


575524/2024/PS-PEM-CIV

 BHEL PEM	Technical Specification For Preparation Of Structural Steel Detailed Fabrication Drawings	Specification Number: PE-TS-512-612-C001
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2 X 800 MW SINGRAULI SUPER THERMAL POWER PROJECT
Technical Specification for
Preparation of Detailed Fabrication Drawings of Structural Steel Works

Bharat Heavy Electricals Limited
Project Engineering Management, Noida
(A Government of India Undertaking)

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Technical Specification For Preparation Of Structural Steel
Detailed Fabrication Drawings

Specification Number:
PE-TS-512-612-C001



Project Title	:	2 X 800 MW SINGRAULI SUPER THERMAL POWER PROJECT-Preparation of Detailed Fabrication Drawings of Structural Steel Works
Job No.	:	512
Document No.	:	PE-TS-512-612-001
Subject	:	Technical Specifications for Preparation of Detailed Fabrication Drawings of Structural Steel Works

Rev. No.	Particulars	Prepared By	Checked By	Approved By	Remarks
0	Name	AG	RKP/DKM	SBP	
	Sign.				
	Designation	Manager	PE (Sr. Manager)/SH-3(Sr DGM)	DH (AGM)	
	Date	10/09/24	10/09/24	10/09/24	

REFERENCES :-

- Document No. PE-TS-512-612-002 ---- Technical Prequalifying Requirements for Preparation of Detailed Fabrication Drawings of Structural Steel Works

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**1. GENERAL**

This specification covers preparation of detailed fabrication drawings required for fabrication and erection of steel structures in 2 x 800 MW Singrauli power plant project in Uttar Pradesh State. Steel structures shall have bolted field connections, unless noted otherwise.

2. Scope of Work:

The scope of work shall include but not be limited to following.

- a. Preparation and submission of detailed fabrication drawings/TEKLA 3D model file using TEKLA 3D software including erection marking drawings for the buildings/structures mentioned elsewhere in the specification. The scope also includes obtaining approval of the drawings from BHEL. BHEL shall furnish the engineering drawings as the input to the bidder.
- b. Visit to BHEL office in Noida/Project Site at Singrauli as and when required.

3. Buildings/Structures

A broad list of buildings/structures for which detailed fabrication drawings are to be prepared is in Annexure-A.

4. Technical Requirements**a. Preparation and submission of detailed fabrication drawings:**

Preparation and submission of detailed fabrication drawings shall include/meet the following.

1. Design of joints/connections. The design shall be by Limit State method conforming to IS 800.
2. Preparation of TEKLA model and submission to BHEL for review/approval. On review, BHEL comments if any shall be incorporated.
3. Fabrication/erection marking drawings shall necessarily be extracted from approved TEKLA model. These drawings shall include bill of materials and material codification as well.
4. The work shall conform to specification/IS Codes/relevant standards.
5. The software shall be genuine and valid.
6. The drawing template to be adopted shall be approved by BHEL.
7. BHEL's clarifications/queries if any shall be immediately resolved.

8. Any modification/correction in the approved drawing as required.


b. Bidder shall visit BHEL PEM, Noida/Singrauli site for official purposes as and when called by BHEL.

5. Codes & Standards

All work under this specification shall, unless otherwise specified, conform to the requirements of the latest revision and/or replacements of the following or any other relevant Indian Standards. In case any particular aspect of the work is not specifically covered by any Indian Standard specification, any other standard practice, as may be specified by the Engineer shall be followed.

