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TENDER SPECIFICATION

TENDER NO. BHEL/ NR/SCT/GADARWARA / BUNKER/PACKAGE-A&B/993

FOR

“Erection, Alignment & Welding, Testing, Painting and Handing Over of Bunker Structure, Raw Coal Bunkers, Transfer Points, Trestles and Conveyor Galleries and Misc. Civil Works for Unit # 1& Unit # 2 at 2X800 MW NTPC Gadarwara Super Thermal Power Station”.

PART II – PRICE BID (Package –A)



Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northern Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar, NOIDA – 201 301.



ISO 9001, ISO 14001,
OHSAS 18001 & SA 8000
certified company
SubContract and Purchase Deptt.

Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northern Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar, NOIDA – 201 301(INDIA)
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IMPORTANT NOTE

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THIS TENDER SPECIFICATION ISSUED TO:

M/S-----

RATE SCHEDULE FOR PACKAGE –A (UNIT No. 1)

ITEM NO.	Description of Item	QTY	Total Amount "A" in Rupees (in figures and words)
	PACKAGE-A		
1.0	Lumpsum price for complete scope of work for "Erection, Alignment & Welding, Testing, Painting and Handing Over of Bunker Structure, Raw Coal Bunkers, Transfer Points, Trestles and Conveyor Galleries and Misc. Civil Works for Unit # 1 at 2X800 MW NTPC Gadarwara Super Thermal Power Station."	1 set	
	Note: The rates of different items for the entire scope shall be worked out & awarded as per " Annexure A "		
Name :-			
Place :-			
Date:-			
Signature of the Bidder With Stamp			

BOQ CUM RATE SCHEDULE- UNIT# 1

Project: 2X800 MW NTPC GADARWRA Super Thermal Power Project

BOQ cum Rate Schedule for the Works of "Erection, Alignment & Welding, Testing, Painting and Handing Over of Bunker Structure, Raw Coal Bunkers, Coal Handling Transfer Points, Coal Conveyor Galleries and its supporting Trestles of Bunker Structures, Miscellaneous Platform Structures and Other Miscellaneous Civil Works including supplying materials for the works of MS Embedments, Doors, Windows, Glazing, Roofing / Side Cladding, Rain Water Down Take Pipes, Structural Steel Painting, Gratings, Mild Steel Bolts, High Strength Structural Bolts, PTFE Bearings, MS Hand Railings, Concreting etc. and Misc. Fabrication works for Unit # 1 at 2X800 MW NTPC Gadarwara Super Thermal Power Station."

SECTION A: SUPPLY PART

Brief description of SECTION A: Supply Part :- Supply of Materials for the works of MS Embedments, Doors, Windows, Glazing, Roofing / Side Cladding, Rain Water Down Take Pipes, Structural Steel Painting, Gratings, Mild Steel Bolts, High Strength Structural Bolts, PTFE Bearings, MS Hand Railings, Concreting etc. for Bunker Structures, Raw Coal Bunkers, Coal Handling Transfer Points, Coal Conveyor Galleries and its Supporting Trestle of Bunker Structures, Miscellaneous Platform Structures, Other Miscellaneous Civil Works including procurement of Raw Material, loading, transportation and handling etc. & receipt of the same at site all complete as per specifications, drawings and as directed by BHEL Engineer for **Unit # 1 of 2X800 MW NTPC GADARWARA STPP.**

A	SUPPLY					
ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
A 700: MS EMBEDMENTS						
	Embedments including all labour, material, equipment, transportation of finished products (from workshop to site), handling etc. at any level as per specification, drawings and as directed by BHEL-Engineer.					
A 701	Total firm price on FOR basis for Supplying MS Embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc. including painting, complete as per specifications, drawings and as directed by BHEL Engineer.	MT	53	34.084		
A 702	Total firm price on FOR basis for Supplying Fabricated Mild Steel foundation bolt assembly of Grade 4.6 conforming to IS:5624 along with nuts, lock nuts (as per IS:1363, 1364 and IS:3138), washers, anchor plates, stiffner plates, protective tape, pipe sleeves, primer, etc. for columns including pipe sleeves, templates wherever necessary etc. all complete as per specifications and as directed by the BHEL Engineer. All threaded and other surfaces of foundation bolts and its materials, Anchor channels, sleeves, etc. shall be coated with temporary rust preventive measures. Work to include preparation of fabrication detailed drawings.	MT	50	42.262		
A 703	Total firm price on FOR Site basis for Supply of following items for all kind of works, as per specifications, drawings and as directed by BHEL Engineer.			-		
a	MS pipes of all diameters	KG	5350	0.042		
b	PVC pipes / conduits of all diameters	KG	100	0.087		
c	UPVC pipes / conduits of all diameters	KG	100	0.087		
d	Expansion fasteners (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for brick work with expansion sleeve of A6 polyamide:			-		
i)	Upto 250 kg	EACH	15	0.135		
ii)	Beyond 250 Kg and upto 500 kg	EACH	4	0.21		
iii)	Beyond 500 Kg and upto 750 kg	EACH	4	0.337		
e	Expansion fasteners (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for concrete work with expansion sleeve of stainless steel:			-		

