3210

TECHNICAL CONDITIONS OF CONTRACT (TCC)

BHARAT HEAVY ELECTRICALS LIMITED

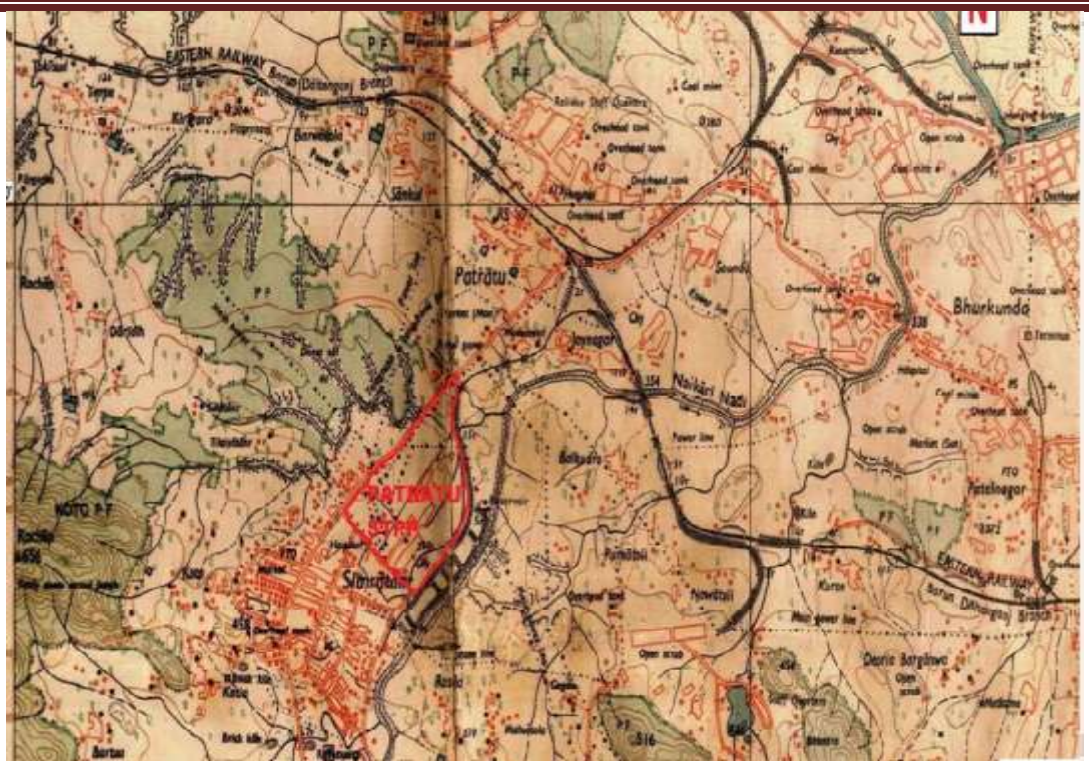
2.1 Project Information

Project Name: 3x800 MW Patratu Vidyut Utpadan Nigam Ltd. (PVUNL) Patratu STPP

The proposed site is located near Patratu town in Ramgarh district of Jharkhand.
The latitudes and longitudes of the site are as follows:
Main Plant & Township:

rner name	Latitude	Longitude
Top Corner	23° 39 ‘ 00'' N	85° 17’ 51.5” E
Bottom Corner	23° 38 ‘12.5'' N	85° 17’ 27” E
Left Corner	23° 38 ‘ 22.5'' N	85° 17’ 10.6'' E
Right Corner	23° 38 ‘ 40'' N	85° 17’ 57'' E

Nearest Town : Patratu (3Km)
Nearest City : Ranchi (35Km)
Nearest Rly Station : Patratu (4Km)
Nearest Airport : Ranchi (45Km)
Nearest Seaport : Kolkata (424 Km)
The vicinity map of the project is shown below



The bidder is 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.

2.0 Scope of work

The work to be carried out under the scope of these specifications is broadly as under:

2.1.1 The scope of work includes the fabrication of bolted-type structures under the Framework Agreement for the Patratu site. Sub-POs will be issued by BHEL under the FWA as per requirement.

PACKAGE-A	**Framework Agreement for detailed drawing preparation, approval from BHEL Engineering, issuance of raw steel from the BHEL storage yard, fabrication of the bolted-type structure as per approved detailed drawings, blasting, painting, and inspection as per the approved MQP, and handover of the structure to BHEL for the 3x800 MW PVUNL Project, Patratu. (Qty – 1500MT)**
PACKAGE-B	**Framework Agreement for detailed drawing preparation, approval from BHEL Engineering, issuance of raw steel from the BHEL storage yard, fabrication of the bolted-type structure as per approved detailed drawings, blasting, painting, and inspection as per the approved MQP, and handover of the structure to BHEL for the 3x800 MW PVUNL Project, Patratu: (Qty – 1000MT)**

2.1.2 The scope also includes transportation of raw steel (supplied free of cost by BHEL) from BHEL storage yards/depots to the fabrication location. These stores are situated both inside the plant premises and outside the plant, at an approximate distance of 3–4 km..

2.1.3 The scope further includes preparation of detailed drawings from RFC/GA provided to the fabricators and Obtaining the approval form the BHEL Engineering ., fabrication of all types of steel structures such as beams, bracings, monorail beams, platforms, columns, purlins, runners, doors, window frames, pipe racks, cable racks, wall beams, tie beams, connecting beams and other support structures etc. Additionally, the contractor shall carry out blasting and painting works as per the approved painting schedule and MQP.

2.1.4 The scope may also include fabrication of items for which details drawings are available with BHEL. The items for which detailed drawings shall be provided by BHEL. Separate payment shall be paid for detail drawing preparation as per awarded rates.

2.1.5 Detailed drawing preparation based on Input design drawings provided by BHEL/PEM/ISG for various structures of the CHP , AHP ,PH,FGD and Misc buildings and getting approval from BHEL PEM/ISG, and Fabrication , painting and supply of finished product (Raw steel will be supplied by BHEL) at 3x800 MW PVUN Project Patratu .

Pkg No	BOQ Sr. no	Description of Works	Unit	Quantity in MT
Pkg-A -(60% of the Total quantity)				
	2300	**STRUCTURAL WORKS: Structural steel fabrication works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment's unless otherwise specified, transportation, handling, sand blasting, painting as per specification etc. at all level as per specification, drawings and as directed by engineer - in - charge for the following:**		
Pkg-A	**AA2301**	Supply of fabricated structural steel of grade E250/E350 in rolled section / built up section / combination of both conforming to IS:2062 and technical specification, 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, silo supporting structures, 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 blast cleaning, providing and applying primer, providing and applying intermediate & finish coats of paint as per specification , connection design & preparation of fabrication drgs, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment(weight of welds not payable.), including, assembly, edge preparation, preheating, 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, rectification wherever if required (at no extra cost to BHEL), dismantling and removal of all temporary structures (weight of temporary structures not payable) etc. all complete as per technical specification. Including appointment of a separate agency, approved by BHEL, for review and approval of fabrication drawings, in consultation with BHEL. ***(Supply/ raw Structural Steel is in BHEL Scope)***	MT	1500

Pkg-A	**AA2302**	Detail drawing Preparation as per the GA drawings , including the Submission of the BOM ,Bolt schedule, Master drawing list , approval of the detail drawings from BHEL /ISG engineering	MT	600
Sub Total of Pkg-A				
	2300	**STRUCTURAL WORKS: Structural steel fabrication works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment's unless otherwise specified, transportation, handling ,sand blasting , painting as per specification etc. at all level as per specification, drawings and as directed by engineer - in - charge for the following:**	**Unit**	**Quantity**
Pkg No	**BOQ Sr. no**	**Pkg-B -(40% of the Total quantity)**		
Pkg-B	**AA2301**	Supply of fabricated structural steel of grade E250/E350 in rolled section / built up section / combination of both conforming to IS:2062 and technical specification, 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, silo supporting structures, 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 blast cleaning, providing and applying primer, providing and applying intermediate & finish coats of paint as per specification , connection design & preparation of fabrication drgs, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment(weight of welds not payable.), including, assembly, edge preparation, preheating, 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, rectification wherever if required (at no extra cost to BHEL), dismantling and removal of all temporary structures (weight of temporary structures not payable) etc. all complete as per technical specification. Including appointment of a separate agency, approved by BHEL, for review and approval of fabrication drawings, in consultation with BHEL. ***(Supply/ raw Structural Steel is in BHEL Scope)***	MT	1000

Pkg-B	**AA2302**	Detail drawing Preparation as per the GA drawings , including the Submission of the BOM ,Bolt schedule, Master drawings list , approval of the detail drawings from BHEL /ISG engineering	MT	400
Sub Total of Pkg-B				

Above quantities are tentative and may vary, BHEL reserves the rights for allocation of tonnage to the agencies as per requirements.

2.2 All works required to complete the Fabrication work involving plates, rolled section, semi-rolled sections, sections fabricated out of plates, chequered plates, grating, hand rails, shot blasting, primer and final painting for all steel structural works, supply of low hydrogen and radiogenic,SS electrodes quality electrodes for welding , non-destructive testing etc complete as per Field Quality Plan/Customer requirements. All field quality checks for welds like radiography, NDT, etc are in the scope of work and bidder should quote accordingly. Supply of all consumables required for fabrication and supply of all bolts, nuts, washers, electrodes etc.

2.3 Based on input design**/engineering** drawings of various buildings, Preparation of detailed drawings, bill of materials, bolt schedule, material codification, obtaining approvals from BHEL ISG /PEM/ PVUNL and uploading the drawing in BHEL PEDM portal..

2.4 Preparation of fabrication drawings, joint design calculations and all other general and special requirements, including appointment of a separate agency for **checking of detailed engineering drawing the above work**, approved by BHEL for review.

2.5 Approval of fabrication drawings from BHEL Project Engineering Management / PVUNL. (Approval of fabrication drawing does not relieve the bidder from the responsibility of its correctness and accuracy).

2.6 Fabrication **of structures and handover of the finished materials at site** as per BOM/Drawings of scope of supply work consisting of following:

2.6.1 Collection & Transportation of Free issue raw materials, BOC etc., from BHEL stores to fabrication yards, Loading of excess / balance materials on to suitable vehicle & Handing over at BHEL stores.

2.6.2 Issue of stores is subject to their availability at the place of issue noted above. Items of stores to be issued by BHEL, which are not available at the time of indenting by the contractor, may be supplied by BHEL after necessary procurement. The material will be issued only during the working hours of the BHEL stores department.

2.6.3 The contractor shall from time to time, render proper account of all materials issued to him by BHEL. If he fails to do, no further issue of materials will be made to him and he will responsible for any delay in the execution of the work, which may occur on this account.

2.6.4 The steel materials if issued will be in random lengths and sizes as stocked by the BHEL and the cost of all cutting, conversion, substitution and fabrication as well as wastage shall have to be borne by the contractor.

2.6.5 It will be the responsibility of the contractor to submit his indents for the BHEL stores in writing at least SEVEN days in advance of the actual materials requirements

2.6.6 Rectification of Raw materials such as straightening etc., if any and trial assembly after fabrication wherever required as per Drawings / QAP and rectification of defects, if any attributable to vendors, found after handing over to Site.

2.6.7 Finalization of cutting plan optimum utilization of offcuts and keeping scrap generated within the specified limit is the responsibility of the contractor.

2.6.8 Preparation of detailed drawings from GA/RFC provided by the BHEL and obtaining its approval from PEM/ISG (engg. Centers of BHEL) is the responsibility of contractor .For this the contractor shall engage a detailer with prior approval of CM,BHEL,Patratu Site.

2.7 Material transportation form BHEL storage yard to site, Unloading and Receipt of steel materials (raw materials) from vehicles using bidder's own T & P and manpower at site and keeping, watch & ward etc.

2.8 Fabrication, welding, destructive, non-destructive and any other tests as per approved QP / BHEL requirement.

2.9 Straightening, making cutting plan, cutting, bending, rolling, grinding, drilling, bolting, temporary pre assembly- of structures **(As per BHEL/PVUNL approved FQP/MQP),** edge preparation, 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.

2.10 Preassembly of structures (as per approved MQP) Trial **assembly** of finished material at fabrication yard as per BHEL instructions / approved drawings.

2.11 Blasting & Painting as per PVUNL/NTPC Specifications.

2.12 All Steel structures shall be cleaned to near white metal surface conforming to SA 2-1/2 standard before application of shop primer. All arrangements for shot blasting such as compressor of required capacities, Diesel/electric generator, GI Sheets, support frames for structural members, Scaffolding pipes for construction of semi closed shed, hose pipe, shed for storage of abrasive materials/paints etc and spray guns/brushes etc shall in the scope of contractor. Any other arrangements that may have to be done to ensure smooth operations of shot blasting shall be in the scope of contractor. The work shall be done as per BHEL specifications/PVUNL Specifications/applicable standards.

2.13 A semi closed shed shall be constructed for shot blasting works including supply and installation of temporary supports for placing of members to be shot blasted/painted. The shed shall have arrangements for storage of abrasive material for shot blasting/paints as well as compressors/hoses etc.

2.14 Transportation of fabricated structures from fabrication yard to storage yard including handling, rigging, assembling, bolting, and welding. If necessary suitable approaches may have to be built for transportation of steel structures. The item rate quoted shall be inclusive of such incidental works.

2.15 Removal of bends, kinks and twists etc of parts damaged during transportation/handling etc shall be made good by the contractor at no extra cost.

2.16 Fabrication tolerances shall be as per approved FQP/PVUNL specifications

2.17 All welding works shall be done through qualified welders. Such welders shall be duly qualified by BHEL/PVUNL engineer based on welder test conducted at site as per IS-817. Process Qualification (if required) shall be arranged by contractor through their qualified quality engineer. All samples for the Welder qualification test shall be arranged by contractor. Quoted rates shall be inclusive of all costs towards testing of welders for destructive/non-destructive tests, testing and approval of welders. All welded joints shall be subject to the acceptance of BHEL/PVUNL engineer. All the welded joints shall be cleaned of slag etc by way of PEENING complete as per BHEL/PVUNL specifications.

2.18 The type of electrode, welding sequence, and pre heat and post heat requirements (if required) shall be approved by BHEL/PVUNL engineer.

2.19 All the welds shall be visually checked for size, length of weldment and external defects. Weld gauges shall be used for checking of welds. Non Destructive tests shall be conducted as per approved FQP/PVUNL Specifications. In case of defects observed during such NDT tests, the joints shall be again back gauged, joints re prepared and re welded. The contractor shall do such repair works at no extra costs.

2.20 All arrangements for carrying out radiography work including dark room and air conditioner and other accessories shall be provided by contractor within the space allotted for office at his cost. As an alternative the contractor may deploy an agency having all above facilities and who are duly approved / accredited by BARC and / or other Regulatory authorities. Detailed particulars of such agencies will be submitted and got approved by BHEL Engineer before the actual deployment of agency for radiography work.

2.21 Delivering finished products at project site as per BOQ of rate schedule - specification, drawings and instructions of the Engineer.

2.22 Raw steel will be supplied by BHEL free of cost. The total quantity of steel required for the work will be calculated from the approved fabrication drawings. In case any such sectional weights are

not available in the above documents, the manufacturer recommendation / BHEL Engineer instruction shall be binding. BHEL reserves the right to reject any fabricated material not found satisfactory.