- IS : 226 - Structural steel (Standard Quality)
- IS : 800 - Code of Practice for general construction in steel.
- IS : 806 - Code of practice for use of steel tubes in general building construction.
- IS : 808 - Rolled steel beams, channels, and angle sections
- IS : 813 - Scheme of symbols for welding
- IS : 814 - Covered electrodes for metal arc welding of structural steel
- IS : 815 - Classification and coding of covered electrodes for metal arc welding of structural steels.
- IS : 816 - Code of practice for use of metal arc welding for general construction in mild steel
- IS : 817 - Code of practice for training and testing metal arc welders
- IS : 818 - Code of practice for safety and health requirements in electric and gas welding and cutting operations
- IS : 822 - Code of practice for inspection of welds
- IS : 919 - Recommendations for limits and fits for Engineering
- IS : 961 - Structural Steel (High Tensile)
- IS : 1161 - Steel Tubes for structural purposes
- IS : 1200 - Method of measurement of steelwork and ironwork (Part 8)
- IS : 1363 - Black hexagon bolts, nuts and lock nuts (dia. 6 to 30 mm) and black hexagon screws (dia 6 to 24 mm)
- IS : 1364 - Precision and semi-precision hexagon bolts, screws, nuts and locknuts (dia, range 6 to 39 mm)
- IS : 1367 - Technical supply conditions for threaded fasteners
- IS : 1442 - Covered electrodes for the metal arc welding of high tensile structural steel
- IS : 1608 - Method for tensile testing of steel products other than sheet strip, wire and tube
- IS : 1730 - Dimensions for steel plate, sheet, and strip for structural and general engineering purposes.
- IS : 1731 - Dimensions for steel flats for structural and general engineering purposes
- IS : 1852 - Rolling and cutting tolerances for hot-rolled steel products
- IS : 1977 - Structural steel (ordinary quality) St-42-0
- IS : 2062 - Steel for General Structural Purposes
- IS : 2074 - Ready mixed paint, red oxide Zinc chromate priming
- IS : 2595 - Code of Practice for Radiographic Testing
- IS : 2629 - Recommended practice for Hot-Dip Galvanizing of Iron and Steel

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- IS : 3757 - High strength structural bolts
 IS : 4000 - High Strength Bolts in steel Structures
 IS : 4759 - Specifications for Hot-Dip Zinc Coatings on Structural Steel and other allied products
 IS : 7205 - Safety Code for Erection of Structural Steelwork
 IS : 7215 - Tolerances for fabrication of steel structures
 IS : 7280 - Bare wire electrodes for submerged arc welding of structural steels.
 IS : 9595 - Recommendations for metal arc welding of carbon and carbon manganese steel.

6. Procedure for Submission of Drawings / Documents

- BHEL shall provide input data in soft format in the form of STAAD files, civil engineering drawings in pdf format, sketches etc.
- Submission schedule of detailed fabrication drawings shall be as follows.
 - Submission of 3D TEKLA model (editable soft copy) with connections and its design (editable soft copy) shall be within 10 days after receipt of engineering drawings/inputs.
 - Submission of drawings shall be within 5 days after approval of TEKLA model.
 - Submission of revised drawings shall be within 5 days after receipt of comments.
 - Resolutions/clarifications on the queries raised by BHEL shall be within 2 days after receipt of queries.
- All deliverables shall be submitted in editable soft copy/pdf copy.
- In case of any input changes, bidder shall revise the drawings accordingly.

7. Secrecy/ Confidentiality

All information including engineering inputs etc shall remain property of BHEL. All information generated by the bidder during the execution of the project such as designs, drawings, documents and TEKLA model etc shall be exclusive property of BHEL and its intellectual property rights shall be of BHEL. BHEL shall have full right to use these deliverables in any manner suitable to BHEL business requirements. Bidder shall sign non-disclosure agreement as required by BHEL in this respect.

8. Mode of Award of Work


Price schedule enclosed indicates total work. Considering the quantum of work & project schedule, it is proposed to award the work to Two (2) separate detailing agencies in the ratio of 60:40 at the successful L1 bidder rate. The successful L1 bidder will be awarded the following: -

- For item no 1 in the price schedule, 60% on 31600 MT i.e. 18960 MT
- For item no 2 in the price schedule, 5 visits

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**9. Time Schedule**

Time for completion of all works / services shall be 12 months from the date of award of work.

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ANNEXURE-A : LIST OF BUILDINGS/STRUCTURES

SI No	Building/Structures	Tentative Weight (MT)
1	Common Control Room (CCR) Building	3900
2	Main Power House U#1 and 2	14400
3	Mill & Bunker Building	7000
4	Bunker Shell & Supporting structures	4500
5	TG Platform	300
6	Pipe & Cable Racks	300
7	Chimney platforms, staircase etc	800
8	Miscellaneous structures/Platforms/ Interconnections	400

The list of buildings and the weight mentioned are tentative. Bidder shall have to prepare the drawings for any other buildings/structures as required for completion of work. Actual weight will be derived post completion of respective drawings.

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