

**TECHNICAL CONDITIONS OF CONTRACT (TCC)
CHAPTER XI –BILL OF QUANTITIES AND % WEIGHTAGE OF INDIVIDUAL ITEMS**

Package E-1: All structural works of Power House Bldg Str. (Unit 1 & 2), ESP Control Room Bldg CWPB Str (Unit 1 & 2). Pipe Rack Structure, CW Treatment, access ways/ platforms etc within the battery limits of plant area up to final painting and handing over to civil/mechanical/electrical agencies AT 4 X 270 MW Thermal Power Station, Manuguru, Distt-Khammam, Telangana
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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	% weightage w.r.t. the total price
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2300 STRUCTURAL STEEL				
Structural steel works including all labour, material, equipments, transportation, handling etc. at any level as per specification, drawings and as directed by engineer - in - charge.				
2301	<p>Taking delivery of steel from BHEL stores / store yard, loading, Transportation, unloading, fabrication and erection of structural steel with mild steel rolled section / built up section / combination of both conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails, sag rods, tie rods etc connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, supply of electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 20° C for welding over 20 mm and upto 40 mm & 66° C for welding over 40 mm and upto 63 mm & 110° C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, online production test coupons, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. Including appointment of a separate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL.</p>			
2301 A	<p>Fabrication and erection of structural steel built up sections made of plated Girders/Columns composed of Structural plates only conforming to IS:2062, in columns, beams, portals, space frames, hangers, struts, monorails, galleries, stiffeners, brackets, stub columns, trestles etc. including straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, assembly, edge preparation, preheating / post heating(if required), inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, online production test coupons, inspection and testing, protection against damage in transit etc all complete as per specification. Payment shall be made for net weight of finished structure along with gussets, stiffeners but not for Nuts & Bolts/washers. Nuts & Bolts/shall be paid under separate item.</p>			
(I)	Fabrication	MT	7175	31.33722362

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(II)	Erection, alignment and welding <u>Payment Break up:</u> a) Erection :70% (Seventy Percent) b) Alignment and Welding : 30 % (Thirty Percent)	MT	7175	14.5310414
2301 B	Fabrication and erection of structural steel with mild steel rolled section ISMC,ISMB,ISA /(angle, channel, beam) conforming to IS:2062, in stub columns, beams, portals etc. including straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, assembly, edge preparation, preheating / post heating(if required), splicing, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works,online production test coupons,inspection and testing, protection against damage in transit etc all complete as per specification. Payment shall be made for net weight of finished structure along with gussets, stiffeners but not for Nuts & Bolts/washers. Nuts & Bolts/washers shall be paid under separate item.			
(I)	Fabrication		2050	2.90194259
(II)	Erection, alignment and welding <u>Payment Break up:</u> a) Erection :70% (Seventy Percent) b) Alignment and Welding : 30 % (Thirty Percent)		2050	4.151726114
2301C	Fabrication and Erection of structural steel built up section composed of rolled sections or rolled sections and plates conforming to IS:2062, in columns, beams, gantry girders, roof trusses, portals, frames, hangers, struts,brackets, bracings, base plates, ladders, stairs, stringers, treads, landings, hand-rails etc including straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, assembly, edge preparation, preheating / post heating (if required), inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, online production test coupons ,inspection and testing, protection against damage in transit etc all complete as per specification.Payment shall be made for net weight of finished structure along with gussets, stiffeners but not for Nuts & Bolts/washers. Nuts & Bolts/washers shall be paid under separate item.			
(I)	Fabrication		1025	2.033524492