2.23 Items covered under this contract shall be subjected to Inspection / Testing and Quality Surveillance. The inspection agency shall at reasonable times, have access to vendor's works. Quality control records. All reasonable facilities required for carrying out the inspection and testing efficiently, shall be provided by the vendor, free of cost. The method of inspection shall be agreed upon in the Approved "Quality Plan" which shall form part of the contract. Wherever possible, standard quality plan, by way of minimum requirements, are included in the bid specification as a guideline.

2.24 The bidder shall abide fully by all the clauses of inspection and tests covered in Technical Specification/MQP. BHEL reserves the right to consider any stage of inspection / test as a "Hold Point", beyond which work shall not proceed without acceptance of that stage.

2.25 The minimum Inspection / Testing requirements shall conform to relevant codes / standards as well as Statutory Regulations applicable, whether or not specifically mentioned in the specification, in addition to those normally carried out by the vendor.

2.26 Prior offering the Inspection BHEL/PVUNL, the Vendor's own inspection staff should have fully inspected / tested the item.

2.27 Approval or passing of Inspection / Test and thereby issue of the acceptance Certificates or waive of Inspection by the Inspection Agency shall not relieve the vendor of his responsibilities and obligations under the contract and also shall not bind BHEL to accept the item should it.

2.28 All necessary documents such as test reports, test certificates, test curves, stress relieving charts, radio graphic films and other non-destructive tests, copies of the welding procedure, welder qualification certificates and other documents in support of adherence to Quality plan shall be furnished to the Inspection agency. The Quality Assurance document consisting of certified copies of all of the above complied sequentially by the vendor shall be sent to BHEL prior to dispatch.

2.29 The vendor shall provide test pieces as required by BHEL/PVUNL quality Engineer to enable him to determine the Quality of Material supplied under the contract. If any test piece fails to comply with the requirements the inspection agency may reject the whole material represented by the test piece.

2.30 In the event of inspection revealing poor quality of goods, BHEL shall be at liberty to specify additional Inspection / Test, required ascertaining Vendor's compliance with the equipment specification.

2.31 All welding shall be carried out in accordance with applicable codes or approved equal. Welding procedure and Welder's qualification shall be got approved. Welding consumables used shall be approved by the BHEL/PVUNL.

2.32 Approved methods of radiographic, ultrasonic or other non-destructive testing as applicable shall be used for the welding of critical components / assembly.

2.33 The above conditions are equally applicable to the agency on which the vendor has sub ordered as it shall be construed.

2.34 Fabrication-cum-storage yard for fabrication will be made available within the plant boundary however if sufficient space will not be available within the plant premises . The contractor shall accordingly arrange their fabrication establishment including T & Ps as required for above fabrication work.

2.35 QUALITY PLAN:

2.35.1 The Quality Plan is a document, which presents in a tabular form the Quality control checks exercised by the vendor during the various stages of manufacture and dispatch in order to meet the requirements of this specification. This plan details, step by step, the operations, components and characteristics being controlled, method of exercising such controls, the importance (criticality) of the control (critical major or minor) with respect to the functioning of the item the extent to which the controls are exercised (100% samples, one per heat, etc.). Acceptance norms for the characteristics, method of maintaining records thereof as a proof of having exercised the control successfully, the agency responsible for performing and witnessing the checks and for verifying the records thereof.

2.35.2 The bidders shall follow the BHEL/PVUNL approved Quality plan. Standard Quality plans are included in tender specification.

2.35.3 Copies of Bidder's/Bidder's Collaborators catalogues/drawings/standards/specifications/ procedures etc. as mentioned in reference document of the Quality Plan shall be furnished for approval.

2.35.3.1 Bidders has to follows the quality control checks exercised by him during the various stages of fabrication / manufacture such as:

a) All bought out items and incoming material checks carried out at sources and on receipt.
b) Process of manufacture i.e. welding, heat treatment etc.
c) Manufacture of various components, sub-assemblies and assembly.
d) Final Inspection and Testing.

e) Surface preparation and painting.
f) Packing, Marking and Dispatch to site.

2.36 Inspection Agency:

Inspection of packages shall be carried out by agency as per below Inspection category of packages:

1. **Cat I: -** Inspection shall be done jointly by PVUNL, BHEL & Successful bidder.
2. **Cat-II: -** Inspection shall be done by BHEL & Successful bidder.
3. **Cat-III: -** Certificate of Compliance shall be furnished by Successful bidder.

Please note, for Cat I & II items BHEL reserve the right to carry inspection by themselves or through nominated third party. For Inspection agency for various items, vendor may refer to Quality Plan.

1. The satisfactory completion of these tests, shall not bind BHEL / PVUNL to accept the supply/equipment, should it, on further tests after erection, be found not to comply with the contract provisions.

2.37 SHORTAGES/DAMAGES:

Any shortages or damages during, transportation or handling at site, including at the time of erection and commissioning, shall be made good by the Seller/Contractor at his risk and costs, to meet the project schedule. In case of faults/discrepancies in any material, component, sub-assembly, assembly, etc., the same shall be supplied/replenished free of cost to enable the equipment to be put in service. Shortages in some cases shall also be replenished free of cost.

2.38 For vendor payments by PSWR, the following documents are required in 4 sets:

1. Original vendor Invoice
2. Item list.
3. Guarantee certificates in line with PO terms- Original.
4. In addition to the above, vendor may furnish mfg. clearance/drg/docs approval date for the purpose of determining contractual delivery for expeditious processing of Invoices.

3. **Checklist for submission of Bills:**

Fabricator should ensure that the following documents are submitted for bill processing to avoid any delay in processing of payment:

1. Invoice – duly signed by Fabricator with seal. Fabricator shall submit 100% Invoice.
2. Invoice Annexures - duly signed by Fabricator with seal.
3. GST Invoice – Original for buyer and Duplicate for transporter copies
4. Original Inspection Reports (IRs) – with relevant painting/SB remarks a - duly signed by BHEL QC inspector and Fabricator with seal.

3.1Raw Material issue and Accountable:

The fabricator shall ensure Material Accounting within 365 days from date of issue of materials. This is a statutory requirement and must be strictly complied with. In case Material Accounting within 365 days from the date of first issue of raw material due to subcontractor's default, the amount payable by BHEL to Government (i.e. GST @ 18% of input material value + applicable interest for 365 days) will be recovered from the fabricator as penalty. The recovery/ penalty will be calculated separately for each material gate pass wherever the period crosses 365 days under a purchase order/ contract.

3.2Reconciliation of steel issued by BHEL (free of cost):

General Notes:

a. All steel like structural steel as specified in relevant BOQ and shall be issued free of cost by BHEL unless specified otherwise in BOQ for use in the work covered in this contract from BHEL stores/storage yard/BHEL direct issue upto fabricator shop. The fabricator shall collect these materials from BHEL at vendors fabrication yard at his own cost and store the same at the work site or in his stores as per standard norms.

b. BHEL reserves the right to recover from the fabricator any loss arising out of damage/ theft or any other causes or during verification/stacking or at any time under the custody of the contractor.

c. The fabricator shall in no case be entitled for any compensation on account of any delay in supply or non-supply thereof for all or any such materials. However, in case of non-availability of any specific section(s) which delays the completion of work, such cases shall be recorded separately in monthly planning format (F14) and shall be considered for time extension of contract.

d. Fabricator will have to make his own arrangement at his own cost for procurement of any other materials except as mentioned above, as required for the works and of such quality as acceptable to BHEL.

e. The fabricator shall maintain proper store account for all the BHEL issued materials and shall give Three (03) copies of monthly-computerized reconciliation statement of such account showing total receipt, consumption and balance at Vendor works to the BHEL. BHEL Engineer's certification for the reconciliation of steel shall be final. The detailed reconciliation (dia. Wise or as required) shall be done at least once in three months (03) or before submission of final bill which comes earlier.

f. Fabricator shall also carryout in complete association with BHEL, the material management functions and execution like day-to-day update of materials, issued to contractor, accounting for surplus/scrap material returned etc. These functions shall also be carried out through computerized system utilizing suitable software. Fabricator shall engage experienced software personnel to associate on dedicated basis for efficient discharge of the same in time.

g. The fabricator shall solely be responsible for the safety & security of material after it is handed over and issued to fabricator by the BHEL.

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

Sl. No	Description PART I	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
3.1	**ESTABLISHMENT**			
3.1.1	**FOR CONSTRUCTION PURPOSE:**			
a	Open space for office (as per availability)	Yes		Location will be finalized after joint survey with owner
b	Open space for storage (as per availability)	Yes		Location will be finalized after joint survey with owner
c	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
d	Bidder's all office equipments, office / store / canteen consumables		Yes	
e	Canteen facilities for the bidder's staff, supervisors and engineers etc		Yes	
f	Fire fighting equipments like buckets, extinguishers etc		Yes	
g	Fencing of storage area, office, canteen etc of the bidder		Yes	
3.1.2	**FOR LIVING PURPOSES OF THE BIDDER**			
a	Open space for labour colony (as per availability)		**Yes**	Agency has to make his own arrangement at his own cost.
B	Labour Colony with internal roads, sanitation, complying with statutory requirements		Yes	
3.2	**ELECTRICITY**			
3.2.1	Electricity For construction purposes only of Voltage 415/440 V, 3 phase, 50Hz (Chargeable Basis)	Yes		At Single point, Bidder to make it own arrangement of distribution of electricity at its own cost.

Sl. No	Description PART I	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
A	Single point source	Yes		At a distance of 500 M from site (Distance is only tentative, it may vary upto an extent depending on site condition)
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.2.2	Electricity for the office, stores, canteen etc of the bidder			Agency has to make his own arrangement at his own cost.
A	Single point source		**Yes**	
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.2.3	Electricity for living accommodation of the bidder's staff, engineers, supervisors etc		**Yes**	Agency has to make his own arrangement at his own cost.
A	Single point source		Yes	
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.3	**WATER SUPPLY**			
3.3.1	For construction purposes: (single point source provided by BHEL)			
a	Making the water available from single point	Yes		Chargeable basis

Sl. No	Description PART I	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	Agency has to make his own arrangement at his own cost.
3.3.2	Water supply for bidder's office, stores, canteen etc.			
a	Making the water available at single point		Yes	
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.3.3	Water supply for Living Purpose			
a	Making the water available at single point		Yes	
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.4	**LIGHTING**			
a	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	
b	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	
c	Providing the necessary consumables like bulbs, switches, etc during the course of project work		Yes	
d	Lighting for the living purposes of the bidder at the colony / quarters		Yes	
3.5	**COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER**			
a	Telephone, fax, internet, intranet, e-mail etc.		Yes	

Sl. No	Description PART I	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
3.6	**COMPRESSED AIR** wherever required for the work		**YES**	
a	Supply of Compressor and all other equipment's required for compressor & compressed air system including pipes, valves, storage systems etc		Yes	
b	Installation of above system and operation & maintenance of the same		Yes	
c	Supply of the all the consumables for the above system during the contract period		Yes	
3.7	Demobilization of all the above facilities		**Yes**	
3.8	**TRANSPORTATION**			
a	For site personnel of the bidder		Yes	
b	For bidder's equipments and consumables (T&P, Consumables etc)		Yes	

3.9 Construction Power (Chargeable):

3.9.1 The construction power (415V) will be provided at a single point for construction purpose only on **chargeable basis** at the applicable rate of PVUNL prevailing during the execution period. Further distribution is to be arranged by the bidder at his cost. Construction power shall be provided from the nearest Substation / tapping point.

3.9.2 Any duty, deposit involved in getting the Electricity shall be borne by the bidder. As regards to contractor's office shed also, all such expenditure shall be borne by the contractor.

3.9.3 Provision of distribution of electrical power from the given single central common point to the required places with proper distribution boards, approved cables and cable laying including supply of all materials like cables, switch boards, pipes etc., observing the safety rules laid down by electrical authority of the State / BHEL / their customer with appropriate statutory requirements shall be the responsibility of the tenderer / contractor.

3.9.4 BHEL is not responsible for any loss or damage to the contractor's equipment as a result of variations in voltage / frequency or interruptions in power supply.

3.9.5 Necessary "Capacitor Banks" to improve the Power factor to a minimum of 0.8 shall be provided by the contractor at his cost. Penalty if any levied by customer on this account will be recovered from contractor's bills.

3.9.6 The PVUNL tariff and tax may vary from time to time. The required Energy meter for measuring the power consumption shall be provided and installed by the contractor. Any dispute regarding consumption, the BHEL engineer's decision shall be final & binding to the contractor. The contractor shall make his own arrangement for further distribution with necessary isolator/LCB etc.

3.9.7 Contractor has to make his own arrangements for his electricity requirement for his labour colony at his cost.

3.9.8 As there are bound to be interruptions in regular power supply, power cut/load shedding in any construction sites, contractor should make his own arrangement for alternative source of power supply through deployment of adequate number of DG sets at their cost during the power breakdown /failure to get urgent and important work to go on without interruptions. No separate payment shall be made for this contingency

3.10 **Construction Water (Chargeable)**

3.10.1 Water (Raw water) required for construction purposes will be provided at one single point within the plant area on chargeable basis. The required water meter for measuring the consumption shall be provided and installed by the contractor. The required pumps & accessories, pipes for drawing water from the points and further distribution will be arranged by the contractor at their cost.

3.10.2 The water charges may vary from time to time as per PVUNL water conditions, Any dispute regarding consumption, the BHEL engineer decision will be final. In case of non-availability of water, the contractor shall make his own arrangements of water suitable for construction to have uninterrupted work. No separate payment shall be made for any contingency arrangement made by contractor, due to delay / failure for providing water supply. Contractor has to make his own arrangements for his water requirement for his labour colony at his cost.

3.11 **DRINKING WATER**

Bidder shall provide drinking water at the work spot at their cost.

3.12 CONSUMABLES:

3.12.1 All consumables, like gas, electrodes, chemicals, lubricants etc. required for the scope of work, shall be arranged by the contractor at his cost unless otherwise specifically mentioned in the contract.

3.12.2 In the event of failure of contractor to bring necessary and sufficient consumables, BHEL may arrange for the same at the risk and cost of the contractor. The entire cost towards this along with overhead shall be paid by the contractor or deducted from the contractor's bills.

3.13 LIGHTING FACILITY:

Adequate lighting facilities such as flood lamps, hand lamps and area lighting shall be arranged by the contractor at the site of construction, pre assembly yard and contractor's material storage area etc. at his cost.

3.14 GASES:

3.14.1 All the required gases like Oxygen / Acetylene / argon required for work shall be supplied by the Contractor at his cost. It shall be the responsibility of the contractor to plan the activities and store sufficient quantity of these gases. Non availability of gases cannot be considered as reason for not attaining the required progress. BHEL reserves the right to reject the use of any gas in case required purity is not maintained.

3.14.2 The contractor shall submit weekly / fortnightly / monthly statement report regarding consumption of all consumables for cost analysis purposes.

3.14.3 The contractor shall ensure safe keeping of the inflammable cylinder at a separate place away from normal habit with proper security etc.

3.14.4 BHEL reserves the right to reject the use of any gas in case required purity is not maintained.

3.15 ELECTRODES SUPPLY AND STORAGE

3.15.1 The bidder shall use the BHEL / Customer approved quality welding electrodes only.

3.15.2 It shall be the responsibility of the contractor to obtain prior approval of BHEL, before procurement, regarding suppliers, type of electrodes etc. On receipt of the electrodes at site, it shall be subject to inspection and approval by BHEL. The contractor shall inform BHEL details regarding type of electrodes, batch number and date of expiry etc.

