

TECHNICAL CONDITIONS OF CONTRACT (TCC)

NAME OF WORK: STRUCTURE STEEL WORKS
FOR FLUE GAS DESULPHURIZATION (FGD)
SYSTEM AT 2X490 MW DADRI THERMAL
POWER PLANT AT DADRI, GAUTAM BUDDHA
NAGAR, U.P.

BHARAT HEAVY ELECTRICALS LIMITED



TECHNICAL CONDITIONS OF CONTRACT (TCC) CONTENTS

SI No	DESCRIPTION	Chapter	PAGE NO.
Volume-IA	Part-I: Contract specific details		
1	Project Information	Chapter-I	3
2	Scope of Works	Chapter-II	4-8
3	Facilities in the scope of Contractor/BHEL (Scope Matrix)	Chapter-III	9-15
4	T&Ps and MMEs to be deployed by Contractor	Chapter-IV	16-17
5	T&Ps and MMEs to be deployed by BHEL on sharing basis	Chapter-V	18
6	Time Schedule	Chapter-VI	19-20
7	Terms of Payment	Chapter-VII	21
8	Taxes and other Duties	Chapter-VIII	22-24
9	Materials and Other Requirements	Chapter-IX	25-28
10	Other Important Conditions	Chapter-X	29-36
11	Annexures	Chapter - XI	37
Volume-IA	Part-II : Technical Specifications		
1	SPECIFICATION NO PE-TS-436-600-C001, section C		
2	SPECIFICATION NO. PE-TS-999-600-C011, C017 & C018 (Section D, Sub-Section D11, D17 & D18)		

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - I : Project Information

NCTPP DADRI FGD (2X490 MW)

NATIONAL THERMAL POWER CORPORATION (NTPC) has entrusted BHEL an EPC contract to setup Flue Gas Desulphurization (FGD) System Package for NCTPP, DADRI Stage-II (2X490 MW)

Sl. No.	Title	Description
1	Owner	NATIONAL THERMAL POWER CORPORATION (NTPC)
2	Project Title	NATIONAL CAPITAL THERMAL POWER PROJECT (NCTPP)
3	Project Site Location	Dadri, Gautam Buddh Nagar, Uttar Pradesh
4	Nearest Railway Station	Dadri (8.5 Km.)
5	Nearest Airport	Delhi (70 Km.)
6	Nearest Highway	National Highway- 3 & 24
7	Nearest Water Body	Upper Ganga Canal system
8	Basic Wind Speed	47 meters/second

The Nearest Town, Dadri is about 7 Km from site and is easily accessible by Road/ Railway.

INSTRUCTIONS TO TENDERERS:

The bidders are advised to visit and examine the site of WORKS and its surroundings and obtain for himself on his own responsibility all information that may be necessary for preparing the bid and entering into the CONTRACT. All costs for and associated with site visits shall be borne by the bidder.

The Bidders shall physically visit the site and fully acquaint themselves with site conditions, transportation routes, various distances and the fact that other contractors would be working in this area and their structures are to be protected. The material brought and stacked for construction should not make hindrance to other contractors. **Necessary precaution and arrangements including sprinkling of water during work as acceptable to BHEL for safety & security for the above have to be made by the contractor. No claim will be entertained by BHEL on ground of lack of knowledge and the contractor's rates shall be deemed to have taken this into account.**

The contractor, in the event of this work awarded to him, shall establish an office at site and keep posted an authorized, responsible officer with valid Power of Attorney for the purpose of the contract. Any order or instructions of the 'Engineer' or his duly authorized representative, communicated to the contractor's representative at site office will be deemed to have been communicated to the contractor at his legal address.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - II: Scope of Works

2.0	GENERAL SCOPE OF WORK
2.1	Scope of this tender covers works for “Structure Steel works for Flue Gas Desulphurization (FGD) System at 2X490 MW Dadri Thermal Power Plant at Dadri, Gautam Buddha Nagar, U.P.
2.2	<p>The scope of work is as follows: The scope of work will include but not limited to Structure Steel works for the following buildings / structures of Flue Gas Desulphurization (FGD) System at 2X490 MW NCTPP Dadri:</p> <ul style="list-style-type: none">A. FGD CONTROL ROOM BUILDING (FGDCR)B. BALL MILL BUILDING [BMB] (LIME STONE GRINDING HOUSE)C. GYPSUM DEWATERING BUILDING [GDWB]D. RC PUMP & OXIDATION BLOWER HOUSE (RCPH)E. SO2 ANALYZER ROOMF. TANKS I.E. FILTRATE WATER TANK, WASTE WATER TANK, LIMESTONE SLURRY TANK, PROCESS WATER TANK, AUXILIARY ABSORBENT TANK, MILL CIRCUIT/ SEPARATOR TANK, CLARIFIED WATER TANK ETC.G. LIMESTONE STORAGE SILO.H. ABSORBERI. FGD FLUE GAS DUCTINGJ. PIPE RACK – SLURRY PIPING & CABLING RACKK. RC PUMPSL. OXIDATION BLOWERSM. WET LIME STONE BALL MILLN. SERVICE/LT TRANSFORMER AREA & HT TRANSFORMER AREAO. PUMPS I.E. SLURRY PUMPS, WATER PUMPS (PROCESS WATER PUMPS, PROCESS WATER BOOST UP PUMPS, CLARIFIED WATER PUMPS)P. VACUUM PUMPSQ. INSTRUMENT AIR RECEIVERSR. BOOSTER FANSS. DISMANTLING OF STRUCTURES / REROUTING OF TRENCHES
2.2.1	<p>The bidder’s scope shall include but not limited to the following:</p> <ul style="list-style-type: none">A. Supply of all materials (except those specified in BHEL scope), consumables, labor, Tools and plants, transportation and storage, sample testing etc. all complete as per BOQ, specifications and drawings for proper and successful execution of the job for Dadri FGD at 2X490 MW Dadri Thermal Power Plant at Dadri, Gautam Buddha Nagar, U.P.
2.2.1.1	<p><u>Fabrication and Erection of Structure Steel:</u></p> <ul style="list-style-type: none">I. Fabrication, erection and alignment of structural steel of grade E250 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. for 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,

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - II: Scope of Works

	<p>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. including 2 coats of red oxide zinc-chromate primer (one coat at fabrication yard and one coat after erection), as per BOQ cum Rate Schedule, Technical Specifications and approved drawings.</p> <p>II. Connection design & preparation of fabrication drawings, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, 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 up to 40 mm & 66° C for welding over 40 mm and up to 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 etc. complete as per BOQ cum Rate Schedule, Technical Specifications and approved drawings.</p> <p>III. 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.</p> <p>IV. Appointment of a separate agency, approved by BHEL, for review and approval of fabrication drawings, in consultation with BHEL.</p> <p>Note: Structure Steel should be fabricated at site only. Contractor needs to prepare a fabrication yard at site as per work requirement and as instructed by BHEL Engineer. All fabricated structures shall have bolted field connections or as per approved drawings. The contractor should arrange and deploy adequate resources (Manpower and T&P) for satisfactory execution of the work.</p>
2.2.1.2	<p>Blast Cleaning, Primer and Painting Works:</p> <p>I. Blast Cleaning: Blast cleaning for making surface conforming to Sa 2 ½ finish of ISO 8501-1 with surface profile 40-60 Micron.</p> <p>II. Primer:</p> <p>a. Providing with two coats of two component moisture curing zinc (ethyl) silicate primer coat (having minimum 80% of metallic Zinc content in dry film, solid by volume minimum 60% ±2%) of minimum 70 micron DFT to be applied over blast cleaned surface . The primer coat shall be applied in shop / fabrication yard immediately after blast cleaning by airless spray technique. Zinc dust composition and properties shall be Type-II as per ASTM D520-00.</p>