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(II)	Erection, alignment and welding Payment Break up: a) Erection :70% (Seventy Percent) b) Alignment and Welding : 30 % (Thirty Percent)		1025	2.075863057
2302A	Extra over ST NO. A2301 for shot blast cleaning of steel structures to near white metal surface(Sa 2 1/2) and applying zinc phosphate primer in coats of minimum 25 micron (DFT) at shop and 25 micron (DFT) after erection, including touch-up painting etc all complete.	MT	10250	12.47873514
2304	Providing and applying two coats of synthetic enamel paint of approved make and shade to achieve an even shade over steel sections already having primer coats and keeping overall DFT with primer not less than 110 microns including protection and cleaning, scaffolding etc. all complete.	MT	10250	5.141111543
2306	Taking delivery of steel from BHEL stores / store yard, loading, Transportation, unloading, fabrication , laying and clamping of crane rails over the crane girder at all elevations as per IS 3443 including all fixtures, clamps, testings etc. all complete as per drawing and specification.	MT	100	0.75434544
2307	Supplying, fabrication, erection and alignment of factory made electroforged galvanised grating units with mild steel (having minimum galvanisation of 610 g/sqm) conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete. Payment Break up: a) Supply including fabrication : 70%(Seventy Percent) b) Erection and alignment : 30 % (Thirty Percent)	MT	150	4.328409848
2308A	Supplying, fabrication, erection and alignment of factory made welded grating units with mild steel conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including 2 coats of zinc-phosphate primer (one coat at shop and one coat after erection), fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, edge preparation, etc. all complete. Payment Break up: a) Supply including fabrication : 70%(Seventy Percent) b) Erection and alignment : 30 % (Thirty Percent)	MT	20	0.53504518
2309	Extra over above ST NO. 2301 for finishing the grating units with hot dipped galvanisation @ 610 gm/sqm over blast cleaned steel surfaces instead of painting with two coats of red oxide zinc-chromate primer all complete.	MT	18	0.118815696

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2310	Providing 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 etc all complete. <u>Payment Break up:</u> a) Supply : 70%(Seventy Percent) b) Fixing in position: 30 % (Thirty Percent)	Quintal	300	1.136130137
2311	Providing 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 etc all complete. <u>Payment Break up:</u> a) Supply : 70%(Seventy Percent) b) Fixing in position: 30 % (Thirty Percent)	Quintal	1400	14.39185133
2312	Dismantling of steel structure , lowering of material and carriage of the dismantled material up to field fabrication shop / 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), scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	MT	65	0.117226505
2313	Addition to, alterations in and/or modification of " Erection Marks " including cutting of parts, gauging 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) etc all complete for the following:			
a	In erected position	MT	43	0.077549842
b	In fabrication yard	MT	80	0.144278775

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2314	Re-erection of dismantled fabricated structural steel members 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 dismantled members, re-alignment of adjacent connected members (weight of such temporarily dismantled members and adjacent members not payable), scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	MT	39	0.140671806
2317	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 ± 50 mm including all taxes, duties, transportation, installation, drilling, bolting, erecting, aligning etc all complete for following vertical loads.			
a	20 Tons	EACH	8	0.038955518
b	25 Tons	EACH	15	0.085214419
c	40 Tons	EACH	10	0.089273579
d	50 Tons	EACH	4	0.038955518
e	60 Tons	EACH	4	0.049775805
2319	Supply, fabrication and fixing of stainless steel pipe hand railing of 32 mm/40 mm dia including transportation, loading/unloading etc. all complete. Payment Break up: a) Supply : 70% (Seventy Percent) b) Fixing in position: 30 % (Thirty Percent)	MT	8	0.822401443
2320A	Supply, fabrication and fixing of GI pipe hand railing (1000 mm high) of 32 mm/40 mm dia (Medium Grade) including transportation, loading/unloading, painting etc. all complete. Payment Break up: a) Supply : 70% (Seventy Percent) b) Fixing in position: 30 % (Thirty Percent)	MT	35	1.136217096
2321	Conducting radiography test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	210	0.102264756

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2322	Conducting ultasonic test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	230	0.186649951
2323	Conducting ultasonic test on steel plates as per ASTM-A435 or equivalent wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	SQM	80	0.064921722
2324	Conducting magnetic particle test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	90	0.06087809
2325	Conducting dye penetration test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges etc. all complete (over and above the work already specified in the specifications.)	RM	200	0.036274671
804	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with ConbextraGP-1 or equivalent. (Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CuM	55	0.892724923
GRAND TOTAL Weightage				100