3.15.3 Shortage of any of the electrodes or the equivalent suggested by BHEL shall not be quoted as reason for deficiency in progress or for additional rate.

3.15.4 All low hydrogen electrodes shall be baked / dried in the electrode drying oven (range 375 deg. C – 425 deg. C) to the temperature and period specified by the BHEL Engineer before they are used in fabrication

work and each welder should be provided with one portable electrode drying oven at the work spot. Electrode drying oven and portable drying ovens shall be provided by contractor at his cost.

3.15.5 In case of improper arrangement of procurement of above electrodes BHEL reserves the right to procure the same from any source and recover the cost from the contractor's first subsequent bills at market value plus departmental charges of BHEL communicated from time to time. Postponement of such recovery is not permitted.

3.15.6 BHEL reserves the right to reject the use of any electrodes at any stage, if found defective because of bad quality, improper storage, date expiry, unapproved type of electrodes etc. It shall be the responsibility of the contractor to replace at his cost without loss of time.

3.16 OTHER FACILITIES

3.16.1 Adequate water less urinals shall be arranged by the contractor within quoted rates, at site with proper disposal arrangement.

3.16.2 Vendors have to comply requirements of HSE & Statutory requirement in line with BHEL HSE plan, NTPC Safety requirement, Jharkhand/Central statutory requirement.

3.16.3 Vendors have to arrange labour rest sheds, drinking water facility, toilets, as per local labour act/BOCW act. Maintaining hygiene and disposal of debris, scraps, items and area cleaning is included in vendor's scope.

3.16.4 Agency has to arrange trained scaffolding experts with accreditation from statutory agencies with proper experience and they will issue fitness certificates for safe use. Such kind of qualified scaffolding experts will vary as per job requirement. At the same time, training has to be given by these experts at regular intervals for their own workers for increasing no. of experts.

3.16.5 Agencies HSE officers should have sufficient experience as per rule 209 of Bocw act central rule 1998. Agencies HSE officers will be part of BHEL HSE Team and they will be responsible for giving training on HSE issues in addition to normal field works and other normal site requirements.

3.16.6 Preparation of method statement, HIRA, Job Safety analysis, permit to work, Lifting plans, and all supporting documents as required for starting & continuation of work/job is in vendor's scope.

3.16.7 **Hydras are not allowed for materials transport, only pick and carry cranes shall be deployed by the agency.**

3.16.8 First aid centre will be maintained by BHEL and cost will be proportionately recovered from vendors.

3.16.9 Vendor has to arrange land within his quoted rate for making labour colony. Vendors labour colony has to be maintained with proper hygiene, drinking water, bathroom water, lighting arrangement, sewerage system. These facilities are to be regularly maintained including drains, surrounding, upkeepment of labour colony. BHEL/NTPC & local statutory authorities will visit labour colony from time to time and all healthy conditions are to be maintained by vendor.

3.16.10 Scaffolding pipes, clamps, safety nets, floor grills for working platforms are to be made of good quality with proper certifications as per IS Codes.

3.17 **DEWATERING:**

Contractor shall ensure at all times that the work area & approach/ access roads are free from accumulation of water, so that the materials are safe and the fabrication/ progress schedule are not affected. No separate claim in this regard shall be admitted by BHEL.

3.18 SITE ORGANISATION

3.18.1 The contractor shall provide adequate staffing in the following areas in addition to the staffing requirements of execution as instructed/informed by BHEL:

i. Overall planning, monitoring & control.
ii. Quality control and quality assurance.
iii. Materials management.
iv. Safety, fire & security.
v. Industrial relations and fulfilment of labour laws and other statutory obligations.

3.18.2 The contractor shall maintain a site organization of adequate strength in respect of manpower, construction machinery and other implements at all times for smooth execution of the contract. This organization shall be reinforced from time to time, as required to make up for slippage from the schedule without any commercial implication to BHEL. The site organization shall be headed by a competent construction manager having sufficient authority to take decisions at site.

3.18.3 The contractor should also submit to BHEL for approval a list of construction equipment, fabrication tools, tackle etc prior to commencement of site activities. These tools & tackles shall not be removed from site without written permission of BHEL.

4.1 MAJOR TOOLS AND PLANTS & MMEs TO BE DEPLOYED BY THE CONTRACTOR

The following minimum major Tools & Plants (T&P) shall be arranged by the Contractor within the quoted rate for execution of this contract.

SN	DESCRIPTION	CAPACITY (MINIMUM)	QUANTITY	REMARKS
1	Tyre mounted Crane	25 MT	01 No.	Crane to be made available at site in consultation with BHEL Site management, BHEL decision is final and agency has to deploy the crane as per BHEL instructions till Site requirement.

Other T&Ps				
S.N.	DESCRIPITION	MINIMUM CAPACITY	MINIMUM QUANTITY	Remarks
1.	Tyre mounted pick & carry crane	12 - 14 MT	01 Nos	
2.	Tyre mounted pick & carry crane	18-20 MT	01 Nos	
3.	Trailer with pulling unit	20/30 TON	01 Nos	
4.	Welding generator sets		As per requirement	
5.	3-phase complete set up for drawal of Power		As per requirement	
6.	Radiography arrangement including the Source and film viewer		As per requirement	
7.	Tig welding set		As per requirement	
8.	Stress relieving equipment with Temperature recorders		As per requirement	
9.	Electrical baking oven – big		As per requirement	
10.	Electrode baking oven – portable		As per requirement	
11.	Oxy-acetylene gas cutting Set		As per requirement	
12.	Drilling machines : assorted Types and sizes		As per requirement	
13.	Grinding machines : assorted Types and sizes		As per requirement	
14.	Electric cable for drawal & distribution of construction power	As per site requirement		

15.	Submerged arc welding m/c	Suitable for application	Adequate to meet compln schedules	
16.	Pug cutting m/c	Suitable for application	Adequate	
17.	Plasma cutting m/c	Suitable for application	Adequate	
18.	Pre heating / stress relieving set (heating control panel, cables, heating elements etc.)	As per requirement	Adequate	
19.	Radiography arrangement including the source	Ir 192	1 sets	
20.	Arrangement for ut of higher thickness joints with recording facility.	Suitable for application	01 set	
21.	Radiography film viewer	Hi intensity	1 nos.	
22.	Sand blasting set with air compressor	Suitable for application	Adequate	
23.	Hoisting & pulling devices/ pulleys etc	Assorted cap	Adequate	
24.	Mech & hyd jacks	As per reqmt	Adequate	
25.	Chain Pulley blocks		As per requirement	
26.	Scaffolding pipes		As per requirement	
27.	DFT measurement (Elcometer)		As per requirement	
28.	Tools for Reaming and Honing		As per requirement	
29.	Gas Cutting Sets		As per requirement	
30.	Sleeper & Concrete blocks for Bed Preparation for Assy		As per requirement	
31.	Dewatering Pump		As per requirement	
32.	Various sizes of clamps/ fixtures for assembling		As per requirement	
33.	Temperature Recorder for 0-1000 deg C 6/12 points with thermocouples/ rod and compensating cable		As per requirement	
34.	Magnetic particle testing equipment – DRY &WET Type		As per requirement	

35.	Stress relieving equipment		As per requirement	
36.	Hydraulic test pumps For testing lines (up to 400 Kg/Sq.cm)		-	
37.	Electrically operated winches	3T-5T	As per requirement	
38.	Air compressor		As per requirement	
39.	Different types of electrical lamps, tube lights , halogen lamps, sodium vapour lamps with Fixtures	As required	As required	
40.	Consumables for welding and NDTs	As required	As required	
41.	Thermal chalks of different ranges	As required	As required	
42.	Consumables for Pre-heating, Stress Relieving, Post heating etc.	As required	As required	
43.	Welders accessories	As required	As required	
44.	Handling accessories for handling chemicals, Control fluid and other items as required	As required	As required	
45.	Services for effluent disposal	As required	As required	
46.	Petrol	As required	As required	
47.	Diesel	As required	As required	
48.	Dp test kit with magnifying glass As required	As required	As required	
49.	Portable switch board containing 15 amps tp metal clad switch with Fuse 3x15 amps, switches and 3 Plug sockets as per requirement	As required	As required	
50.	Tarpauline 3x3 m and 5x5 m and 10x5 M and other sizes as per Requirement	As required	As required	
51.	**List of suggestive safety Equipments/PPEs to be included in List of minimum T&P:**			

52.	**Horizontal life line** Stainless Steel Wire rope of 8mm diameter. Minimum six nos. of steel U-bolt clips are required for clamping each wire rope to a rigid support (03 nos. of U-bolt clips at each end).		AS PER REQUIREMENT	

4.2 MEASURING AND MONITORING DEVICES (MMD):

As per requirement to be finalized at site, shall meet the requirements as per field quality plan and other fabrication, testing related activities.

NOTE:

1. All above T&Ps are to be deployed by contractor as and when required as per instruction of BHEL engineer. If works gets delayed due to non-availability of above T&Ps, BHEL reserves the right to deploy the same and recover the charges thereof from the contractor as per prevailing market rate/hiring rate/BHEL internal hiring rates, as the case may be, + Applicable overhead rates.

2. Number of Major T&Ps listed above are fixed. All the other relevant clauses shall be read accordingly.

3. This above list of T&Ps (apart from Major T&Ps) is only indicative and neither exhaustive nor limiting. Quantities indicated above are only the minimum required. Contractor shall deploy all necessary T&P to meet the schedules & as prescribed by BHEL engineer and required for completion of work.

4. Necessary electrical / water / air connection required for operation of any of the tools & tackles shall be to Contractor‘s account.

5. Contractor has to submit the Calibration certificates of all the precision Equipement to BHEL. BHEL may ask for recalibration of the MMEs /precision equipments for ensuring quality of work. Contractor must reascertain/ recheck range and accuracy of each IMTE from BHEL Engineer well in advance before arranging calibration/ deployment.

6. Any T&Ps, Cranes, Slings, D-shackles and other lifting tackles, Trailers required for shifting of material from store to site shall be arranged by contractor over and above T&Ps/ crane provided by BHEL.

7. T&P (apart from Major T&Ps) and the mobilization shown in the above mentioned list is suggestive requirement. Mobilization schedule as instructed at site for all the required T&Ps, have to be adhered to. Numbers / time of requirement will be reviewed time to time at site and contractor will provide required T&P / equipments to ensure completion of entire work within schedule / target date of completion without any additional financial implication to BHEL. Vendor will give advance intimation & certification regarding capacity etc. prior to dispatch of heavy equipments. Also on completion of the respective activity, demobilization of T&P in total or in part can be done with the due approval of engineer in charge. Retaining of the T&Ps during the contract period will be mutually agreed in line with construction requirement.

8. In the event of need of change of type of any of T&Ps, approval shall be taken from BHEL Engineer in-charge prior to mobilization. The decision of Number of T&P required due to replacing the enlisted T&P as per above table, shall be taken after analyzing the production capacity and suitability of both the T&Ps.
9. The above list is only indicative (apart from major T&Ps) and all these T&Ps including major T&Ps may not be required for entire contract period but contractor shall ensure the availability of the T&Ps as per work requirement and T&P Deployment schedule. T&P Deployment schedule shall be finalized at site in consultation with BHEL Engineer based on the work fronts/work requirement. BHEL decision shall be final and binding regarding the T&P deployment schedule. Contractor shall mobilize / maintain the T&P's as per the deployment schedule notified time to time by BHEL Engineer.
10. APR- Contractor has to deploy T&P, MMD, IMTE as per requirement of site and as decided by BHEL Engineer.
11. Any additional item (apart from Major T&Ps) required in addition to above mentioned T&P for proper execution of scope of work, contractor has to arrange such T&P within quoted rate on the instruction of BHEL in writing in a reasonable period within two weeks from the written instruction from BHEL.
12. T&Ps mentioned above shall be specifically deployed as per the requirement. However, as per work requirement and availability of T&Ps the inter use in Material Handling and Mechanical works may be permitted as per the instruction of the BHEL Engineer.
13. If the work related to T & Ps mentioned above is completed then, BHEL can release that T & P during contract period / extended period if any. However, written permission shall be taken by contractor from BHEL construction Manager for releasing the T&P.
14. In case of any specific requirement of higher capacity crane apart from the vendors scope shall be provide by the BHEL on sharing basis & free of charge.
15. The T&P deployment as specified in above table is only indicative, however the contractor has to ensure the availability of required T&P till completion of all the work under his scope in this tender.
16. In the eventuality of contractor not deploying cranes / abnormal down time of cranes in his scope during the period specified above, and BHEL arranges for the same [either BHEL's own cranes / hired cranes], prevailing BHEL Corporate Crane hire charges (may vary from time to time) shall be recovered from the contractor's running bills. Corresponding pages of Corporate Crane hire charges are enclosed as part of VOL I as File titled "Annexure 1- T&P Hire Charges". (Please note that these charges are as valid up to Aug 31, 2023 and may get revised further).
17. For loading and transportation, all necessary T&P such as Trailers, Cranes, Winches, welding generators, slings, jacks, sleepers, rails etc., are to be arranged by the contractor.
18. All the T&Ps required for this scope of work, except the Tools & Plants provided by BHEL are to be arranged by the contractor with in the quoted rates.
19. 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.
20. Any or part or all of the T & Ps of the contractor identified for the tendered package shall not the engaged for any works other than that of the works intended in this tender.
21. The contractor shall arrange crane operator, diesel, petrol and other consumables required for the tools and plants, equipment's etc. Preventive and routine maintenance of T&P are also to be arranged by

the contractor at his cost without any delay. Required number of experienced mechanics and helpers for routine maintenance of the above cranes shall be provided by the contractor within his quoted rate.

22. For transportation, material handling, loading& unloading of all components / equipments, the contractor has to make his own arrangements at his own cost. BHEL will not provide any crane / T&Ps for unloading the above components. All necessary T&P such as, Trailers, Cranes Winches, Welding generators, Slings, Jacks, Sleepers, Rails etc. are to be arranged by the contractor.

23. All the T & P, lifting tackles including wire ropes, slings, shackles and electrically operated equipment shall be got approved by BHEL Engineer before they are actually put on use. Test certificates obtained from the statutory authority should be submitted before their usage.

24. All the T & P arranged by contractor including electrical connections wherein required shall be reliable / proven / tested with necessary test certificate.

25. All instruments, measuring tools etc. are to be calibrated periodically as per the requirement of BHEL and necessary calibration certificates are to be submitted to BHEL before use.

26. Crane operators deployed by the contractor shall be tested by BHEL before he is allowed to operate the cranes.

27. The contractor shall submit the valid test certificate/calibration certificates for all the T&Ps before put into actual use at site. The certificates shall be renewed time to time as instructed by BHEL Engineer.

28. Crane operators deployed by the contractor shall have valid license for operation of cranes.

29. Apart from above mentioned T&P, any additional item required for proper execution of scope of work, contractor has to arrange such T&P within quoted rate as instructed by BHEL Engineer. Deployment schedule of such T&Ps shall be maintained as per the instruction of BHEL Engineer.