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - II: Scope of Works

	<p>b. Providing with epoxy resin based zinc phosphate primer in coats of minimum 50 micron (DFT) at shop and 50 micron (DFT) after erection, including touch-up painting, mist coat, additional water sprinkling etc. all complete.</p> <p>III. Intermediate coat:</p> <p>a. Providing and applying intermediate coat of epoxy based Titanium dioxide (TiO₂) of minimum 100micron DFT on steel surfaces already having primer coats as per BOQ cum Rate Schedule, Technical Specifications and approved drawings.</p> <p>b. Providing and applying (with airless spray technique) Intermediate coat of two component polyamide cured epoxy with MIO Content (containing lamellar MIO minimum 30% on pigment, solid by volume minimum 80% ±2%) of minimum 100 micron DFT. This coat shall be applied in shop / fabrication yard after an interval of minimum 24 hours (from the application of primer coat) by airless spray technique including protection and cleaning, scaffolding etc. all complete as per BOQ cum Rate Schedule, Technical Specifications and approved drawings.</p> <p>IV. Finish Coat:</p> <p>a. Two coats of epoxy based colour finish paint (one coat of epoxy paint suitable pigmented of approved shade and colour with glossy finish and DFT of 75 microns and Additional finishing coat of polyurethane of minimum DFT of 25 microns) including protection and cleaning, scaffolding etc. all complete as per BOQ cum Rate Schedule, Technical Specifications and Approved drawings.</p> <p>b. Providing and applying Finish Coat of two pack aliphatic Isocyanate cured acrylic finish paint (solid by volume minimum 55% ±2%) with Gloss retention (SSPC Paint Spec No 36, ASTM D 4587, D 2244, D 523) of Level 2 (after minimum 1000 hours exposure, Gloss loss less than 30 and colour change less than 2.0 ΔE) and minimum 70 micron DFT including protection and cleaning, scaffolding, touchup painting etc. all complete as per BOQ cum Rate Schedule, Technical Specifications and approved drawings. This coat shall be applied in shop / fabrication yard after an interval of minimum 10 hours and within six (6) months (from the completion of Intermediate coat), Colour and shade of the coat shall be as approved by the Employer.</p>
2.2.1.3	All other works i.e. Supply Fabrication and Erection of Gratings, Galvanization, permanent MS Bolts and High Strength Structure Bolts, 4 mm thick Stainless Steel Liner of grade AISI-304, providing and fixing PTFE type sliding bearings of reputed manufacturer, Stainless Steel pipe hand railing, MS pipe hand railing, Galvanized MS Pipe hand railing, Lighting arrestor and air terminal over roof of house, handrails etc. shall be carried out as BOQ cum Rate Schedule, Technical Specifications and Approved drawings.
2.2.1.4	Testing: Contractor's scope includes conducting following non-destructive testing on Welds and Steel Plates: I. Radiography test on welds, II. Ultrasonic test on welds,

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - II: Scope of Works

	III. Magnetic particle test on welds, IV. Dye penetration test on welds, V. Conducting ultrasonic test on steel plates.
2.2.2	Structure Steel Supply: Structure Steel required as per relevant BOQ Item for this tender's scope shall be procured by BHEL and issued to contractor free of cost (As FOC Item). However unloading, handling / storage of Structural Steel procured by BHEL for this tender scope, at site, inside BHEL Stores / Contractor's Stores and further transportation from Stores to work area will be in the scope of contractor. No Extra payment shall be made for this work.
2.2.3	The working area shall be separated from the existing plant area by cordoning off the area by providing MS / GI sheets of suitable heights with appropriate frame work as approved by BHEL/ Customer as per customer requirement and as directed by BHEL Engineer. No extra payment shall be paid to contractor for this work.
2.2.4	The Customer National Thermal Power Corporation (NTPC) may depute their representative for checking and supervision of important stages of work. The contractor shall be required to provide all facilities for inspection of works at no extra cost to BHEL. Any defect in quality of work or deviations from drawings / specifications pointed out during such inspection shall be made good by the contractor in the same way as if pointed out by the BHEL Engineer, without any cost implication to BHEL.
2.2.5	The work under this contract shall be carried out as per BOQ Cum Rate Schedule. In case the description / specifications as per BOQ are found to be incomplete, Indian standard specifications shall be followed. Quantities mentioned in the BOQ cum Rate schedules are approximate only and liable for variation due to change of scope of work / variation in schedule of quantities, changes in design etc. The tenderers shall undertake 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. The quantities indicated against each item may vary to any extent and no compensation will be payable in variation of Individual quantity.
2.2.6	The complete works shall be carried out as per BOQ cum Rate schedule. If any work covered in the scope of contract cannot be executed using items available in BOQ, additional / extra items shall be made and rates for such items shall be worked out as per GCC clause 2.15.7. However contractor shall be bound to execute all the works under the scope of the contract and decision whether an extra item is applicable or not, shall be taken by BHEL Engineer which will be binding on the contractor.
2.2.7	Any activity which is necessarily required for satisfactory execution of any item of BOQ in line with technical specifications shall be deemed to be included in BOQ item even if it is not described in the item description and no extra payment shall be made against such activity.
2.3	The technical requirements for work to be executed under this specification shall be as per Specifications No PE-TS-436-600-001 (Section C) & PE-TS-999-600-

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - II: Scope of Works

	C011, C017 & C018 (Section D, Sub-Section D11, D17 & D18), enclosed with this tender document. (Part - II)
2.4	Contractor's scope also includes following:
2.4.1	Furnishing all labor, materials (except those specified in BHEL scope), supervision, construction plans, equipment, supplies, transport to and from the site, materials handling, fuel, electricity, compressed air, water, transit and storage insurance and all other incidental items and temporary works not shown or specified but reasonably implied or necessary for the proper completion, maintenance and handing over the works, in accordance with the stipulations laid down in the contract documents and additional stipulations as may be provided by BHEL Engineer during the course of works.
2.4.2	Furnishing samples of all materials required by the engineers for testing / inspection and approval for use in the works. The samples may be retained by the engineer for final incorporation in the works. Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the engineer.
2.4.3	Giving all notices, paying all fees, taxes etc., in accordance with the general conditions of contract, that are required for all works including temporary works.
2.4.4	Arranging manufacturer's supervision for items of work done as per manufacturer's specifications when so specified.
2.4.5	The scope of work will also include such other related works although they may not be specifically mentioned in the above paragraph and all such incidental items not specified but reasonably implied and necessary for completion of the job as a whole all as desired and as directed by the engineer.
2.4.6	The scope of work covered above is not a comprehensive list of items of work involved. The detail scope of work may vary considerably depending on the actual construction requirements.

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III: Facilities in the scope of Contractor/BHEL

Sl.No	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.1.0	ESTABLISHMENT			
3.1.1	FOR CONSTRUCTION PURPOSE:			
3.1.1.1	Open space for office	Yes		BHEL shall provide free of charge limited open space for office and store as and where made available by its customer
3.1.1.2	Open space for storage	Yes		
3.1.1.3	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
3.1.1.4	Bidder's all office equipment, office / store / canteen consumables		Yes	
3.1.1.5	Canteen facilities for the bidder's staff, supervisors and engineers etc.		Yes	
3.1.1.6	Firefighting equipment like buckets, extinguishers etc.		Yes	
3.1.1.7	Fencing of storage area, office, canteen etc. of the bidder		Yes	
3.1.2	FOR LIVING PURPOSES OF THE BIDDER			
3.1.2.1	Open space		Yes	
3.1.2.2	Living accommodation		Yes	
3.2.0	ELECTRICITY			

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III: Facilities in the scope of Contractor/BHEL

Sl.No	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.2.1	<u>Electricity For construction purposes</u> (To be specified whether chargeable or free)		Yes	Construction Power can be provided at single point source at 415V (3-phase) on chargeable basis as and where made available by Owner, however contractor has to deploy DG Sets at no extra cost to BHEL.
3.2.1.1	Single Point source	Yes		
3.2.1.2	Further distribution for the work to be done which include supply of materials and execution		Yes	
3.2.2	Electricity for the office, stores, canteen etc. of the bidder which include:		Yes	
3.2.2.1	Distribution from single point including supply of materials and service		Yes	
3.2.2.2	Supply, installation and connection of material of energy meter including operation and maintenance		Yes	
3.2.2.3	Duties and deposits including statutory clearances for the above		Yes	
3.2.2.4	Living facilities for office use including charges		Yes	
3.2.2.5	Demobilization of the facilities after completion of works		Yes	

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III: Facilities in the scope of Contractor/BHEL

Sl.No	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.2.3	Electricity for living accommodation of the bidder's staff, engineers, supervisors etc. on the above lines.		Yes	
3.3.0	WATER SUPPLY			
3.3.1	For construction purposes:			
3.3.1.1	Making the water available at single point	Yes		Construction Water may be made available at single point source, as per availability. However Bidder has to ensure an alternate arrangement for construction water at his own cost by resorting to the methods like bore well, water tankers etc.
3.3.1.2	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.3.2	<u>Water supply for bidder's office, stores, canteen etc.</u>		Yes	
3.3.2.1	Making the water available at single point		Yes	

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III: Facilities in the scope of Contractor/BHEL

Sl.No	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.3.2.2	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.4.0	LIGHTING			
3.4.1	For construction work (supply of all the necessary materials) 1. At office storage area 2. At the preassembly area 3. At the construction site /area		Yes	
3.4.2	For construction work (execution of the lighting work/ arrangements) 1. At office storage area 2. At the preassembly area 3. At the construction site /area		Yes	
3.4.3	Providing the necessary consumables like bulbs, switches, etc. during the course of construction		Yes	
3.4.4	Lighting for the living purposes of the bidder at the colony / quarters		Yes	
3.5.0	COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER			
3.5.1	Telephone, fax, internet, intranet, e-mail etc.		Yes	
3.6.0	COMPRESSED AIR SUPPLY			

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III: Facilities in the scope of Contractor/BHEL

Sl.No	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.6.1	Supply of Compressor and all other equipment required for compressor and compressed air system including pipes, valves, storage systems etc.		Yes	
3.6.2	Installation of the above system and operation and maintenance of the same.		Yes	
3.6.3	Supply of the all the consumables for the above system during the contract period		Yes	
3.7	CONSTRUCTION FACILITIES			
3.7.0	Engineering works for construction:			
3.7.1	Providing the design drawings for all the works covered under this scope	Yes		
3.7.2	Erection methodology and detailed fabrication drawings		Yes	In consultation with BHEL. Detailed fabrication drawings shall be prepared by the Contractor as specified in BOQ cum Rate Schdl.
3.7.3	As-built drawings – where ever deviations observed and executed and also based on the decisions taken at site		Yes	In consultation with BHEL
3.7.4	Shipping lists etc. for reference and planning the activities	Yes		"
3.7.5	Preparation of site construction schedules and other input requirements	Yes	Yes	"

