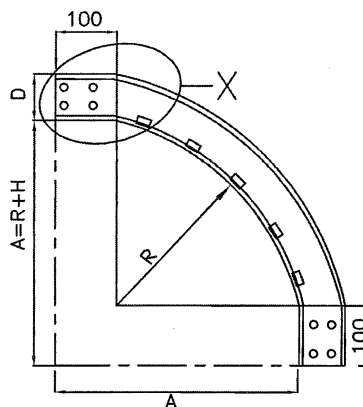
PE-DG-405-507-E005

SH 7 OF 11

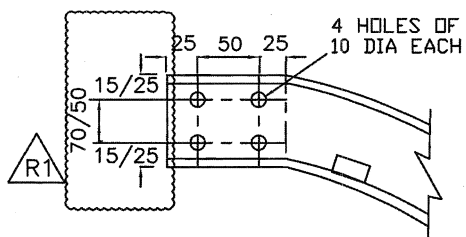
REV 01



INSIDE TYPE



OUTSIDE TYPE

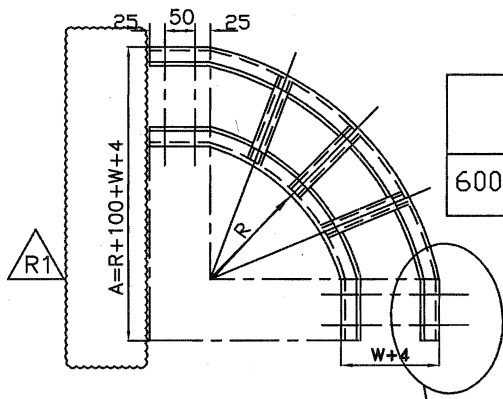


ENLARGED VIEW OF "X"

VERTICAL ELBOW 90 DEG UP/DOWN

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

90° VERTICAL BEND - LADDER TYPE



LADDER TYPE

X (AS ABOVE)

HORIZONTAL ELBOW 90 DEG

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

90° HORIZONTAL BEND - LADDER TYPE

SEE GENERAL NOTES IN SHEET 10.



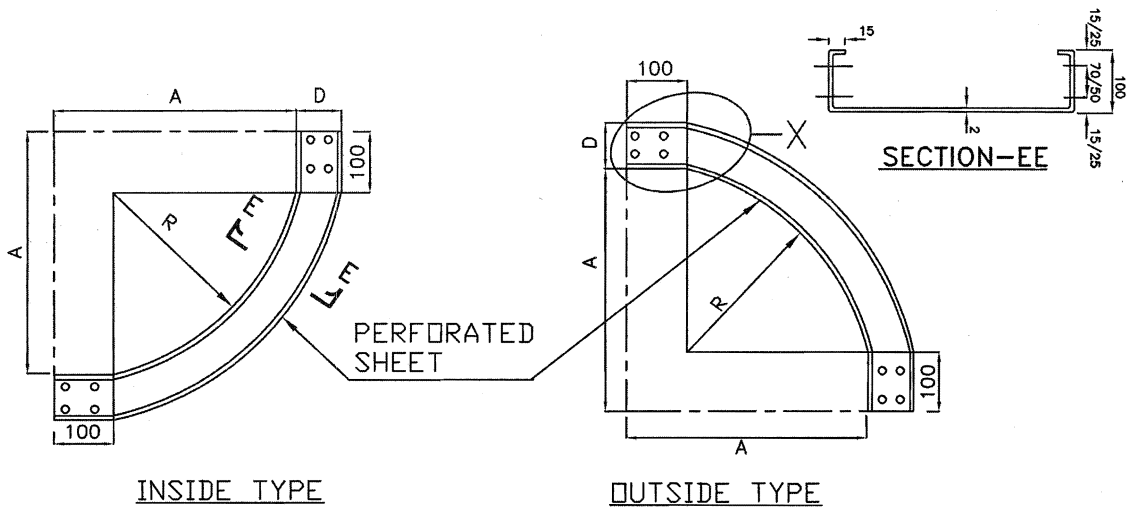
TYPICAL DETAILS OF
CABLE TRAYS AND ACCESSORIES

DRAWING NO.

PE-DG-405-507-E005

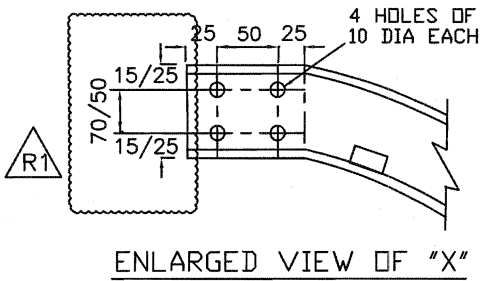
SH 8 OF 11

REV 01



INSIDE TYPE

OUTSIDE TYPE

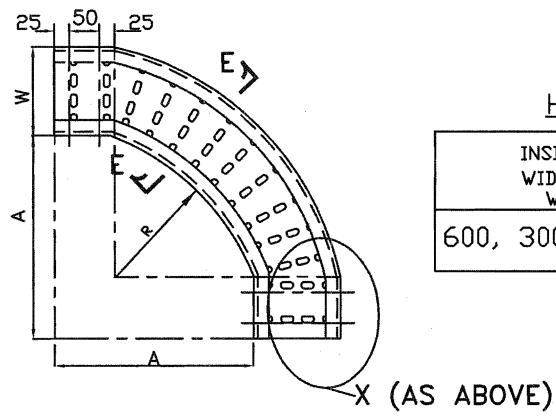


ENLARGED VIEW OF "X"