30. T&P's mentioned above shall be specifically deploy as per the respective works. However, as per work requirement and availability of T&Ps the inter use in Material Handling and Mechanical works may be permitted as per the instruction of the BHEL Engineer.

31. Any of the T&Ps deployed by the contractor, will be released from site during contract period / extended period only after completion of work for which the particular T&Ps was envisaged. The written permission shall be taken by contractor from BHEL Construction Manager for releasing the T&Ps.

32. The loading, unloading and transportation of contractors T&Ps shall be in the scope of contractor. All necessary items such as Trailers, Cranes, Winches, welding generators, slings, jacks, sleepers, rails etc., are to be arranged by the contractor at his own cost.

5.1 List of T&Ps to be made available by BHEL to contractor free of hire charges on sharable basis.			
SN	**DESCRIPTION & CAPACITY OF T&P**	**QUANTITY IN NOS**	**PURPOSE /Remark**
1	Crawler Crane of above 25 MT (suitable capacity)	As decided by BHEL	Except Contractor scope, required for mentioned work will be arranged by BHEL as per requirement.

NOTE:

5.1 Above T&P will be provided on sharing basis only. Contractor has to plan his activities well in advance and inform BHEL Engineer in charge/ Construction Manager the date of actual use. The decision of BHEL Engineer in-charge/CM on this will be final and binding.

5.2 The cranes mentioned at Sl. No.1 of the table will be provided as per requirement on sharing basis at the discretion of the BHEL Engineer.

5.3 The contractor shall make necessary arrangement like laying of steel plates, assembly & dismantling of heavy lift attachment, boom, jib, providing manpower and T&Ps etc. for altering the crane configuration viz change of boom length etc movement of BHEL cranes to carry out the job for his use.

5.4 Necessary electrical / water / air connection required for operation of any of the BHEL's T & Ps shall be Contractor's account. All the distribution boards, connecting cables, hoses etc., and temporary connection work including electrical connections shall have to be arranged by the contractor at his cost.

5.5 All the T&Ps mentioned in table 5.1 above shall be given to contractor on sharable basis and the allotment is made by BHEL on need basis. Contractor shall plan activities well in advance and inform BHEL Engineer in charge/ Construction Manager the date of actual use. The decision of BHEL Engineer in-charge/CM on this will be final and binding.

5.6 Contractor shall transport from BHEL stores, install, operate, carry out maintenance, dismantle after use and return to BHEL stores all T&Ps mentioned in Table 5.1 for his use.

5.7 **For Crawler Crane**:

1. The cranes may be BHEL owned or may be obtained on hiring basis including operating and maintenance crew.
2. Operator and O&M for BHEL owned crane will be provided by BHEL.
3. Operator and O&M for hired crane will be provided by the hiring agency.
4. Contractor shall provide the fuel for BHEL provided cranes (Hired/owned) for his use. Lubricants for crane (hired/owned) shall be provided by the BHEL.
5. Contractor shall provide necessary manpower assistance for initial and final assembly & dismantling and for subsequent operations of boom extension and reduction during execution of work. Contractor shall also make necessary arrangements like laying of special sleeper beds and steel plates (**sleepers for BHEL owned/hired cranes shall be provided by the BHEL)** for movement of the crane.

6. Cranes provided by BHEL will be on sharing basis with other agencies / contractors of BHEL. The allocation of cranes shall be the discretion of BHEL engineer, which shall be binding on the contractor. Cranes will be deployed at appropriate time as decided by BHEL for suitable duration and intended purpose. Augmentation of BHEL T & P under special circumstances shall be discretion of BHEL.

Time schedule & mobilization

6.1.1 **Mobilization (For Supply)**

After receipt of Work Order, Fabricator shall discuss with project manager / construction manager regarding initial mobilization. The successful bidder will tie up with approved detailers of BHEL/NTPC for preparation of detailed fabrication drawing, submission of same to BHEL/ PEM and approval from them. Appointed Detailers by the successful bidder will co-ordinate with BHEL PEM/BHEL ISG/PVUNL for approval of drawing and day to day routine co-ordination with site team (Bidder/BHEL/NTPC) for any clarification during fabrication. Contractor shall mobilize necessary resources within 2 weeks of issue of fax letter of intent or as per the directive of Project Manager / Construction Manager. Such resources shall be progressively augmented to match the schedule of milestones.

On approval of detailed drawings, successful bidder will start fabrication work at Site". They will prepare cutting plan, get it checked with BHEL/NTPC official and proceed with fabrication.

Contractor shall mobilize further resources as per requirement to commence the work of fabrication, testing, shot blasting, painting etc. to match schedule of the project.

6.1.2 **Commencement of contract period and tentative**

Date of Approval of the Ist detailed drawing shall be recognized **as "start of contract period"** and date of start shall be recorded with mutual consent of BHEL Site & fabricating agency.

The contractor has to subsequently augment his resources in such a manner that the entire work is completed to achieve the following tentative schedule: -

A Rate Contract shall be entered into with eligible Fabricators. The contract shall be valid, for a period of 14 Months from date of start of the contract. **BHEL will issue the Sub POs for the structures to be fabricated at site**. Moreover, validity of contract is subject to further extension with mutual consent. PO(s) placed under this contract shall be governed by the T&C's of this contract till the completion of PO. BHEL is at liberty to terminate the Agreement by giving 10 days' notice in writing.

i. Supply of Fabricated structures as per scope including surface preparation and application of primer paint for PVUNL Patratu STPP shall as per the following schedule against the issued SUB POs:

Case-1 (When Detail drawings prepared by the BHEL)

a. For awarded tonnage is 50 MT under Sub POs - 45 days from the date of issuance of the Sub POs.

b. For awarded tonnage is 51 MT-200MT under Sub POs - 75 days from the date of issuance of the Sub POs.

c. For awarded tonnage is 201 MT-400 MT under Sub POs - 105 days from the date of issuance of the Sub POs.

d. Further increase in scope of work above 400 MT by 50 MT will add the 15 days additional.

ii. Case-2 (When Detail drawings prepared by the agency)

a. For awarded tonnage is 50 MT under Sub POs - 90 days from the date of issuance of the Sub POs.

b. For awarded tonnage is 51 MT-200MT under Sub POs - 120 days from the date of issuance of the Sub POs.

c. For awarded tonnage is 201 MT-400 MT under Sub POs - 150 days from the date of issuance of the Sub POs.

d. Further increase in scope of work above 400 MT by 50 MT will add the 15 days additional.

iii. The Fabricator has to subsequently augment his resources in such a manner that the entire work is completed to achieve the following tentative schedule.

L-2 Schedule shall be prepared and submitted by Fabricator for approval of BHEL.

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.

6.2 PROVISION OF PENALTY IN CASE OF SLIPPAGE OF INTERMEDIATE MILESTONES

The work is to be completed within the completion date mentioned in the PO from the date of handover of issue documents. In the event of delay in supply of goods and or services beyond contractual delivery period, penalty of 0.5% per week on PO value or part there of shall be levied on the undelivered portion subject to a maximum of 10% of the total purchase order or contract value. Penalty amount so determined along with GST if applicable thereon, shall be recovered.

Note 1:

1. In order to meet above schedule in general, and any other intermediate targets set, to meet customer/project schedule, contractor shall arrange & augment all necessary resources from time to time as per the instructions of BHEL.

2. In case the activities in the schedule are to be advanced, the related activities in the scope of the contractor are to be advanced to meet the project requirement. No extra payment whatsoever shall be paid on this account.

3. The contractor shall submit area-wise L3 schedule within 7 days in consultation with BHEL. The detailed L3 schedule shall be approved by BHEL and same shall be implemented. Bidder shall submit L3 schedule in MS Projects to meet the agreed project schedule covering various mile stone activities and their split up details such as mobilization, procurement of materials, fabrication & erection activities. This schedule shall also clearly indicate the interface facilities / inputs applicable in each package.

7. Term of Payment: -

The progressive payment for supply on accepted price of contract value will be released as per the break up given hereinafter: -

Stages of progressive pro-rata payments

1. 95 % on completion of fabrication against MDCC and receipt by BHEL Engineer.
2. 5% against submission of material reconciliation statement.

Note: Site may at its discretion further bifurcate the above percentages to make the cash flow for smooth fabrication activities.

❖ payment as per PO, Billing schedule/Price Bid, excluding GST shall be released within 30 days after receipt & acceptance of material at site and submission of following documents: -

a) GST Complaint Invoice (1 Original + 2 copies)
b) Copy of Material Dispatch Clearance Certificate issued by BHEL site.
c) Guarantee Certificate
d) Material Receipt certificate by BHEL/site.

❖ Applicable GST shall be released upon compliance of following documents:

Vendor has declared such Invoice in their GSTR-1 & has paid the tax to the Government by filing GSTR-3B or any other return/form for payment of tax so that Vendor's invoice details appear in BHEL's GSTR-2A. Payment may not be released if above is not complied & invoice details do not appear in BHEL's GSTR-2A.

❖ The agency shall submit the Security Deposit (SD) as per the applicable GCC clause for each issued Sub-PO, separately, prior to commencement of the work under the respective Sub-PO.

❖ SD amount payment as per PO, Billing schedule/Price Bid, excluding GST shall be released after completion of warranty period i.e. after 18 Months from last date of supply. This shall be deemed as performance guarantee for the contract.

❖ Paying Authority shall be **General Manager, BHEL 3 X 800 MW, PVUNL Patratu Site, Jharkhand**

8.0 TAXES, DUTIES, LEVIES (Rev 14 dated 09/10/2020)

1. All taxes excluding GST, GST Cess **& BOCW** Cess **but including, Royalties, fees, license, deposits, commission, any State or Central Levy and other charges whatsoever, if any, shall be borne by you and shall not be payable extra.**

2. Any increase of the taxes excluding GST, GST Cess & BOCW **Cess**, at any stage during execution including extension of the contract shall have to be borne by the contractor. Quoted/ accepted rates/ price shall be inclusive of all such requirements. Please note that since GST on output will be paid by BHEL separately as enumerated below, your quoted rates/ price should be after considering the Input Credit under GST law at your end.

3. **GST :**

The successful bidder shall furnish proof of GST registration .GST along with Cess (as applicable) legally leviable & payable by the successful bidder as per GST Law, shall be paid by BHEL. Hence Bidder shall not include GST along with Cess (as applicable) in their quoted price.

4. GST charged in the Tax Invoice/Debit note by the contractor shall be released separately to the contractor only after contractor files the outward supply details in GSTR-1 on GSTN portal and input tax credit of such invoice is matched with corresponding details of outward supply of the contractor and has paid the GST at the time of filing the monthly return

5. E-invoicing under GST has been implemented with effect from 1st October 2020 for all the taxable persons having turnover more than the threshold limit in any preceding financial year from 2017-18 onwards. Therefore, for all the taxable persons falling under the purview of E-invoice, it is mandatory to mention a valid unique Invoice Reference No. (IRN) and QR code as generated from E-Invoicing portal of the Government for the purpose of issuing a valid Tax Invoice. Only an E-invoice issued in the manner prescribed under rule 48(4) of CGST Rules shall be treated as valid invoice for reimbursement of GST amount.

If the successful Bidder is not falling under the purview of E-Invoicing then he has to submit a declaration in that respect along with relevant financial statements.

6. Bidder shall note that the GST Tax Invoice complying with GST Invoice Rules (Section 31 of GST Act & Rules referred there under) wherein the 'Bill To' details will as below:

BHEL GSTN – As per **Annexure -1**

NAME -- Bharat Heavy Electricals Limited

ADDRESS – Site address

7. Bidder to immediately intimate on the day of removal of Goods (in case of any supply of goods) to BHEL along with all relevant details and a scanned copy of Tax Invoice to below email ids to enable BHEL to meet its GST related compliances :-

Email id ---- to be intimated later on.

In case of delay in submission of the abovementioned documents on the date of dispatch, BHEL may incur penalty /interest for not adhering to Invoicing Rules under GST Law. The same will be liable to be recovered from the successful bidder, if such delay is not attributable to BHEL.

8. In case of raising any Supplementary Tax Invoice (Debit / Credit Note) Bidder shall issue the same containing all the details as referred to in Section 34 read with Rule 53.

9. Bidder shall note that in case GST credit is delayed/ denied to BHEL due to delayed / non receipt of goods and /or tax invoice or expiry of the timeline prescribed in GST Law for availing such ITC, or any other

reasons not attributable to BHEL, GST amount shall be recoverable from the vendor along with interest levied / leviable on BHEL, as the case may be.

10. Bidder shall upload the Invoices raised on BHEL in GSTR-1 within the prescribed time as given in the GST Act. Bidder shall note that in case of delay in declaring such invoice in your return and GST credit availed by BHEL is denied or reversed subsequently as per GST Law , GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from the bidder along with interest levied / leviable on BHEL.

11. Way Bill: Successful Bidder to arrange for way bill / e-waybill for any transfer of goods for the execution of the contract.

The Bidder has to make their own arrangement at their cost for completing the formalities, if required, with Issuing Authorities, for bringing materials, plants & machinery at site for execution of the works under this contract, Road Permit/ Way Bill, if required, shall be arranged by the contractor and BHEL will not supply any Road Permit/ Way Bill for this purpose.

12. **New taxes and duties**:-Any New taxes & duties, if imposed subsequent to due date of offer submission as per NIT & TCN, by statutory authority during contract period including extension, if the same is not attributable to you, shall be reimbursed by BHEL on production of relevant supporting document to the satisfaction of BHEL. However, you shall obtain prior approval from BHEL before depositing new taxes and duties.

Benefits and/or abolition of all existing taxes must be passed on to BHEL against new Taxes, if any, proposed to be introduced at a later date.

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 must convey its impact on his price duly substantiated by documentary evidence in support of the same before opening of the price bids. Claim for any such impact after opening the price bid will not be considered by BHEL for reimbursement of tax or reassessment of offer.

13. For transportation work, bidder shall declare in his quotation whether he is registered under GST, if yes, whether he intends to claim GST on forward charge basis. In absence of this declaration, BHEL will proceed further with the assumption that bidder intends not to claim GST on forward charge basis. However, in case of GST registered transporter, the amount to the extent of goods and service tax will be retained till BHEL avails the credit of GST. Further, transporter shall issue tax invoice which inter alia includes gross weight of the consignment, name of the consigner and the consignee, registration number of vehicle in which the goods are transported, details of goods transported, details of place of origin and destination, GSTIN of the person liable for paying tax whether as consigner, consignee or goods transport agency, and also containing other information as mentioned under rule 46.

14. **TDS under Income Tax shall be deducted at prevailing rates on gross invoice value from the running bills unless exemption certificate from the appropriate authority/ authorities is furnished.**

15. **TDS under GST shall be deducted at prevailing rates on applicable value from the running bills.**

16. **TCS under Income Tax 1961 has been implemented with effect from 1st October 2020 for every seller having turnover more than threshold limit during financial year immediately preceding financial year in which the sale of goods is carried out, who receives any amount as consideration for sale of any**

goods of the value or aggregate of such value exceeding threshold limit other than export of goods or who is already covered under other provision of section 206C, collect from the buyer, TCS as per applicable rates of the sale consideration exceeding threshold limit subject to following conditions

i. Buyer shall be as per clause (a) of section 206C- (1H)
ii. Seller shall be as per clause (b) of section 206C- (1H)
iii. No TCS is to be collected, if the seller is liable to collect TCS under other provision of section 206C or the buyer is liable to deduct TDS under any provision of the Act and has deducted such amount.