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III: Facilities in the scope of Contractor/BHEL

Sl.No	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.7.6	Review of performance and revision of site construction schedules in order to achieve the end dates and other commitments	Yes	Yes	"
3.7.7	Weekly construction schedules based on Sl. No 3.7.5		Yes	"
3.7.8	Daily construction / work plan based on Sl. No 3.7.7		Yes	"
3.7.9	Periodic visit of the senior official of the bidder to site to review the progress so that works are completed as per schedule. It is suggested this review by the senior official of the bidder should be done once in every two months.		Yes	
3.7.10	Preparation of preassembly bay / fabrication yard		Yes	
3.8	Other important Conditions regarding facilities to be provided by BHEL / Contractor i.e. Space, Construction Power and Construction Water etc.:			
3.8.1	BHEL shall provide free of charge limited open space, for office & storage shed, as and where made available by M/s NTPC. It is the responsibility of the contractor to construct sheds, fabrication yard etc., provide all utilities and dismantle and clear the site after completion of work or as and when required, as a part of his scope of work.			
3.8.2	Contractor shall be responsible for providing all necessary facilities like residential accommodation, transport, electricity, water, medical facilities etc. as required under various labour laws and statutory rules and regulations framed there under to the personnel employed by him.			
3.8.3	Construction power, for construction purposes will be provided on chargeable basis at one point near erection site from supply point AS AND WHEN IT IS MADE AVAILABLE BY THE CUSTOMER. In the initial stages, the Contractor may have to deploy the DG sets for carrying out the tender works. Further distribution of power (when received) shall be done			

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III: Facilities in the scope of Contractor/BHEL

	by contractor at his cost. All wiring must comply with local regulations and will be subject to Engineer's inspection and approval before connecting supply.
3.8.4	Provision of distribution lines of power and water from the central points to the required place with proper distribution boards observing the safety rules laid down by the authorities of the state shall be done by the contractor, supplying all the materials like cables, distribution board, switch boards, TPN, CBS, ELCBS/ MCCBS / Copper / Brass clamps, copper conductor, change over switches, pipes, pipe fittings etc. at his own cost. If any failure is caused in supply of the power and water, it is the responsibility of the contractor to make alternate arrangements at his cost. The contractor shall adjust his working shift / hours accordingly and deploy additional manpower if necessary so as to achieve the targets.
3.8.5	In case of power cuts / load, shedding no compensation for idle labour or extension of time for completion of work will be given to contractor.
3.8.6	Adequate lighting facilities such as flood lamps, hand lamps and area lighting shall be arranged by the contractor at the site of construction, contractor's material storage area etc. within finally accepted rates.
3.8.7	No claim for damages will be entertained by the Company on account of interruptions of water supply or limitation of quantity of water as aforesaid or on account of the water so taken being not fit for construction purposes or on any other account in connection with such water supply.
3.8.8	CONTRACTOR HAS TO ARRANGE FOR CONSTRUCTION WATER BY PROVIDING SUITABLE BORE WELL WITHIN THE QUOTED RATES. Contractor to satisfy himself that the water drawn by him is fit for construction / consumption and adequately treat such water at his cost when it is not found fit for the said purposes
3.8.9	The Contractor should make arrangements for storage of sufficient quantity of water required for work.
3.8.10	The Contractor shall during the progress of the work, provide, erect and maintain at his own expenses all necessary temporary workshops, stores, consumables, offices, etc. required for the proper and efficient execution of the work. The planning, setting and erection of these buildings shall have the approval of the Engineer and the Contractor shall at all times keep them tidy and in a clean and sanitary condition to the entire satisfaction of the Engineer.
3.8.11	On completion of work or as and when required by BHEL, all the temporary buildings, structures, pipe lines, cables etc. shall be dismantled and leveled and debris shall be removed as per instruction of BHEL by the contractor at his cost. In the event of his failure to do so, same will be got done by the Engineer and expenses incurred shall be recovered from the contractor along with prevailing overhead. The decision of BHEL Engineer in this regard shall be final.

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – IV: T&Ps and MMEs to be deployed by Contractor

(A) - LIST OF T&Ps and MMEs TO BE ARRANGED BY THE CONTRACTOR AT HIS OWN COST:

SI No.	EQUIPMENT	INDICATIVE QUANTITY
1	HYDRA CRANE 9 / 14 T	2 Nos.
2	TYRE MOUNTED CRANE 40 MT	1 Nos.
3	15/20 MT TRAILORS WITH PULLING UNIT / TRACTOR - TRAILORS	2 Nos.
4	PORTABLE LIGHTING MAST / LIGHTING SYSTEM	2 Nos.
5	POWER / HAND WINCHES	APR*
6	WELDING MACHINES	APR*
7	HEATING OVEN	APR*
8	PORTABLE OVENS	APR*
9	PLATE BENDING MACHINE	APR*
10	PIPE CUTTING MACHINE	APR*
11	WINCH WITH BUILDING HOIST	APR*
12	DG SET 125 kVA	APR*
13	WATER TANKER WITH SPRINKLER	APR*

APR*: As per Requirement

NOTES:

1. The above list – (A) is only indicative and these T&Ps and MMEs may not be required for entire contract period but contractor will ensure that these T&Ps and MMEs are provided as per the work requirement. **T&P Deployment schedule will be finalized at site based on the work fronts and in consultation with BHEL Engineer. Contractor have to mobilize / maintain the T& P as per the schedule notified time to time by BHEL Engineer.**
2. If any one of T&P / MMEs mentioned above is not needed for proper execution of scope of work, provided contractor has not utilized BHEL free issued T&P/ MMEs for completing such work, no recovery from contractor shall be applicable.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – IV: T&Ps and MMEs to be deployed by Contractor

3. Any additional item required in addition to above-mentioned T&Ps/MMEs for proper execution of scope of work, contractor has to arrange such T&Ps/MMEs within quoted rate on the instruction of BHEL in writing in a reasonable period within two weeks from the written instruction from BHEL.
4. In case deployment of T&Ps/MMEs w.r.t requirement, is delayed or deployed for a shorter period or abnormal down time of T&Ps/MMEs or in case T&Ps/MMEs w.r.t requirement was not deployed by the contractor as per instruction of BHEL and BHEL had to deploy either its own T&P or from outside, the recovery shall be done from the contractor as under:
 - a. In case BHEL had to deploy its own T&P, hire charges of T&P applicable for outside agencies as per extant guidelines for “Hire Charges on issue of Capital Tools & Plants” shall be recovered.
 - b. In case BHEL had to deploy the T&P from outside, actual hiring cost plus applicable overheads shall be recovered.
5. All the tools and tackles/measuring instruments shall be duly tested/calibrated and valid certificate to that effect should be submitted to BHEL site in-charge before the start of work.
6. Other terms and conditions regarding above items please also refer clause for T&P/MMEs in SCC.
7. All the tools and plants required for this scope of work, except the Tools & Plants provided by BHEL are to be arranged by the contractor within the quoted rates. The list is suggestive in nature. **Any additional T & P required to meet BHEL commitments/schedule shall be arranged without any extra cost by the contractor.**
8. **If the work related to T & Ps mentioned above list - (A) is completed then, Engineer I / C can release the T & P during contract period / extended period if any. However, written permission shall be taken by contractor from BHEL construction Manager before releasing T&P.**

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – V: T&Ps and MMEs to be deployed by BHEL on sharing basis

THE LIST OF T&Ps BEING PROVIDED BY BHEL FOR USE OF CONTRACTOR FREE OF HIRE CHARGES ON SHARING BASIS:

SI No.	EQUIPMENT	QUANTITY
1	CRAWLER CRANE 100 / 135 MT	ON SHARING BASIS

NOTES:

1. The contractor shall make necessary arrangement like laying of steel plates, assembly & dismantling of heavy lift attachment, boom, jib etc. for movement and operation of crane.
2. Any other special T&P if supplied by the manufacturer and available with the customer may also be provided to the contractor free of hire charges as and when made available. Special tools and tackles are to be used only for the purpose for which these are meant and to be returned in good condition.
3. For T&P other than cranes, mentioned above and any other provided by BHEL for erection and commissioning purposes, contractor shall transport from BHEL stores, install, operate, carry out maintenance, dismantle after use and return to BHEL stores in working condition.
4. Other terms and conditions regarding above items shall be as per T&P clause in SCC.
5. Cl.4.2.2.16 c.) of SCC shall read as day-to-day upkeep and running maintenance like filling topping up of lubricants, changing filters, etc. including repair of self-starter, batteries and dynamo of these cranes shall be excluded from the scope of the contractor. In case of breakdown of crane, contractor shall provide the necessary manpower for maintenance of the crane to maintenance agency, failing to do so BHEL will get the job done at the risk and cost of contractor. BHEL may also provide cranes through crane hiring agencies in which case the day-to-day upkeep and running maintenance shall be excluded from scope of contractor.
6. Cl.4.2.2.16 e.) of SCC. The operator, helper & maintenance personal for BHEL's cranes 100 MT & above capacity being provided by BHEL free of cost. Further fuel for operation of all BHEL cranes shall be provided by contractor without any extra cost.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VI: Time Schedule

