

# Bharat Heavy Electricals Limited

(A Govt. Of India Undertaking)

Power Sector – Southern Region



## **SPECIAL CONDITIONS OF CONTRACT**

### **DESIGN, MANUFACTURING, SUPPLY, SITE STORAGE, ERECTION & HYDROTESTING OF GRP PIPELINES INSIDE PLANT BOUNDARY ALONG WITH SUPERVISION OF CIVIL WORKS AT 2X660 MW UDANGUDI STPP**

1.0	Project Name	2 x 660 MW Udangudi Super critical Thermal Power Project
2.0	Ultimate Customer	TAMILNADU GENERATION AND DISTRIBUTION CORPORATION LIMITED [TANGEDCO]
3.0	Location of Plant	<b>Location:</b> Kallamoli ,Thiruchedur Taluk, Tuticorin District, Tamil Nadu-628203, India.  <b>Nearest Village:</b> Udangudi <b>Nearest Town &amp; City:</b> Tuticorin (41 km) <b>Nearest Railway Station:</b> Tiruchendur (8 km) <b>Nearest Airport:</b> Tuticorin (41 km) <b>Nearest Seaport:</b> Tuticorin (45 km) <b>Site Elevation:</b> (+) 2.8 m above Mean Sea Level
4.0	Delivery Address(Ship to)	UDANGUDI SUPERCRITICAL TPS 2 x 660 MW, Kallamoli, Thiruchedur Taluk, Tuticorin District, Tamil Nadu-628203, India.
5.0	Consignee Address (Bill To)	UDANGUDI SUPERCRITICAL TPS 2 x 660 MW, Kallamoli, Thiruchedur Taluk, Tuticorin District-628203, Tamil Nadu, India.
	Notes	Consignee address (Bill To) in Invoice & LR should be strictly as per Sl. No. 05. Place of supply along with name of state to be clearly indicated by vendor in invoice.  Delivery address (Ship To) in Invoice and LR should be as per Sl. No. 04.  Invoice should clearly specify “Billing from” and “Shipping from” addresses.  It is Vendor's responsibility to ensure availability of trucks well in advance for dispatch of material to meet contractual delivery requirement.  Delivery Order shall be carried by transporter along with other dispatch documents.
6.0	Buyer and Paying Authority	Buyer and Paying Authority shall be <b><u>BHEL-PSSR/BHEL-Ranipet</u></b> as per the individual PO/WO

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7.0	Mode of Dispatch	By Road/Rail/Sea on Door Delivery and Freight Pre-Paid Basis.
8.0	Road Permit Required	E-way bills / Transit passes / Road Permits, if required for materials / T&P etc., brought into the project site is to be arranged by the Contractor only.
9.0	Transit Insurance	In BHEL Scope Vendor shall inform the following details of dispatches to the Underwriter (refer details below) under intimation to BHEL-PSSRand BHEL Site office: (1) Policy No. (2) Consignee Name. (3) Consignment Details (items with their Qty and value (in INR)). (4) Project Name and P.O. No. (5) LR No. and date, Dispatch origin and destination details, Inv. No.
	Policy No.	1. Marine Policy: 212800/21/2019/24 2. SCE Policy : 212800/44/2019/14
	Name of the Insurance Company	THE ORIENTAL INSURANCE COMPANY LIMITED
10.0	GST No.	33AAACB4146P2ZL
11.0	Customer GST & PAN No	TANGEDCO provisional GST no.- 33AADCT4784E1ZC PAN No. - AADCT4784E
12.0	Unloading at site	By Vendor at their own cost
	Storage at site	By Vendor at their own cost
	Movement of Material within Site	By Vendor at their own cost

#### **1. Name of Job**

Design, Engineering, Manufacturing, Transportation, Site Storage, Erection & Jointing and Hydro-testing of Glass Reinforced Plastic (GRP) piping along with Supervision of civil works for GRP piping, within plant boundary at 2x660 MW Udangudi Supercritical Thermal Power Project Stage-I, Tuticorin District, Tamil Nadu

#### **2. Broad Scope of work**

- 2.1 Detailed Design, Engineering, Manufacturing, Transportation from Manufacturing Area to Site, Site-Storage, Transportation to Erection area from storage yard, Erection and Hydro-testing of Glass Reinforced Plastic (GRP) piping along with Supervision of civil works for GRP piping, within plant boundary at 2x660 MW Udangudi Supercritical Thermal Power Project Stage-I, Tuticorin District, Tamil Nadu
- 2.2 Bidder to refer the technical specifications BHEL/PEM PE-TS-435-100-M042 R03 and BHEL/RANIPET SPEC.NO.ROS: 6283 R02 for BOQ and other technical requirements. Bidder's scope also covers to provide civil design inputs for Thrust Blocks, Concrete Encasement etc. requirement along with required loading details.

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- 2.3 Complete piping system with fittings (Tees, elbows, expander, end caps etc.) along with flanged tapping (for main/branch pipe connections, drains, vents, manholes etc.) shall be in bidder's scope.
- 2.4 Isolation valves drain and vents, measuring instruments shall be supplied by BHEL with flanged ends, as free supply items.
- 2.5 Transient/ Surge analysis of the systems shall be carried out by BHEL. Based on the same, suitable Air Release Valves shall be provided by BHEL as free supply items. Branch connections in the main header piping for ARVs shall be provided by Bidder.
- 2.6 GRP pipelines shall be mainly underground with RCC encasement of 250mm for all sizes. Top of the buried pipe shall be at least 1.5 meters below the ground level (Refer Technical Requirements
- 2.7 Based on bidder's civil design inputs, civil works i.e. excavation, bed preparation, RCC encasement, backfilling, casting of thrust blocks etc. shall be done by BHEL's Civil Agency during project execution.
- 2.8 Supply of GRP Pipes, erection, jointing, hydro-testing (segments as well as full system) of GRP Pipelines shall be done by the bidder.
- 2.9 It shall be the bidder's responsibility to supervise and ensure correct installation of GRP Piping including supervision of all civil works (pipe trenching, PCC, RCC beds, Concrete encasement, thrust blocks casting etc.) by co-ordinating with BHEL's Civil execution agency.
- 2.10 Civil Supervision manpower shall be available on BHEL intimation. Number of supervisors at any point of time shall be decided in consultation with BHEL. Requirement of civil supervision manpower may not be continuous and shall be based on site requirement. However, payment shall be made for actual deployment only. In the event of manpower deployment being for part of a month, payment shall be made proportionately.
- 2.11 Dewatering of the excavated trench during the erection, jointing, hydro-testing works is in the scope of the bidder.
- 2.12 Scope though not specifically mentioned here but needed to make the system complete shall also be the responsibility of the bidder, unless specifically mentioned under exclusions. The scope comprises all necessary investigations, survey, analysis, design, preparation and approval of drawing & documents by BHEL / Consultant / Customer, construction & infrastructure required for the completion GRP pipelines within plant boundary. The scope of work includes all the works in conformity with approved Mechanical layout drawings but not limited to the systems described above.
- 2.13 Terminal Points for GRP Piping is marked in the P&ID Documents attached as a part of Technical Specifications
- 2.14 Scope includes all incidental items not shown or specified but reasonably implied or necessary for the completion of all Mechanical requirement for GRP Pipelines accordance with the specifications for the proposed thermal power plant of 2x660 MW Udangudi supercritical TPP-

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Stage-1.