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
i)	Upto 250 kg	EACH	35	0.16		
ii)	Beyond 250 Kg and upto 500 kg	EACH	31	0.24		
iii)	Beyond 500 Kg and upto 750 kg	EACH	31	0.38		
A 800 GROUTING						
	Supplying Grouting material including labour, material, equipment, transportation of material at site as per specification, drawings and as directed by BHEL Engineer.				-	
A 801	Total firm price on FOR Site basis for Supplying the complete grouting material for grouting of pocket holes, pipe sleeves and under base plate of structural steel work / machinery / pipe supporting structures with non-shrink cementitious flowable grout as per specification using non-shrink cum plasticizer admixture . Crushing Strength of the grout shall be one grade higher than that of the base concrete (however grade of grout shall be minimum M30 to max M35 grade). (Measurement shall be done after Grouting at Site and payment shall be released as per the actual Quantity of Grouting executed).	CUM	30	7.12		
A 802	Total firm price on FOR Site basis for Supplying the complete grouting material for grouting of pocket holes, pipe sleeves and under base plates of structural steel work / machinery / pipe supporting structures with Conbextra GP-1 or equivalent. (Measurement shall be done after Grouting at Site and payment shall be released as per the actual Quantity of Grouting executed)	CUM	20	26.189		
A 803	Total firm price on FOR Site basis for Supplying the complete grouting material for grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures with Conbextra GP-2 or equivalent. (Measurement shall be done after Grouting at Site and payment shall be released as per the actual Quantity of Grouting executed)	CUM	8	29.08		
A 900: DOORS, WINDOWS, VENTILATORS, LOUVERS						
	Doors, windows, ventilators, louvers, roof ventilators, rolling shutters, partitions including all labour, material, equipments, transportation, handling, preparation of working drawings etc. as per specification, drawings and as directed by BHEL Engineer.				-	
A 901	Total firm price on FOR Site basis for Supplying, Fabricated Single or Double steel door shutters with 45mm thk flush design shutter comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150 mm on centres including void filled with mineral wool (density as per specification), all fittings, Godrej or equivalent make mortice lock with handle on both sides, primer, painting etc. all complete as per specifications.	SQM	30	2.85		
A 902	Total firm price on FOR Site basis for Supplying, Fabricated Fire Proof steel doors (single or double shutter) with panic devices shall be 45 mm thk flush design comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150 mm on centers including all fittings, primer & shop painting with approved post office/signal red color fire resistant paint and mineral wool insulation (64 kg/cum density) complete and shall be fire proof as per IS:3614, TAC requirements and as per specification. Minimum ratings shall be 2 Hrs.	SQM	20	7.216		

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
A 903	Total firm price on FOR Site basis for Supplying Steel Windows/Ventilator with steel sections as per IS:1038, IS:1361 & IS:7452 latest revision including all fittings, metal beadings, hold fasts, shop, primer painting, wire mesh wherever required, glazing etc. all complete. (Glazing shall be paid separately)			-		
a	Openable type	SQM	166	1.369		
b	Fixed type	SQM	111	1.310		
A 904	Total firm price on FOR Site basis for Supplying pressed steel frames , fabricated from 16 gauge M.S sheet mortised , reinforced drilled and tapped for hinges and locks bolts, strikes, hold fasts adjustable floor anchors, floor tiles/weather bars ,paintings etc. all complete as per specifications.	KG	150	0.05		
A 905	Total firm price on FOR Site basis for Supplying glazing of first grade / class in steel/aluminium/wooden frames, where ever required including hardware, gaskets, clips, beadings etc. all complete as per drawing, specifications.			-		
a	6 mm thick wired glass	SQM	40	0.37		
b	6mm thick multi (twin) wall fire retardant (Continuous use under temperature 100 degree C), impact resistant and ultraviolet resistant polycarbonate sheet with sealed open edegs.	SQM	175	1.03		
A 906	Total firm price on FOR Site basis for Supplying Steel Louvered Window with mild steel frames all round including verticals with pressed steel louvers, painting etc. all complete.	KG	5000	0.03		
A 1500: ROOFING / SIDE CLADDING				-		
	Roofing / side cladding including all labour, material, equipment, transportation (from workshop to site), handling, scaffolding, lags, hooks, washers, corner pieces, flashing, capping, trimming, closure for vertical / horizontal joints, ridges, hips etc. at any level as per specification, drawings and as directed by BHEL Engineer.			-		
A 1501	Total firm price on FOR Site basis for Supplying thermally insulated sandwiched metal cladding for roofs with troughed profile permanently colour coated sheet on outside (External sheet) and plain permanently colour coated sheet on inside (Internal Sheet) with 50 mm thick mineral wool insulation in between the two sheets. Outside sheeting of cladding system shall have troughed profile steel metal sheets with zinc coated to class Z275 having minimum bare metal thickness (i.e. excluding the thickness of coating and painting) of 0.6mm of grade G250 as per AS1397 / grade SS255 as per ASTM A653M / grade S250GD as per EN10326 OR troughed profile steel metal sheets with aluminium-zinc alloy coated to class AZ150 with minimum bare metal thickness (i.e. excluding the thickness of coating and painting) of 0.5mm of grade G350 as per AS1397 / grade SS340 class 4 as per ASTM A792M / grade S350GD as per EN 10326. Continued..					
A 1501	Inside sheeting of cladding system shall have plain profile steel metal sheets with zinc coated to class Z275 having minimum bare metal thickness (i.e. excluding the thickness of coating and painting) of 0.6mm of grade G250 as per AS1397 / grade SS255 as per ASTM A653M / grade S250GD as per EN10326. Out side and Inside Steel Sheets shall be colour coated with total coating thickness of 35 microns (nominal) dry film thickness (DFT) comprising of Silicon Modified Polyester paint (SMP) (with silicon content of 30% to 50%) or Polyester paint, of 20 microns (nominal) SMP or Polyester paint on one side (exposed side) over 5 micron (nominal) primer coat and 5 microns (nominal) SMP or Polyester paint over 5 microns (nominal) primer coat on other side. (SMP and Polyester paint shall conform to Product type 4 of AS/ANZ 2728) . Coated surface shall be provided with a protected guard film (polyethylene) of about 40 microns to avoid any damage to the coating during handling, transportation. Mineral wool shall conform to IS : 8183, having a density of 32 Kg/Cu.M. for glass wool & 48 Kg/Cu. M. for rock wool. This shall include supply of corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete as per Specification . Sheeting work in roof & sides shall be measured in Sq.M. for net area of the work done .	SQM	3369	1.47		
A 1502	Total firm price on FOR Site basis for Supplying shear connectors of mild steel studs having 16 mm dia and minimum 75 mm projected length above purlin passing through metal decking as per relevant IS codes and specification.	KG	3000	0.036		