6.	TIME SCHEDULE												
6.0	MOBILIZATION, TIME SCHEDULE, CONTRACT PERIOD												
6.1	<p>INITIAL MOBILIZATION :</p> <p>After receipt of Letter of Award (LOA), Contractor shall discuss with Project Manager / Construction Manager regarding initial mobilization. Contractor shall mobilize necessary resources within 02 (two) weeks of issue of LOA or as per the directive of Project Manager / Construction Manager. Such resources shall be progressively augmented to match the schedule of milestones as directed by BHEL Engineer.</p> <p>Contractor shall also finalize the agency for reviewing and approval of fabrication drawings (in consultation with BHEL), within 02 (two) weeks if issue of LOA.</p>												
6.2	<p>START DATE / ZERO DATE</p> <p>The schedule date of start of work shall be the date after 2 weeks of issue of LOA; The Actual Date of Start of Contract Period (Zero Date) shall be date of handing over of site to contractor for work and shall be certified by the BHEL Engineer.</p>												
6.3	<p>CONTRACT PERIOD:</p> <p>The contract period for completion of entire work under scope of this contract shall be 12 (Twelve) Months from the Zero Date.</p>												
6.4	<p>CONTRACT SCHEDULE:</p> <p>Contractor shall prepare a detailed work completion schedule in consultation with Site within 02 (two) weeks from start of work and get it approved from BHEL. However Indicative contract schedule shall be as under:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Sl. No.</th> <th style="text-align: center;">Description</th> <th style="text-align: center;">Schedule from Zero date</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Completion of Works for U#1</td> <td style="text-align: center;">Within 07 months</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Completion of Works for U#2</td> <td style="text-align: center;">Within 10 months</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Finishing works/ Completion in all respect</td> <td style="text-align: center;">Within 12 months</td> </tr> </tbody> </table> <p>Contractor has to mobilize adequate resources to meet BHEL’s commitments to their customer as indicated from time to time. In the event the contractor fails to respond to these requirements, BHEL shall take appropriate actions to meet customer’s commitments in line with the provisions of General Conditions of Contract.</p>	Sl. No.	Description	Schedule from Zero date	1	Completion of Works for U#1	Within 07 months	2	Completion of Works for U#2	Within 10 months	3	Finishing works/ Completion in all respect	Within 12 months
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TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VI: Time Schedule

6.5	In case due to reasons not attributable to the contractor, the work gets delayed and scheduled completion gets extended, time extension will be granted by BHEL as per clause no. 2.11 of GCC.
6.6	The work under the scope of this contract is deemed to be completed in all respects, only when all the works are carried out as per satisfaction of BHEL. The decision of BHEL on completion date shall be final and binding on the contractor.
6.7	In order to meet above schedule in general, and any other intermediate targets set, to meet customer/ project schedule requirements, contractor shall arrange & augment all necessary resources from time to time on the instructions of BHEL without any extra cost to BHEL.
6.8	CONSEQUENCE OF DELAY It may be noted that in the event, delay in completion is attributable to the contractor; BHEL will impose LD on the contractor as per clause no. 2.7.9 of GCC.

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – VII: Terms of Payment

7.0	TERMS OF PAYMENT
7.1	The 'Engineer' will certify regarding the actual work executed in the measurement books and bills, which shall be accepted by the contractor in measurement book.
7.2	The Contractor shall be paid monthly running bill as per chapter – X of SCC and Clause Nos. 2.22 & 2.23 of GCC. The format for billing shall be approved by BHEL before raising invoices.
7.3	The contractor on certification of the engineer at site is entitled for payments of his running bills which shall be subject to any deduction/retention specifically under clauses 2.22 of GCC and 10.0 of SCC.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII: Taxes & Duties

8. TAXES AND DUTIES:

8.1.1	<p>Price quoted should be inclusive of all applicable Taxes/charges but Excluding GST. The Contractor shall pay all other taxes, fees, royalty, commission etc. which may be levied on the contractor in executing the contract. In case BHEL is forced to pay any of such taxes, it shall be recovered from Contactor's bills or otherwise as deemed fit.</p> <p>GST Shall be payable extra as per following :</p>
8.1.2.	<p>Contractor/Vendor has to issue invoice indicating HSN/SAC code, Description, Value, Rate, applicable tax and other particulars in compliance with the provisions of relevant GST Act and Rules made thereunder. With the implementation of e way bill provisions, contractor shall comply with same as applicable.</p>
8.1.3	<p>Vendor has to submit GST compliant invoice within seven days from the due date of invoice as per GST Law. In case of delay, BHEL reserves the right of denial of GST payment if there occurs any hardship to BHEL in claiming the input thereof. In case of goods, vendor has to provide scan copy of invoice & GR/LR/RR to BHEL before movement of goods starts. Special care should be taken in case of month end transactions.</p>
8.1.4.	<p>GST amount claimed in the invoice shall be released on fulfilment of all the following conditions by the Contractor : -</p> <ol style="list-style-type: none">Supply of goods and/or services have been received by BHEL.Original Tax Invoice has been submitted to BHEL.Respective invoice has appeared in BHEL's GSTR - 2A for the month corresponding to the month of invoice. Alternatively, BG of appropriate value may be furnished which shall be valid at least one month beyond the due date of confirmation of relevant payment of GST on GSTN portal or sufficient security is available to adjust the financial impact in case of any default by the contractor.
8.1.5	<p>Contractor shall be solely responsible for discharging his GST liability according to the provisions of GST Law and BHEL will not entertain any claim of GST/interest/penalty or any other liability on account of failure of contractor in complying the provisions of GST Law or discharging the GST liability in a manner laid down thereunder</p>
8.1.6	<p>In case declaration of any invoice is delayed by the vendor in his GST return or any invoice is subsequently amended/altered/deleted on GSTN portal which results in any adverse financial implication on BHEL, the financial impact thereof including interest/penalty shall be recovered from the Contactor's due payment.</p>
8.1.7	<p>Any denial of input credit to BHEL or arising of any tax liability on BHEL due to non-compliance of GST Law by the Contractor in any manner, will be recovered along with liability on account of interest and penalty (if any) from the payments due to the Contactor.</p>
8.1.8	<p>The admissibility of GST, taxes and duties referred in this chapter or elsewhere in the contract is limited to direct transactions between BHEL & its Contractor. BHEL is not responsible for any liability that may arise due to any transaction beyond the direct transaction between BHEL & its Contractor.</p>

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII: Taxes & Duties

8.1.9	<p><u>Variation in Taxes & Duties:</u> Any upward variation in GST shall be considered for reimbursement provided supply of goods and services are made within schedule date stipulated in the contract or approved extended schedule for the reason solely attributable to BHEL. However downward variation shall be subject to adjustment as per actual GST applicability.</p> <p>In case the Government imposes any new levy/tax on the output service/goods after price bid opening, the same shall be reimbursed by BHEL at actual. The reimbursement under this clause is restricted to the direct transaction between BHEL and its contractor only and within the contractual delivery period only.</p> <p>In case any new tax/levy/duty etc. becomes applicable after the date of Bidder's offer but before opening of the price Bid, the Bidder/Contractor must convey its impact on his price duly substantiated by documentary evidence in support of the same before opening of price bid. Claim for any such impact after opening the price bid will not be considered by BHEL for reimbursement of tax or reassessment of offer.</p>
8.1.10	<p><u>Modalities of Tax Incidence on BHEL:</u> Where GST law permits more than one option or methodology for discharging liability of tax/ levy/ duty; the contractor shall approach BHEL before choosing any option to discharge his tax liability. BHEL shall have the right to direct the contractor to adopt the appropriate option considering the amount of tax liability on BHEL as well as procedural simplicity with regard to assessment of the liability.</p> <p>The option chosen by BHEL shall be binding on the contractor for discharging the obligation of BHEL in respect of the tax liability to the contractor.</p>
8.2	BUILDING & OTHER CONSTRUCTION WORKERS (REGULATION OF EMPLOYMENT AND CONDITIONS OF SERVICE) ACT, 1996 (BOCW Act) AND RULES OF 1998 READ WITH BUILDING & OTHER CONSTRUCTION WORKERS CESS Act, 1996 & CESS RULES, 1998.
	<p>In case any portion of work involves execution through building or construction workers, then compliance to the above titled Acts shall be ensured by the contractor and contractor shall obtain license and deposit the cess under the Act. In the circumstances it may be ensured as under:-</p>
8.2.1	<p>It shall be the sole responsibility of the contractor in the capacity of employer to forthwith (within a period of 15 days from the award of work) apply for a licence to the Competent Authority under the BOCW Act and obtain proper certificate thereof by specifying the scope of its work. It shall also be responsibility of the contractor to furnish a copy of such certificate of licence / permission to BHEL within a period of one month from the date of award of contract.</p>
8.2.2	<p>It shall be the sole responsibility of the contractor as employer to ensure compliance of all the statutory obligations under these act and rules including that of payment / deposit of 1% cess on gross payment made for value of work involving building or construction workers engaged by the contractor within a period of one month from the receipt of payment.</p>