- 2.15 Design and construction shall conform in every respect to all local and state regulations governing such works and to stipulations of Indian Standards unless stipulated otherwise in detailed specification.
- 2.16 The quantities indicated in the tender specification are approximate and are liable for variation and alteration at the discretion of BHEL. The quoted unit rate shall be applicable for any additional product group also, if included at a later date integral to the main scope of work / package envisaged. The work executed shall be measured and priced as per the unit rate arrived at for each work area as mentioned in the relevant clauses.
- 2.17 During the course of execution of work, certain rework / modification / rectification / repairs / fabrication etc that may be necessary on account of feedback from various relevant source, and also on account of design discrepancies / alterations, manufacturing defects, site operations / maintenance requirements. Contractor shall carry out such rework / modification / rectification / fabrication / repairs etc promptly and expeditiously. Daily log sheets indicating the details of work carried out, man-hours etc shall be maintained by the contractor and got signed by BHEL engineer every day. Claims of contractor, if any, for such works due to change in the BHEL suggested Pipe layout only will be considered. Any such modification/rework due to contractor's design discrepancies/manufacturing defects/erection issues shall be done by the contractor without any additional cost.
- 2.18 Deploying all types of labour including operators as the case may be, Supervisors, Engineers, watch and ward as required, providing consumables as required for completing the works, is included in this scope of work. All the expenditure including taxes and incidentals in this connection will have to be borne by the contractor unless otherwise specified in the relevant clause. The contractors quoted rates should be inclusive of all such contingencies.
- 2.19 It shall be specially noted that the contractor's labour and staff may have to work round the clock to meet the completion schedules / plans, which may involve payment of considerable overtime. The contractors quoted rates should be inclusive of all such contingencies.
- 2.20 Carrying out work as per the specification between equipment constituting terminal points, contractor shall carry out the terminal joints at either end. Also where the piping connection to the terminal points involve flanged joints, matching of flanges, fixing gaskets, bolting and tightening as per drg/BHEL Engineers instructions is in the scope of work. In case piping connected to equipment, matching of flanges for achieving the parallelism and alignment at the equipment end as instructed by BHEL Engineer, with in the quoted rate.
- 2.21 The works to be performed under this contract consist of providing all labour, supervision, material, scaffolding, construction equipment's, tools and plants, temporary works, supplies including POL, transportation and all incidental items not shown or specified but reasonably implied or necessary for the proper completion of work in all respects.
- 2.22 The quoted price shall include all material, equipment, fixtures, labour, construction plant, temporary works and everything whether of permanent or temporary nature necessary for the completion of job in all respects.
- 2.23 All necessary statutory clearances shall be obtained by the contractor prior to execution of work

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under scope of this specification.

- 2.24 The work shall be carried out in line with approved construction drawings, technical specifications, latest IS codes, best engineering practices.
- 2.25 The scope comprises all necessary investigations, survey, analysis, design, preparation and approval of drawing & documents by BHEL / Consultant / Owner. Bidder to refer only the relevant specifications.
- 2.26 All the works areas shall be adequately flood lighted to the satisfaction of the Engineer-in-Charge when the work is in progress during the night shifts.
- 2.27 All construction work shall commence only after the design & Drawings are checked and approved by the Customer / Customer's Consultant.
- 2.28 The bidder should provide relevant GA Drawings, Design Documents, Sub-vendor List, Inspection Categorization Plan (ICP), Manufacturer's Quality Plan (MQP) and other documents through BHEL-PSSR to BHEL-PEM and BHEL-Ranipet for their vetting as per the relevant portions of the technical specifications and further approval of customer. Required method statements for various activities, Field Quality Plan (FQP) along with formats for joint protocols and other documents to be submitted by the bidder for vetting of BHEL-PSSR and further approval of customer.
- 2.29 Bidder should have in-house testing facilities for carrying out tests as per relevant standards & Quality Plan. In case, the in-house testing facilities are not available, then bidder shall furnish undertaking that test(s) will be carried out from Govt. approved lab or test house recognised by reputed customers.
- 2.30 The contact personnel in relation to design shall be
- a. DGM/Civil, Project Engineering Management, Bharat Heavy Electricals Limited, Plot no 25, Sector 16A, Noida- 201301, Uttar Pradesh
- b. DGM/Water Systems, Boiler Auxiliaries Plant, Bharat Heavy Electricals Limited, Ranipet, Tamil Nadu
- 2.31 The contact personnel in relation to site shall be AGM/Civil, 2X660MW Udangudi STPP Stage -I, Kallamoli village, Tiruchendur Taluk, Tuticorin District. Tamilnadu
- 2.32 Plot plan and other drawings enclosed is only tentative & for information purpose and this may get revised during execution.

### **3. SITE VISIT**

- 3.1.** Bidder should visit site and acquire full knowledge & information about prevailing site conditions and in & around plant premises together with all the statutory, obligatory, mandatory requirements of various authorities before submission of the bid.

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#### **4. Facilities & Consumables in the Scope of Contractor / BHEL (Scope Matrix)**

Sl.No	Description	Scope to be taken care by		Remarks
		BHEL	Bidder	
1	<b>PART I</b>			
1.1	<b>ESTABLISHMENT</b>			
1.1.1	<b>FOR CONSTRUCTION PURPOSE:</b>			
1.1.1.1	Open space for office	Yes		Free
1.1.1.2	Open space for storage	Yes		Free
1.1.1.3	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
1.1.1.4	Bidder's all office equipments, office / store / canteen consumables		Yes	
1.1.1.5	Canteen facilities for the bidder's staff, supervisors and engineers etc		Yes	
1.1.1.6	Fire fighting equipments like buckets, extinguishers		Yes	
1.1.1.7	Fencing of storage area, office, canteen etc of the bidder		Yes	
1.1.2	<b>FOR LIVING PURPOSES OF THE BIDDER</b>			
1.1.2.1	Open space		Yes	
1.1.2.2	Living accommodation		Yes	
1.2	<b>ELECTRICITY</b>			
1.2.1	Electricity For construction purposes			<b>Chargeable Basis.</b>
1.2.1.1	Single point source	Yes		As provided by TANGEDCO
1.2.1.2	Further distribution for the work to be done which include supply of materials and execution		Yes	At bidder's own cost
1.2.2	Electricity for the office, stores, canteen etc of the bidder which include:		Yes	
1.2.2.1	Distribution from single point including supply of materials and service		Yes	
1.2.2.2	Supply, installation and connection of material of energy meter including operation and maintenance		Yes	Calibration certificate to be provided
1.2.2.3	Duties and deposits including statutory clearances for the above		Yes	
1.2.2.4	Demobilization of the facilities after completion of works		Yes	
1.2.3	Electricity for living accommodation of the bidder's staff, engineers, supervisors etc on the above lines		Yes	

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1.3	<b>WATER SUPPLY</b>			
1.3.1	For construction purposes:			Chargeable Basis
1.3.1.1	Making the water available at single point	Yes		Refer Note B
1.3.1.2	Further distribution as per the requirement of work including supply of materials and execution		Yes	
1.3.2	<b>Water supply for bidder's office, stores, canteen etc</b>			
1.3.2.1	Making the water available at single point		Yes	
1.3.2.2	Further distribution as per the requirement of work including supply of materials and execution		Yes	
1.4	<b>LIGHTING</b>			
1.4.1	For construction work (supply of all the necessary materials) At office storage area At the preassembly area At the construction site /area		Yes	
1.4.2	For construction work (Execution of the lighting work / arrangements) At office storage area At the preassembly area At the construction site /area		Yes	
1.5	<b>COMMUNICATION FACILITIES for site operations</b>	-		
1.5.1	Telephone, Fax, internet, internet, email etc		Yes	
2	<b>PART II</b>			
2.1	<b>ERECTION FACILITIES</b>			
2.1.0	Engineering works for construction			In consultation with BHEL
2.1.1	Providing the erection drawings for all the equipments covered under this scope		Yes	
2.1.2	Drawings for construction methods		Yes	
2.1.3	As-built drawings – wherever deviations observed and executed and also based on the decisions taken at site		Yes	In consultation with BHEL
2.1.4	Shipping lists etc for reference and planning the activities		Yes	In consultation with BHEL
2.1.5	Preparation of site erection schedules and other input requirements		Yes	In consultation with BHEL
2.1.6	Review of performance and revision of site erection schedules in order to achieve the end dates and other commitments		Yes	In consultation with BHEL
2.1.7	Weekly erection schedules		Yes	In

