

TENDER SPECIFICATION

BHEL PSSR SCT 1371

**Fabrication & Erection of Structural Steel in Power House,
Bunker Bay, Pipe rack & other Misc. Structures**

For

2 X 500 MW

at

**NTPL TUTICORIN THERMAL POWER PROJECT
TUTICORIN, TAMIL NADU**

VOLUME - III

RATE SCHEDULE

BOOK NO



BHARAT HEAVY ELECTRICALS LIMITED

(A GOVERNMENT OF INDIA UNDERTAKING)

POWER SECTOR – SOUTHERN REGION

690, ANNA SALAI, NANDANAM, CHENNAI – 600 035

BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)
POWER SECTOR – SOUTHERN REGION,
690, ANNA SALAI, NANDANAM, CHENNAI – 600 035.

TENDER SPECIFICATION No. BHEL PSSR SCT 1371

NAME OF THE WORK

Fabrication & Erection of Structural Steel in Power House, Bunker Bay, Pipe rack & other Misc. Structures for 2x500MW at NTPL Tuticorin Thermal Power Project, Tuticorin, Tamilnadu.

Volume III
RATE SCHEDULE

DATE:

Issued to

M/s.

For and on behalf of
BHARAT HEAVY ELECTRICALS LTD

AGM / CONTRACTS

The tender documents are not transferable.

Place: Chennai-600035

Date:

PREAMBLE FOR THE SCHEDULE OF QUANTITIES

PREAMBLE TO THE SCHEDULE OF QTS. (SOQ)

- 1) Details of the items in this Schedule shall be read in conjunction with the corresponding NTPL specifications and other documents and shall have precedence over any contrary statement mentioned any where in this document.
- 2) The work shall be carried out as per construction drawings (which will issued progressively during the execution), specifications, the description of the items in this schedule and/or Engineer's instructions., The layout, sizes and details of the building, structures and foundations may vary at a large extent during actual construction.
- 3) Items of work provided in this schedule but not covered in the specifications shall be executed strictly as per instructions of the Engineer.
- 4) Unless specifically mentioned otherwise in the contract, the bidder shall quote his rates for the finished items and shall provide for the complete cost towards fuel, tools, tackle, equipment, constructional plant , temporary works, labour, materials, levies , taxes , transport, layout, repairs, rectification, maintenance till handing over, supervision, shops, establishments, services , temporary roads, revenue expenses, contingencies, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the works according to the contract.
- 5) The rate quoted shall be inclusive of cleaning the site of any vegetations, dressing and leveling etc., required for commencement of site activities. No separate payment will be made towards the same.
- 6) The rate shall also be inclusive of carrying out survey of site to establish levels and coordinates at suitable intervals, form existing grid levels and coordinates furnished by the owner, establish bench marks, setting out the location and levels of the proposed structures, constructions and making references , pillars and other identification marks etc. No separate payment will be made towards the same.
- 7) The quantities of the various items mentioned in the schedule are approximate and may vary up to any extent or be deleted altogether. The quoted rates of each item shall remain firm as long as the variation in the total value of the works executed under this contract, including extra items if any, remain within +/- 30% (thirty percent) of the Bid Price of the probable extent of the work to be executed under any particular item in this schedule, before under taking any preliminary work or purchasing bought out component related to the work. The variation clause will be applicable as stipulated in the General conditions of contract, Volume 1 of this tender.
- 8) Rates shall be quoted both in figures and in words in clear legible writing. No over writing is allowed. All scoring and cancellation should be counter signed by the bidder. In case of illegibility, the interpretation of the engineer shall be final. All entries shall be in English language.

- 9) Engineers decision shall be final and binding on the contractors regarding clarification of items in this schedule with respect to the other section of the contract.
- 10) Unless otherwise specified in the schedule of items Structural and Reinforcement steel will be issued by BHEL as FREE ISSUE for incorporation in the permanent works as specified elsewhere in this tender document.
- 11) In case of any matching sections (Structural steel) not issued by BHEL, but required for incorporation in the work as per drawings/specification, on the direction of the engineer in-charge the materials shall be supplied by agency. The cost of the same shall be reimbursed as per the price indicated by SAIL yard price at the nearest outlet of the project.
- 12) In case of any discrepancy between item description, relevant drawing and/or specification clarification shall be sought at tender stage itself. Otherwise it shall be assumed that the bidder has quoted for the more stringent requirement.