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
A 1503	Total firm price on FOR Site basis for Designing, Supplying Single Sheet Metal Cladding for Roof, External Walls , Internal Walls , ridge, hips, flashing/trimming /closure for vertical/ horizontal joints, capping, etc. with troughed profile steel metal sheets with zinc coated to class Z275 having minimum bare metal thickness (i.e. excluding the thickness of coating and painting) of 0.6mm of grade G250 as per AS1397 / grade SS255 as per ASTM A653M / grade S250GD as per EN10326 OR troughed profile steel metal sheets with aluminium-zinc alloy coated to class AZ150 with minimum bare metal thickness (i.e. excluding the thickness of coating and painting) of 0.5mm of grade G350 as per AS1397 / grade SS340 class 4 as per ASTM A792M / grade S350GD as per EN 10326 . The troughed profile steel metal sheets shall be colour coated with total coating thickness of 35 microns (nominal) dry film thickness (DFT) comprising of Silicon Modified Polyester paint (SMP) (with silicon content of 30% to 50%) or Polyester paint, of 20 microns (nominal) SMP or Polyester paint on one side (exposed side) over 5 micron (nominal) primer coat and 5 microns (nominal) SMP or Polyester paint over 5 microns (nominal) primer coat on other side. SMP and Polyester paint shall conform to Product type 4 of AS/ANZ 2728. Coated surface shall be provided with a protected guard film (polyethylene) of about 40 microns to avoid any damage to the coating during handling. This shall include supply of corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete as per Specification . Sheeting work in roof & sides shall be measured in Sq.M. for net area of the work done .	SQM	8000	0.64		
A 1504	Total firm price on FOR Site basis for Supplying Side/Roof Cladding with troughed translucent sheets of Polycarbonate material including laps, hooks, washers, corner piece etc. at all elevations complete as per specification, drawing and as directed by the BHEL Engineer for the following.			-		
(i)	2 mm thick fire retardant and ultraviolet resistant translucent polycarbonate clean sheet of GE plastic or equivalent approved make.	SQM	900	0.345		
1700 RAIN WATER DOWN TAKE PIPES						
A 1701	Total firm price on FOR Site basis for Supplying hot dip galvanised MS down take pipes of 150 mm NB - Medium quality as per IS:1239 (part-I) all complete.The minimum coating of Zinc shall be of 610 gm/Sqm and shall comply with IS:4759 and other relevant codes.	RM	1200	0.92		
A 1800: MISCELLANEOUS WORKS						
A 1801	Total firm price on FOR Site basis for Designing and supplying of Heavy duty galvanised chemical anchor fasteners of Hilti/Equivalent make of 12 mm diameter and appropriate length in concrete (minimum grade M20) to take direct tension of minimum 1 MT including anchor fastener, materials, equipment, labour etc. complete as per direction of BHEL-Engineer.	EACH	6	0.38		
A 1802	Total firm price on FOR Site basis for Supplying of complete Raw materials for Concrete of grade M-25 conforming to IS:456 with coarse sand and graded hard stone aggregate 20 mm nominal size in foundations/Sub Structure/ Super Structure etc. at any level, any shape, position or thickness etc. complete including shuttering, curing, reinforcement, use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete and as directed by BHEL Engineer. (Measurement shall be done after completion of concreting at Site and payment shall be released as per the actual Quantity of concrete executed)	CUM	30	2.35		
A 2300: STRUCTURAL STEEL						
	Structural steel works including all labour, material, equipments, transportation of finished products (from storage yard to site), handling etc. at any level as per specification, drawings and as directed by BHEL Engineer.			-		
A2301	Total firm price on FOR Site basis for Supplying Chlorinated Rubber based Zinc Phosphate Primer to be applied after Manual cleaning of steel structures embedded in concrete. Primer Coat of Chlorinated Rubber based Zinc Phosphate primer of 50 micron (DFT) shall be applied. (Measurement shall be done after application of primer. Payment shall be released as per the actual quantity of primer work executed)	MT	465	0.632		
A 2302	Total firm price on FOR Site basis for Supplying Intermediate Coat, Finish Coat and Final Finish Coat of paints to be applied over steel surfaces (already applied with primer coat) :-			-		

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
(i)	Intermediate Coat: Intermediate Coat of Polyamide Cured pigment Titanium Di-Oxide (TiO2) or Micaceous Iron Oxide (MIO) Epoxy Based Paint (Solid by Volume minimum 60%) of Minimum 75 Micron DFT. This Coat shall be applied in shop after an interval of minimum overnight (after the application of primer coat) by Airless Spray Technique. Color and Shade of the Coat shall be as approved by the BHEL Engineer. Work shall include protection, cleaning, scaffolding etc. all complete. (Measurement shall be done after application of paint over the steel structure surfaces. Structure Steel in MT shall be measured for the painting work and payment shall be released as per the actual quantity of painting work executed)	MT	260	1.01		
(ii)	Finished Coat: Intermediate coat shall be followed with the application of Finished Coat of Polyamide cured Color pigment Epoxy based paint (solid by volume Minimum 60%) of minimum 75 micron DFT. This coat shall be applied after an interval of minimum overnight and maximum indefinite (from application of Intermediate coat) either before Erection by Airless Spray technique or after Erection by Brush and / or spray. The finished coat thickness of 75 Micron can be built up either application at shop / yard or in two applications one at shop / yard and other at Site. (Measurement shall be done after application of paint. Payment shall be released as per the actual quantity of painting work executed)			-		
	a) First Coat Application at shop / Yard of minimum 35 Micron DFT	MT	260	0.47		
	b) Second Coat Application at Site of Minimum 40 Micron DFT	MT	9160	0.54		
(iii)	Final Finish Coat: Finished coat shall be followed with the application of Final finish coat polyurethane based colour pigment paint (solid by volume minimum 40%) of minimum 25 micron DFT. This coat shall be applied within seven days from completion of finish coat, after Erection by brush and or spray, Color and shade of the coat shall be as approved by BHEL Engineer. Work shall include touch up paint, protection, cleaning, scaffolding etc. all complete. (Measurement shall be done after application of paint. Payment shall be released as per the actual quantity of painting work executed)	MT	9160	0.34		
A 2303	Total firm price on FOR Site basis for Supplying factory made Electro-forged grating units with mild steel conforming to IS : 2062 at all elevation. Grating units shall be blast cleaned to Sa 2 1/2 finished (Swedish standard SIS-05-5900) and hot-dipped galvanised (galvanisation of 610 gms/sqm) 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, packing, grinding, drilling, welding, edge preparation, etc. all complete.	MT	163	55.156		