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				consultation with BHEL
2.1.8	Daily erection / work plan		Yes	
2.1.9	Periodic visit of the senior official of the bidder to site to review the progress so that works are completed as per schedule. It is suggested this review by the senior official of the bidder should be done once in every two months.		Yes	
2.1.10	Preparation of preassembly bay		Yes	

#### A. Construction Power:

- 1 Construction power will be provided to the contractor at one single point within the plant area by BHEL on chargeable basis as per the prevailing rates of TANGEDCO under LT tariff VI at the nearest substation.
- 2 The present LT tariff VI rate of TANGEDCO is
  - Consumption charges at Rs.12.00 per unit
  - Maximum demand (MD) charges as applicable per month
  - Low Power Factor (LPF) charges
  - Electricity Tax on total amount
  - Any other miscellaneous charges charged by M/s TANGEDCO pertaining to construction power supply.
- 3 The TANGEDCO tariff and tax may vary from time to time and the same is applicable for the bidder. The required digital Energy meter (CT Type) for measuring the consumption and MD shall be provided and installed by the contractor. Any dispute regarding consumption, the BHEL engineer's decision is final.  
The contractor shall make his own arrangement for further distribution (as required within plant boundary and outside plant boundary) with necessary isolator / LCB etc.
- 4 Necessary "Capacitor Banks" to improve the Power factor to a minimum of 0.9 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.
- 5 Provision for 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.
- 6 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.



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- 7 Contractor has to make their own arrangements for electricity requirement for labour colony at their cost. Any duty, deposit involved in getting the Electricity for contractors use i.e. Office shed, labour colony etc shall be borne by the bidder.
- 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.

#### **B. Construction Water:**

Water required for construction purposes will be provided at one single point within the plant area on chargeable basis from the nearest storage tank located inside the plant area at the prevailing rates of TANGEDCO / Metro water. 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 storage tank and further distribution will be arranged by the contractor at their cost.

The water charges may vary from time to time as per TANGEDCO / Metro water conditions, however the prevailing water charge is Rs.191.00 per 1000 litres. 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 purpose 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.

#### **C. Open space:**

Availability of land within plant boundary is very limited and the contractor has to plan and use the existing land considering the use of land by other Civil / mechanical/ electrical contractors and the storage of plant machineries and materials. The existing land shall be shared by all erections agencies. Land will be allocated with certain time frame and to the extent available/ considered necessary, and will be reviewed by BHEL depending upon the area availability. Area within plant premises for fabrication, office, storage area etc. for construction purpose shall be provided as per availability free of cost. The contractor will be responsible for handing back all lands, as handed over to him by BHEL.

Contractor has to make his own arrangements for labour colony at his cost. The contractor to construct labour colony as per his requirements after obtaining approval of formalities from statutory body. The contractor shall provide adequate water arrangement for drinking/washing/bathing with required toilets, drainage system, lighting facilities etc. in labour colony. Suitable paved area to be provided in the labour colony. The Contractor shall provide adequate arrangements for electricity requirements for labour colony.

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**D. 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, and contractor's material storage area etc. at his cost.

**E. DEWATERING**

Excavation & Civil works will be done by BHEL Agency. Dewatering of the excavated area during pipe erection, alignment, jointing will be under the scope of the bidder. Sufficient numbers of dewatering pumps to be mobilized for the same. The contractors quoted rates should be inclusive of the same.

**5. TACKLING PANDEMIC**

**5.1.** Special arrangements to be made for tackling pandemic – Contractor shall make arrangements for stay of workers within their premises as far as possible and/ or adjacent building and for implementation of STANDARD OPERATING PROTOCOL (SOP) as per government order. The transportation of workers to work place shall be arranged by the contractor in dedicated transport by ensuring social distance. Any person violating the pandemic measures published vide government order time to time will be liable to be proceeded for legal action as per the government order. Following shall be observed in work place:

- 5.1.1.1. All work places shall have adequate arrangements for temperature screening and provide sanitizers at convenient places.
- 5.1.1.2. Work places shall have a gap of one hour between shifts and will stagger the lunch breaks of staff, to ensure social distancing.
- 5.1.1.3. Use of AROGYA SETU will be encouraged for all employees both private and public.
- 5.1.1.4. Contractor shall sanitize their work place between shifts.
- 5.1.1.5. Large meetings to be prohibited. Spitting shall be strictly prohibited. Wearing of face cover is compulsory.
- 5.1.1.6. Government order (state/ center) being issued time to time for protective measures of pandemic shall be complied with strictly untill government (state/ center) declares end of pandemic.

**5.1.1.7. Standard operating procedure for social distancing for workplace and offices**

The following measures shall be implemented by contractor for their office and workplaces:

- 1. All areas in the work premises including the following shall be disinfected completely using user friendly disinfectant mediums:
  - a. Entrance gate of work place, office, if any
  - b. Cafeteria and canteens, if any
  - c. Meeting room, conference halls/ open area available/ verandah/ entrance gate of site, bunkers, porta cabins, buildings, etc.
  - d. Equipments and lifts
  - e. Washroom, toilet, sink, water points, etc

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f. Wall/ all other surfaces

2. For workers coming from outside, special transportation facility shall be arranged without any dependency on the public transport system. These vehicles should be allowed to work only with 30-40% passenger capacity.
3. All vehicles and machinery entering the premise should be disinfected by spray mandatorily.
4. Mandatory thermal scanning of everyone entering and exiting the work place
5. Medical insurance for the workers to be made mandatory.
6. Provision for hand wash & sanitizer preferably with touch free mechanism shall be made at all entry and exit points and common areas. Sufficient quantities of all the items should be available.
7. Work places shall have a gap of one hour between shifts and will stagger the lunch breaks of staff, to ensure social distancing.
8. Large gatherings or meetings of 10 or more people to discouraged. Seating at least 6 feet away from others on job sites and in gatherings, meetings and training sessions.
9. Not more than 2/4 persons (depending on size) will be allowed to travel in lifts or hoists.
10. Use of staircase for climbing should be encourages.
11. There should be strict ban of gutka, tobacco, etc. and spitting should be strictly prohibited.
12. There should be total ban on non-essential visitors at sites.
13. Hospitals/ clinics in the nearby areas, which are authorized to treat COVID-19 patients, should be identified and list should be available at work place all the times.

#### **6. Inspection Agency (Domestic supplies)**

- 6.1.** Vendor shall give inspection call in line with approved QAP / Customer Hold Points to Regional BHEL-CQS center / Third Party Inspection Agency (TPIA) (as informed by BHEL) on "BHEL CQS Website"; with a copy of inspection call to BHEL-PSSR for arranging Customer/Third Party participation (wherever applicable), with an advance notice of 15 days for participation in inspection/ Joint inspection on the proposed date. The MDCC shall be issued by customer/BHEL based on the BHEL-CQS/TPIA report OR Joint inspection report of BHEL CQS/TPIA & Customer (wherever applicable). Materials shall be dispatched only after receipt of MDCC from BHEL.