If Successful Bidder is falling under the purview of TCS then he has to submit a declaration in that respect along with relevant financial statements before the start of work or if bidder is falling under preview of TCS during the work in progress then bidder is compulsorily required to submit relevant financial statement in the beginning of the respective FY.

For TCS claim, vendor has to submit relevant documents required as per Income Tax Act.

17. Refer Annexure – 2 for BOCW Act & Cess Act.

ANNEXURE-1

State wise GSTIN no.s of BHEL

Sl. No	Projects under state	GSTIN
1	Andhra Pradesh	37AAACB4146P7Z8
2	Bihar	10AAACB4146P1ZU
3	Chhattisgarh	22AAACB4146P1ZP
4	Gujarat	24AAACB4146P1ZL
5	Jharkhand	20AAACB4146P5ZP
6	Madhya Pradesh	23AAACB4146P1ZN
7	Maharashtra	27AAACB4146P1ZF
8	Orissa	21AAACB4146P1ZR
9	Telangana	36AAACB4146P1ZG

ANNEXURE-2

BOCW Act & Cess Act

Bidder may please note that the sub-contractor/bidder of BHEL engaging building or construction worker in connection with building or other construction work, are required to follow the procedures enumerated below:

1. It shall be the sole responsibility of the contractor as employer to ensure compliance of all the statutory obligations under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder.

2. It shall be sole responsibility of the contractor engaging Building Workers in connection with the building or other construction works in the capacity of employer to apply and obtain registration certificate specifying the scope of work under the relevant provisions of the Building and Other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 from the appropriate Authorities.

3. It shall be responsibility of the contractor to furnish a copy of such Registration Certificate within a period of one month from the date of commencement of Work.

4. It is responsibility of the contractor to register under the Building and other Construction Workers' Welfare Cess Act, 1996 and deposit the required Cess for the purposes of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 at such rate as the Central Government may , by notification in the Official Gazette, from time to time specify. However, before registering and deposit of Cess under the Building and other Construction Workers' Welfare Cess Act, 1996, the contractor will seek written prior approval from the Construction Manager.

5. It shall be sole responsibility of the contractor as employer to get registered every Building Worker, who is between the age of 18 to 60 years of age and who has been engaged in any building or other construction work for not less than ninety days during the preceding twelve months as Beneficiary under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996.

6. It shall be sole responsibility of the contractor as employer to maintain all the registers, records, notices and submit returns under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder.

7. It shall be sole responsibility of the contractor as employer to provide notice of poisoning or occupation notifiable diseases, to report of accident and dangerous occurrences to the concerned authorities under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the rules made thereunder and to make payment of all statutory payments & compensation under the Employees' Compensation Act, 1923.

8. It shall be the responsibility of the sub-contractor as employer to make payment/deposit of applicable cess amount on the extent of work involving building or construction workers engaged by the sub-contractor within a period of one month from the receipt of payment. It shall also be responsibility of the Contractor to furnish BHEL on monthly basis, Receipts/ Challans towards Deposit of the Cess under the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder along with following statistics :

(i)Number of Building Workers employed during preceding one month.

(ii) Number of Building workers registered as Beneficiary during preceding one month.

(iii)Disbursement of Wages made to the Building Workers for preceding wage month.

(iv) Remittance of Contribution of Beneficiaries made during the preceding month

9. BHEL shall reimburse the contractor the Cess amount deposited for the purposes of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 under the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder. However, BHEL shall not reimburse the Fee paid towards the registration of establishment, fees paid towards registration of Beneficiaries and Contribution of Beneficiaries remitted.

10. It shall be responsibility of the Building Worker engaged by the Contractor and registered as a beneficiary under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 to contribute to the Fund at such rate per mensem as may be specified by the State government by notification in the Official Gazette. Where such beneficiary authorizes the contractor being his employer to deduct his contribution from his monthly wages and to remit the same, the contractor shall remit such contribution to the Building and other construction Workers' Welfare Board in such manner as may be directed by the Board , within the fifteen days from such deduction.

11. Bidders may please note that though the quoted price is exclusive of BOCW (which will be reimbursed by BHEL as per sub-clause 9 above) , however, If at any point of time during the contract period, non-compliance of the provisions of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder is observed, BHEL reserves the right to deduct the applicable cess (1%) on the contract value and penalty (if any, imposed by Cess Authorities) from the payables on account of non-compliance.

12. The contractor shall declare to undertake any liability or claim arising out of employment of building workers and shall indemnify BHEL from all consequences / liabilities / penalties in case of non-compliance of the provisions of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder.

9. WELDING, RADIOGRAPHY AND OTHER NON-DESTRUCTIVE TESTING, POST WELD HEAT TREATMENT

9.1WELDING

i. Installation of equipment involves good quality welding, NDEe checks, post weld heat treatment etc. Contractor's personnel engaged should have adequate qualification on the above works.

ii. The method of welding will be indicated in the detailed drawing/documents. BHEL engineer will have the option of changing the method of welding as per site requirement.

iii. Before any welder is engaged on work, he shall be tested and qualified by BHEL/ customer, though they may possess the previous certificate. BHEL reserves the right to reject any welder without assigning any reason. All the expenditure in testing/qualification of the contractor's welder shall be borne by contractor.

iv. Unsatisfactory and continuous poor performance may result in discontinuation of concerned welder.

v. The welded surface shall be cleaned of slag and painted with primer paint to prevent rusting, corrosion. For these consumables like paint /primer etc will be in the contractor's scope.

vi. Welding electrodes have to be stored in enclosures having temperature and humidity control arrangements. This enclosure shall meet BHEL specifications.

vii. Welding electrodes, prior to their use, call for baking for specified period and will have to be held at specified temperature for specified period. Also, during execution, the welding electrodes have to be carried in portable ovens.

viii. Faulty welds caused by the poor workmanship shall be cut and re-welded at the contractor's expense. The Engineer prior to any repair being made shall approve the procedure for the repair of defective welds. After the repair has been carried out, the compliance shall be submitted to the quality engineer.

ix. All expenses for testing of contractor's welders including destructive and Non- destructive tests conducted by BHEL at site or at laboratory shall have to be borne by the contractor only.

x. Only BHEL approved electrodes and filler wire shall be used. All electrodes shall be baked and dried in the electric electrode-drying oven to the required temperature for the period specified by the Engineer before these are used in fabrication work. All welders shall have electrodes drying portable oven at the work spot. The electrodes brought to the site will have valid manufacturing test certificate. The test certificate should have a co-relation with the lot number / batch number given on electrode packets. No electrodes will 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. The contractor shall also arrange periodical calibration for the same. Separate ovens shall be used for baking and holding. All racks and other items used for storage of welding electrodes shall be of steel and not of wood.

xi. All welding consumables shall be issued to the welders only by authorized person who is controlled by contractor‟s welding engineer. The necessary baking requirements are to be ensured by Contractor‟s welding engineer.

xii. All butt / fillet welds shall be subject to Non –Destructive testing as per the Drawing/Procedures/Welding Schedules/Documents at no additional cost.

xiii. The contractor shall maintain a record in the form as prescribed by BHEL of all operations carried out on each weld. He has to maintain a record indicating the number of welds, the names of welders who welded the same, date and time of start and completion, preheat temperature, radiographic results, rejection if any, percentage of rejection etc. and submit copies of the same to the BHEL Engineer as required. Interpretation of the BHEL Engineer regarding acceptability or otherwise of the welds shall be final.

xiv. The contractor shall carry out the edge preparation of weld joints at site in accordance with the details acceptable to BHEL Engineer. Wherever possible machining or automatic flame cutting should be done. Gas cutting will be allowed only wherever edge preparation otherwise is impractical. All slag / burrs shall be removed from the edge and all the hand cuts shall be ground smooth to the satisfaction of engineer. Prepared edges to be preserved / applied with wieldable primer.

b. Non Destructive examination:

i. Contractor shall provide all resources and make all arrangements for the radiographic examination of welds for this work. For reasons of safety, invariably the radiography work will be carried out after the normal working hours and close of other site activities only. In this regard, the contractor has to adhere to the safety rules / regulations laid by BARC authorities from time to time.

ii. Radiography inspection of welds shall be performed in accordance with requirements and recommendation of BHEL Engineer. The minimum quantum of radiographic inspection shall be as per provision of BHEL's documents. They may, however be increased depending upon the performance of the individual welder at the discretion of BHEL Engineer. Bidder shall also arrange the UT equipment with recording facility at his own cost. UT shall be done as per requirement of BHEL / client. Records of UT shall be produced & submitted to as per site requirement.

iii. All X-ray / Gamma ray films of weld joints shall be preserved properly and be handed over to BHEL.

iv. The field welded joints shall be subject to dye-penetrant/MPT/RT/ other non-destructive examination as specified in the respective engineering documents/ as instructed by BHEL.

v. Where required, surface preparation, like smooth grinding of welded area, prior to radiography shall be done. It may also become necessary to adopt inter-layer radiography/MPT/UT depending upon the site/ technical requirement necessitating interruptions in continuity of the work and making necessary arrangements for carrying out the above work. The contractor shall take all this into account in his offer. The required ndt method/procedure will be decided by BHEL Engineer at site.

vi. For carrying out Ultrasonic testing of welding joints of large size, it will be necessary to prepare surface by grinding and buffing a smooth finish and contour as necessary. The contractor's scope of work includes such preparation as incidental to work.

vii. No separate payment for any NDE activities is envisaged. Accordingly, the offered rate shall be inclusive of cost of all NDE.

viii. The contractor shall also be equipped for carrying out other NDT like LPI /MPI / Hardness test etc. as required as per welding schedules / drawings within the finally accepted price / rates. Ultrasonic testing, wherever required, will be arranged by contractor within the quoted rate.

ix. The technical particulars, specification and other general details for radiography work shall be in accordance with ASME, or ISO as specified by BHEL.

x. Contractor at his cost shall arrange necessary safe guards required for radiography. Radiography personnel with sufficient experience and certified by M/s BARC for conducting radiographic tests in accordance with safety rules laid down by Division of Radiological protection only have to be deployed. These personnel should also be registered with DRP / BARC for film badge service.

xi. All radiographs shall be free from mechanical, chemical or process marks, to the extent they should not confuse the radiographic image and defect finding. Penetrameter as per ASME or ISO must be used for each exposure.

xii. Lead numbers and letters are to be used (generally 6mm size) for identification of radiographs. Contract number, joint identification, source used, welder's identification and SFD are to be noted down on paper cover of radiograph. Lead intensifying screens for front and back of the film shall be used as per the ASME specification and as per the instructions of BHEL Engineer.

xiii. All arrangements for carrying out radiography work including dark room, air conditioner and other accessories & facilities shall be provided by contractor within the space allotted for office at his cost. There must be a number of radiographic personnel with sufficient experience and certified by BARC for field radiographic inspection. As an alternative the contractor may deploy an agency having all above facilities and who are duly approved / accredited by BARC and / or other Regulatory authorities. Detailed particulars of such agencies will be submitted and got approved by BHEL Engineer before the actual deployment of agency for radiography work.

xiv. The contractor shall have a dark room fully equipped with radiography equipment, film (un-exposed), chemicals and any other dark room accessories. All radiography films shall be developed in the dark room at site.

xv. All the Radiographs shall be properly preserved in air-conditioned rooms and shall become the property of BHEL. They are to be reconciled with the work done, joints radio graphed and submitted to BHEL / customer.

xvi. Since radioisotopes are being used, all precautions and safety rules as prescribed by BHEL/BARC/ Customer shall be strictly followed. BARC /DRP certificate to be provided before taking up the work.

xvii. Wherever radiographs are not accepted, on account of bad shot, joints shall be re-radiographed and new film re- submitted for evaluation.

xviii. The defects as pointed out by the Engineer shall be rectified immediately to the satisfaction of Engineer and Re-radio graphed. The decision of Engineer regarding acceptance or otherwise of the joint shall be final and binding on the contractor. However, if the defect persists after first repair, further repair work followed with radiography shall be repeated till the joint is made acceptable. In case the joint is not repairable, the same shall be cut, re-welded and re-radio graphed at contractor's cost.

xix. Radiography, heat treatment and other NDE processes may be required to be carried out at any time (day and night) to ensure the continuity of the progress. The contractor shall make all necessary arrangements including labour, operators/ supervisors/ engineer as required for timely and satisfactory execution of radiography work as per directions of BHEL.

xx. The technical particulars, specifications and other general details of work shall be in accordance with BHEL welding, Heat treatment and NDE manuals or equivalent as decided by BHEL Engineer.

xxi. The field joints are to be radiographed and preheating and post weld heat treatment to be done as per BHEL procedure and manuals.

xxii. The contractor shall also be equipped for carrying out other NDT like liquid penetrant inspection, magnetic particle inspection, etc. as and when required in the interest of work within the quoted rates.

xxiii. It may also become necessary to adopt inter layer radiography / MPT / UT depending upon the site/technical requirement necessitating interruptions in continuity of the work and making necessary arrangements for carrying out the above work. The contractor shall take all this into account and quote the price inclusive of all such work and radiography.

xxiv. The welding process, weld joint details, joint configuration and material specification may change to suit the design requirements. The contractors quoted rates shall be inclusive of each contingency.

xxv. Preheating, inter-pass heating, post weld heating and stress relieving after welding are part of fabrication work and shall be performed by the Contractor in accordance with BHEL engineer's instructions. Where the electric resistance heating method is adopted Contractor shall make all arrangement including heating equipment with automatic recording devices, all heating elements, thermocouples and attachment units, graph sheets, thermal chalks, & insulating materials like mineral wool, asbestos cloth/pad, ceramic beads, asbestos ropes etc, required for all heating and stress relieving works.

xxvi. Contractor shall deploy NDE and Heat Treatment agency as per the "Guidelines for selection of NDE and Heat Treatment agencies at Site (to be deployed by BHEL's E&C associates). Refer Chapter-XXIV Guidelines NDE &Heat Treatment agencies.

xxvii. List of Penalties on Violations on Quality Provisions

Sr no	**Violation**	**Penalty in Rs**
1	Mother oven not working	500 per day & ban on its use
2	Slackness in control over baking of welding electrodes(Doc.)	200 per incident
3	Holding oven not working/plugged in	500 per incident/day & ban its use
4	Portable oven not working/Plugged in	100 per incident & welder to be sent home
5	Use of cold electrodes(Except E6013)	100 per incident & welder to be sent home
6	Unauthorized welder on job	500 per incident & welder to be sent home
7	Delay in NDT Agency deployment w.r.t jointly agreed Ere. Prog	500 per incident & welder to be sent home
8	Failure to monitor Welder's Performance (RT, SR, Penalty Joint etc.)	5000 per week
9	Improper acts w.r.t maintain SR Charts	10000 per incident
10	Site Welding/QLY Engineer not deployed w.r.t mutually agreed Ere. Plan	500 per day
11	Delay in (RT, SR, UT) report submission & customer acceptance Log sheets esp. for Billed qty. from dt. of Billing (Vendor)	10,000 per week
12	Lack of safe approach Scaffolds/Platform for inspection & non-availability of calibrated MMDs –	1000 per incident.