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII: Taxes & Duties

8.2.3	It shall be the responsibility of the sub-contractor to furnish the receipts /challans towards deposit of the cess together with the number, name and other details of beneficiaries (building workers) engaged by the sub-contractor during the preceding month.
8.2.4	It shall be the absolute responsibility of the sub-contractor to make payment of all statutory payments & compensations to its workers including that is provided under the Workmen's Compensation Act, 1923.
8.2.5	The contractor shall, however ensure before deposit of any BOCW Cess, that customer is not depositing the same in order to avoid excess deposit of cess.
8.2.6	The contractor shall bear cost of BOCW cess either by way of deposit or through recovery by BHEL in case the same is deposited by the customer.
8.2.7	In case of failure in above mentioned compliances, BOCW Cess @ 1% as well as applicable penalty as specified in BOCW Act/Rules shall be deducted from the contractor.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IX: Materials and Other Requirements

9.0	MATERIALS
9.1	The contractor shall at his own expenses provide all materials including paints, welding electrodes etc. required for the work. However for permanent works structure steel will be issued free of cost as per terms & conditions specified in clause No. 9.14 from BHEL / Customer stores or at a point instructed by BHEL.
9.2	All materials to be provided by the Contractor shall be of the best kind in conformity with the specifications laid down in the contract or as per relevant Indian standard and the Contractor shall, if requested by the BHEL Engineer, furnish proof to the satisfaction of BHEL Engineer that the materials so comply.
9.3	The Contractor shall, at his own expense and without delay, supply to the BHEL Engineer samples of materials proposed to be used in the works. The BHEL Engineer shall within seven days of supply of samples or within such further period as he may require will intimate to the Contractor in writing, whether samples are approved by him or not. If samples are not approved, the Contractor shall forthwith arrange to supply to the BHEL Engineer for his approval fresh samples complying with the specifications laid down in the Contract. Any delay in approval of samples (original or fresh ones) shall not make the contractor eligible for any compensation.
9.4	The BHEL Engineer shall have full powers for removal of any or all of the materials brought to site by the Contractor which are not in accordance with the Contract specifications or do not conform in character or quality to samples approved by him. In case of default on the part of the Contractor in removing rejected materials, the BHEL Engineer shall be at liberty to have them removed by other means. The BHEL Engineer shall have full powers to procure other proper material to be substituted for rejected materials and in the event of the Contractor refusing to comply; he may cause the same to be supplied by other means. All costs, which may attend upon such removal and / or substitution, shall be borne by the Contractor.
9.5	The Contractor shall indemnify BHEL, its representatives or employees against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties or other charges which may be payable in respect of any article or material or part thereof included in the Contract. In the event of any claim being made or action being brought against BHEL or any agent, servant or employee of BHEL in respect of any such matters as aforesaid, the Contractor shall immediately be notified thereof, provided that such indemnity shall not apply when such infringement has taken place in complying with the specific directions issued by BHEL but the Contractor shall pay any royalties or

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IX: Materials and Other Requirements

	other charges payable in respect of any such use, the amount so paid being reimbursed to the Contractor only if the use was the result of any drawings / specifications issued after submission of the tender.
9.6	The BHEL Engineer shall be entitled to have tests carried out as specified in the Contract for any materials supplied by the Contractor other than those for which, as stated above, satisfactory proof has already been furnished, at the cost of the Contractor and the Contractor shall provide at his expense all facilities which the Engineer may require for the purpose. If no tests are specified in the Contract, and such tests are required by the BHEL Engineer, the Contractor shall provide all facilities required for the purpose and the charges for these tests shall be borne by the Contractor only. The cost of materials consumed in tests shall be borne by the Contractor in all cases except when otherwise provided.
9.7	In addition, the Contractor shall perform / submit at his own cost such tests / samples as may be required by the BHEL Engineer out of the materials used by the company except for the costs of materials used in such tests/ samples.
9.8	After acceptance of the Contract, if Contractor desires BHEL to supply any other materials, such material may be supplied by BHEL, if available, at rates to be fixed by the BHEL Engineer along with prevailing departmental charges. BHEL reserve the right not to issue any material. The non-issue of such material will not entitle the Contractor for any compensation whatsoever either in time or in cost.
9.9	Material required for the works, whether brought by the Contractor or supplied by BHEL, shall be stored by the Contractor only at places approved by the Engineer. Storage and safe custody of material shall be the responsibility of the contractor.
9.10	BHEL's officials concerned with the Contract shall be entitled at any time to inspect and examine any materials intended to be used in or on the works, either on the Site or at factory or workshop or other place(s) where such materials are assembled, fabricated, manufactured or at any place (s) where these are lying or from which these are being obtained and the Contractor shall give such facilities as may be required for such inspection and examination.
9.11	All materials brought to the Site shall become and remain the property of BHEL and shall not be removed off the Site without the prior written approval of the BHEL Engineer. But whenever the Works are finally completed and advance, if any, in respect of any such material is fully recovered, the Contractor shall at his own expense forthwith remove from the Site all surplus material originally supplied by him

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IX: Materials and Other Requirements

	and upon such removal, the same shall re-vest in and become the property of the Contractor.
9.12	It shall be the responsibility of the contractor to obtain prior approval of BHEL, regarding suppliers, type of electrodes etc. before procurement of welding electrodes / TIG wires. On receipt of electrodes at site these shall be subjected to inspection and approval by BHEL. The contractor shall inform BHEL details regarding type of electrodes, batch No. date of expiry etc. and produce test certificate for each lot / batch with correlation of batch / lot no. with respective test certificate. No electrode will be allowed to be used without valid test certificate.
9.13	All charges on account of Octroi, terminal or sales tax and other duties on material obtained for the works from any source shall be borne by the contractor.
9.14	ISSUE AND ACCOUNTING OF STRUCTURE STEEL
9.14.1	Structure Steel as per BOQ cum Rate Schedule will be issued as free issue materials from BHEL/NTPC site stores or other issuing points as specified by the Engineer. Such issues would be only for permanent works. Necessary indents shall be raised by the contractor as per procedure laid down by the Engineer-in-Charge about 7 days in advance of the actual requirement for incorporation in the works.
9.14.2	Materials will be issued only for permanent works and not for making templates, other temporary works, enabling works etc. and the same shall not be taken into account for purpose of material reconciliation.
9.14.3	The contractor shall bear all other costs including the lifting, carting from issue points to works site / contractor's stores, custody and handling etc. and return of surplus / serviceable materials to BHEL's stores to be designated by the BHEL Engineer-in-charge and all expenditure will be made by the contractor.
9.14.4	All steel shall be issued in available lengths / shapes and no claims for extra payment on account of issue of non-standard lengths / shapes will be entertained. For the purpose of billing and accounting only linear measurement will be taken and weight will be calculated as per the IS Co-efficient. The different in unit weight as per IS and actual as issued, if any shall be to the contractor's account and contractor shall quote the rates for corresponding item to take care of such difference.
9.14.5	In the case of steel materials, the same shall be issued generally on the basis of linear measurement and the corresponding weight will be calculated as per Indian Standard. For the purpose of billing & accounting, only linear measurement will be taken and any difference in weight based on linear measurement & actual weight shall be to contractor's account. Quoted price shall be deemed to include the above & the permissible wastage mentioned. No claim whatsoever shall be entertained on account of wastage & difference in weight as referred to above.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IX: Materials and Other Requirements

9.14.6	Issue of stores material is subject to availability and the contractor shall not be entitled to any claim or compensation for non-supply or delay in the supply under any circumstances. The material will be issued generally during the working hours.						
9.14.7	The theoretical consumption of structural steel required for the work will be calculated on the basis of approved drawings / joint measurements. Structural steel shall be measured by weight in tones. The weight will be arrived at by multiplying the used length by the sectional weight. The sectional weight will be same as were applied at the time of issue.						
9.14.8	The contractor shall submit proper account of material / material reconciliation statement for the material drawn by him from stores once in every three months. Failing compliance of this requirement further issue of steel to the contractor may be suspended and no claim of compensation for delay in execution on this account shall be entertained.						
9.14.9	All the Structure steel thus issued shall be properly accounted for as per the following permissible wastage over the theoretical quantity / consumption incorporated in the works. <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th style="width: 40%;">Item</th> <th style="width: 30%;">Area</th> <th style="width: 30%;">Permissible Variation / Wastage</th> </tr> </thead> <tbody> <tr> <td>Structural Steel</td> <td>For All Works</td> <td>4%</td> </tr> </tbody> </table>	Item	Area	Permissible Variation / Wastage	Structural Steel	For All Works	4%
Item	Area	Permissible Variation / Wastage					
Structural Steel	For All Works	4%					
9.14.10	Any unused / serviceable quantity of structural steel not returned in good condition & wastages / loss / consumption beyond specified / agreed limits shall be charged at penal rate of Rs. 70,000 per MT for structural steel at the time of preparing final bill, during finalization of the contract. The decision of Engineer-in-charge with regard to applicability of penal rates shall be final & binding upon the contractor.						
9.14.11	For the materials i.e. Structure Steel being issued free of cost, the scrap generated shall belong to BHEL.						
9.14.12	SCRAP & SERVICEABLE MATERIALS: All Structural steel of length above 2 M and Plates above 2 SQM shall be considered as serviceable materials provided the materials is in good and acceptable condition. Structural Steel in length less than 2 M and Plates less than 2 SQM shall be treated as scrap.						