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- 7. Inspection Agency (Imported supplies)**
- 7.1.** In case of Imported Supplies advance notice of 30 days for participation in inspection (if applicable, in line with approved QAP / Customer Hold Points) to be given.
- 7.2.** The Test Certificates & Inspection reports duly accepted by the Foreign Vendor Inspection agency in line with approved QAP/Customer Hold Points shall be submitted to BHEL-PSSR, CHENNAI. The above Inspection reports & Test certificates shall be reviewed by BHEL-PSSR in line with the Technical Specifications & Approved Data sheets and then sent to customer for their clearance. The customer dispatch clearance (MDCC) will be given to the Foreign Vendor or their representative in India through BHEL-PSSR after acceptance/clearance of above test certificates by Customer. Materials shall be dispatched only after receipt of MDCC from BHEL.
- 8. Dispatch Documents required**
- 8.1.** Materials shall be dispatched only after receipt of MDCC from BHEL. 85% of the payment (as per clause 23 of SCC) shall be released against receipt of material at site from registered place of dispatch of supplier. This payment shall be released on submission of the following documents:
- 8.1.1. For materials originating from Indian Territory
    - 8.1.1.1. GST complaint Invoice in original & duplicate
    - 8.1.1.2. Test certificate in original
    - 8.1.1.3. Copy of Inspection Report (if applicable)
    - 8.1.1.4. MDCC (Material Dispatch Clearance Certificate)
    - 8.1.1.5. Original copy of Lorry Receipt(LR)/Railway Receipt(RR)
    - 8.1.1.6. Packing List
    - 8.1.1.7. Copy of letter, addressed to insurance company intimating dispatch.
  - 8.1.2. For materials originating from non-Indian Territory
    - 8.1.2.1. Three (3) original and Seven (7) copies of clean bill of landing or One (1) clean original Airway Bill & Four (4) copies, in case of air freight.
    - 8.1.2.2. One (1) original and Six (6) copies of signed Invoices (Paying Authority along with TIN No. should be Mentioned).
    - 8.1.2.3. One (1) original and Seven (7) copies of Packing List (clearly showing number of packages, gross weight and net weight).
    - 8.1.2.4. Six (6) copies of certificate of country of origin.
    - 8.1.2.5. Eight (8) copies of Customer/BHEL MDCC.
    - 8.1.2.6. Six (6) copies of inspection certificate, if any, issued by the customer/his authorized representative.
    - 8.1.2.7. Six (6) copies of certificate from the vendor to the effect that drawings and catalogues for customs clearance purpose have been kept with the packages for shipment.
    - 8.1.2.8. Six (6) copies of certificate from the vendor to the effect that the contents in each case are not less than that entered in the invoices and guaranteed as new and as per the relevant technical specifications.
    - 8.1.2.9. Shipping Specification – One (1) copy.
    - 8.1.2.10. Quality Certificate – One (1) copy.
    - 8.1.2.11. Approved Test Certificates if any. - Six (6) copies.
    - 8.1.2.12. Guarantee Certificate – One (1) Original + One (1) copy.
    - 8.1.2.13. Inspection Reports – One (1) Original + One (1) copy.
    - 8.1.2.14. Copy of letter, addressed to insurance company intimating dispatch

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#### **9. Material Receipt Certificate (MRC)**

- 9.1. The vendor shall obtain Material Receipt Certificate from the project site, duly signed by Customer and BHEL-Site after receipt & physical verification of the material at site.

#### **10. Taxes & Duties (to be updated by FAX)**

- 10.1. All bidders/vendors to note that this project is a Non-Mega power Project. However, Essentiality certificate shall be issued by TANGEDCO (customer) for availing concessional custom duty under Project Import Regulations.

- 10.2. Essentiality certificate shall be issued by TANGEDCO through BHEL for the items to be imported by the vendor for specified items, limited to CIF content mentioned in the offer/order, for availing concessional custom duty.

- 10.3. The bidder has to indicate in their offer, the import contents (if any) i.e. list of items along with qty., currency of import, country of import & CIF value.

- 10.4. Availability of CIF for packages, if any, shall be intimated in NIT.

- 10.5. Bidder has to note that in order to derive the total Landed Cost to BHEL, evaluation shall be done excluding GST quoted by bidders. However, same shall be re-confirmed during techno-commercial evaluation of bids.

#### **11. Packing, Identification & marking**

- 11.1. The supplier shall include and provide for securely protecting and packing the materials so as to avoid loss or damage during handling & transport by air, sea, rail and road.

- 11.2. All packing shall allow for easy removal and checking at site. Special precaution shall be taken to prevent rusting of steel and iron parts during transit by sea. Gas seals or other materials shall be adopted by the Contractor for protection against moisture during transit.

- 11.3. The number of each package in a shipment shall be shown in fraction, numerator showing number of the package and the denominator showing total number of packages in a lot / consignment. The packages number shall be generally prepared in the sequence in which they will be required for erection.

- 11.4. Each package delivered under the Contract shall be marked by and at the expense of the supplier and such marking must be distinct and in English language (all previous irrelevant markings being carefully obliterated). Such marking shall show the description and quantity of contents, the name and address of consignee, the gross weight and net weight of the package, the name of the Contractor with a distinctive number of mark sufficient for purposes of identification. All markings shall be carried out with such materials as to ensure quickness of drying, fastness and indelibility. Each equipment or parts of equipment shall, when shipped or railed or otherwise dispatched be tagged with reference to the assembly drawings and corresponding part numbers. Each bale or package shall contain a packing note quoting specifically the name of the Contractor, the number and date of contract and the name of the office placing the contract, nomenclature of the stores and

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include a schedule of parts for each complete equipment giving the part numbers with reference to the assembly drawing and the quantity of each part, drawings nos. and tag numbers.

- 11.5. Besides wherever necessary, packing shall bear a special marking "TOP", "BOTTOM", "DO NOT TURN OVER", "KEEP DRY", "HANDLE WITH CARE" etc
- 11.6. All packing cases, containers (excluding marine container), packing and other similar materials shall be new.
- 11.7. Notwithstanding anything stated in this clause, the Contractor shall be entirely responsible for loss, damage or depreciation or deterioration to the materials & supplies due to faulty and/or insecure packing.
- 11.8. Two copies of packing list should be kept in case/package No. 1 of each consignment of the goods and four copies in each case (three inside the box and one copy in a special packet at the outer side of the Box).
- Name and address of Consignee:
  - Project reference:
  - Contract No.:
  - Packing No.: (1/10, 2/10, 3/10 .....when there are 10 packages for one consignment)
  - Net Weight/Gross Weight:
  - Port of Loading:
  - Destination Port:
12. **Submission of Final Drawing / Documents along with O&M Manual, Type Test Certificates (if any)**
- 12.1. As per GCC/ Technical specification
13. **Inspection by Customer at works (foreign and India)**
- 13.1. All expenses on this account is to be borne by the Contractor.
14. **Divisible Contract**
- 14.1. Bidder shall note that LOA for supply portion of BOQ as per Technical Specifications - BHEL/RANIPET SPEC.NO.ROS: 6283 R02 (Rate Schedule – Schedule B) will be provided. PO for supply of pipes & fittings will be provided by BHEL/Ranipet. PO will be operated by BHEL/Ranipet.
- 14.2. Bidder shall note that separate orders shall be placed for a) Supply Portion of BOQ as per Technical Specifications BHEL/PEM PE-TS-435-100-M042 R03 (Rate Schedule – Schedule A) (b) Execution Portion (Price Schedule – Schedule C)

Contract Performance Bank Guarantee (CPBG) shall be calculated for respective orders separately and successful bidder shall submit accordingly.

- 14.3. Notwithstanding anything stated elsewhere in the tender, the contract has to be awarded on the basis of supply & service contract (divisible contract) on single

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source responsibility. In the mode of contracting on the basis of supply & service, the supply portion of the contract will correspond to the price of supply part of price schedule, and service portion of contract will correspond to the price of service part of price schedule

**14.4.** But the two contract shall not in any way dilute the responsibility of the successful bidder for the successful completion of job as per tender and both contracts shall contain a cross-fall breach clause, namely that a breach in one contract shall automatically be classified as a breach on other contract which will confer a right on BHEL to terminate the other contract at the risk and cost of the successful bidder along with BHEL overhead.