VERTICAL ELBOW 90 DEG UP/DOWN

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

90° VERTICAL BEND - PERFORATED TYPE



HORIZONTAL ELBOW 90 DEG

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

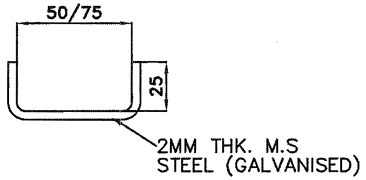
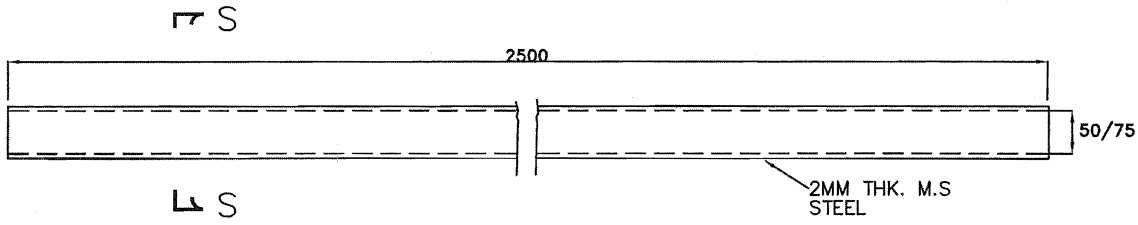
90° HORIZONTAL BEND - PERFORATED TYPE

SEE GENERAL NOTES IN SHEET 10.



TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES

DRAWING NO.
PE-DG-405-507-E005



SECTION S-S

CABLE TROUGHS

SEE GENERAL NOTES IN SHEET 10.



TYPICAL DETAILS OF
CABLE TRAY AND ACCESSORIES

BHEL DRAWING NO.
PE-DG-405-507-E005

SH 10 OF 11	REV 01
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NOTES:-

1. THE CABLE TRAYS AND ACCESSORIES SHALL BE MADE OF 2mm M.S.SHEET CONFIRMING TO IS:1079.
2. THE CABLE TRAYS AND ACCESSORIES SHALL BE HOT DIP GALVANISED AS PER IS 2629.
3. FOR LADDER TYPE CABLE TRAYS AND ACCESSORIES, ALL RUNGS SHALL BE SLOTTED.
4. PERFORATED TRAYS SHALL BE FABRICATED OUT OF A SINGLE M.S. SHEET.
5. THE DIMENSIONS OF ALL BENDS, TEES, CROSSES, ETC. FOR PERFORATED CABLE TRAYS SHALL BE THE SAME AS FOR LADDER TYPE TRAY FITTINGS.
6. SIDE CHANNELS OF PERFORATED TRAY ACCESSORIES SHALL BE WELDED WITH THE PERFORATED SHEET AT INTERVALS OF 100mm.
7. LENGTH OF WELDING SHALL NOT BE LESS THAN 25mm. WELDING SHALL BE AS PER IS 9595.
8. PREFERABLY SINGLE MS PERFORATED SHEET SHALL BE USED AS BASE OF ALL PERFORATED TYPE TRAY ACCESSORIES. HOWEVER, IF USE OF PIECES OF PERFORATED SHEET IS UNAVOIDABLE FOR BASE, PIECES SHALL BE WELDED WITH EACH OTHER IN LINE WITH THE ABOVE.
9. ALL TRAY CORNERS SHALL BE FREE OF SHARP EDGES & SMOOTH.
10. THE DEPTH, WIDTH AND LENGTH OF TRAYS AND ACCESSORIES SHALL BE WITHIN A TOLERANCE AS PER RELEVANT IS
11. TO FACILITATE ASSEMBLY, ALL ACCESSORIES AT ENDS SHALL HAVE 100mm STRAIGHT PORTION.
12. ALL NUTS, BOLTS, WASHERS ETC., SHALL BE HOT DIP GALVANISED AS PER IS 1367 FOR SIZES ABOVE 12MM AND ELECTROPLATED/ELECTROGALVANISED FROM SIZE BELOW 12MM.
13. ALL DIMENSIONS ARE IN mm UNLESS NOTED OTHERWISE.
14. TRAY ACCESSORIES SHOWN IN THIS DRAWING SHALL BE FACTORY FABRICATED FOR USE AT SITE AS PER APPROVED LAYOUT DRAWINGS. FOR SPECIFIC SITE REQUIREMENTS (E.G. IRREGULAR ANGLE BENDS SUCH AS 30°/60° BENDS, ETC) AS PER SITE LAYOUT CONDITIONS, TRAY ACCESSORIES SHALL BE FABRICATED AT SITE FROM THE STRAIGHT LENGTH OF RESPECTIVE SIZES AS REQUIRED. GALVANISATION DAMAGED DURING CUTTING/WELDING OPERATIONS SHALL BE BRUSHED AND RED LEAD PRIMER, OIL PRIMER AND ALUMINIUM PAINT SHALL BE APPLIED BEFORE INSTALLATION OF THE ACCESSORIES.
15. WIDTH OF CABLE TRAYS PROPOSED TO BE USED FOR PROJECT ARE AS UNDER :
LADDER TYPE CABLE TRAY (MM) : 600,300 & 150
PERFORATED TYPE CABLE TRAY (MM) : 600,300,150
16. 600MM WIDE CABLE TRAY SHALL BE SUITABLE FOR WEIGHT OF 100KG/M INCLUDING LIVE LOAD OF RUNNING LENGTH OF CABLE TRAY.
17. CABLE TROUGHS SHALL BE USED FOR BRANCHING OUT FEW CABLES FROM MAIN CABLE ROUTE.
18. MAKE OF ALL ITEMS SHALL BE AS PER NTPC QA APPROVAL.

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TYPICAL DETAILS OF CABLE TRAYS AND ACCESSORIES

DRAWING NO.

PE-DG-405-507-E005

SH 11 OF 11

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