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
A 2304	Total firm price on FOR Site basis for Supply 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 up to 300mm long for structural steel work etc. all complete	KG	1050	0.0489		
A 2305	Total firm price on FOR Site basis for Supplying 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 up to 300 mm long for structural steel work etc all complete.	KG	15300	0.11		
A 2306	Total firm price on FOR Site basis for Supplying 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 etc. for following vertical loads.			-		
a	40 Tons	EACH	5	12.65		
b	50 Tons	EACH	5	13.234		
c	60 Tons	EACH	5	16.24		
d	70 Tons	EACH	5	18.945		
e	80 Tons	EACH	5	21.65		
A 2307	Total firm price on FOR Site basis for Supplying flexible open ended bellow strap of neoprene of minimum thickness 2 mm and minimum width 200 mm with aluminium stripped edges as sealing below top of bunker and bottom of tripper floor to avoid the coal dust nuisance all complete as per specifications and as directed by BHEL Engineer.	RM	350	0.53		
A 2308	Total firm price on FOR Site basis for Supplying Mild steel pipe (medium class) hand railing for staircase, ladders, openings, etc. with kick plates , galvanized at the rate of 610 Gms/Sq M. as per IS 4736 all complete as per the specifications and as directed by BHEL Engineer, of following size pipes:			-		
a	32 mm nominal bore pipe-medium grade	MT	13	42.385		
b	40 mm nominal bore pipe- medium grade	MT	8	42.385		
Total Amount- Section A (Rs.)						

SECTION B: E & C PART

Brief description of SECTION B: E & C Part :- Receipt, loading, transportation, unloading, preservation and handling at site etc. of finished materials of Bunker Structures, Raw Coal Bunkers, Coal Handling Transfer Points, Coal Conveyor Galleries and its Supporting Trestle of Bunker Structures supplied by BHEL units, raw materials supplied by BHEL from BHEL stores / yard and materials supplied by the contractor. Pre assembly, Erection, Alignment, Bolting/ Welding/ Fastening, Grouting, Testing, Painting and Handing Over of Bunker Structures, Raw coal bunkers, Coal Handling Transfer Points, Coal Conveyor Galleries and its Supporting Trestle of Bunker Structures, Miscellaneous Platform Structures including Miscellaneous Civil Works etc. at site all complete as per Specifications, Drawings and as directed by BHEL Engineer for **Unit # 1 of 2X800 MW NTPC GADARWARA STPP.**

B	E&C PART					
ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
B 700 MS EMBEDMENTS						
B 701	Fabricating, Fixing / Erection, Installation and Alignment of mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc. including welding, bolting, cutting, drilling, scaffolding, setting etc. all complete. (Supply of Embedments, inserts etc. is covered under Section A "Supply Part")	MT	53	8.52		
B 702	Fabrication, Fixing / Erection, Installation and Alignment of following items in concrete / brickwall for all kind of works, including setting material in concrete, layout, scaffolding, cutting, forming, grinding, drilling, bolting, welding, jointing, testing, primer, painting etc. all complete. as per specifications, drawings and as directed by BHEL Engineer. (Supply of materials is covered under Section A "Supply Part")			-		
a	MS pipes of all diameters	Kg	5350	0.01		
b	PVC pipes / conduits of all diameters	Kg	100	0.022		
c	UPVC pipes / conduits of all diameters	Kg	100	0.022		
d	Expansion fasteners (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for brick work with expansion sleeve of A6 polyamide:			-		
i	Upto 250 kg	Each	15	0.034		
ii	Beyond 250 Kg and upto 500 kg	Each	4	0.053		
iii	Beyond 500 Kg and upto 750 kg	Each	4	0.084		
e	Expansion fasteners (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for concrete work with expansion sleeve of stainless steel:			-		
i	Upto 250 kg	Each	35	0.04		
ii	Beyond 250 Kg and upto 500 kg	Each	31	0.06		
iii	Beyond 500 Kg and upto 750 kg	Each	31	0.10		
B 703	Prestressing, Placing and releasing of Vibration Isolation Spring modules over the FAN foundation at all elevations including providing all assistance under the supervision of the VIS supplier, transportation from BHEL store, necessary staging, platforms, leveling, alignment etc. all complete. (Vibration Isolation springs shall be issued Free of cost by BHEL)	Each	248	0.75		
B 800 GROUTING						
	Grouting including all labour, material, equipment, roughening surface, cleaning, ramming, curing etc. at any level unless otherwise specified as per specification, drawings and as directed by BHEL Engineer.			-		
B 801	Grouting of pocket holes, pipe sleeves and under base plate of structural steel work / machinery / pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. with non-shrink cementitious flowable grout as per specification using non-shrink cum plasticizer admixture. Crushing Strength of the grout shall be one grade higher than that of the base concrete (however grade of grout shall be minimum M30 to max M35 grade). (Supply of Grouting Material is covered under Section A "Supply Part", cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	30	1.78		
B 802	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 . (Supply of Grouting Material is covered under Section A "Supply Part", cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	20	6.547		