**14.5.** The title of ownership of goods to be supplied shall pass on to the owner on dispatch ex-works/ FOR destination. However, till the scope is completed in all respect and the plant/ equipment is taken over, the goods shall remain with the custody of the successful bidder.

#### **15. EVALUATION OF BID**

**15.1.** Bidders should quote prices as per format provided in the tender. Bids shall be evaluated based on total price quoted (supply & services)

**15.2.** **Currency of bidding shall be in INR only.**

#### **16. TIME SCHEDULE**

**16.1.** Site front availability will be reckoned as the date when site informs vendor for mobilization of manpower & resources. The date of commencement of erection/services at site shall be mutually agreed between the successful bidder and BHEL Engineer In-Charge.

**16.2.** During the total period of contract, the contractor has to carry out the activities in a phased manner as required by BHEL and as per the program of milestone events.

#### **17. SCHEDULE OF SUPPLY**

**17.1.** The successful bidder shall complete the supply of materials within **6 (Six) months** from the date of placement of PO as per the below mentioned schedule:

S. No.	Activity	Time schedule
1	Completion of Mechanical Design, Submission of design inputs (load details) to BHEL & QAP for GRP Pipes and Fittings	2 Months from the date of issue of PO
2	Completion of supply of GRP Pipes and Fittings	Progressively by 6 Months from the date of issue of PO

#### **18. SCHEDULE OF EXECUTION/SERVICES**

**18.1.** The successful bidder shall complete the erection/services work within **12 (Twelve)**

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months from date of commencement of work at site in line with PO placed for erection/services as per the below mentioned schedule:

S. No.	Activity	Time schedule
1	Completion of Erection	Progressively by 10 Months from the date of commencement of work at site.
2	Completion of Hydro testing of Pipelines	Progressively by 11 Months from the date of commencement of work at site
3	Reconciliation and handing over to BHEL/Customer	12 months from date of commencement of work at site

#### **19. EXTENSION OF TIME FOR COMPLETION**

**19.1.** If the completion of work as detailed in the scope of work gets delayed beyond the contract period, the contractor shall request for an extension of the contract and BHEL at its discretion may extend the Contract.

**19.2.** Based on the monthly reviews jointly signed, the works balance at the end of original contract period less the backlog attributable to the contractor shall be quantified, and the number of months of 'Time extension' required for completion of the same shall be jointly worked out. Within this period of 'Time extension', the contractor is bound to complete the portion of backlog attributable to the contractor. Any further 'Time extension' or 'Time extensions' at the end of the previous extension shall be worked out similarly.

**19.3.** However, if any 'Time extension' is granted to the contractor to facilitate continuation of work and completion of contract, due to backlog attributable to the contractor alone, then it shall be without prejudice to the rights of BHEL to impose penalty / LD for the delays attributable to the contractor, in addition to any other actions BHEL may wish to take at the risk and cost of contractor.

**19.4.** A joint programme shall be drawn for the balance amount of work to be completed during the period of 'Time Extension', along with matching resources (with weightages) to be deployed by the contractor as per specified format. Review of the programme and record of shortfall shall be done every month of the 'Time extension' period in the same manner as is done for the regular contract period.

**19.5.** During the period of 'Time extension', contractor shall maintain their resources as per mutually agreed program.

**19.6.** At the end of total work completion as certified by BHEL Engineer, and upon analysis of the total delay, the portion of delay attributable to (i) Contractor, (ii) Force majeure conditions, and (iii) BHEL, shall be worked out. The total period of time extensions shall be the sum of (i), (ii) and (iii) above and shall be equal to period between the scheduled date of completion and the actual date of completion of contract. LD shall be imposed / levied for the portion of delay attributable to contractor and recoverable from the dues payable to the contractor.

#### **20. MOBILISATION**

**20.1.** The Contractor has to subsequently augment his resources in a prudent manner to achieve the COMPLETION SCHEDULES as specified in the contract.



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- 20.2.** The above time allowed for completion of work (as per clause 17 and clause 18) includes Sundays and Holidays. Detailed program to be prepared by the tenderer taking in to consideration of the COMPLETION SCHEDULES /site decision on drawings flow (latest) and submitted for BHEL's approval.
- 20.3.** 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.
- 20.4.** In case the project is to be advanced, work in the scope of the contractor is to be advanced to meet the project requirement. No extra payment whatsoever shall be paid on this account.
- 21. SUBMISSION OF L3 SCHEDULE**
- 21.1.** The Successful bidder shall prepare L1 schedule/ network of engineering, manufacturing, testing, and procurement of sub-vendor items, as per completion schedule given in this document. This network must conform to the overall project schedule.
- 21.2.** Based on L1 network the successful bidder will prepare L2 network which will indicate exhaustive list of activities of engineering, procurement of raw materials, manufacturing, testing, procurement of sub-vendor items, and dispatch as per completion schedule given in this document. This network must include all milestone and key activities for each subsystems/ components in the areas of engineering (wherever applicable), procurement, manufacture (wherever applicable), dispatch, erection/ testing.
- 21.3.** Based on L2 network The successful bidder will develop L3 network, which will indicate micro details of each activity of L2 network and also show customer/ BHEL hold points, responsibility of the customers/ BHEL and Successful bidder.
- 21.4.** The contractor shall submit a detailed L3 schedule within 15 days of placement of LOI 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.
- 21.5.** The schedule shall be acceptable to BHEL for meeting their mile stone targets/schedule.
- 21.6.** The successful bidder shall prepare and submit to BHEL monthly progress report indicating progress on key activities, management summary for critical activities, list of actions requiring attention of BHEL in CD (compatible to BHEL software) and also in requisite number of hard copies. The input & output data for all such schedule shall be furnished to BHEL in a manner compatible with BHEL software available at site. A copy of progress report must be submitted to Construction Manager/ BHEL/ site and Project Manager/ BHEL/ Chennai latest by 7th of every month covering the detailed progress achieved in the previous month.
- 21.7.** The progress report shall indicate the progress achieved against planned with reasons indicating delays, if any, and shall give the remedial actions which The successful bidder intends to take to make good the slippage or lost time, so that

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further works again proceed as per the original program and the slippage's do not accumulate and affect the overall program.

- 21.8.** Weekly progress review meetings will be held at site during which actual progress during the week vis-à-vis scheduled program shall be discussed or actions to be taken for achieving target. The program of subsequent week shall also be presented by Successful bidder for discussions. The Successful bidder shall constantly update/revise his work program to meet the overall requirement.
- 21.9.** Periodic progress reviews on the entire activities of execution in respect of supply and works in scope of Successful bidder will be held once in a month. These meetings will be attended by reasonably higher officials of the Successful bidder and will be used as a forum for discussing all areas where progress needs to be sped up. The Successful bidder shall be further responsible for ensuring that suitable steps are taken to meet various targets decided upon such meetings.
- 21.10.** Successful bidder has to provide electronic/ computerized storing & re-production/ printing/ plotting of various data, log sheets, protocols, measurements etc. These may be stored in virus free CD & handed over to BHEL as per requirement.