HIERARCHY

In case of any conflict/deviations amongst various documents, the order of precedence shall be as follows

- Items in Schedule of quantities
- Statutory Regulations
- NTPL specification
- BHEL's standard specification (with prior approval of Engineer-in-charge).
- IS/BS standards

Mode of Award of work for Unit 1 and Unit 2

- (i) There are two units of 500 MW each at NTPL Tuticorin Thermal Power Project. Tender SCT1371 is for Unit 1 – 500 MW only. The quantity indicated in the price bid is for Unit 1 only and the quantity for Unit 2 is also same.
- (ii) The L1 bidder against this quote will be awarded the contract for unit 1 Tuticorin Thermal power project.
- (iii) BHEL reserves the right to award the contract for Unit 2 of Tuticorin Thermal Power Project on the same terms and conditions of SCT 1371 to the next lowest bidder in the order of competitiveness who should match his rates / price with awarded price / rate for Unit 1.
- (iv) BHEL reserves the right to award the contract for Unit 2 of Tuticorin Thermal Power Project on the same terms and conditions of SCT 1371 to the next lowest bidder in the order of competitiveness who should match his rates / price with awarded price / rate for Unit 1.

- (v) Thus the work for Units 1 and 2 will be awarded to two agencies i.e. Unit1 work for one agency and Unit 2 work for the other agency.
- (vi) In case the other bidders in their order of competitiveness do not accept to match their rates/Price with awarded price / rate of Unit 1, then BHEL reserves the option to consider the L1 bidder, for award of Unit-2 work also at the same rate/Price and at the same Terms & Conditions of Unit-1. This will be solely at the discretion of BHEL and the L1 bidder, who is awarded the work of Unit-1, shall not have any claim for award of Unit-2 work to him, on conditions whatsoever.
- (vii) Incase BHEL, at its discretion opts to go for retendering for award of work for Unit-2, then the L1 bidder who is awarded with Unit-1 work shall not be considered for Unit-2 work.
- (viii) Each unit will be treated as a separate contract.
- (ix) Refer Clause **23** in the special condition of the contract for mode of award of work for unit 1&2

GENERAL:

NOTE: The bidder to note the following before submission of the offer

Technical requirements in Volume- II should be read in conjunction with BOQ in Volume – III and other sections of the tender / contract. In case of any conflict between the contents of BOQ in Volume – III and Technical Requirements in Volume – II, then BOQ will prevail over Technical requirements.

In case of any conflict between Technical requirements in Volume – II – Book 1 (Customer spcn) and Volume – II – Book 2 (standard technical specification), then Volume – II – Book 1 (Customer spcn) will prevail over standard technical specification in Volume – II – Book 2.



2X500 MW TUTICORIN TPS

**TENDER SPECIFICATION
BHEL:PSSR:SCT 1371**

VOLUME III

BILL OF QUANTITIES

RATE SCHEDULE

FABRICATION & ERECTION OF STRUCTURAL STEEL WORKS IN POWER HOUSE, BUNKER, PIPE RACK AND OTHER MISC. STRUCTURES

Item No.	DESCRIPTION	UoM	Quantity for one Unit	RATE in Figures & Words	AMOUNT in Figures & Words
2300	<p>STRUCTURAL STEEL WORKS (BHEL will supply rolled sections like joists, channels, angles, plates, chequered plate, MS/GI pipes, SS plate(4mm thick plate confirming to AISI304) only as a free issue. Balance other materials like Gratings, MS/HT/HSFG bolts, Nuts, Cladding Sheets, MS/SS specials, SS pipes, Washers, Shims, etc. required for incorporation in the permanent works are in the agency scope)</p>				
2301	<p>Fabrication of structural steel and mild steel rounds, at all elevations involving rolled sections (including mild steel rounds), built up sections fabricated out of plates, rolled sections and combination of plates and rolled sections, in columns, beams, gantry girders, roof trusses, gratings, portals, laced purlins, space frames, shear connectors, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats,</p> <p>trestles, base plates, splice plates, decking and seal plates, diaphragm, steel frame grid over false ceiling, walkway platforms, catway, ladders, stairs, stringers, treads, landings, toeplates, MS Rungs, insert plates, edge angles, embedments, lugs, posts, stays, louvers, lacings, gusset plates, safety chains for walkways adjacent to crane girders etc, collection of steel from BHEL stores, transportation,</p> <p>straightening, making cutting plan, cutting, bending, rolling, grinding, drilling, bolting (supply of permanent bolts under item 2314), assembly, edge preparation, preheating (minimum preheat and interpass temperature of 20 degrees for welding over 20 mm and upto 40 mm & 66 degree centigrade for welding over 40 mm and upto 63 mm & 110 degree centigrade over 63mm) & use of low hydrogen/ radiogenic electrodes as per specification (CI No. 21.06.00, Section-C), post heating, testing of welders, inspection of welds, visual inspection, non destructive (as per FQP, Technical Specification) and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, protection against damage in transit, stability of structures, surface preparation by blast cleaning as per grade SA 2 1/2 of swedish standard institution SIS 05 5900, primer painting (primer coat consisting of 2 coats of epoxy based redoxide or zinc-phosphate</p>				