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
B 803	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 Conbextra GP-2 or equivalent . (Supply of Grouting Material is covered under Section A "Supply Part", cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	8	7.27		
B 900: DOORS, WINDOWS, VENTILATORS, LOUVERS						
	Fixing Doors, windows, ventilators, louvers, roof ventilators, rolling shutters, partitions including all labour, material, equipments, transportation (at site), handling, preparation of working drawings etc. at any level as per specifications, drawings and as directed by BHEL Engineer.			-		
B 901	Fixing / Erection, Installation and Alignment of single or double steel door shutters with 45mm thk flush design shutter comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150 mm on centres including void filled with mineral wool (density as per specification), all fittings, Godrej or equivalent make mortice lock with handle on both sides, shop and final painting etc. all complete. (Supply of fabricated door shutters in covered under Section A "Suply Part")	SQM	30	0.714		
B 902	Fixing / Erection, Installation and Alignment of fire proof steel doors (single or double shutter) with panic devices shall be 45mm thk flush design comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centers including all fittings, shop painting with approved post office/signal red color fire resistant paint, final painting (at site) and mineral wool insulation (64 kg/cum density) complete and shall be fire proof as per IS:3614, TAC requirements and as per specification. Minimum ratings shall be 2 Hrs. (Supply of Fabricated fire proof doors is covered under Section A "Supply Part")	SQM	20	1.805		
B 903	Fixing / Erection, Installation and Alignment of steel windows / ventilator with steel sections as per IS:1038, IS:1361 & IS:7452 latest revision.including all fittings, metal beadings, hold fasts, shop and final painting , wire mesh wherever required, glazing etc. all complete as per specifications. (Glazing shall be paid separately). (Supply of steel windows / ventilators is covered under Section A "Supply Part")			-		
a	openable type	SQM	166	0.342		
b	fixed type	SQM	111	0.33		
B 904	Fixing / Erection, Installation and Alignment of pressed steel frames fabricated from 16 gauge M.S sheet mortised, reinforced drilled and tapped for hinges and locks bolts strikes, hold fasts adjustable floor anchors, floor tiles/weather bars ,paintings etc. all complete as per specifications. (Supply of pressed steel frames is covered under Section A "Supply Part")	Kg	150	0.015		
B 905	Cutting, Fixing and fitting of glazing of first grade class in steel / aluminium / wooden frames, where ever required, cleaning after fixing including hardware, gaskets, clips, beadings etc. all complete as per specifications. (Supply of Glazing is covered under section A "Supply Part")			-		
a	6 mm thick wired glass	SQM	40	0.09		
b	6 mm thick multi (twin) wall fire retardant (Continuous use under temperature 100 degree C), impact resistant and ultraviolet resistant polycarbonate sheet with sealed open edgcs.	SQM	175	0.26		
B 906	Fixing / Erection, Installation and Alignment of steel louvered window with mild steel frame all round including verticals with pressed steel louvers, paintin etc. all complete. (Supply of steel louvered window with mild steel frame all round is covered under section A "Supply Part")	KG	5000	0.01		
B 1000: BRICKWORK						
B 1001	Breaking of existing brick work at all levels including plastering, removing the rubbish up to a distance of 500 m including transportation, loading, unloading etc. all complete as directed by the BHEL Engineer.	CUM	3	0.53		
B 1002	Making openings in existing brick wall or partition wall including making good the broken edges/surface with cement mortar etc. complete.	CUM	3	0.71		

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
B 1500: ROOFING / SIDE CLADDING						
	Erecting Roofing / side cladding work including all labour, material, equipment, transportation (at site), handling, scaffolding, lags, hooks, washers, corner pieces, Flashing, capping, trimming, closure for vertical / horizontal joints, ridges, hips etc. at any level as per specification, drawings and as directed by BHEL Engineer.			-		
B 1501	<p>Fixing / Erection, Installation and Alignment of thermally insulated sandwiched metal cladding for roofs with troughed profile permanently colour coated sheet on outside (External sheet) and plain permanently colour coated sheet on inside (Internal Sheet) with 50 mm thick mineral wool insulation in between the two sheets. Outside sheeting of cladding system shall have troughed profile steel metal sheets with zinc coated to class Z275 having minimum bare metal thickness (i.e. excluding the thickness of coating and painting) of 0.6mm of grade G250 as per AS1397 / grade SS255 as per ASTM A653M / grade S250GD as per EN10326 OR troughed profile steel metal sheets with aluminium-zinc alloy coated to class AZ150 with minimum bare metal thickness (i.e. excluding the thickness of coating and painting) of 0.5mm of grade G350 as per AS1397 / grade SS340 class 4 as per ASTM A792M / grade S350GD as per EN 10326 . Continued..</p> <p>Inside sheeting of cladding system shall have plain profile steel metal sheets with zinc coated to class Z275 having minimum bare metal thickness (i.e. excluding the thickness of coating and painting) of 0.6mm of grade G250 as per AS1397 / grade SS255 as per ASTM A653M / grade S250GD as per EN10326. Out side and Inside Steel Sheets shall be colour coated with total coating thickness of 35 microns (nominal) dry film thickness (DFT) comprising of Silicon Modified Polyester paint (SMP) (with silicon content of 30% to 50%) or Polyester paint, of 20 microns (nominal) SMP or Polyester paint on one side (exposed side) over 5 micron (nominal) primer coat and 5 microns (nominal) SMP or Polyester paint over 5 microns (nominal) primer coat on other side. (SMP and Polyester paint shall conform to Product type 4 of AS/ANZ 2728) . Coated surface shall be provided with a protected guard film (polyethylene) of about 40 microns to avoid any damage to the coating during handling. Mineral wool shall conform to IS : 8183, having a density of 32 Kg/Cu.M. for glass wool & 48 Kg/Cu. M. for rock wool. The work shall include fixing to supports / rails by concealed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete as per Specification .Sheeting work in roof & sides shall be measured in Sq.M. for net area of the work done . (Supply of fabricated thermally insulated sandwiched metal cladding is covered under Section A "Supply Part")</p>	SQM	3369	0.368		
B 1502	<p>Fixing and fitting of shear connectors of mild steel studs having 16mm dia and minimum 75 mm projected length above purlin passing through metal decking as per relevant IS codes and specification. (Supply of shear connectors of mild steel studs is covered under Section A "Supply Part")</p>	Kg	3000	0.01		
B 1503	<p>Fixing / Erection, Installation and Alignment of single sheet metal cladding for roof, external walls , internal walls, ridge, hips, flashing / trimming / closure for vertical / horizontal joints, capping, etc, with troughed profile steel metal sheets with zinc coated to class Z275 having minimum bare metal thickness (i.e. excluding the thickness of coating and painting) of 0.6 mm of grade G250 as per AS1397 / grade SS255 as per ASTM A653M / grade S250GD as per EN10326 OR troughed profile steel metal sheets with aluminium-zinc alloy coated to class AZ150 with minimum bare metal thickness (i.e. excluding the thickness of coating and painting) of 0.5mm of grade G350 as per AS1397 / grade SS340 class 4 as per ASTM A792M / grade S350GD as per EN 10326 . The troughed profile steel metal sheets shall be colour coated with total coating thickness of 35 microns (nominal) dry film thickness (DFT) comprising of Silicon Modified Polyester paint (SMP) (with silicon content of 30% to 50%) or Polyester paint, of 20 microns (nominal) SMP or Polyester paint on one side (exposed side) over 5 micron (nominal) primer coat and 5 microns (nominal) SMP or Polyester paint over 5 microns (nominal) primer coat on other side. SMP and Polyester paint shall conform to Product type 4 of AS/ANZ 2728. Coated surface shall be provided with a protected guard film (polyethylene) of about 40 microns to avoid any damage to the coating during handling. The work shall include fixing to supports, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete as per Specification . Sheeting work in roof & sides shall be measured in Sq.M. for net area of the work done . (Supply of fabricated single sheet metal cladding is covered under Section A "Supply Part")</p>	SQM	8000	0.16		