## **22. QUALITY ASSURANCE**

- 22.1.** All materials, components and equipment covered under this specification shall be procured, manufactured, and tested at all the stages, as per a comprehensive Quality Assurance Program. An indicative program of inspection/tests to be carried out by the successful bidder for some of the major items is given in the quality assurance program. This is however not intended to form a comprehensive program as it is the responsibility of the successful bidder to draw up and implement such program duly approved by BHEL. The detailed quality plan for manufacturing and Field Quality Plan should be drawn up by the Successful bidder and will be submitted to BHEL for approval.
- 22.2.** Manufacturing Quality Plans and Field Quality Plans will detail out all the equipment & components, various tests/ inspection to be carried out as per requirement of specification & standards mentioned therein and the quality practices & procedures, etc to be followed by The successful bidder 's quality control organization during various stages of materials procurement, manufacturing, assembly, handling, erection and final testing/ performance testing. Field Quality Plans to include the required joint protocol formats to be made during course of erection and commissioning.
- 22.3.** Quality audit/ approval of the results of tests and inspection will not prejudice the right of BHEL to reject equipment not giving the desired performance after erection and shall not in any way limit the liabilities and responsibilities of the successful bidder in earning satisfactory performance of equipment as per specification.
- 22.4.** Repair/ rectification procedures to be adopted to make any job acceptable shall be subjected to the approval of BHEL/ owner.

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- 22.5.** The Successful bidder shall furnish copies of reference documents/ plant standards/ acceptance norms/ tests and inspection procedures etc. as referred in Quality Plans along with Quality Plan. These Quality Plans and reference documents/ standards etc. will be subject to BHEL/ owner's approval without which manufacturing will not proceed. These approved documents will form part of the contract. In these approved Quality Plans, BHEL/ authorized representative shall identify customer hold points, test/ checks which shall be carried out in presence of BHEL/ owner's representative and beyond which work will not proceed without consent of BHEL/ owner. All deviations to the specifications, approved Quality Plan and Applicable standards must be documented and referred to BHEL for approval & disposition.
- 23. Terms of payment for supply portion**
1. Eighty-Five percent (85%) of basic price of materials supplied, as per approved Rate schedule, along with 100% taxes and duties (as applicable), shall be paid against receipt of material at site on pro-rata basis.
  2. Five percent (5%) of basic price of materials supplied along with freight, if applicable, will be released on pro-rata basis after submission of Material Receipt Certificate (MRC) from project site engineer of Owner/ Purchaser
  3. Ten percent (10%) of the total basic price shall be released after
    - i) Submission of all final documents as per Technical Specifications and
    - ii) Successful completion of Hydro-test of the entire system

**Note: In case of consortium, payments shall be made to the Prime bidder only.**

**24. Terms of payment for erection portion**

**A. Pipe Erection & Jointing**

1. Fifty Percent (50%) payment on pro-rata basis for placement of pipes (on running meter basis as per rate schedule – Schedule C) shall be released by site on submission of protocols duly signed by BHEL site / TANGEDCO.
2. Fifteen Percent (15%) payment on pro-rata basis for jointing of pipes and fittings (on running meter basis as per rate schedule- Schedule C) shall be released by site on submission of protocols duly signed by BHEL site / TANGEDCO.
3. Fifteen Percent (15%) payment on pro-rata basis towards hydro testing of pipeline sections (on running meter as per rate schedule – Schedule C) shall be released by site on submission of protocols duly signed by BHEL site / TANGEDCO.  
(If hydro testing of the pipelines is not being done in sections, this item shall be combined with the item – 24.A.5)
4. Ten Percent (10%) payment on pro-rata basis towards providing clearance to Civil Agency for encasing of underground GRP Pipes (on running meter as per rate schedule – Schedule C) shall be released by site on submission of protocols duly signed by BHEL site/TANGEDCO. (If encasing is not applicable for any pipeline, this item shall be combined with the item - 24.A.2)

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5. Ten Percent (10%) payment on successful completion of Hydro-test of the entire system on submission of protocols duly signed by BHEL site / TANGEDCO.

#### **B. Supervision of Civil Works**

1. Hundred Percent (100%) payment on pro-rata basis towards the no. of the man months deployed (on man months' basis as per rate schedule – Schedule C) shall be released on successful completion of the activity and site certification.

**Note: In case of consortium, payments shall be made to the Prime bidder only.**

#### **25. Currency of payment**

- 25.1.** All payment by BHEL for supply and service portion, shall be done in INR only.

#### **26. T&PS TO BE DEPLOYED BY CONTRACTOR**

- 26.1.** Following Major T&Ps to be arranged by contractor within the indicated time

SL.No.	Description	Qty
1	40 MT capacity cranes for pipe laying works	2 Nos. as per work requirement at site.
2	Adequate Chain Pulley Blocks, Jacks, Nylon Slings, Angle Cutting Machine with sufficient cutting & grinding wheels	As per work requirement at site
3	Pick and carry Crane of minimum capacity of 14 MT capacity	2 Nos. as per work requirement at site.
4	Hydraulic testing pumps - ( 0 to 15 kg/cm <sup>2</sup> )	As required
5	Well Point Dewatering Pumps	As per work requirement at site.
6	1 Nos. Trailer 40 Feet for transportation of Materials	As per requirement in site

**Note:**

T&P and the mobilization shown in the above mentioned list is tentative requirement considering parallel working. However, Mobilization schedule and quantity/ numbers of T & Ps, and period of deployment as mutually agreed at site for major 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/ equipment's 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 equipment's. 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&P's during the contract period will be mutually agreed in line with construction requirement.

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- 26.2.** All T&P and all IMTEs, which are required for successful and timely execution of the work covered within the scope of this tender, shall be arranged and provided by the contractor at his own cost in working condition.
- 26.3.** All T&P, lifting tackles and pulling devices to be deployed by the successful bidder must bear valid/ latest test certificates for their suitability, and documents shall be preserved at site.
- 26.4.** In case of expiry of validity of any such test certificate during construction, successful bidder shall arrange for revalidation of the same well in advance, so that the construction activities do not suffer on account of non-availability of such Test certificates.
- 26.5.** In the event of non-mobilization of Tools, Plants, Machinery, Equipment, Material or non-availability of the same owing to breakdown and as a result progress of work suffers, BHEL reserves the right to make alternative arrangement (available or higher capacity) and hire charges shall be recovered as per BHEL norms. applicable as under:
- 26.5.1.** Case 1: BHEL provides its own Capital T&P: If BHEL provides owned T&P then BHEL, hire charges (as per BHEL norms) will be recovered from the contractor as per the prevailing BHEL Corporate hire charges applicable (as enclosed in annexure-C1, annexure-C2, annexure-T I, annexure-T II,) as per following cases:
- 26.5.1.1.** In case the T&P is specifically listed in “T&Ps to be deployed by Contractor”, ‘Rates of hire charges applicable to outside agencies other than contractors working for BHEL’ (annexure-C2 and annexure-T II) will apply.
- 26.5.1.2.** In case the T&P is not specifically listed in “T&Ps to be deployed by Contractor”, ‘Rates of hire charges applicable to contractors working for BHEL’ (annexure-C1 and annexure-T I) will apply.
- 26.5.1.3.** The hire charges of Capital Tools & Plants are exclusive of operating expenses e.g., Operator, fuel & Consumables and the same shall be arranged by the contractor at his cost.
- 26.5.2.** Case 2: BHEL provides hired T&P: In all cases other than that specified in SI No. 26.5.1 above, actual expenses incurred by BHEL along with applicable overheads will be back-charged to the contractor.
- 26.6.** In the event of need of change of type of any of major 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 analysing the production capacity and suitability of both the T&Ps.
- 26.7.** In addition to the above, any other tools and plants required for execution of the above work are in contractor’s scope.
- 26.8.** Contractor shall have at all times experienced operators and technicians for routine and breakdown maintenance of the equipment. Any delay in rectification of defects



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will warrant BHEL rectifying the defect and charging the cost to the contractor.