c. Heat treatment:

i. Pre-heating, radiography and other NDT tests, post heating and stress relieving after welding, are parts of fabrication work and shall be carried out by the contractor in accordance with the instructions of the Engineer. Contractor at his cost shall arrange all equipment and consumables essential for carrying out the above process.

ii. For the purpose of temperature recording of stress relieving process, thermocouples have to be attached to the weld joint. The number of temperature measuring points and locations shall be as per the standards of BHEL. Thermocouples have to be attached using capacitor discharge type portable thermocouple attachment unit. Contractor shall arrange sufficient number of thermocouple attachment units.

iii. Contractor should provide temperature indicator / temperature recorder for measuring temperature during pre-heating for welding or for controlling temperature of metal for hot correction etc. The temperature recorders should be preferably of solid state type.

iv. Heat Treatment may require to be carried out at any time (day or night) to Ensure the continuity of the process. The contractor shall make all necessary arrangements including labourer required for the same as per directions of BHEL.

v. In certain cases only the pre-heating of weld joints may be called for.

vi. For weld joints of heavy structural sections, if heat treatment is required, the same shall be carried out as part of the work.

vii. Checking effectiveness of stress relieving by hardness tests (by digital hardness tester or other approved test methods as per BHEL engineer's instruction) including necessary testing equipment's is within the scope of the work / specification.

viii. Preheating, inter-pass heating, post weld heating and stress relieving after welding are part of Fabrication work and shall be performed by the contractor in accordance with BHEL engineer's instructions. Where the electric resistance heating method is adopted contractor shall make all arrangement including heating equipment with automatic recording devices, all heating elements, thermocouples and attachment units, graph sheets, thermal chalks, & insulating materials like mineral wool, asbestos cloth, ceramic beads, asbestos ropes etc, required for all heating and stress relieving works.

ix. Results of these processes shall be verified/ validated as per requirements of BHEL / client.

x. Contractor shall arrange all necessary stress relieving equipment with automatic recording devices. The contractor shall arrange for labour, heating elements, thermocouples, thermo-chalks, temperature recorders, thermocouple attachment units, graphs, sheets insulating materials like asbestos cloth, ceramic beads,

asbestos ropes etc. required for heat treatment/ stress-relieving operations. The contractor should take a note of the following,

xi. Temperature shall be measured by thermocouple and recorded on a continuous printing type recorder. All the recorded graphs for heat treatment works shall be the property of BHEL.

xii. All stress relieving equipment will be used after due calibration and submission of test certificate to BHEL. Periodic calibration from Govt. Approved / accredited Test Houses traceable to National / International standards will also be arranged by the contractor for such equipment at his cost.

xiii. The contractor shall obtain the signature of Engineer or his representative on the strip chart of the recorder prior to the starting of SR operations.

d. GUIDELINES FOR WELDING, NDE AND HEAT TREATMENT

- **For NDT & Heat Treatment agencies has to follow the guidelines as per Annexure 8.**

1. RECEIPT INSPECTION OF WELDING ELECTRODES / FILLER WIRES

1. All electrodes / filler wires received at site stores shall be segregated for type and size of electrode.
2. Ensure that electrode packets received are free from physical damage.
3. Where electrodes are damaged, the same shall be removed from use.
4. Only electrodes identified in the “Rationalized List of Electrodes” are to be accepted.
5. Ensure availability of relevant test certificates. Refer tables of chemical compositions and mechanical properties for acceptance.
6. Endorse acceptance / rejection on the test certificate.

ii. STORAGE & IDENTIFICATION OF WELDING ELECTRODES / FILLER WIRES

1. **Scope**

1.1 This procedure is applicable for storage of welding electrodes / filler wires used at sites.

2. **Procedure:**

2.1 Only materials accepted (based on receipt inspection) shall be taken into account for storage.

2.2 Storage Facility:

2.2.1 The storage facility shall be identified.

2.2.2 Access shall be restricted to authorized personnel.

2.2.3 The storage area shall be clean and dry.

2.2.4 Steel racks may be used for storage.

2.2.5 Avoid storing wood inside the storage room.

2.2.6 Maintain the temperature of the storage facility above the ambient temperature.

2.2.7 This can be achieved by the use of appropriate heating arrangement .

2.3 The electrodes / filler wire shall be segregated and identified for

1. Type of electrode e.g. E7018.
2. Size of electrode e.g. Dia 3.15 mm.

iii. BAKING AND HOLDING OF WELDING ELECTRODES

A. Purpose:

This section details activities regarding baking and holding of welding electrodes used at sites.

B. Procedure:

1. While handling, avoid contact of oil, grease with electrodes. Do not use oily or wet gloves.
2. It is recommended that not more than two days requirements are baked.

C. GTAW Filler Wires:

1. These wires do not require any baking.

D. Covered Electrodes:

I. Baking and holding
II. Identify baking oven and holding oven.
III. They shall have a temperature control facility upto 350 °C for baking oven and 200 Deg. C for holding oven.
IV. A calibrated thermometer shall be provided for monitoring temperature.
V. On opening a packet of electrodes, segregate and place them in the baking oven. Avoid mix up.
VI. After loading, raise the baking oven temperature to the desired range as per Table below.
VII. Note the time when the temperature reaches the desired range. Maintain this temperature for the duration required as per Table below.
VIII. On completion of baking, transfer the electrodes to holding oven, maintain a minimum temperature of 100°C till issue.
IX. The electrode shall not be subjected to more than two cycles of baking. Maintain a register containing following details:
   a. Brand name (e.g. Supratherme)
   b. Size (e.g Dia 4.0 mm)
   c. Quantity (e.g. 110 pieces)
   d. Time at required temperature ie. Above 2500C
   e. Time of Transfer to holding oven. Activities a, b, c to be recorded before loading into the oven.

10. Preservation & Protection of Components

At all stages of work, equipments / materials in the custody of contractor will have to be preserved as per the instructions of BHEL. Necessary preservation agents including the primer & paint, for the above work shall be provided by the contractor.

10.1

The contractor shall make suitable security arrangements including employment of security personnel and ensure protection of all materials/ equipment in their custody and installed equipments from theft/fire/pilferage and any other damages and losses.

11.0 Site Visit by the Bidder

11.1 The bidder shall, prior to submitting his tender for the work, visit and examine the site of works and its surroundings at his own expense, and obtain and ascertain for himself on his own responsibility all information that may be necessary for preparing his tender and entering into a contract, and take the same into account in the quoted contract price for the work.

11.1.1 The bidder shall satisfy themselves about the following factors:

i) Site conditions including access to the site, existing and required roads and other means of transport/communication for use by him in connection with the work including diverting and re-routing of services.

ii) Requirement and availability of land and other facilities of his enabling works, establishment of his nursery, office, stores etc.

iii) Ground conditions including those bearing upon transportation, disposal, handling and storage of materials required for the work or obtained there-from.

iv) Source and extent of availability of suitable materials, including water etc., and labour (skilled and unskilled) required for work, and laws and regulations governing their use and employment.

v) Geological, meteorological, topographical and other general features of the site and its surroundings as are pertaining to and needed for the performance of the work.

vi) The limit and extent of surface and subsurface water to be encountered during the performance of the work, and the requirement of drainage and pumping.

vii) The type of equipment and facilities needed, for and in the performance of the work:

viii) The extent of lead and lift required for the work in complete form over the entire duration of the contract, and

ix) All other information pertaining to and needed for the work including information as to the risks, contingencies and other circumstances which may influence or affect the work or the cost thereof under this contract.

11.1.2 The work to be carried out at quoted / accepted rates by the Contractor under the scope of these specifications covers the complete work of handling, loading and transporting of materials from project stores sheds / storage yards to fabrication yard and fabrication of the silos including its supports, walkways, handrails ,platforms etc , including supply and application of final painting of 3x800MW, Project Patratu.

11.1.3 The work covered under this specification is of highly sophisticated nature, requiring the best quality of workmanship for detailed drawings preparations and fabrication . The Bidder should ensure timely completion of work. The Bidder must have adequate quantity of tools, construction aids, equipments etc, in his possession. He must also have on his rolls adequate, trained, qualified and experienced supervisory staff and skilled personnel.

11.1.4 The work shall be executed under the usual conditions affecting major power plant construction and in conjunction with numerous other operations at site. The Bidder and his personnel

shall co-operate with the personnel of other agencies, co-ordinate his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.

11.1.5 All the work shall be carried out as per the instructions of BHEL engineer. BHEL engineer's decision regarding the correctness of the work and method of working shall be final and binding on the Bidder.

11.1.6 The Bidder shall at his cost perform any services, tests etc, although not specified but nevertheless required for the completion of work.

11.1.7 All cranes, transport equipment, handling equipment, tools, tackles, fixtures, equipment, manpower, supervisors/engineers, consumables etc. except otherwise specified as BHEL scope of free issue, required for this scope of work shall be provided by the Contractor. All expenditure including taxes and incidentals in this connection will have to be borne by Contractor unless otherwise specified in the relevant clauses. The Contractor's quoted rates should be inclusive of all such contingencies.

11.1.8 BHEL reserves right to recover from the Contractor any loss which arises out of undue delay / discrepancy / shortage / damage or any other causes due to Contractor's lapse during any stage of work. Any loss to BHEL due to Contractor's lapse shall have to be made good by the Contractor as per GCC.

11.1.9 Contractor shall fabricate the silos & associated structures as per sequence prescribed by BHEL at site. The sequence of fabrication, methodology will be decided by the BHEL engineers depending upon the availability of material, work fronts etc. No claims for extra payment from the Contractor will be entertained on the grounds of deviation from the methods and sequence of fabrication.

11.1.10 All the necessary certificates and licenses required to carryout this work are to be arranged by the Contractor expeditiously at his cost.

11.1.11 The contractor shall make adequate security arrangements including employment of security personnel and ensure protection from theft, fire, pilferage, damage and loss of materials/equipments issued to him for the work.

11.1.12 materials shall be handled very carefully to prevent any damage or loss. No bare wire ropes, slings etc, shall be used for handling of the equipments without the specific permission of the engineer.

11.1.13 Contractor shall ensure proper housekeeping and remove all scrap materials periodically from various work area covered in the scope and deposit the same at the place earmarked for this purpose. In case of contractor's failure to do the same, BHEL reserves the right to remove scrap at contractor's risk and cost.

11.1.14 Access to site for inspection by BHEL and customer engineers shall be made available by the contractor at all times.

11.1.15 Contractor shall mobilize sufficient quantity of sleepers for stacking of materials in his custody.

11.1.16 welding of stainless steel fittings including supply of necessary stainless steel welding electrodes is within the scope of the work/specification.

11.1.17 Submission of Periodical Reports

Contractor shall submit periodical reports in respect of following aspects of operation:

a) Consumption of welding electrodes and gases
b) Consumption of construction power
c) Manpower reports
d) Daily and Monthly Progress reports
e) Field calibration reports
f) Monthly material reconciliation statement

BHEL at site will inform formats for these reports.

11.1.18 It is the responsibility of the contractor to arrange gate pass for all his employees, T&P etc. Necessary coordination with customer officials is the responsibility of the contractor. Contractor to follow all the procedures laid down by the customer for making gate passes. Where permitted, by customer/ BHEL, to work beyond normal working hours, the contractor shall arrange necessary work permit for working beyond normal working hours.

11.1.19 The work shall conform to dimensions and tolerances given in various drawings and quality manuals provided by BHEL. If any portion of work is found to be defective in workmanship not conforming to drawings or other stipulations, the contractor shall dismantle and redo the work duly replacing the defective materials at his cost, failing which the job will be carried out by BHEL by engaging other agencies and recoveries will be effected from contractor's bill towards expenditure incurred including BHEL's overhead charges.

11.1.20 Contractor shall execute the work as per sequence and procedure prescribed by BHEL at site. BHEL engineer, depending upon the availability of materials, fronts etc, will decide the sequence of fabrication and methodology. No claims for extra payment from the contractor will be entertained on the grounds of deviation..

11.1.21 Identification of equipment at storage yard, technical assistance for checking and making the shortage/damage reports, taking delivery at storage yard and pre-assembly of equipment wherever required.

11.1.22 It is not the intent to specify herein all details of material. Any item related this work not covered by this but necessary to complete the system will be deemed to have been included in the scope of the work.

11.1.23 Site testing wherever required shall be carried out for all items / materials fabricated by the contractor to ensure proper fabrication unctioning in accordance with drawings, specifications and manufacturer's recommendations and manufacturing quality plans of BHEL.

11.1.24 The work shall confirm to dimensions and tolerances specified in the various drawings / documents that will be provided during various stages of fabrication. If any portion of work is found to be defective in workmanship, not conforming to drawings or other stipulations due to Contractor's fault, the Contractor shall re-do the work duly replacing the defective materials at his cost, failing which the work will be get done by BHEL and recoveries will be effected from the Contractor's bills towards expenditure incurred including cost of materials and departmental overheads of BHEL as per GCC.

11.1.25 Contractor shall retain all T&P / Testing instrument / Material handling equipments etc at site as per advice of BHEL engineer and same shall be taken out from site only after getting the clearances from engineer in charge.

11.1.26 The contractor at his cost shall arrange necessary security measures for adequate protection of his machinery, equipment, tools, materials etc. BHEL shall not be responsible for any loss or damage to the contractor's construction equipment and materials. The contractor may consult the Engineer-in-Charge on the arrangements made for general site security for protection of his machinery equipment tools etc.

11.1.27 The Contractor may have to execute work in such a place and condition where other agencies also will be under such circumstances. However completion time for fabrication agreed will be subject to the condition that contractor's work is not hampered by the agencies.

11.1.28 If required by BHEL, the contractor shall change the sequence of his operation so that work on priority sectors can be completed within the projects schedule. The contractor shall afford maximum assistance to BHEL in this connection without causing delay to agreed completion date.

11.1.29 The contractor must obtain the signature and permission of the security personnel of the customer for bringing any of their materials inside the site premises. Without the Entry Gate Pass these materials will not be allowed to be taken outside.

11.1.30 The contractor shall ensure that his premises are always kept clean and tidy to the extent possible. Any untidiness noted on the part of the contractor shall be brought to the attention of the contractor's site representative who shall take immediate action to clean the surroundings to the satisfaction of the Engineer-in-Charge.

11.1.31 The contractor is strictly prohibited from using BHEL's regular components like angles, channels, beams, plates, pipe / tubes, and handrails etc. for any temporary supporting or approach platforms or scaffolding works or as bed for pre-assembly works. Contractor shall arrange himself all such materials. The Contractor shall make all fixtures, temporary supports, steel structures required for jigs & fixtures, anchors for load and guide pulleys required for the work. Contractor shall arrange

necessary steel (angles, channels, beams, plates etc) for such usage as normal scope of work without any cost implication on BHEL.

11.1.32 In case of such misuse of BHEL materials, a sum as determined by BHEL engineer will be recovered from the contractor's bill. The decision of BHEL engineer is final and binding on the contractor.

11.1.33 On completion of work, all the temporary buildings, structures, pipe lines, cables etc. shall be dismantled and leveled and debris shall be removed as per instructions of BHEL by the contractor at his cost. In the event of his failure to do so, the expenditure towards clearance of the same will be recovered from the contractor. The decision of BHEL Engineer in this regard is final.

11.1.34 The intent of specification is to provide services according to the most modern and proven techniques and codes. The omission of specific reference to any method, equipment or material necessary for proper and efficient execution of this work shall not relieve the Contractor of the responsibility of providing such facilities to complete the work without any extra compensation.