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
B 1504	Fixing / Erection, Installation and Alignment of Side/Roof Cladding with troughed translucent sheets of Polycarbonate material including laps, hooks, washers, corner piece etc. at all elevations complete as per specification, drawing and as directed by the engineer for the following. (Supply of Fabricated Side / Roof Cladding with translucent sheets of Polycarbonate material is covered under Section A "Supply Part")			-		
(i)	2 mm thick fire retardant and ultraviolet resistant translucent polycarbonate clean sheet of GE plastic or equivalent approved make.	SQM	900	0.086		
B 1700: RAIN WATER DOWN TAKE PIPES						
B 1701	Fixing hot dip galvanised MS down take pipes of 150 mm NB - Medium quality as per IS:1239 (part-I) all complete. The minimum coating of Zinc shall be of 610 gm/Sqm and shall comply with IS:4759 and other relevant codes.	RM	1200	0.232		
B 1800 MISCELLANEOUS WORKS						
	Miscellaneous works including all labour, material, equipment etc. at any level unless otherwise specified as per specification, drawings and as directed by engineer - in - charge.			-		
B 1801	Concrete of grade M-25 conforming to IS:456 with coarse sand and graded hard stone aggregate 20 mm nominal size in foundations/Sub Structure/ Super Structure etc. at any level, any shape, position or thickness etc. complete including shuttering, curing, reinforcement, use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete and as directed by BHEL Engineer. (Supply of Raw Materials for Concreting e.g. Coarse Sand, Cement, Aggregates, Reinforcement, Shuttering etc. is covered under Section A "Supply Part")	CUM	30	0.59		
B 1802	Dismantling concrete work for all types of structures at all levels including stacking of servicable material to a lead of 500 m and disposal of unservicable material upto a lead of 2 km , cutting of reinforcement, labour, equipment, safety precautions etc. all complete as per drawings, specification and instructions of BHEL Engineer. (Scope includes Supply of complete materials, equipments, labours, scaffoldings etc. as required)			-		
(i)	Plain cement concrete of all grades	CUM	3	1.12		
(ii)	Reinforced cement concrete of all grades	CUM	28	1.577		
B1803	Chipping of concrete in reinforced concrete work, cutting pockets, making openings at all levels and according to shapes, disposal of waste materials upto a lead of 2 km as directed by engineer including equipment, safety precautions, making good the broken surface etc. all complete as per specification, drawing, instructions of BHEL Engineer but excluding cutting of reinforcement . (Scope includes Supply of complete materials, equipments, labours, scaffoldings etc. as required)	CUDM	50	0.06		
B 1804	Extra over and above ST. NO. 1803 for cutting of reinforcement, all sizes and types including labour, equipment, return of cut reinforcement to store etc. all complete as per specification, drawings and instructions of engineer in charge. Measurement shall be on the cross sectional area of reinforcement cut. (Scope includes Supply of complete materials, equipments, labours, scaffoldings etc. as required)	SQCM	25	0.065		
B 1805	Cutting Reinforced concrete with mechanised tools like Core drilling machine etc. for cutting pockets, holes, cores in slab, beam, column or foundation as per direction of engineer in charge. (Scope includes Supply of complete materials, equipments, labours, scaffoldings etc. as required)	CUDM	5	0.06		
B 1806	Dismantling of metal sheet in cladding at any elevation, lowering of material and carriage of the dismantled material up to field fabrication shop or return to projects storage including scaffolding, staging, tools & tackles, gas cutting, welding, consumables, etc. complete as per specification, drawings and instructions of the Engineer.	SQM	25	0.046		
B 1807	Fixing of Heavy duty galvanised chemical anchor fasteners of Hilti/Equivalent make of 12mm diameter and appropriate length in concrete (minimum grade M20) to take direct tension of minimum 1MT including anchor fastener, materials, equipment, labour, scaffolding complete as per direction of Engineer.	Each	6	0.10		
B 1808	Providing small size openings (having size within 150mmx150mm area) in existing finished Floors, Walls, Cladding, Roof etc. including making good the broken edges/surface with cement mortar, fixing steel /precast concrete section as lintel , painting, finishing to match with existing finishing, scaffolding/ staging works, gas cutting of reinforcement/structural work, cleaning and removing of all debris within 1Km lead etc. all complete as per specification and as directed by Engineer.	SQM	5	0.335		