- 26.9.** In construction projects of this magnitude it is possible that all the areas / approaches may not be ready. In such cases consolidation of ground and arrangement of sleeper's / sand bag filling etc for safe operation / movement of equipment including cranes / trailers etc shall be the responsibility of the contractor at his cost. No compensation on this account shall be payable.
- 26.10.** Crane operators deployed by the contractor shall be tested by BHEL before they are allowed to operate the cranes.
- 26.11.** The age of the contractor deployed cranes upto 150 T should be within 15 years as on date of deployment. Contractor has to provide documentary proof for the age of the crane at the time of deployment to the BHEL Engineer.
- 26.12.** CRANE OPERATOR FOR CRANES PROVIDED BY CONTRACTOR
- 26.12.1. Must be capable of independently operating hydraulic/ mechanical crawler/ tyre mounted cranes of respective categories.
- 26.12.2. Must have minimum 2 years' experience in operation of hydraulic/ mechanical crawler/ tyre mounted cranes in respective categories & hold valid HMV/ TRANS license. Should be able to read and interpret the operation and maintenance manual, boom load chart, boom angle and other indicating devices.
- 26.12.3. Operator shall have latest physician's certification for their physical fitness in vision with/ without lenses & adequate hearing with or without hearing aid
- 27.** **MATERIAL HANDLING**
- 27.1.** Open land as available shall be provided by BHEL on free of cost basis as provided by TANGEDCO. Contractor shall maintain one centralized fenced store cum fabrication yard, as applicable in accordance with site condition, at his own cost. Hard surfacing, as applicable in accordance with site condition, of this yard and all round drain shall be carried out by the contractor at his own cost within the quoted rate. The bidder shall make complete arrangement of necessary security personnel, lighting to safeguard all such materials in his custody.
- 27.2.** Periodic audit of system of purchasing, storing and issue, etc. will have to be carried out by the vendors, as applicable. BHEL will also audit the same, as applicable.
- 27.3.** The Contractor must ensure proper preservation of the supplied material till completion of erection and handing over activities.
- 27.4.** All materials shall be stored as per manufacturer's guidelines. Materials shall be stacked neatly, preserved and stored in the contractor's shed / work area in an orderly manner. 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.



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- 27.5.** Materials shall not, under any circumstances, be taken out of the project site unless otherwise permitted by BHEL.
- 27.6.** Unloading/Loading at Bidder stores and storage yard, transport to site, unloading at site / working area of equipment, placement on respective foundation / location, fabrication yard, pre-assembly bay or at working area are in the scope of work. 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.
- 27.7.** The contractor shall provide any fixtures, concrete blocks & wooden sleepers, sandbags which are required for temporary supporting of the components at site.
- 28. PVC and ORC**
- 28.1.** Price Variation Compensation (PVC) is not applicable
- 28.2.** Over Run Compensation (ORC) is not applicable
- 29. Contract Performance Bank Guarantee**
- 29.1.** Standalone bidder/ Prime bidder along with consortium partner(s) have to submit individual Contract Performance Bank Guarantee (as per Annexure-III of of GCC) amounting to 10% of the order/contract value (excluding taxes, duties & freight) for each PO/WO/Contract. In case of consortium, each CPBG as submitted by Prime bidder and consortium partner(s) shall be in the proportion of value of work being executed individually as indicated in their consortium agreement. The prime bidder shall submit CPBG (Contract Performance Bank Guarantee) equivalent to 1% of the total contract value in addition to the individual CPBGs to be submitted by all consortium partners including prime bidder, as dealt above.
- 29.2.** All remaining terms & conditions shall be as per clause 11.0 “**Contract Performance Bank Guarantee**” of GCC.
- 29.3. BILL OF QUANTITY**
1. The quantity and dimensions of material shown are approximate and are liable to vary. No increase in quoted / accepted unit rates shall be allowed due to change quantity.
  2. The quantity indicated given in the rate Schedule/technical specifications are approximate and these are subject to change as per site conditions. Any increase in the quantity, vendor shall supply/erect materials as per the accepted unit rates for the increased quantity also.
  3. All the required tools and tackles required for jointing pipes/fittings to be supplied within the quoted rate. List of the same to be provided during bid submission. All fasteners & gaskets (suitable for sea water) to be supplied along with flanges within quoted rate.
  4. All the materials required for jointing pipes or fittings (lamination or coupling) to be supplied within the quoted rates.

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5. For Civil supervision, thirty man-days will be treated as one man-month for Payment. Log Book to be maintained and the same to be duly signed by BHEL-Engineer on daily basis.

#### **29.4. FOUNDATIONS, GROUTING AND CIVIL WORKS**

1. All civil works are excluded from the scope of the bidder.
2. The concrete foundation, surfaces shall be properly prepared by chipping, as required to bring the top of such foundation to the required level and to provide the necessary roughness for bondage. To achieve the level for pipe laying, chipping upto 50 mm shall be done by the bidder.
3. Bidder's scope also covers to provide civil design inputs for Thrust Blocks, Concrete Encasement etc. requirement along with loading details.
4. It shall be the bidder's responsibility to supervise and ensure correct installation of GRP Piping including supervision of all civil works viz. pipe trenching, PCC, RCC beds, Concrete encasement, thrust blocks casting etc.) by co-ordinating with BHEL's Civil execution agency to avoid interface issue between Civil and Mechanical works during site execution.

#### **29.5. ERECTION & JOINTING OF GRP PIPES AND FITTINGS**

1. The work to be carried out at quoted / accepted rates by the contractor under the scope of these specification covers the complete work of materials handling at stores, transporting to site, inspection, preparation of foundation, erection, leveling, centering, alignment, pre-assembly, pipe connections, including supports (if any), dewatering including subsoil water, etc. for GRP piping with associated equipments / systems, Testing & handing over of the system at 2X660MW Udangudi STPP, Tuticorin, Tamilnadu.
2. Brief list of equipment / sub-assemblies to be erected by the contractor are given under the chapter-IX (Bill of quantity) and is meant for giving general idea to the tender only about magnitude of the work involved.
3. Required nos. of couplings and lamination kits for each size are to be supplied within the quoted rate.
4. The terminal points decided by BHEL are final and binding on the contractor for deciding the scope of work and effecting the payment for the work done up to the terminals.
5. The bidder should provide Manufacturer's Quality Plan (MQP), Field Quality Plan (FQP), Inspection Categorisation Plan (ICP) and methodologies for various activities and approval should be obtained from BHEL/Customer.
6. The contractor will have to follow the instructions provided in the technical manuals, drawings, and specifications provided by BHEL, to the contractor



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from time to time. In case of ambiguity or deviation the decision/clarification of BHEL engineer will have to be followed.

7. In case of any class of work for which there is no such specifications as laid down in the contract the work shall be carried out in accordance with instructions and requirements of the BHEL engineer at the quoted rates only.
8. All normal erection and assembly techniques necessary for completion of works under this specification and magnitude have to be carried out. It is not possible to specifically list out all of them. Absence of any specific reference will not absolve the contractor of his responsibility for the particular operation. These would include equipment for checking, cleaning, servicing and site fabrication.
9. Scaffolding and rigging operations
10. Temporary erections for alignment, dismantling of certain equipment for checking, cleaning, servicing and site fabrication
11. The temporary structures/ items welded to permanent members/pipes are to be cut and removed without any damage. Any damage so to permanent members/ pipes to be made good by the contractor at his cost.
12. Contractor shall erect pipe line as per the sequence prescribed by BHEL at site. The sequence of erection and methodology will be provided by the bidder and approved by the BHEL Engineer depending upon the availability of materials, fronts and other inputs etc. No claim for extra payment from contractor will be entertained on the grounds of deviation from the methods of erection adopted in erection of similar piping in other places.
13. Materials shall be stacked neatly, preserved and stored in the contractor's shed/work area in an orderly manner. 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.
14. Contractor has to arrange required fire proof tarpaulins to protect the components / assembled parts drawn from BHEL before and after erection at their cost.
15. Any fixtures, scaffolding materials, approach ladders, concrete block supports, steel structures required for temporary supporting, pre assembly, checking, jointing, lifting & handling during pre-assembly and erection shall be arranged by the contractor at his cost.
16. It shall be the responsibility of the contractor to provide ladders for all pipe trenches for erection purpose.
17. In case of piping connected to equipment/pipelines, matching of flanges for achieving the parallelism and alignment at equipment/pipeline end by suitably within scope of work.