11.1.35 If the contractor or his workmen or employees break, deface, injure or destroy any part of a building, road, curb, fence, enclosure, water pipes, cables, drains, electric or telephone posts or wires, trees or any other property or to any part of site infrastructure / components etc, the contractor shall make the same good at his own expense or default, BHEL may made good by other workmen or by other means and deduct the expenses (of which BHEL's decision is final) from any money due to the contractor.

11.1.36 The contractor will be responsible for the safe custody and proper accounting of all materials in connection with the work. If the contractor has drawn materials in excess of design requirements, recoveries will be effected for such excess drawls at the rate prescribed by manufacturing units.

11.1.37 For the purpose of planning, contractor shall furnish the estimated requirement of power (month wise) for execution of work in terms of maximum kW demand.

11.1.38 It is the responsibility of the contractor to do the dimension, checking, etc. if necessary, repeatedly to satisfy BHEL Engineer / Customer Engineers with all the necessary tools and tackles, manpower etc. without any extra cost. The inspection will be completed only when jointly certified so, by the BHEL Engineer & Customer.

11.1.39 Wherever necessary suitable temporary fencing and lighting shall have to be provided by the contractor as a safety measure against accident and damage of property of BHEL. Suitable caution notices shall be displayed where access to any part may be deemed to be unsafe and hazardous.

11.1.40 Contractor has to work in close co-ordination with other agency at site. BHEL engineer will co-ordinate area clearance. In a project of such magnitude, it is possible that the area clearance may be less / more at a particular given time. Activities and Construction program have to be planned in such a way that the milestones are achieved as per schedule/ plans. Contractor shall arrange & augment the resources accordingly.

11.1.41 Contractor shall remove all scrap materials periodically generated from his working area and collect the same at one place earmarked for the same. Load of scraps is to be shifted to a place earmarked by BHEL. Failure to collect the scrap is likely to lead to accidents and as such BHEL reserves

the right to collect and remove the scrap at contractor's risk and cost if there is any failure on the part of contractor in this respect.

11.1.42 It is the responsibility of the contractor to do the checking, testing etc. if necessary, repeatedly to satisfy BHEL Engineer with all the necessary tools and tackles, manpower etc. without any extra cost. The testing will be completed only when jointly certified so, by the BHEL Engineer.

11.1.43 Any damage by the landscape contractor's team to such utilities will be penalized and contractor shall be responsible for cost for such damages.

11.2 SITE INSPECTION

11.2.1 The contractor shall make necessary arrangements for such inspection and carry out the rectification pointed out by the owner / BHEL/Customer without any extra cost to the owner / BHEL/Customer. No cost whatsoever such duplication of inspection of work be entertained.

11.2.2 BHEL / Customer will have full power and authority to inspect the works at any time, either on the site or at the contractor's premises. The contractor shall arrange every facility and assistance to carry out such inspection. On no account will the contractor be allowed to proceed with work of any type unless such work has been inspected and entries are made in the site inspection register by customer / BHEL.

11.2.3 BHEL is operating web based computerized E-store system that includes, inter-alia, issue of materials, daily progress reporting, Contractor's running monthly billing and material reconciliation through a computerized data management system. Contractor shall install necessary hardware to hook-up with the BHEL's system and use the same for his scope of work.

11.2.4 In the event the computerized E-store/SOMS is inoperative for any reasons, the Contractor shall take delivery of materials from the storage area/sheds of BHEL/customer after getting the approval of the engineer/customer on standard indent forms to be specified by BHEL/customer. All these records however shall be updated in the E-store/SOMS as and when the E-store/SOMS is reactivated/ normalized.

11.3 Dewatering

Dewatering of Low Lying areas (as per scope applicability) till handing over to customer is in bidders scope for which vendor has to arrange and maintain adequate no. of Diesel & electrical pumps of suitable capacities, operators, necessary manpower with sufficient quantity of suction & discharges hoses, pipes, Clamps, cables, Electrical panels/starters, diesel, consumables without any extra commercial implication on BHEL treating as normal scope of work. Dewatering pumps will be required to run to ensure job progress is not hampered & if required pumps are to be run on round the clock basis on working days & holidays, Sundays.

11.4 Housekeeping/Area Cleaning

The contractor has to do area cleaning on every date on daily basis. Noncompliance of the above cleaning shall call for penal recovery of Rs.2000.00 on each instance and at the same time, cleaning of the area shall be done by BHEL at the risk and cost of the contractor. No excuses on this above account shall be entertained by BHEL on whatsoever account.

Contractor shall engage separate gang exclusively for proper housekeeping of the site. The contractor has to make necessary arrangements for collection and for bringing down the scrap from all locations and taking them away from the fabrication areas to various locations as indicated by BHEL Engineer. The house keeping must be a routine and continuous activity. in the various work fronts.

The scope of the work will comprise of but not limited to the following:
(All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

12.1 Refer forms F-14 to F-18 of volume I D (Forms & Procedure) of volume –IBCD. Plan and review will be done as per the formats.

12.2 Contractor is required to draw mutually agreed monthly Fabrication programs in consultation with BHEL well in advance. Contractor shall ensure achievement of agreed program and shall also timely arrange additional resources considered necessary at no extra cost to BHEL.

12.3 The progress reports shall indicate the progress achieved against plan, indicating reasons for delays, if any. The report shall also give remedial actions which the contractor intends to make good the slippage or lost time so that further works can proceed as per the original plan the slippages do not accumulate and affect the overall programme.

12.4 It is the responsibility of the contractor to provide all relevant information on a regular basis regarding progress of work, labour availability, equipment deployment, testing, etc.

12.5 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. The contractor shall constantly update / revise his work program to meet the overall requirement. All quality problems shall also 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 so as to eliminate the cause of nonconformities.

12.6 Tenderers have to furnish a list of Tools and Plants including cranes, Tractor / Trailers etc., which they propose to deploy for this work.

12.7 The contractor shall submit daily, weekly and monthly progress reports, manpower reports, materials reports, consumables (gases / electrodes) report, cranes availability report and other reports as per Performa considered necessary by the Engineer. The periodicity of the reports will be decided by BHEL Engineer at site.

12.8 The contractor shall submit a report of any damage, shortage, discrepancy etc., every week detailing in this regard.

12.9 The monthly report as a booklet shall be submitted at the end of every month and shall contain the following details :-

a. Colour Progress photographs to accompany the report should be submitted.

b. Fabrication progress in terms of tonnage and welding joints, radiography and stress relieving completed as relevant to the respective work areas against planned.

c. Site Organization chart of engineers & supervisors as on the last day of the month with further mobilization plan

d. Category- wise man hours engaged during the previous month under the categories of fitters, welders, riggers, khalasis, grinder-men, gas-cutters, electricians, crane operators and helpers. Consumables report giving consumption of all types of gases and electrodes during the previous month.

e. Availability report of cranes

f. Safety implementation report in the format

g. Pending material and any other inputs required from BHEL for activities planned during the subsequent month.

12.10 if the progress is found unsatisfactory, or if the target dates fixed from time to time for every milestone are to be advanced, or in the opinion of BHEL, if it is found that the skilled workmen like fitters, operators, technicians employed are not sufficient BHEL will induct required additional workmen to improve the progress and recover all charges incurred on this account including all expenses together with BHEL overheads from contractor's bills.

MATERIAL HANDLING, TRANSPORTATION AND SITE STORE

The scope of the work will comprise of but not limited to the following:

(All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

13.1 Loading at BHEL / Customer stores and storage yard, transport to site, unloading at site / working area of, fabrication yard, pre-assembly bay or at working area are in the scope of work. The scope includes taking materials / Equipments from customer stores / storage yard also. Contractors Quoted / Accepted rate shall be inclusive of the same. Required cranes, tractors, trailer or trucks/ slings/ tools and tackles / labour including operators, fuel, lubricants etc. for loading & unloading of materials will be in the scope of contractor.

13.2 The storage yard is located inside the Main Plant Boundary at a distance of approximately 3-4 KM from the plant.

13.3 Loading at storage yard and transporting to site, unloading at site / pre assembly area or at working area, is in the scope of work. Required cranes for loading & unloading of materials, trailer shall be in the scope of contractor. The contractor shall provide any fixtures, concrete blocks & wooden sleepers, sandbags which are required for temporary supporting/stacking of the components at site in his custody.

13.4 The raw materials from the storage yard shall be moved in sequence to the actual site of location at the appropriate time as per the direction of BHEL Engineer so as to avoid damage / loss of such materials at site.

13.5 Contractor shall plan and transport raw materials from storage yard to fabrication site in such a manner and sequence that material accumulation at fabrication site does not lead to congestion at site of work. However, in specific cases “as a special case to expedite the job” the consignment received at BHEL stores can directly be diverted to the work site, as decided by BHEL, following issuance procedure of BHEL. Such direct issues shall be as per the Challan/dispatch document/LR received with the consignment. In such cases, contractor shall do unloading of materials from trucks/lorry at their own cost.

13.6 Sometimes it may become necessary for the contractor to handle certain unrequited components in order to take out the required materials. The contractor has to take this contingency also into account. No extra payment is payable for such contingencies.

13.7 All materials issued by BHEL shall be stacked neatly, preserved, stored in the contractor’s shed / work area above ground level by use of concrete or wooden sleepers. No materials shall remain on ground at any time. All concrete or wooden sleepers required for stacking the materials shall be arranged by contractor at his own cost within the quoted rates. In case it is necessary to shift and re-stack the materials kept at work area / site to enable other agencies to carry out their work, same shall be done by the contractor at no extra cost.

13.8 The contractor shall take all such measures as may be reasonably necessary to ensure that its arrangements and those of its sub-contractors with respect to the transport of Goods, Materials and Labour to the site do not interfere with local traffic in the vicinity of the site and where such interference is unavoidable shall make such special arrangements as may be reasonably required to minimize the effect of such interference.

13.9 The contractor shall in no case be entitled for any compensation on account of any delay in supply or non-supply thereof for all or any such materials. However in case of non-availability of any specific materials which delays the completion of work, such cases shall be recorded separately in monthly planning format (F 14) and shall be considered for time extension of contract.

13.10 The contractor shall solely be responsible for the safety & security of material after it is handed over and issued to contractor by the BHEL. BHEL reserves the right to recover from the contractor any loss arising out of damage/ theft or any other causes or during verification/stacking or at any time under the custody of the contractor.

13.11 Contractor shall also carryout in complete association with BHEL, the material management functions and execution like day-to-day update of materials, issued to contractor, accounting for surplus/scrap material returned etc. These functions shall also be carried out through computerized system utilizing suitable software. Contractor shall engage experienced software personnel to associate on dedicated basis for efficient discharge of the same in time.

13.12 Open space for storage purposes shall be provided by BHEL on free of cost/as available basis. Temporary barbed wire fencing, as required, of the open storage yard is to be done by the contractor and is included under the scope of his work. Contractor shall also remove grass, bushes, trees etc wherever required off the land provided to him and shall make proper continuous up keeping of the open yard /land by removing grass, bushes trees etc and same is included under the scope of his work & No extra payment shall be made to the contractor in this regard. The bidder shall make complete arrangement of necessary security personnel's to safeguard all such materials in his custody. The contractor shall take care of material issued by BHEL and shall protect the same from theft, damage and weathering. In case, loss of any materials for whatsoever reasons attributable to the contractor, then cost of such materials shall be recovered from the running bill payment with applicable overheads.

13.13 All surplus materials shall be returned to BHEL store. All wastage / scrap (including melting scrap, wastage, and unusable scrap) shall be returned to the stores on weighment basis in consultation with BHEL Engineer and a receipt obtained for material accounting purposes. Scrap materials shall be sorted section-wise and returned separately at a place directed by BHEL Engineer within the project area. Return of such materials will not be entitled for any handling and incidental charges.

13.14 HANDLING OF MATERIALS ISSUED BY BHEL:

a. Materials shall be issued by BHEL based on the **weighment basis/linear measurements & sectional weight**..

b. All materials issued by BHEL shall be stacked, stored above ground level **by use of concrete or wooden sleepers. No materials shall remain on ground at any time**. All concrete or wooden sleepers required for stacking the materials shall be arranged by fabricator (successful bidder of this package) at his own cost within the quoted rates.

c. Materials issued will be used only for construction of permanent works. The fabricator shall take care of material issued by BHEL and shall protect the same from theft, damage and weathering. Excessive rusting of steel in custody of agency/fabricator must be avoided. **In case, due to any cause attributable to the contractor, such rusting of steel occurs rendering the same unusable, then such quantity of steel shall be recovered from the interim payment at the penal rate specified in the tender.**

13.15 ISSUE OF STEEL

The steel shall be issued to the fabricator on the following basis:

Structural Steel: Weighment basis (Unit – MT)

All the steel (structural) issued by BHEL shall be properly accounted. The total quantity of steel required for the work will be calculated from the approved, fabrication drawings, lugs etc. The measurement for payment as well as for accounting shall be based on the sectional weights as indicated in the following IS/BS/EN specifications.

S. No.	Name of Standard	Name of Section
1.	IS: 808-1964	Beams, Channels and Angles
2.	IS: 1730-1961	Plates, Sheets and Strips/Flats
3.	BS4-1: 1993	UB/UC sections
4.	IS: 12778/equivalence with EN-19-57	For NPB sections
5.	IS: 12778/equivalence with EN-53-62	For HE/WPB sections
6.	IS: 1786 or grade -1 of IS432 (Part-I)	Rounds including deformed high yield strength bars

In case any such sectional weights are not available in the above documents, the manufacturer recommendation shall be binding.

a) The steel issued to the fabricator shall be mainly in standard length and sections as received from the supplier. However, the fabricator shall be bound to accept the steel in length as available in the project stores, no claims for extra payment because of issue of non-standard length will be entertained.

b) The fabricator shall satisfy himself of the quality and quantity of the materials at the time of taking delivery from BHEL deployed trucks. No claims whatsoever will be entertained by BHEL because of quality or quantity after the materials are taken by the fabricator from BHEL deployed trucks.

c) The fabricator shall submit to BHEL, a statement indicating estimated quantity of steel required during a quarter. In addition, the fabricators Shall also furnish the estimated requirement of steel during a month by the third week of the previous month indicating his requirement. Fabricator during his indenting should specify the required dimension in order to minimize the scrap generation and utilizing the standard available lengths.

13.16 RETURN OF MATERIALS

Return Structural Steel including Scrap: All surplus steel will be taken back on weighment basis. Surplus, unused and untampered steel shall be sorted section-wise and returned separately which will be transported by Fabricated to Project Premise. As regard to the scrap generated will be the property of fabricator & the amount for same will be recovered from the fabricator at the rate as per BHEL scrap policy mentioned below: -

13.17 SCRAP RECOVERY RATES:

For all the categories of scrap recovery, quarterly floating rate shall be followed based on the latest disposal rate of JPC (joint Plant committee). Wherever the latest scrap rates are not available the existing rates available as on date of recovery shall prevail. Subsequent revision of scrap rates shall be updated every financial quarter. The revised scrap rates will be updated during first week of every financial quarter for previous quarter (i.e.) in the month of Apr, Jul, Oct & Jan.

13.18 Scrap and Serviceable Materials:

All structural steel of length above 2 M except M.S Plate shall be considered as **serviceable materials** provided the materials is in good and acceptable condition. Structural steel in length less than 2 M Shall be treated as scrap.