Item No.	DESCRIPTION	UoM	Quantity for one Unit	RATE in Figures & Words	AMOUNT in Figures & Words
2301	(DFT= 40 microns/coat) as per IS:2074 & IS:1477 (Parts I & II). One coat to be applied at shop and the other after erection) installation of temporary structures (Scaffolding, Access ladders, Working Platforms etc.) (weight of temporary structures not payable) complete with all labour, material, electrodes and other consumables, equipment, testing (mechanical and non- destructive), preparation of fabrication drawings, joint design calculations and all other general and special requirements including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drawings, in consultation with BHEL, prepared by the bidder and all other activities required for completion of the work including return of surplus/ waste steel materials to store etc. as per specification, drawings and instructions of the Engineer. Approval of fabrication drawings does not relieve the bidder from the responsibility of its correctness and accuracy.	MT	11000		
2302	Fabrication of Chequered plates and delivery at site including shop coat of painting and touch up painting complete as per specifications. The surface preparation & primer coat shall be as per details explained under item no 2301.	MT	200		
2303	Supply, fabrication, Fixing of MS grating and delivery at site including shop coat of painting and touch up painting complete as per specifications. The surface preparation & primer coat shall be as per details explained under item no 2301 .	MT	70		
2304	Fabrication and delivery at site, transportation, loading/unloading of various sizes, GI/MS pipe hand railing including painting and fixing as per specification, labour and material completer for heavy duty class. The surface preparation & primer coat shall be as per details explained under item no 2301.	MT	80		
2305	Fabrication including preperation of fabrication drawings, delivery at site, transportation, loading, unloading etc. of MS coal bunkers in cylindrical or rectangular shape with bottom conical portion (with circular or rectangular mouth piece attached) with all special fixtures such as stiffeners, supporting brackets for mounting of steel frame structure as per specification, labour, material, welding (use of low hydrogen radiographic electrodes) complete including shop coat of painting and touch up painting. The surface preparation & primer coat shall be as per details explained under item no 2301.	MT	1650		
2306	Erection of structural steel works including the receiving the fabricated material either from Project site or from any where at Project site, all field connections, bolting (supply of permanent bolts under item 2314)wherever applicable and welding and fixtures wherever necessary as shown on drawings and as directed by the engineer, labour and material, for all heights as per the drawings issued from time to time at the time of execution.	MT	11000		

Item No.	DESCRIPTION	UoM	Quantity for one Unit	RATE in Figures & Words	AMOUNT in Figures & Words
2307	Erection of chequered plate, handrail and grating including the receiving material either from Project store or from any where at Project site all field connection, bolting(supply of permanent bolts under item 2314), welding and fixtures wherever necessary as per specifications and as shown on drawings and as directed by the engineer, labour and material, for all heights as per the drawings.	MT	350		
2308	Erection of coal bunkers as mentioned above on structural steel frame work including receiving fabricated material either from project store or anywhere at project site, all field connections, bolting(supply of permanent bolts under item 2314), welding complete as shown on drawings and as directed by engineer, labour and material complete.	MT	1650		
2309	Providing & application of Epoxy Micaceous Iron Oxide Intermediate Paint or approved equivalent make and colour in single coat of minimum 75 micron thickness (DFT) already having primer coats (as per Item No. 2301) at all elevations with all materials, labour, equipment, handling, including protection and cleaning, scaffolding etc. complete as per specification, drawings and instructions of the Engineer.	MT (of steel)	11000		
2310	Providing & application of epoxy based amine/polyamide cured finish paint of approved make and colour in two coats of minimum 40 micron total thickness (DFT) already having primer coats (as per Item No. 2301) & Intermediate coats (as per Item No. 2309) at all elevations to achieve an even shade with all materials, labour, equipment, handling, including protection and cleaning, scaffolding etc. complete as per specification, drawings and instructions of the Engineer.	MT (of steel)	11000		
2311	Providing & application of anti corrosive synthetic enamel paint of Berger or approved equivalent make and colour in two coats of minimum 50 micron total thickness (DFT) already having primer coats (as per Item. 2301) at all elevations to achieve an even shade with all materials, labour, equipment, handling, including protection and cleaning, scaffolding etc. complete as per specification, drawings and instructions of the Engineer.(Total thickness (DFT) including primer shall not be less than 110 micron.)	MT (of steel)	100		