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
B 2300:	STRUCTURAL STEEL			-		
	Structural steel works including, skilled labour, mterial, equipments including suitable capacity gantry cranes, crawler / Tyre mounted cranes, transportation, handling etc. at any level as per specification, drawings and as directed by BHEL Engineer.			-		
B 2301	<p>Fabrication of structural steel at Fabrication shop / Yard 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 etc.</p> <p>Work shall include connection design & preparation of fabrication drgs, issuing and collection of steel from stores (supplied by BHEL as Free of Cost Item), fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, fit up, welding, electrodes and other consumables, 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, production test plate, inspection and testing, transportation to site from fabrication shop / yard, protection against damage in transit (weight of temporary structures not payable for packing & transit), return of surplus / waste steel materials to store etc. all complete. including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL.</p> <p>(Structural Steel Material e.g. Plates, Angles, Chanel, Beams, chequered plates, mild steel rounds, monorails, stays, safety chains, ladders, MS gratings etc. will be issued as free of cost (FOC) by BHEL)</p>	MT	310	7.910		
B 2302	<p>Erection, alignment, welding of already fabricated structural steel made from mild steel, pipes, chequered plate and mild steel rounds, at all elevations involving rolled sections, built up sections fabricated out of plates, rolled sections and combination of plates and rolled sections, in columns, beams, gantry girders, roof trusses, portals, laced purlins, space frames, shear connectors, 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, diaphragm, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails, toeplates, MS Rungs, insert plates, edge angles, embedments, lugs, posts, stays, louvers, lacings, gusset plates, safety chains for walkways adjacent to crane girders etc including issuing and collection of fabricated structural steel from stores, transportation, bolting, erection bolts & nuts (weight of erection bolts & nuts shall not be payable. Supply of permanent bolt of grade C mild steel bolts & nuts to be paid separately), assembly, use of low hydrogen/ radiogenic electrodes as per specification, post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transportation at site, stability of structures, installation of temporary structures (Scaffolding, Access ladders, Working Platforms etc.), setting column bases, surface preparation, touch-up painting, dismantling and removal of all temporary structures (weight of temporary structures not payable) complete with all labour, material, electrodes and other consumables, equipment, testing (mechanical and non-destructive), all other general and special requirements, 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 BHEL Engineer.</p> <p>(Fabricated Structural Steel will be issued as Free of Cost (FOC) by BHEL)</p>	MT	8010	3.951		

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
B 2303	Erection of coal bunkers' supplied by BHEL Unit (cylindrical or rectangular shape with bottom conical portion) on structural steel frame work including preparation of erection scheme, receiving fabricated material either from project store or anywhere at project site, all field connections, bolting, welding etc. complete as shown on drawings and as directed by BHEL Engineer, including labour and material complete. Work shall include protection against damage in transportation at site, stability of structures, installation of temporary structures (Scaffolding, Access ladders, Working Platforms etc.), touch-up painting, dismantling and removal of all temporary structures (weight of temporary structures not payable) complete with all labour, material, electrodes and other consumables, equipment, testing (mechanical and non-destructive), all other general and special requirements, all other activities required for completion of the work as per specification, drawings and instructions of the Engineer. (Fabricated Structural Steel will be issued as Free of Cost (FOC) by BHEL)	MT	1150	4.75		
B 2304	Fabrication and Erection of M.S. Seal Plates approximate 12 gauge thick in conveyor gallery structures confirming to IS:2062. Work shall include fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, fit-up, welding, electrodes and other consumables, edge preparation, testing of welders, inspection of welds, visual inspection, rectification and correction of defective welding works, transportation to site from fabrication shop, protection against damage in transit (weight of temporary structures not payable for packing & transit), surface preparation, primer paint, shop paints etc. all complete. (Structural Steel Material i.e.g. Plates etc. will be issued as free of cost (FOC) by BHEL)	MT	20	7.91		
B 2305	Extra over ST NO. B 2301 for Blast cleaning of all Steel Surfaces to near white metal conforming to Sa 2 1/2 finish of Swedish standard SIS-05-5900 followed by providing with self curing Inorganic Zinc Silicate Primer Coat (Solid by Volume Minimum 60%) of Minimum 75 Micron Dry Film Thickness (DFT) including the cost of primer .The primer Coat shall be applied in shop / Yard immediately after blast cleaning by Airless spray technique etc all complete.	MT	310	2.33		
B 2306	Extra over ST NO. 2301 for Manual cleaning of steel structures embedded in concrete and applying Primer Coat of Chlorinated Rubber based Zinc Phosphate primer of 50 micron (DFT). (Supply of primer is covered under Section A "Supply Part")	MT	410	0.63		
B 2307	Applying Following Paints over steel surfaces (already applied with primer coat) :-			-		
(i)	Intermediate Coat: Intermediate Coat of Polyamide Cured pigment Titanium Dioxide (TiO2) or Micaceous Iron Oxide (MiO) Epoxy based paint (Solid by Volume Minimum 60%) of Minimum 75 Micron DFT. This Coat shall be applied in shop after an interval of Minimum overnight (after the application of primer Coat) by Airless spray technique. Color and shade of the Coat shall be as approved by Engineer Incharge . Work shall include protection, cleaning, scaffolding etc. all complete.	MT	260	0.81		
(ii)	Finished Coat: Intermediate coat shall be followed with the application of Finished Coat of Polyamide cured Color pigment Epoxy based paint (solid by volume Minimum 60%) of minimum 75 micron DFT. This coat shall be applied after an interval of minimum overnight and maximum indefinite (from application of Intermediate coat) either before Erection by Airless Spray technique or after Erection by Brush and / or spray. The finished coat thickness of 75 Micron can be built up either application at shop / yard or in two applications one at shop / yard and other at Site.					
	a) First Coat Application at Shop / Yard of minimum 35 micron DFT	MT	260	0.405		
	b) Second Coat application at site of minimum 40 Micron DFT	MT	9160	0.405		
(iii)	Final Finish Coat: Finished coat shall be followed with the application of Final finish coat polyurethane based colour pigment paint (solid by volume minimum 40%) of minimum 25 micron DFT. This coat shall be applied within seven days from completion of finish coat, after Erection by brush and or spray, Color and shade of the coat shall be as approved by BHEL Engineer. Work shall include touch up paint, protection, claning, scaffolding etc. all complete. (Supply of Paints is covered under Section A "Fabrication and Supply Part")	MT	9160	0.405		