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-X: Other Important Conditions

10.1	EXECUTION OF WORK
10.1.1	The work shall be executed in a workman like manner and to the entire satisfaction of the Engineer and as per technical specification issued with tender, IS codes, technical specifications as applicable. In case of conflict, the decision of the Engineer I/c shall be final & binding.
10.1.2	The Engineer I/c will communicate or confirm his instructions to the Contractor in respect of the execution of the work in a "Work Site Order Book" maintained at his office and the Contractor shall visit this office daily and shall confirm receipt of such instructions by signing the relevant entries in this book or through e-mail. Such entries / e-mails will rank as order or notices in writing within the intent and meaning of these conditions.
10.1.3	Only BHEL approved make of electrodes will be used. All electrodes shall be heated and dried in the electric electrode drying oven to the required temperature for the period specified by the Engineer before these are used in erection work. All welders shall have electrodes drying portable oven at the work spot. The electrodes brought to site will have valid manufacturing test certificate. The test certificate will have co-relation with the lot no. / batch no. given on electrode packets. No electrodes will be allowed to be used in the absence of above requirement. The thermostat and thermometer of electrode drying oven will be also calibrated and test certificate from Govt. approved / accredited test house traceable to National / International standards) will be submitted to BHEL before putting the oven in use. Periodical calibration for the same shall also be arranged by the contractor within the finally accepted rates.
10.2	SETTING OUT
10.2.1	All the works shall be set out to the true lines, grades and elevation indicated on the drawing. The contractor shall be responsible to locate and set out the works. Only one grid reference line and bench mark all be made available for setting out the works under the contract. This reference lines shall be used as datum for the works under the contract and the contractor has to establish for his work area at available points horizontal and vertical control points. The contractor shall inform BHEL well in advance of the times & places at which he wishes to do work in the area allotted to him so that suitable datum points established by him are checked by BHEL / Customer to enable the contractor to proceed with the works. Any work done without being properly located may be removed and / or dismantled by BHEL / Customer at contractor's expense.
10.2.2	The contractor shall at his own expense take all proper and responsible precautions to preserve and maintain these datum marks to its true position. In the event of these marks being disturbed or obliterated by accident or due to any other cause whatsoever, the same may be deemed necessary placed by BHEL / Customer at contractor's expenses.
10.3	SITE DRAINAGE

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-X: Other Important Conditions

10.3.1	All water including sub-soil water which may accumulate on the Site during the progress of the works or in trenches and excavations, including monsoon period shall be removed by the contractor from the Site to the satisfaction of the Engineer. It will also be responsibility of the contractor to de-water all the foundation pits, trenches with suitable de-watering methods like, pumping out, well point system etc. considering the depth of water table at plant site. All such expenditure on de-watering shall be deemed to be included in quoted rates.
10.4	INSPECTION AND STAGE APPROVAL OF THE WORK
10.4.1	The owner or his duly authorized representative shall have at all reasonable times access to the contractor's premises or works and shall have the power to inspect drawings or any portion of the work, examine the materials and workmanship and shall have the authority to reject any work. This would be implemented through joint inspection by the representative of the owner and BHEL and in the form of joint protocols without any extra claims and loss of time and amount.
10.4.2	All work embracing more than one process shall be subject to examination and approval at each stage thereof and the Contractor shall give due notice in writing to the Engineer when each stage is ready. In default of such notice being received, the Engineer shall be entitled to approve the quality and extent thereof at any time he may choose and in the event of any dispute, the decision of the Engineer thereon shall be final and conclusive.
10.5	UNCOVERING AND MAKING GOOD
10.5.1	The Contractor shall uncover any part of the Works and/or make openings in or through the same as the Engineer may from time to time direct for his verification and shall reinstate and make good such part to the satisfaction of the Engineer. If any such part has been covered up or put out of view after being approved by the Engineer and is subsequently found on uncovering to be executed in accordance with the Contract, the expenses of uncovering and / or making opening in or through, reinstating and making good the same shall be borne by BHEL. In any other case all such expenses shall be borne by the Contractor.
10.6	DISCREPANCIES AND ADJUSTMENT OF ERRORS
10.6.1	The several documents forming the Contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small-scale drawings and figures dimensions in preference to scale and special conditions in preference to general conditions.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-X: Other Important Conditions

10.6.2	<p>In case of discrepancies between schedules of quantities, the specification and / or the drawings, the following order of preference shall be observed.</p> <p>(a) Description in schedule of quantities.</p> <p>(b) Technical Conditions of Contract.</p> <p>(c) Drawings.</p> <p>(d) Technical Specifications</p> <p>(e) Special Conditions of Contract</p> <p>(f) General conditions of contract</p>
10.6.3	<p>If there are varying or conflicting provisions made in any one document forming part of the contract, the Engineer shall be the deciding authority with regard to the document.</p>
10.6.4	<p>Any error in description, quantity in schedule of quantities or any omission there from shall not vitiate the contract or release the contractor from the execution of the whole or any part of the works comprised therein according to the drawings and specifications or from any of his obligations under the contract.</p>
10.7	MATERIAL OBTAINED FROM EXCAVATION
10.7.1	<p>Valuable Materials / Archeologically important materials of any kind obtained from excavation on the Site shall remain the property of BHEL / its client and shall be disposed of as the Engineer may direct, at no extra cost.</p>
10.8	SAFETY CODE
10.8.0	The contractor shall comply with following towards Safety and Social Accountability.
10.8.1	<p>Besides provision with regard to SAFETY under Clause 9.0 of SCC, the contractor will be responsible for Health, Safety & Environment management at site for the construction activities to be carried out by them. The contractor shall continuously take special care to ensure the safety and prevention of human and equipment accidents and maintain good sanitary conditions in and around the site. All the construction work and plant operation must be carried out in the safest possible manner. The Engineer reserves the right to stop any process which, in the Engineer's opinion, is being performed dangerously. In this case the contractor must immediately adhere the requisite safety precautions and any delays attributed to the work stoppage on this account shall not affect the agreed contractual finishing dates.</p>
10.8.2	<p>HSE plan for site operation by Sub Contractor (Doc No. HSEP 13 Rev 00 attached) shall be followed.</p>

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-X: Other Important Conditions

10.9	NUISANCE
10.9.1	The Contractor shall not at any time do, cause or permit any NUISANCE on Site or do anything which shall cause unnecessary disturbance or inconvenience to owners, tenants or occupiers of other properties near the Site and to the public generally.
10.10	TREASURE , TROVE , FOSSILS etc.
10.10.1	All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the site shall be the absolute property of BHEL / BHEL's client and the Contractor shall take reasonable precautions to prevent his workmen or any other person from removing or damaging any such article or thing, shall immediately upon discovery thereof and before removal acquaint the Engineer with such discovery and carryout the Engineer's directions as to the disposal of the same.
10.11	PROTECTION OF WORKS
10.11.1	Trees designated by the Engineer shall be protected from damage during the course of the Works and earth level within 1 meter of each such tree shall not be charged. Where necessary, such trees shall be protected by providing temporary fencing.
10.11.2	The contractor shall provide and maintain at his own expense all lights, guards, fencing and watching when and where necessary or required by the Engineer for the protection of the Works or for the safety and convenience of those employed on the Works or the public.
10.11.3	The contractor shall have total responsibility for protecting his works till it is finally taken over by the Engineer. No claim will be entertained by the Engineer for any damage or loss to the contractor's works and the contractor shall be responsible for the complete restoration of the damaged works to its original condition to comply with the specifications and drawings. Should any such damage to the contractor's works occur because of other party not under his supervision or control, the contractor shall make his claim directly with the party concerned. The contractor shall not cause any delay in the repair of such damaged works because of any delay in the resolution of such disputes. The contractor shall proceed to repair the work immediately and no cause thereof will be assigned pending resolution of such disputes.
10.12	RECORD FOR MATERIALS CONSUMED
10.12.1	The contractor shall maintain and furnish to the Engineer the RECORD OF MATERIALS consumed in the works for each activity. The statement showing the theoretical vis-à-vis actual consumption of specified materials, such as structural /reinforcement steel, cement, bitumen, lead, paint etc., shall be enclosed along with the running bills submitted by the contractor. Contractor has to also furnish the test results of the materials used in the work as per IS specifications.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-X: Other Important Conditions