Plates having both side greater than 1 Meter OR if any side is less than 1 M but greater than 0.5 M and the total area is equal or greater than 2 sq. Meter shall be considered as **serviceable material**.

All pipe measuring 2 M and above in length shall be treated serviceable materials provided they are in good and acceptable condition. Pipe in less than 2 M length shall be treated as Scrap.

13.19 Steel Consumption and wastage:

i. Structural Steel (Rolled Sections and Plates etc.) Consumption

The theoretical consumption of various sections shall be based on approved drawings. Weights shall be calculated considering the sectional weights as per Indian standard. No extra shall payable to the fabricator for any deviation in weights for the two different procedures adopted for issue and calculation of the theoretical consumption including rolling tolerances.

a) Actual consumption = Issue – Surplus.

b) Surplus = un-tampered, unused, uncut quantity of steel **including serviceable material** returned by the fabricator to BHEL.

c) Wastage = Actual consumption – Theoretical consumption.

ii. Structural Steel Wastage for Plates, Rolled section, Tubular etc.

a) **Allowable wastage**: 4% (FOUR percent) of the theoretical consumption shall be considered. Wastage shall be considered as cut pieces and scrap material, measured as per actual weighment basis. Invisible wastage, if any, shall be considered to be included in the specified 4 % allowable wastage.

S. No.	Structural steel including SS plate	Basis of issue & penal recovery
S-1	Theoretical consumption (without considering any wastage, scrap or loss) as per specification & drg.	Free
S-2	Wastage limited to **plus four** percent (+4%) of the aforesaid theoretical consumption (S-1) towards allowable wastage.	Free
S-3	Wastage beyond **four** percent (4%) of the aforesaid theoretical consumption (S-1).	Penal rate

13.20 Reconciliation of Materials:

a) The fabricator shall submit a reconciliation statement of steel issued to the fabricator with each RA Bill

b) At the time of submission of bills, the fabricator shall properly account for the material issued to him as specified herein to the satisfaction of BHEL certifying that the balance material are available in the fabricator custody at site.

c) At the time of submission of bills, if it is noticed by BHEL that the wastage is high and calls recovery at the penal rate, then, BHEL will proceed for recovery for the excess wastage as per penal recovery rates as specified.

d) The reference drawings for actual material consumption to be used for the purpose of reconciliation shall be drawings prepared by the BHEL and drawings approved by BHEL for fabrication works and such other drawings approved by BHEL.

13.21 Recovery of Materials (Penal Rates):

If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly RA Bills as per following penal rates if material Supply is in BHEL SCOPE:

S. No.	Item	Penal rate (Rs)
P-1	Chequered Plates (if supplied by BHEL) and MS plates	120% of Current SAIL Price (At the time of effective recovery)
P-2	MS Flats, beams, channel, angels etc. (Rolled Sections)	120% of Current SAIL Price (At the time of effective recovery)
P-3	SS Plate	120% of Current SAIL Price (At the time of effective recovery)

a) The weights of the P.O. items as per the approved specifications and drawings shall form the basis for accounting of raw materials issued to the agency. Raw materials shall be issued with a process **allowance of 3% for Sheets and 4% for Plates**, which includes an **invisible wastage of 0.5%** for both Sheets and Plates. The said process allowance shall be deemed to include all margins towards wastageand invisible losses. Material reconciliation shall be carried out strictly on the basis of the approved design weight and allowable process allowance only.

b) For rolled section (Beam, Channel, Angle UC, UB, Rods, Pipe etc.) invisible wastage shall be 0%.

c) No additional payment whatsoever shall be payable due to any change in section, rolling tolerance, or variation in actual weight of the sections supplied or erected. The agency shall be paid strictly on the basis of the approved drawing/design weight only. Material reconciliation shall also be carried out exclusively with reference to the design weight, and no claim arising out of excess consumption or weight variation shall be entertained.

d) If section change proposed/approved the BHEL due to non-availability of the required material as per drawings, then BHEL approved/proposed section weight shall be considered in material reconciliation only however agency will not liable to get the any additional payment due to section change weight variation.

e) All balance materials (off cut) /serviceable are to be returned to designated Stores by BHEL, at

Subcontractor's cost.

f)All scraps under BHEL supplied materials including that of Stainless Steel shall not be returned to BHEL. In case, scrap generated beyond permissible limit shall be charged as per penal rate as well as recover scrap value as per recovery rate.

g) Recovery of the cost of the scrap along with GST and other statutory levies, if any, shall be made from the fabricator.

h) Wherever attested materials are issued, the balance materials are to be returned in the attested condition only.

i)The material rejected as PDO (Part Disposition Order) due to faulty workmanship of Fabricator shall entail recovery of the cost of prime material as per relevant penal clause. In addition, conversion and service charges shall also be recovered in case of part-processed item.

j)The material rejected as PDO (Part Disposition Order) due to reasons other than faulty workmanship of Fabricator shall be returned to BHEL Stores, failing which recovery shall be made as per relevant penal clause.

k) The Fabricator should properly utilize materials issued by BHEL/PSWR as per the drawings/QWIs (Quality Work Instructions) in order to meet design and quality requirements of the product.

l)After material issue, the Fabricator should submit cutting plan within 15 days from the date of material issue. Fabricator should submit cutting plan along with layout and joint details (if applicable) before GR (Good Receipt) for all the materials issued.

m) However, in working out such economic cutting plans, it is to be ensured that the details as prescribed in each QWIs are adhered to. After the approval of the cutting plans, any balance material available from the issues made either in original or in supplementary shall be returned to our Stores at Subcontractor's cost. The cutting plans as approved by BHEL shall be kept at Subcontractor's premises for a minimum period of 3 years from date of cutting plan approval. They should be made available whenever required by BHEL officials or representatives of BHEL. It should be ensured that the jobs are fabricated and welds are made as per the layout of approved cutting plans.

n) Whenever fabrication is done without proper cutting plans, the excess issue over and above the net weight shall attract recovery as prime material as per relevant penal clause.

o) In case joint is specified in the cutting plan by BHEL, necessary quality requirements such as WPS should be adhered to by the Subcontractor

p) Failure to return the prime / offcut material shall entail recovery of the value of material as fixed by

BHEL from time to time which is inclusive of departmental/financing charges, etc. In addition, statutory taxes, duties and levies as applicable shall also be recovered.

q) Normally, all the indirect materials falling within the scope of the fabricator for doing the job is to be taken care of by the fabricator themselves.

r) For the purpose of material accountability, Vendor shall submit a provisional material reconciliation statement on Quarterly basis, considering the Scrap percentage as applicable (Including Invisible scrap) and Serviceable offcut material (Certified by engineer).

13.22 Provisional Material Accounting Method:

i) Actual consumption = Issue – Surplus.
Surplus = un-tampered, unused, uncut quantity of steel **including serviceable material** returned by the fabricator to BHEL.
Wastage = Actual consumption – Theoretical consumption.

ii) Agency shall submit with the Provisional monthly reconciliation statement along with applicable MDCC, MRC Detailed BOM for receipt of material at vendor works, detail of finished goods supply and resident engineer certified material under work in progress and serviceable off cut material. In case of deviation from the reconciliation statement, amount Any discrepancy such as weight mismatches etc. shall be settled in before final bill.

iii) Recovery towards unreturned balance material as per FMAS (Final Material Accounting Statement) shall be done as per BHEL norms along with applicable statutory levies from the Subcontractor. Hence, any correction after the generation of the FMAS shall not be entertained. After the issue of FMAS, the purchase order shall be treated as closed in all respects; therefore, requests toward refund of recovery shall not be entertained.

iv) The Fabricator shall be responsible for prompt material accounting. Repeated occurrence of inordinate delay in returning and settling the material accounts shall entitle BHEL the right to terminate the contract forthwith or to impose a temporary suspension on further loading at the discretion of BHEL.

13.23 Custody of materials issued by BHEL to Subcontractor:

a) The raw material issued to the Fabricator in connection with the fabrication contract shall remain the property of BHEL PSWR, Nagpur. The Fabricator shall use the above materials only for the execution of BHEL's WOs for which the materials have been issued, and for no other purpose whatsoever. The Fabricator shall be responsible for the full value thereof to be assessed by BHEL PSWR, Nagpur, whose decision shall be binding on the Subcontractor.

b) The Fabricator shall be liable for the loss or damage to such property from whatever the cause may be while such property is in the possession or under the control of the Subcontractor, their

employees, workmen or agents or any other person connected with the Subcontractor. Such materials should not be shown as the Subcontractor's assets in any of the statements of the Fabricator to any party.

c) The Fabricator shall produce the materials supplied by BHEL, PSWR in the form of raw material, semi-finished structure to BHEL officials visiting the Subcontractor's unit for verification purposes.

d) Inventory statement has to be submitted every month by the Fabricator for the materials issued. If the Fabricator fails to produce or properly account the materials so issued, BHEL, PSWR shall have the right to take further action as deemed fit including recovery of the value of the materials along with the respective administrative charges and statutory levies from the running bills of the Fabricator and/or temporary suspension of load and/or termination of contract and/or de-listing.

e) Any act of Fabricator resulting in dishonest misappropriation or conversion of the materials so issued for his own use shall constitute the offence of Civil / Criminal Breach of Trust under Indian Penal Code and/or such other offences under any other provisions of law and the Contractee (BHEL) shall have every right to proceed against the Fabricator under Civil/Criminal Law in order to ensure proper punishment to such perpetrator(s) for the said offence(s). In such cases, BHEL shall take all necessary steps to recover the material available with those firms.

f) Wherever availability of material becomes critical for certain work orders, BHEL, PSWR shall transfer the balance material available with the Fabricator including the scrap sizes from one Fabricator to the other. For this, necessary credit shall be given during material accounting. The material transfer emanating from BHEL, PSWR is to be honored immediately or otherwise, recovery shall be made at the prime material cost. Any difficulty for affecting such transfer shall be brought to the knowledge of BHEL officials immediately.

13.24 GUARANTEE FOR THE FINISHED GOODS

The Subcontractor shall warrant that the fabrications comply fully with the drawings and other technical conditions specified by BHEL. If the fabrications are found defective owing to faulty workmanship/incomplete work **within a period of eighteen (18) months from the date of dispatch ~~of last consignment~~,** the Subcontractor shall do the necessary repair/rework or replace the defective items free of cost. Alternatively, the rework/replacement charges shall be recovered.

Important Notes:

- The scope of Permanent / Erection bolts, it is not in Vendor scope.
- Supply and fixing of Electro forged gratings is not in bidder scope.
- Painting specifications are covered under Cl No.6.04.03, Sec VI, Part B, Sub section D-01 of technical specification.

- All structural steel works including tubular sections shall be painted as per specification.
- All factory fabricated structures shall have bolted field connections.
- Splice is permitted only for longer length of members and at selected and approved location finalized during detailed engineering.

Weightages / Factors/BOQ

PACKAGE -A: Framework Agreement for detailed drawing preparation, approval from BHEL Engineering, issuance of raw steel from the BHEL storage yard, fabrication of the bolted-type structure as per approved detailed drawings, blasting, painting, and inspection as per the approved MQP, and handover of the structure to BHEL for the 3x800 MW PVUNL Project, Patratu:

SN	Description	Rate schedule identifier	Quantity	UOM	Weightage/ Factor "X" w.r.t Total Price
1	Supply of fabricated structural steel of grade E250/E350 in rolled section / built up section / combination of both conforming to IS:2062 and technical specification, 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, silo supporting structures, 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 blast cleaning, providing and applying primer, providing and applying intermediate & finish coats of paint as per specification , connection design & preparation of fabrication drgs, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment(weight of welds not payable.), including, assembly, edge preparation, preheating, post heating, testing of welders, inspection of welds, visual inspection, non-destructive and special testing, rectification and correction of defective welding works,	AA2301	1500	MT	0.984004864784

	production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, rectification wherever if required (at no extra cost to BHEL), dismantling and removal of all temporary structures (weight of temporary structures not payable) etc. all complete as per technical specification. Including appointment of a separate agency, approved by BHEL, for review and approval of fabrication drawings, in consultation with BHEL. **(Supply/ raw Structural Steel is in BHEL Scope)**				
2	Detail drawing Preparation as per the GA drawings , including the Submission of the BOM ,Bolt schedule, Master drawing list , approval of the detail drawings from BHEL PEM/ISG engineering	AA2302	600	MT	0.015995135216

Weightage Factors for Pkg-B

PACKAGE -B: Framework Agreement for detailed drawing preparation, approval from BHEL Engineering, issuance of raw steel from the BHEL storage yard, fabrication of the bolted-type structure as per approved detailed drawings, blasting, painting, and inspection as per the approved MQP, and handover of the structure to BHEL for the 3x800 MW PVUNL Project, Patratu:

SN	Description	Rate schedule identifier	Quantity	UOM	Weightage/ Factor "X" w.r.t Total Price
1	Supply of fabricated structural steel of grade E250/E350 in rolled section / built up section / combination of both conforming to IS:2062 and technical specification, 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, silo supporting structures, roof	AA2301	1000	MT	0.984004864784

	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 blast cleaning, providing and applying primer, providing and applying intermediate & finish coats of paint as per specification , connection design & preparation of fabrication drgs, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment(weight of welds not payable.), including, assembly, edge preparation, preheating, 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, rectification wherever if required (at no extra cost to BHEL), dismantling and removal of all temporary structures (weight of temporary structures not payable) etc. all complete as per technical specification. Including appointment of a separate agency, approved by BHEL, for review and approval of fabrication drawings, in consultation with BHEL. **(Supply/ raw Structural Steel is in BHEL Scope)**				
2	Detail drawing Preparation as per the GA drawings , including the Submission of the BOM ,Bolt schedule, Master drawing list ,	AA2302	400	MT	0.015995135216

	approval of the detail drawings from BHEL PEM/ISG engineering				

Note: The quantity indicated in the BOQ is approximate only and is liable for variation. Payment will be as per actual quantity executed as certified by BHEL Engineer above Unit rate of individual items of BOQ.

Revised-Instructions to the bidders

1. **Bidders shall quote Total Lump-sum Price for the entire scope of work in Rupees only in VOL II PRICE BID at BHEL E-procurement Portal.** Any other entry elsewhere in the offer of the bidder shall be treated as Null and Void.

2. BHEL has pre-fixed the Weightages / Factor as detailed above in this chapter for deriving the Unit Rates. Considering these BHEL pre-fixed the Weightages / Factor and (w.r.t) the total price quoted by the bidder; unit rate of individual items shall be derived. Unit Rate/Item Rate thus arrived shall be rounded down to two decimal places.

3. Based on the quantities of individual item and the item rates arrived in Sl No 2 above, the total amount for individual items shall be derived. Total amount thus derived shall be rounded off to zero decimal places.

4. **Grand Total amount for the work shall be derived by BHEL by summing up respective total amounts.** ***The Grand total amount thus derived shall be considered for award of the work.***

5. Bidders to note that this is an item rate contract. Payment shall be made for the actual quantities of work executed at the unit rate arrived at as per Sl No.2 above.

6. For the convenience of bidders, BHEL has issued an **Excel Sheet For Calculation Purpose Only** with all the requisite formulae as described above. ***However the referred excel sheet shall not form part of contract document. Further, this sheet should not be uploaded at the e-Portal.***