Item No.	DESCRIPTION	UoM	Quantity for one Unit	RATE in Figures & Words	AMOUNT in Figures & Words
2312	Supplying, fabrication, transportation, erection and alignment of factory made electroforged galvanised gratings of steel (having minimum galvanisation of 610 gm/sqm) conforming to IS:2062 at all elevations including preparation of design drawings and fabrication drawings in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads, fixing clamps etc. complete with other fittings and fixtures including all taxes, duties, transportation, packing, grinding, drilling, bolting (supply of permanent grade `C` mild steel bolts and nuts to be paid separately under Item No. 2314, all welding, edge preparation, blast cleaning of steel surfaces to near white metal surface (Sa 2 1/2), testing, complete as per specifications, drawings and instructions of the Engineer.	MT	150		
2313	Finishing the fabricated grating unit with hot dipped galvanisation @ 610 gm/sqm over blast cleaned steel surfaces, as per specifications, drawings and instructions of Engineer instead of painting with 2 coats of red oxide primer followed by two coats of enamel finish paint.(extra over Item 2303)	MT	70		
2314 i)	Supplying and fixing in position of permanent mild steel bolts (class 4.6 as per IS : 1367 and grade `C` as per IS: 1363) and nuts, washers etc. up to and inclusive of 39 mm diameter and upto 300mm long for structural steel work complete as per specification, drawings and instructions of the Engineer.	QUINTAL	10		
2314 ii)	Supply and fixing in positing of high strength structural bolts (of property class 8.8 and product grade `C` as per IS: 1367) and conforming to IS: 3757 and high strength structural hardened and tempered nuts (of property class `8` as per IS:1367) conforming to IS:6623 with hardened and tempered washers as per IS:6649 etc. up to and inclusive of 39 mm diameter and upto 300 mm long for structural steel work complete as per specification, drawings and instructions of the Engineer.	QUINTAL	200		
2315	Dismantling of steel structure at any elevation, lowering of material and carriage of the dismantled material up to field fabrication shop, or, return to projects storage including temporary dismantling, cutting, re-welding, supporting, and restoring to correct position all temporarily dismantled members, re-alignment of all adjacent connected members to their correct positions, (weight of such adjacent members and temporarily dismantled members not payable) including scaffolding, staging, tools & tackles, gas cutting, welding, consumables, etc complete as per specification, drawings and instructions of the Engineer.	MT	65		

Item No.	DESCRIPTION	UoM	Quantity for one Unit	RATE in Figures & Words	AMOUNT in Figures & Words
2316	Addition to, alterations in and/or modification of "Erection Marks" either in erected position or in the shop including cutting of parts, gouging of welds, cutting, grinding, fabrication, welding, drilling holes, straightening, removal of bends, raising to the required level, painting, transportation, return of unutilised steel pieces to the project store, temporarily dismantling, cutting, re-welding, supporting and restoring to correct position of all the temporarily dismantled members, realignment of adjacent connected members, (weight of such temporarily dismantled and adjacent members not payable), complete as per specifications, drawings and instructions of the Engineer.				
	i) In erected position	MT	8		
	ii) In fabrication yard	MT	30		
2317	Re-erection of dismantled fabricatied structural steel members requiring additions, modification, (dismantling and additions to, alterations in and/or modification to be paid separately under ST NO. 2310 and 2311 respectively) including carriage of modified "Erection Marks" from the field fabrication shop to erection site, lifting to required position, aligning in position, tack welding, final welding and touch up painting including temporary dismantling and re-erection of temporarily dismantled members, cutting, rewelding, supporting and restoring to the correct position of all temporarily dismnatled members, re-alignment of adjacent connected members, (weight of such temporarily dismantled members and adjacent members not payable) including scaffolding, staging, tools & tackles, gas cutting, welding, consumables, etc complete as per the specifications, drawings and instructions of the Engineer.	MT	15		
2318	Fabrication and erection of 4 mm thick stainless steel liner of grade AISI-304; Finish Grade 2B (Cold rolled, Annealed & Pickled and Skin passed) on M.S. plate for inside surfaces of hopper & mouth of hopper of bunkers as directed by the Engineer including fixing with stainless steel studs, bolting (including countersunk), welding etc. complete as per specifications and IS standards. Electrode classification shall be E308L for welding of stainless steel to stainless steel and E309 for stainless steel to mild steel etc. complete as per specifications, drawings and instructions of the Engineer.	MT	105		
2319	Supply, fabrication and delivery at site, transportation, loading/unloading of various sizes, seamless 25 NB stainless steel hand railing of approved shape/design including Stainless steel posts(40 NB,medium Class), fixing as per specification, labour and material complete for medium duty class.	Kg	250		