10.13	PROTECTION OF EMBEDMENTS, BOLTS ETC.
10.13.1	The contractor shall ensure proper protection to the satisfaction of the Engineer, of all bolts, inserts, embedment etc. from weather etc./ by greasing, rapping them with gunny bags or canvas or by any other means as directed by Engineer. Cost of such protections shall be deemed to be included in the rates quoted for the item.
10.14	COMPLETION OF WORK AND COMMENCEMENT OF GURANNTIE PERIOD
10.14.1	The works shall be completed to the entire satisfaction of the BHEL Engineer-In-charge, in accordance with the completion schedule as specified in the Contract, and all unused stores and materials, T&Ps, equipment, temporary buildings, site office, labor hutments and other things shall be removed. Contractor shall deliver at his own expense, the site and work cleared of rubbish and all waste materials, clean and tidy to the satisfaction of the BHEL Engineer-In-charge.
10.14.2	BHEL shall have power to take over from the Contractor from time to time such sections of the work as have been completed to the satisfaction of the BHEL Engineer. Such work however shall not be treated as have been completed until the extra / pending works are executed to the satisfaction of Engineer.
10.14.3	The Engineer shall certify to the contractor the date on which the work is completed and the date thereof for commencement of Guarantee Period. Guarantee Period shall be as given in GCC.
10.15	CLEARANCE OF SITE AND REPAIRS.
10.15.1	Contractor has to clear the site / area where mechanical and electrical erection work is to be commenced / or in progress. The contractor shall remove construction materials and equipment lying in the vicinity and causing obstruction in the erection work within 24 hrs. notice. In case, he fails to clear the site, this will be done at his risk & cost by BHEL.
10.16	QUALITY ASSURANCE
10.16.1	Contractor shall prepare a Field Quality Plan (FQP) for this tender's scope, in consultation with BHEL and submit to BHEL / Customer (NTPC) for approval. All works shall be carried out in accordance of the approved Field Quality Plan for this work. The contractor has to establish / arrange at site the field-testing facilities and all MMEs, consumables etc. as required for testing of materials / works for ensuring the proper quality, grade and strength of the materials used in the construction in line with approved field quality check-list of BHEL/ its client. Contractor has to submit detailed report for testing of all material used etc. All testing shall be done as per IS code specifications/ BHEL's approved quality plan. If further test is required by the engineer to be carried from outside laboratory, the cost of the same shall be borne by the contractor.
10.17	NA
10.18	METHOD OF MEASUREMENT
10.18.1	Method of measurements shall be as per standard specifications included in the tender. For other items measurements shall be as per relevant IS Codes.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-X: Other Important Conditions

10.19	DEVIATION
10.19.1	The Contractor shall not make any alteration in, addition to or omission from the work as described in the tender documents except in pursuance of the written instructions of the Engineer. No such deviation from the work described in the tender documents shall be valid unless the same has been specifically confirmed and accepted by the Engineer in writing and incorporated in the Contract.
10.19.2	The Engineer may deviate, either by way of addition or deduction, from the work so described, provided that the Contract sum be not thereby varied on the whole by more than the percentage set out in the tender documents. The value of all additions and deductions shall be added to or deducted from the Contract sum. (Whenever the Engineer intends to exercise such a right his intentions shall specify the deviations, which are to be made, the lump-sum assessment or the proposed basis of payment, the extra time allowed, if any, and the date for completion of the entire contract). Any objection by the contractor to any matter concerning the order shall be notified by him in writing to the Engineer within seven days from the date of such order, but under no circumstances shall the work be stopped (unless so ordered by the Engineer) owing to differences or controversy that may arise from such an objection. In the absence of such a notification of objection by the Contractor, he will be deemed to have accepted the order and the conditions stated therein.
10.19.3	Valuation of Deviations shall be as per Clause 2.15 & 2.16 of GCC.
10.20	COMPLIANCE TO REGULATIONS AND BYELAWS
10.20.1	The Contractor shall conform to the provisions of any statute relating to the work and regulations and bylaws of any local authority and of any water and lighting Companies or Undertaking with whose system the work is proposed to be connected. He shall, before making any variation from the drawings or the specifications that may be necessitated for such connections give the Engineer, notice specifying the variation proposed to be made and the reasons therefore and shall not carry out any such variation until he has received instructions from the Engineer in respect thereof. The Contractor shall be bound to give all notices required by statute, regulations or by-laws as aforesaid and to pay all fees and taxes payable to any authority in respect thereof.
10.20.2	<p>In order to give phillip to Pradhan Mantri Kaushal Vikas Yojna:</p> <p>"The contractor shall, at all stages of work deploy skilled/semi-skilled tradesmen who are qualified and possess certificate in particular trade from CPWD Training Institute/ Industrial Training Institute/ National Institute of Construction Management and Research (NICMAR), National Academy of Construction, CIDC or any similar reputed and recognized Institute managed/ certified by State/ Central Government. The number of such qualified tradesmen shall not be less than 20% of total skilled/ semi-skilled workers required in each trade at any stage of work. The contractor shall submit</p>

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-X: Other Important Conditions

	number of man days required in respect of each trade, its scheduling and the list of qualified tradesmen along with requisite certificate from recognized Institute to Engineer-in-Charge for approval. Notwithstanding such approval, if the tradesmen are found to have inadequate skill to execute the work of respective trade, the contractor shall substitute such tradesmen within two days of written notice from Engineer-in-Charge. Failure on the part of contractor to obtain approval of Engineer-in-Charge or failure to deploy qualified tradesmen will attract a compensation to be paid by contractor at the rate of Rs. 100 per such tradesman per day. Decision of Engineer-in-Charge as to whether particular tradesman possesses requisite skill and amount of compensation in case of default shall be final and binding.
10.21	PROGRESS REPORTING :
10.21.1	Contractor is required to draw mutually agreed monthly program as per Form F-14 given in the contract, in consultation with BHEL well in advance. Contractor shall ensure achievement of agreed program and shall timely arrange additional resources considered necessary at no extra cost to BHEL.
10.21.2	Weekly progress review meetings will be held at site during which actual progress during the week vis-a-vis scheduled program shall be discussed for actions to be taken for achieving targets. Contractor shall also present the program for subsequent week for discussions. The contractor shall constantly update / revise his work program to meet the overall requirement. All quality problems shall be discussed during above review meetings. Necessary preventive and corrective action shall be discussed and decided upon in such review meetings and shall be implemented by the contractor in time bound manner to eliminate the cause of non-conformities.
10.21.3	The contractor shall submit weekly and monthly progress reports, materials reports, consumables (gases / electrodes) report and other reports as per proforma considered necessary by the Engineer.
10.21.4	The progress report shall indicate the progress achieved against planned , with reasons indicating delays, if any, and shall give the remedial actions which the contractor intends to take to make good the slippage or lost time, so that further works again proceed as per the original programme and the slippages do not accumulate and effect the overall programme.
10.21.5	The daily manpower reports shall clearly indicate the manpower deployed, category wise specifying also the activities in which they are engaged.
10.22	DRAWING AND DOCUMENTS
10.22.1	The detailed drawings, specifications available with BHEL engineers will form part of this tender specification. These documents will be made available to the contractor

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-X: Other Important Conditions

	during execution of work at site. The contractor will also ensure availability of all drawings / documents at work place.
10.22.2	Necessary drawings / documents by BHEL to carry out the construction work will be furnished to the contractor by BHEL (except those proposed to be prepared by contractor, as mentioned in this contract) on loan which shall be returned to BHEL Engineer at site after completion of work. Contractor shall ensure safe storage and quick retrieval of these documents.
10.22.3	The contractor shall maintain a record of all drawings and documents available with him in a register as per format given by BHEL Engineer. Contractor shall ensure use of pertinent drawings / data / documents and removal of obsolete ones from work place and return to BHEL.
10.22.4	The data furnished in various annexures enclosed with this tender specification are only approximate and for guidance. However, the change in the design and in the quantity may occur as is usual in any such large scale of work.
10.22.5	Should any error or ambiguity be discovered in the specification or information the contractor shall forthwith bring the same to the notice of BHEL before commencement of work. BHEL's interpretation in such cases shall be final and binding on the contractor.
10.22.6	Deviation from design dimensions should not exceed permissible limit. The contractor shall not correct or alter any dimension / details, without specific approval of BHEL.

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter-XI: Annexures

Annexure-I: Rate Schedule

BOQ : Annexure-II: BOQ cum Rate Schedule for the Work of “STRUCTURE STEEL WORKS FOR FLUE GAS DESULPHURIZATION (FGD) SYSTEM AT 2X490 MW DADRI THERMAL POWER PLANT AT DADRI, GAUTAM BUDDHA NAGAR, U.P.”

RATE SCHEDULE

JOB: Structure Steel Works for FGD System Package at 2X490 MW NCTPP Dadri Thermal Power Plant at Dadri, Gautam Buddha Nagar, U.P.

Sl. No.	DESCRIPTION OF WORK	TOTAL PRICE ("A") IN RUPEES (IN FIGURES AND WORDS)
1.0	TOTAL PRICE ("A") FOR THE TOTAL WORK AS PER TENDER SPECIFICATIONS FOR "Structure Steel Works for FGD System Package at 2X490 MW NCTPP Dadri Thermal Power Plant at Dadri, Gautam Buddha Nagar, U.P."	

Notes:-

- Bidder's quoted price above shall be complete in all respect for the full scope defined in specification and in accordance with all terms & conditions of tender.
- The rates of different items for the entire scope of work shall be as per BOQ Cum Rate schedule (Annexure-II).
- The derived item rate will remain firm through out the Contract period.