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
B 2308	Fixing /Erection and Alignment of factory made Electro-forged blast cleaned to Sa 2 1/2 finished (Swedish standard SIS-05-5900), hot dipped galvanised grating units with mild steel conforming to IS:2062 (minimum galvanisation shall be 610 gms/sqm) at all elevations 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. (Supply of fabricated Electro-Forged Galvanised Grating Units is covered under Section A "Supply part")	MT	163	13.789		
B 2309	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 300 mm long for structural steel work etc. all complete. (Supply of permanent mild steel studs is covered under Section A "Supply Part")	Kg	1050	0.01		
B 2310	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. (Supply of high strength structural bolts is covered under Section A "Supply Part")	Kg	15300	0.028		
B 2311	Dismantling of steel structure at any elevation , 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	53	4.97		
B 2312	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:					
(i)	In erected position	MT	53	6.74		
(ii)	In fabrication yard / preassembly yard	MT	53	6.31		
B 2313	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	103	5.13		

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
B 2314	Erection, alignment, welding of already fabricated Stainless steel liner (SS:304 grade of 4 mm thickness on M.S. plate for inside surfaces of conical hopper portion and part of vertical portion of bunkers) at all heights including collection of fabricated SS liner segments from storeyard at site, transportation, assembly, alignment, providing and fixing with stainless steel studs, bolting (including countersunk), welding with electrode classification E308L for welding of stainless steel to stainless steel and E309 for stainless steel to mild steel, erection bolts & nuts (Weight of erection bolts & nuts shall not be payable. Supply of permanent bolt of grade C mild steel bolts & nuts to be paid separately), inspection of welds, visual inspection, rectification and correction of defective welding works, erection scheme, protection against damage in transportation at site, stability of structures, installation of temporary structures (Scaffolding, Access ladders, Working Platforms etc.), dismantling and removal of all temporary structures (weight of temporary structures not payable) complete with all labour, material, electrodes and other consumables, all other general and special requirements, all other activities required for completion of the work as per specification, drawings and instructions of the Engineer. (Only stainless steel liner's weight shall be paid under this item).	MT	100	36.742		
B 2315	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. (Supply of PTFE type sliding bearings is covered under Section A "Supply Part")			-		
a	40 Tons	EACH	5	3.163		
b	50 Tons	EACH	5	3.31		
c	60 Tons	EACH	5	4.06		
d	70 Tons	EACH	5	4.74		
e	80 Tons	EACH	5	5.413		
B 2316	Fixing flexible open ended bellow strap of neoprene of minimum thickness 2 mm and minimum width 200 mm with aluminium stripped edges as sealing below top of bunker and bottom of tripper floor to avoid the coal dust nuisance all complete. (Supply of open ended bellow strap is covered under Section A "Supply Part")	RM	350	0.133		
B 2317	Fixing / Erection, Installation and Alignment of Mild steel pipe (medium class) hand railing for staircase, ladders, openings, etc. with kick plates , galvanized at the rate of 610 Gms/Sq M. all complete as per the specifications and as directed by BHEL Engineer, for the following size pipes: (Supply of Mild Steel pipe hand railing is covered under Section A "Supply Part")			-		
a	32 mm nominal bore pipe- medium grade	MT	13	10.60		
b	40 mm nominal bore pipe- medium grade	MT	8	10.60		
B 2318	Conducting radiography test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	105	1.43		
B 2319	Conducting ultrasonic test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	105	0.94		
B 2320	Conducting ultrasonic test on steel plates as per ASTM-A435 or equivalent wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	SQM	5	1.38		
B 2321	Conducting magnetic particle test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	105	0.84		

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
B 2322	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	105	0.87		
	Total Amount- Section B (Rs.)					
	GRAND TOTAL - Section- A + Section B (Rs.)					
	"A"					

ST. NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	FACTOR	RATE= A* FACTOR/100000 (Rs.)	AMOUNT = RATE*QUANTITY (Rs.)
NOTE:						
1	Bidder's quoted GRAND TOTAL price as "A" above shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope defined in specification and in accordance with all terms & conditions of tender.					
2	Contractor shall fully understand description and Specifications of items mentioned in BOQ.					
3	Conditional price bids with any deviation / clarification etc are liable to be rejected. No cutting / erasing / over writing shall be done.					
4	Quantities mentioned in rate schedules are approximate only and liable for variation on either side depending upon site / design requirement. The tentative contract value (CV) of entire scope of work shall be calculated as per finally quoted / accepted rates & the Quantities indicated in BOQ cum Rate Schedule .					
5	Contractor's total quoted price as per rate schedule will be taken as tentative only. The contractor undertakes to execute actual quantities as per advice of BHEL Engineer and accordingly the final contract price shall be worked out on the basis of quantities actually executed at site and payments will also be regulated for the same.					
6	In case of any mis-match in rate and amount on price discrepancy, the same will be dealt as per clause no. 1.4 of GCC.					