

Expression of Interest

Project Engineering Management Division of Bharat Heavy Electricals Limited (BHEL), located in Noida, India, invites expressions of interest from suppliers of GRP as per details given herein.

BHEL has been contracted by TANGEDCO (Tamil Nadu Generation and Distribution Corporation Limited) to design and engineer, supply, erect and commission their 2x660 MW, coal-based super thermal power plant at Ennore, near Chennai in Tamil Nadu state of India.

As part of this project, BHEL is required to design, supply, install, commission and maintain for 2 years, a GRP piping system for sea water intake system (for plant water requirement) and Cooling Tower (CT) blowdown system. The complete work is to be **executed within 12 months** from date of placement of order.

BRIEF DESCRIPTION OF THE PIPING SYSTEM

Sea water intake system consists of:

- a. 2x1300NB from Existing North Chennai TPS (NCTPS) Stage-II Sea water intake pump discharge header to Ennore 660MW plant boundary approx. 4500 Meter each.
- b. 1x1800NB header near plant boundary to tap-off for CT make up & to Clarifier approx. 45 Meter.
- c. 1x1300NB from Tap-off to CT make up approx. 730 Meter.
- d. 1x800NB from Tap-off to Clarifier approx. 1150 Meter.

Sea water blow down system consists of:

- a. 1x1200NB from CT blow down pump discharge header of Ennore 660MW to tap off for blow down connection from future unit approx. 250 Meter.
- b. 1x1500NB from tap off to Hot water return channel of NCTPS Stage-I approx. 550 Meter inside plant boundary & 4500 Meter outside plant.

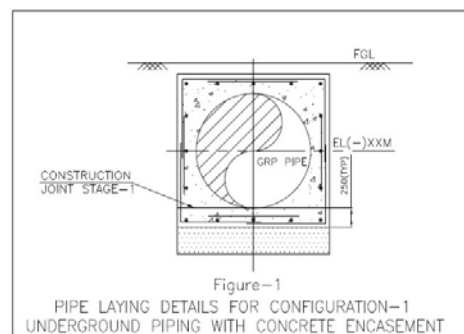
For detailed layout of above piping systems, refer Annexure-1.

The GRP pipes shall be designed as per the applicable codes AWWA-M-45/ ASTM- 3517 / AWWA-C-950 / IS-12709 / IS-14402. The GRP pipes shall be manufactured by either CFW (Continuous Filament Winding process) or HFW (Helical filament winding process).

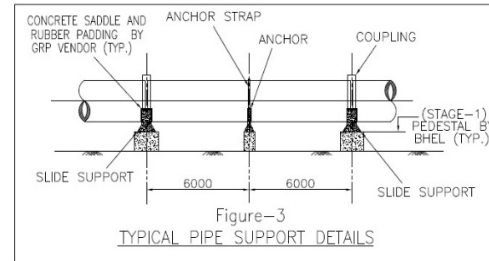
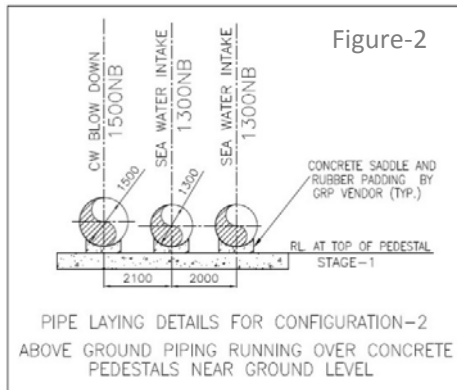
These piping are divided in 3 (three) segments considering pipe laying configuration:

1. Underground piping with concrete encasement:

Piping shall be laid as per details given in Figure-1. Bidder shall be provided with trench for pipe laying with concrete stage-1 casted for pipe jointing/ installation. Pipe transportation from storage yard to site, lowering & jointing and installation of fittings/ manholes are in bidder's scope. Completion of concrete encasement and backfilling shall be done by BHEL.



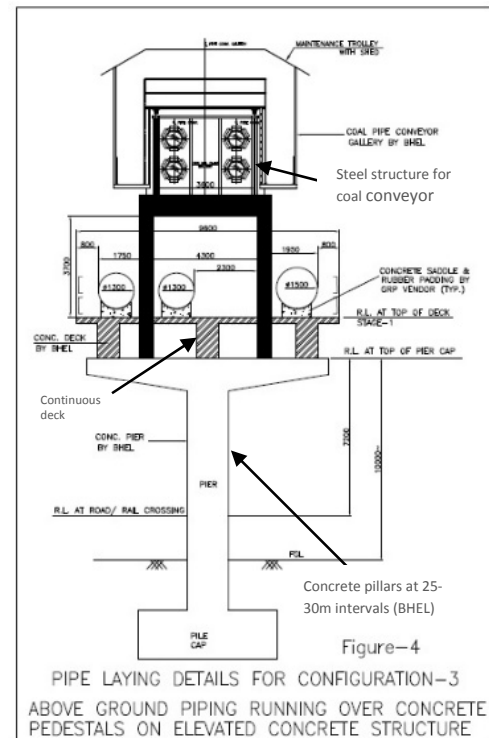
2. Above ground piping running over concrete pedestals near ground level:



Piping shall be laid as per details given in Figure- 2 & 3. Bidder shall be provided with concrete pedestals for pipe laying with concrete stage-1 casted for pipe jointing/installation. Pipe transportation from storage yard to site, placement on pedestals & jointing, installation of fittings/manholes, Rubber sheets & secondary concrete work for supports are in bidder's scope. Thrust blocks at bends/Tees shall be provided by BHEL as per details furnished by bidder.