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18. Contractor shall engage separate gangs throughout the contract period, 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 erection areas to various locations as indicated by BHEL Engineer. The house keeping must be a routine and continuous activity
19. The contractor shall take all reasonable care to protect the materials and equipment during erection.
20. Prior to erection of any components inspection to be done for any foreign materials and damages and they are to be removed / attended as per BHEL engineer.
21. Upon completion of daily work, the contractor shall remove from the vicinity of work all scrap packing materials, rubbish, unused and other materials and deposit them in places to be specified by BHEL Engineer.
22. All fittings like elbows, tees, reducers, flanges, inserts etc., shall be matched with pipes for jointing which may require re-edge preparation, grinding etc., No extra cost shall be paid for this.
23. Carrying out erection of piping as per the specification between equipment/pipelines constituting terminal points, whether the terminal equipments fall within the scope of work / specification, contractor shall carry out the terminal joints at either end. Also where the piping connection to the terminal points involve flanged joints, matching of flanges, jointing, fixing gaskets, bolting and tightening as per BHEL Engineers instructions is in the scope of work.
24. Adjustment like removal of ovalities in pipes shall be carried out by the contractor within the quoted rate.
25. All the pipes shall be cleaned and shown to the BHEL Engineer before lifting.
26. The contractor shall provide any fixtures, concrete blocks / wooden sleepers, steel structures etc., which are required for temporary supporting for checking / jointing / lifting / handling / preassembly of the components at site at no extra cost.
27. Before lifting the heavy components, soft materials like gunny bags to be used while lashing the rope to avoid dents, rubbing marks etc.
28. Any other connected material supply which is not covered in BOQ but required to complete the system shall be supplied and erected by the vendor and payment in this case shall be made as per applicable item rate.
29. Contractor to exercise utmost care while doing execution and hydrotesting work for this package so that no damage is caused to the existing plant at site. Any such damage will be back charged to contractor.

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30. Protection of pipeline against floatation during the contract period shall be the responsibility of the contractors.

#### **29.6. HYDROTESTING OF GRP PIPELINES**

1. The contractor shall make all necessary arrangements including making of temporary blanking on piping / equipment for carrying out the hydro-static testing on all piping, equipment covered in the specification at no extra cost.
2. Soundness of the joints shall be tested hydraulically under the supervision of the BHEL Engineer and Customer, to the pressure indicated in the drawing.
3. Hydraulic testing if necessary is to be carried out in segments/sections to provide clearance for other allied works. The same is to be carried out by the contractor within the quoted rate. Any requirement of blind flanges, gaskets, fasteners, spool pieces etc. of the same to be arranged within quoted rate.
4. Hydraulic testing, as required shall be carried out by the contractor. The installation, electrical connection, erection, testing and dismantling of Hydraulic Test pump, temporary pipelines, fittings, etc. shall be carried out by the contractor as part of this work.
5. All the hydraulic tests shall be repeated till all the pipelines to satisfy the requirements / obligation of BHEL and BHEL's customer. As far as the hydraulic pressure test is concerned, the same shall be conducted to the satisfaction of / BHEL / Customer Engineers. Any rectifications required shall have to be done / redone by the contractor at his cost. The contractor shall carry out all the required tests for successful and reliable operation.
6. Test records shall be made for pressure testing of above piping system. These records shall contain the following information:  
  
Date of test  
Identification of piping tested  
Test fluid  
Test pressure  
Approval of the Engineer.  
Pressure Gauge calibration report
7. Contractor has to arrange required pumps with sufficient capacity for filling water in the system for conducting Hydraulic testing of GRP lines. Contractor has to arrange Hydraulic Test pump / Hand Pump, pressure gauges at his cost for Hydraulic testing of all the pipelines under this scope of tender.
8. Contractor shall lay all necessary electric cables and switches etc. required for the hydraulic tests and other tests, flushing etc., and maintain the system till the tests are completed satisfactorily.
9. Contractor at his cost shall lay all necessary temporary piping, install the pumps, blanks, PRV, valves required for the test, pressure gauges etc.



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10. The contractor shall make all necessary arrangements including making of temporary closures / dummy on piping / equipment for carrying out the hydro-static testing on all piping, equipment covered in the specification at no extra cost.
11. In general Hydraulic testing of piping shall be performed after all eventual pipe branches have been completed and valves installed. Should it be required to hasten erection work or to provide clearance to civil works, pressure tests shall be performed by sections. For this scope of work, the erected pipe lines shall be hydraulically tested as per site requirement in segments within the quoted rates.
12. During hydraulic test, the pipes being tested shall be isolated from the equipments to which they are connected.
13. Openings on piping for pressure / temperature impulse connections shall be fully closed during the test to prevent dust or foreign matter entering into the instrument piping inadvertently.
14. The following specifications shall also be completed with during hydrostatic test.
15. Vent nozzles with valves shall be provided at the highest point of the runs, to eliminate air pockets. At the lowest point drain nozzles, with valves shall be provided to drain water from pipes. The nozzles and valves shall be of the same materials as the pipe.
16. Pressure shall be slowly increased (without shocks) to the stipulated value and maintained as long as required to visually check all joints.
17. Following these test, the pipe shall be drained or pumped out to the other section to be hydro test using the drain out pump to be provided by Contractor and wherever necessary shall be flushed with air for all pipes.
18. The pressure test is considered satisfactory if no cracks, unjustified pressure reductions, leakages, seepages etc., appear.
19. Should defects be found, these shall be repaired in the same manner as these during radiographic examination. Hydraulic test shall be repeated after defects have been repaired.
20. All GRP piping systems shall be subjected to Hydraulic test as specified in the drawing or as per instruction of BHEL engineer for various system. The contractor shall supply necessary labour and other services to carry out the required tests as per the instructions and directions of the BHEL Engineers.
21. The pump shall be suitable for pressurization to this test pressure and the volume of water to be used for sectionalized hydro test.

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22. Required water filling pump is to be arranged by the contractor.
23. During the testing period, though BHEL's and Customer's staff will also be associated in the work, the contractor's responsibility will be to make available resources in his scope till such time the commissioned units are handed over by the customer / BHEL.
24. The contractor shall see that the water shall not be allowed to accumulate in open trenches where work is in incomplete stage, precautionary works such as blank flanging the open ends of the pipe line and filling the pipe line with water etc. shall be taken as directed by the engineer. Such works shall be to the contractor's account and no separate payment will be made for the same.
25. All the tests may have to be repeated till all the equipment/pipeline satisfy the requirement / obligation of BHEL at various stages. The contractor shall do all the repairs for the joints arising out of the failure during testing.
26. At the time of each inspection, the contractor shall take note of the decisions/ changes proposed by the Engineer and incorporate the same at no additional cost. Any improvement / repair / rework / rectification / fabrication / modification due to design improvement / requirement is involved, the same shall be carried out by the contractor promptly and expeditiously.
27. It shall be the responsibility of the contractor to provide various categories of workers in sufficient numbers as per the work requirement along with supervisors including necessary consumable tools etc., during this period.