BOQ CUM RATE SCHEDULE- STRUCTURE STEEL WORKS

PROJECT: NCTPP,DADRI STG-II (2X490 MW-FGD Package)

Scope: STRUCTURE STEEL WORKS FOR FLUE GAS DESULPHURIZATION (FGD) SYSTEM AT 2X490 MW DADRI THERMAL POWER PLANT AT DADRI, GAUTAM BUDDHA NAGAR,

ST NO.	ITEM DESCRIPTION	UNIT	QUANTITY	FACTOR (F)	RATE (Rs.) = FACTOR (F) * A / 100000 (Rounded off to two place after decimal)	AMOUNT (Rs.)= RATE*QUANTITY
2300	STRUCTURAL STEEL					
	STRUCTURAL WORKS: Structural steel works including all labour, material (unless otherwise specified in BOQ/contract specification), equipments unless otherwise specified, transportation, handling etc. at all level as per specification, drawings and as directed by engineer - in - charge for the following:					
A2301	Fabrication,erection and alignment of structural steel of grade E250 with mild steel built up section / combination of rolled & built up section 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, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, splices, 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. including coats of primer (to be paid separately by item no. A2302/ B2302), connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, 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, production test plate, 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 seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL . Note: Structure Steel shall be supplied by BHEL and issued as Free of Cost (FOC) Item.	MT	6352	9.7840		
B2301	Fabrication,erection and alignment of structural steel of grade E250 with mild steel rolled section 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, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, splices, 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 including coats of primer(to be paid separately by item no.A2302/B2302), connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, 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, production test plate, 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 seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL. Note: Structure Steel shall be supplied by BHEL and issued as Free of Cost (FOC) Item.	MT	250	9.7840		
C2301	Fabrication,erection and alignment of structural steel of grade E250 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 including 2 coats of red oxide zinc-chromate primer (one coat at shop and one coat after erection), connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, 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, production test plate, 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 seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL. Note: Structure Steel shall be supplied by BHEL and issued as Free of Cost (FOC) Item.	MT	23	9.7840		
A2302	Extra over ST NO. 2301 for blast cleaning for making surface conforming to Sa 2 ½ finish of ISO 8501-1 with surface profile 40-60 Micron and providing with two coats of two component moisture curing zinc (ethyl) silicate primer coat (having minimum 80% of metallic Zinc content in dry film, solid by volume minimum 60% ±2%) of minimum 70 micron DFT to be applied over blast cleaned surface . The primer coat shall be applied in shop immediately after blast cleaning by airless spray technique. Zinc dust composition and properties shall be Type-II as per ASTM D520-00.	MT	6625	1.6065		
B2302	Extra over ST NO. 2301 for blast cleaning for making surface conforming to Sa 2 ½ finish of ISO 8501-1 and providing with epoxy resin based zinc phosphate primer in coats of minimum 50 micron (DFT) at shop and 50 micron (DFT) after erection, including touch-up painting, mist coat, additional water sprinkling etc all complete.	MT	10	2.4098		

BOQ CUM RATE SCHEDULE- STRUCTURE STEEL WORKS

PROJECT: NCTPP,DADRI STG-II (2X490 MW-FGD Package)

Scope: STRUCTURE STEEL WORKS FOR FLUE GAS DESULPHURIZATION (FGD) SYSTEM AT 2X490 MW DADRI THERMAL POWER PLANT AT DADRI, GAUTAM BUDDHA NAGAR,

ST NO.	ITEM DESCRIPTION	UNIT	QUANTITY	FACTOR (F)	RATE (Rs.) = FACTOR (F) * A / 100000 (Rounded off to two place after decimal)	AMOUNT (Rs.)= RATE*QUANTITY
2305	Providing and applying intermediate coat of epoxy based Titanium dioxide(TiO ₂) of minimum 100micron DFT on steel surfaces already having primer coats, topped with two coats of epoxy based colour finish paint (one coat of epoxy paint suitable pigmented of approved shade and colour with glossy finish and DFT of 75 microns and Additional finishing coat of polyurethane of minimum DFT of 25 microns) including protection and cleaning, scaffolding etc. all complete.	MT	12	1.3859		
A2305	Providing and applying (with airless spray technique) Intermediate coat of two component polyamide cured epoxy with MIO Content (containing lamellar MIO minimum 30% on pigment, solid by volume minimum 80% ±2%) of minimum 100 micron DFT. This coat shall be applied in shop after an interval of minimum 24 hours (from the application of primer coat) by airless spray technique including protection and cleaning, scaffolding etc. all complete as per specification for all structures	MT	6623	0.9701		
B2305	Providing and applying Finish Coat of twopack aliphatic Isocyanate cured acrylic finish paint (solid by volume minimum 55% ±2%) with Gloss retention (SSPC Paint Spec No 36, ASTM D 4587, D 2244, D 523) of Level 2 (after minimum 1000 hours exposure, Gloss loss less than 30 and colour change less than 2.0 ΔE) and minimum 70 micron DFT including protection and cleaning, scaffolding, touchup painting etc. all complete as per specification for all structures. This coat shall be applied shop after an interval of minimum 10 hours and within six (6) months (from the completion of Intermediate coat), Colour and shade of the coat shall be as approved by the Employer.	MT	6623	0.5544		
2307	Supplying, fabrication, erection and alignment of factory made electroforged galvanised grating units with mild steel having minimum galvanisation 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, <u>drilling, welding, edge preparation, etc. all complete.</u>					
a	Minimum galvanisation of 610 g/sqm	MT	61	36.4371		
2308	Supplying, fabrication, erection and alignment of factory made galvanised 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 redoxide zinc-chromate primer (one coat at shop and one coat after erection), fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete.	MT	20	27.6651		
2309	Extra over above ST NO. 2301 for finishing the grating units/bolts/inserts 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	5	9.6145		
2311	Supply, 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.	KG	1530	0.02668		
2312	Supply, 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.	KG	70725	0.0285		
2313	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	12	2.7034		
2314	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	10	5.9338		
b	In fabrication yard	MT	5	4.7589		
2315	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	10	3.9268		
2317	Supply, fabrication and erection of minimum 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 including 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, fabrication detailed drawing etc.all complete. (The measurement for the item of stainless steel liner in hopper shall be based on the actual finished weight of SS liner over hopper)	MT	70	106.4990		
2318	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	3	5.1328		
b	25 Tons	EACH	3	5.8232		
c	40 Tons	EACH	2	6.2837		
d	50 Tons	EACH	2	6.7442		
e	60 Tons	EACH	2	7.2046		

BOQ CUM RATE SCHEDULE- STRUCTURE STEEL WORKS

PROJECT: NCTPP,DADRI STG-II (2X490 MW-FGD Package)

Scope: STRUCTURE STEEL WORKS FOR FLUE GAS DESULPHURIZATION (FGD) SYSTEM AT 2X490 MW DADRI THERMAL POWER PLANT AT DADRI, GAUTAM BUDDHA NAGAR,

ST NO.	ITEM DESCRIPTION	UNIT	QUANTITY	FACTOR (F)	RATE (Rs.) = FACTOR (F) * A / 100000 (Rounded off to two place after decimal)	AMOUNT (Rs.)= RATE*QUANTITY
A 2318	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 ± 150 mm including all taxes, duties, transportation, installation, drilling, bolting, erecting, aligning etc all complete for following vertical loads.					
a	20 Tons	EACH	1	5.1328		
b	25 Tons	EACH	1	5.8232		
c	40 Tons	EACH	1	6.2837		
d	50 Tons	EACH	1	6.7442		
e	60 Tons	EACH	1	7.2046		
2320	Supply, fabrication and fixing of stainless steel pipe hand railing conforming to SS 409 of 32 mm/40 mm dia including transportation, loading/unloading etc. all complete..	MT	1	119.9751		
2321	Supply, fabrication and fixing of MS pipe hand railing of 32 mm/40 mm dia including transportation, loading/unloading etc. all complete. Payments terms - a)on receipt of materials at site - 65%; b) Erection & fixing - 35%	MT	43	35.5946		
A2322	Supply, fabrication and fixing of galvanised MS pipe hand railing (minimum 1000 mm high) of 32 mm/40 mm/50 mm dia (Medium Grade) as per IS:1161, galvanised at the rate of 610gms/sqm as per IS:4736, including transportation, loading/unloading, painting etc. all complete.	MT	2	40.1988		
2323	Conducting radiography test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	5	0.3594		
2324	Conducting ultrasonic test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	55	0.2599		
2325	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	105	0.1173		
2326	Conducting magnetic particle test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	105	0.2099		
2327	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	0.1688		
2328	Supply, fixing lightning arrester and air terminal over roof of power house building, pump house and other structures including all materials, labour, electrodes etc complete (all materials to be supplied by the contractor).	EACH	1	1.2597		
2334	Providing and fixing 20mm square MS bar balustrade with suitable MS flat with suitable anti corrosive paint and teakwood handrails etc all complete.	RM	10	0.4059		
	Total Amount "A" (Rs.)					
NOTES:						
1	Bidder's quoted price above 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.					
7	Taxes (GST) shall be payable extra as per relevant clause in Technical Conditions of Contract.					