3. Above ground piping running over concrete pedestals on elevated concrete structure (Elevation varying from 8M to 10M) with coal conveyors running over GRP piping:

Piping shall be laid as per details given in Figure-3 & 4. Bidder shall be provided with concrete pedestals for pipe laying with concrete stage-1 casted for pipe jointing/ installation. Pipe transportation from storage yard to site, raising pipes & fittings to elevated structure, jointing, installation of fittings/ manholes, Rubber sheets & secondary concrete work for supports are in bidder's scope. Thrust blocks at bends/Tees shall be provided by BHEL as per details furnished by bidder. This portion of piping falls in the area where water may be present in some part of the year and there is no permanent approach available to the elevated structure for pipe lifting. Bidder to visit site and take suitable consideration of the same in the bid.



For above ground piping on elevated structure, bidder may also offer bi-axial GRP pipes i.e. pipes with sufficient axial strength which can be installed with complete restrained joints to avoid thrust blocks at bends. Bidder shall require to submit design calculation and documents of reference projects for review by BHEL/ Customer.

SCOPE OF WORK FOR MAIN TENDER

Bidder to note that the complete scope of work, as detailed below, shall be executed by same arrangement of execution as offered to BHEL as part of bidding documents (i.e. single bidder / the JV companies/ Joint Bidders / bidders having collaboration/ licensing agreement/ MOU/ Indian subsidiaries).

The scope of work includes the following:

1. Preparation and submission of Design calculations for pipe, GA drawings of pipe & fittings and QP for approval by BHEL/customer.
2. Preparation of detailed installation plan for complete piping developed based on piping drawing provided by BHEL. The drawing shall be approved by BHEL/Customer.
3. To get Transient (surge) analysis of the piping systems done from reputed institution/consultant like IITs, IISc, etc. Bidder to inform the institute to BHEL before placing order for transient analysis.
4. To provide civil loads for pedestal & thrust blocks design for piping over pedestal at ground level.
5. To provide civil loads & arrangement for pedestal & thrust blocks design for piping over pedestal at elevated structure.
6. Supply of piping & fittings including manhole assemblies, all material required for completion of work including erection & commissioning items, tools & tackles for hydro test & commissioning.
7. Storage of pipe, fittings and other materials supplied by bidder.
8. For storage of GRP piping & fittings, BHEL shall provide approx. 15,000 Sq.M open area inside plant boundary. Bidder to use this area for storage of material related to the complete work. In case, bidder feels requirement of storage outside plant boundary, the same shall be arranged by bidder himself.
9. Preparation of temporary access to pipe laying areas as per actual site condition.
10. Transportation of material for laying.
11. Laying & jointing of pipe & fittings including installation of fittings including manholes, vent/drain valves, stubs (if any).
12. Secondary civil work for pedestals.
13. Commissioning & Hydro testing (at 1.5times design pressure) of complete system.
14. Annual Maintenance Contract (AMC) of the system for 2years after successful commissioning or handing over. In case, due to unforeseen circumstances, if commissioning/handling over is delayed beyond 2 months after acceptance of hydro-testing the both systems by BHEL, AMC shall start after two months from acceptance of hydro-testing of both systems. Bidder shall maintain the GRP system for the period (Max 2 months) between hydro-testing & commissioning/handling over as part of the contract.
15. Obtaining necessary approvals from MOEF, State WRD, PWD & Irrigation departments etc. is in the scope of Bidder.

Detailed Specification for the above work is given in Annexure-2. The Terms of payment are given in Annexure-3.

SCOPE OF EOI

BHEL seeks Expressions of Interest from bidders who, prima facie, qualify for this assignment **against Pre-Qualification Requirements (PQR) as given in Annexure-4.**

The purpose of the EOI is to:

- Arrive at uniform specification parameters meeting technical requirements, including terms of payment, and
- Shortlist interested parties for further processing through open or limited tenders

However, it may be noted that BHEL is under no obligation to go ahead with the proposed assignment and may terminate this exercise at any time, without assigning any reasons. Bidders are also hereby informed that they participate in this EOI at their own risk and cost and no compensation, whatsoever, shall be admissible by BHEL.

As part of their EOI, bidders are required to:

1. Critically examine the technical feasibility of the proposed assignment and comment on the same with detailed reasoning, based on their experience.
2. Provide feedback on the technical specification and other terms and conditions so as to ensure that the best practices of the industry are well incorporated into the same to enable BHEL provide to its customer the best solution.
3. Make an assessment of the risks to a project of this nature, as perceived by them, and advise on strategies for mitigation of the risks.
4. Examine "Terms of Payment" attached in Annexure-3 w.r.t. milestone completion duration & linked percentage payment and provide feedback with reasoning.

and submit their offers along with documents in support of meeting the PQR as per Annexure-4.

BHEL reserves the right to accept or reject (partially or in full) the suggestions given by the bidder, without assigning any reasons. By participating in this EOI, the bidder gives BHEL the right to use the information provided by the bidder to finalize the specification for this package.

Depending on need, post submission of the EOI by the bidder, further engagement with the bidder may include providing clarifications to BHEL by mail or phone, presentations and across the table discussions at BHEL's office in Noida or site, facilitating visits of BHEL personnel to project sites where bidder has commissioned similar projects.