Item No.	DESCRIPTION	UoM	Quantity for one Unit	RATE in Figures & Words	AMOUNT in Figures & Words
2320A	Supply, fabrication and delivery at site, transportation, loading/unloading of various sizes, seamless 32 NB stainless steel hand railing of approved shape/design including Stainless steel posts(40 NB medim class), fixing as per specification, labour and material complete for medium duty class.	Kg	150		
2320B	Supply, fabrication and delivery at site, transportation, loading/unloading of various sizes, seamless 40 NB stainless steel hand railing of approved shape/design including Stainless steel posts(40 NB medim class), fixing as per specification, labour and material complete for medium duty class.	Kg	100		
2321	Providing and fixing in position PTFE type sliding bearings of reputed manufacturer, individual bearing suitable for required vertical loads as per the construction drawings and for maximum displacement of (+or -) 50 mm including all taxes, duties, transportation, installation, drilling, bolting, erecting, aligning etc complete as per specification, drawing and instruction of the engineer				
a)	Vertical Load of 20 Tons	Nos	10		
b)	Vertical Load of 25 Tons	Nos	10		
c)	Vertical Load of 40 Tons	Nos	4		
d)	Vertical Load of 50 Tons	Nos	2		
e)	Vertical Load of 60 Tons	Nos	5		
2322	Providing and fixing flexible open ended bellow strap of neoprene of minimum thickness of 2mm and minimum width 200 mm with aluminium strip edges as sealing below top of bunker and bottom of tripper floor to avoid coal dust nuisance	RM	320		
2323	Conducting radiography test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	90		
2324	Conducting ultasonic test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	65		
2325	Conducting magnetic particle test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	65		
2326	Conducting dye penetration test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	75		

Item No.	DESCRIPTION	UoM	Quantity for one Unit	RATE in Figures & Words	AMOUNT in Figures & Words
2327	Conducting ultasonic test on steel plates as per ASTM-A435 or equivalent wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	SQM	200		
800	GROUTING AS PER SPECIFICATION FOR THE FOLLOWING:				
802	Providing & grouting of pocket holes, pipe sleeves of any shape and size under base plate after erection, and alignment if necessary, of heavy machinery at any elevations including roughening surface, cleaning, ramming, curing, etc with Conbextra GPX-2 of 'Fosroc' or equivalent all complete as per specifications. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	10		
803	Providing & grouting of pocket holes, pipe sleeves of any shape and size under base plate after erection, and alignment if necessary, of main structural steel work at any elevations including roughening surface, cleaning, ramming, curing, etc with ConbextraGP-1 or equivalent all complete as per specifications. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	70		
804	Providing & grouting of pocket holes, pipe sleeves of any shape and size under base plate after erection and alignment if necessary, of secondary structures, machinery and pipe supporting structures at any elevations including roughening surface, cleaning, ramming, curing, etc with 1:1:2 cement - sand - 6 mm down stonechips all complete as per specifications. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	10		
			TOTAL		
	<u>Note to Rate schedule:</u>				
i)	The quantities of the various items mentioned in the schedule are approximate and may vary up to any extent or be deleted altogether. The quoted rates of each item shall remain firm as long as the variation in the total value of the works executed under this contract, including extra items if any, remain within +/- 30% (thirty percent) of the Bid Price of the probable extent of the work to be executed under any particular item in this schedule, before under taking any preliminary work or purchasing bought out component related to the work. The variation clause will be applicable as stipulated in the General conditions of contract, Volume 1 of this tender.				
ii)	PAYMENT FOR ADDITIONAL ITEMS				
	For working out the rates for supplemental / additional items, the least of the following will be operated.				
a)	Near similar item (or) derived from LOI items				
b)	Direct from CPWD schedule of rates. The cost index (based on formula) for the project site prevailing during the year of reckoning, shall be calculated and applied over the DSR-2007 item rate.				
c)	Derived from CPWD rates (While deriving the rate from CPWD, the above procedure (as given in (b)) shall be followed).				
	If any item could not be derived from the above , Rate will be worked out based on market rate for such item with 15% plus towards contractor's overhead and profit.				