VOLUME – I

Technical Enquiry Specification
for
Equipment Portion of Main Coal Handling Plant (other than interconnection path) Package for
1 X 500 MW Unchahar Thermal Power Project
## CONTENTS

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>PRE-QUALIFICATION CRITERIA FOR THE PACKAGE</td>
<td>4</td>
</tr>
<tr>
<td>2.0</td>
<td>PROJECT INFORMATION</td>
<td>4</td>
</tr>
<tr>
<td>3.0</td>
<td>SCOPE OF ENQUIRY</td>
<td>4</td>
</tr>
<tr>
<td>4.0</td>
<td>GENERAL TECHNICAL INSTRUCTIONS</td>
<td>6</td>
</tr>
<tr>
<td>5.0</td>
<td>BROAD SCOPE OF CHP TURNKEY PACKAGE</td>
<td>7</td>
</tr>
<tr>
<td>6.0</td>
<td>TECHNICAL DOCUMENTS AND DRAWINGS</td>
<td>14</td>
</tr>
<tr>
<td>7.0</td>
<td>INSPECTION AND TESTING</td>
<td>15</td>
</tr>
<tr>
<td>8.0</td>
<td>ERECTION CONDITIONS OF CONTRACT</td>
<td>16</td>
</tr>
<tr>
<td>9.0</td>
<td>SITE ACTIVITIES</td>
<td>16</td>
</tr>
<tr>
<td>10.0</td>
<td>OPERATION AND MAINTENANCE</td>
<td>16</td>
</tr>
<tr>
<td>11.0</td>
<td>TOOLS &amp; TACKLES, COMMISSIONING SPARES</td>
<td>20</td>
</tr>
<tr>
<td>12.0</td>
<td>OPERATION &amp; MAINTENANCE MANUAL</td>
<td>20</td>
</tr>
<tr>
<td>13.0</td>
<td>LIST OF FORMATS / ENCLOSURES</td>
<td>21</td>
</tr>
<tr>
<td>14.0</td>
<td>SCOPE OF ELECTRICS</td>
<td>22</td>
</tr>
<tr>
<td>15.0</td>
<td>SCOPE OF C&amp;I</td>
<td>26</td>
</tr>
<tr>
<td>16.0</td>
<td>LOADING CRITERIA (STRUCTURAL STEEL)</td>
<td>30</td>
</tr>
<tr>
<td>17.0</td>
<td>BID EVALUATION CRITERIA</td>
<td>30</td>
</tr>
<tr>
<td>18.0</td>
<td>CONSTRUCTION FACILITIES</td>
<td>30</td>
</tr>
<tr>
<td>19.0</td>
<td>TERMINAL POINTS</td>
<td>32</td>
</tr>
<tr>
<td>20.0</td>
<td>STEEL CONSUMPTION AND WASTAGE</td>
<td>33</td>
</tr>
<tr>
<td>21.0</td>
<td>RECONCILIATION OF EMPLOYER ISSUED MATERIALS</td>
<td>33</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>22.0</td>
<td>RECOVERY OF MATERIAL</td>
<td>34</td>
</tr>
<tr>
<td>23.0</td>
<td>INSPECTION AND STAGE APPROVAL OF THE WORK</td>
<td>34</td>
</tr>
<tr>
<td>24.0</td>
<td>EXCLUSIONS</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>ANNEXURE-1-Technical PQR (Ref NIT)</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>ANNEXURE-2 – Time Schedule</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>ANNEXURE-3 – Indicative T&amp;P deployment</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>ANNEXURE-4 – Indicative List of Civil Lab Equipment</td>
<td>42</td>
</tr>
</tbody>
</table>
1.0 PRE-QUALIFICATION CRITERIA FOR THIS PACKAGE:

As per Annexure –1, enclosed with NIT

2.0 PROJECT INFORMATION:

Feroze Gandhi Unchahar Thermal Power Station (FGUTPP) Stage-I (2X210MW) was implemented by UPRVN. Further, it was taken over by NTPC Ltd. and thereafter NTPC implemented Stage-II (2X210MW) & Stage-III (1X210MW).

The present expansion proposal is for setting up of a coal based FGUTPP STAGE-IV (1x500 MW) to be owned by NTPC Ltd. The NTPC BHEL Power Project Private Limited (NBPPL) is the prime contractor of this project.

The FGUTPP (1X500MW) is located in Raebareli district of Uttar Pradesh. It is bounded by villages khanpur, Faridpur and khaliqpur khurd. Mustafabad town is located at a distance of about 3 Kms from plant.

Unchahar railway station on Allahabad- Raebareli broad gauge(BG) section of Northern railway (NR) is 2 KMs away. The nearest airport is located at Lucknow at a distance of approximately 110 Km from the project site.

The latitude and longitude of Site are 25°54’ 50” to 81°19’ 50” respectively.

3.0 SCOPE OF ENQUIRY:

This enquiry covers the main equipment portion of Coal handling system (from outlet of railway wagon via wagon tippler area to TP-23, PH-41, Crusher house, TP-24, TP-34, TP-35, Crusher coal stockyard, PH-42, PH 43, TP-25, TP-26, TP-27 upto interconnecting conveyors 33A/B) of 1X500 MW FGUTPP Stage – IV excluding interconnection between Stage – II & Stage – IV (to feed coal from Stage II to IV i.e via the path TP-14, TP-28, TP-29, TP-30, TP-31, TP-32 & TP-33 and up to end of Bunkers on both sides of Unit – VI Boiler) as turnkey including design, Engineering, manufacture, assembly, inspection and testing at manufacturer’s and/or his sub – contractors works, proper packing, delivery at site, transportation, unloading/handling at site, storage at site, erection, site painting, commissioning, testing, all structural works (TPs, Conveyor Galleries and other Technological Structures, etc) associated all electrical works, C&I works including mandatory spares/recommended spares/special tools & tackles for maintenance, start up, pre
commissioning & commissioning spares, first fill & consumables excluding all civil works (except design of all civil works including piling) as necessary for completeness in all respects and for efficient & trouble free operation and handover of this portion of Coal handling system for Feroze Gandhi Unchahar Thermal Power Project Stage IV, (1X500 MW).

Design, Engineering, Supply, E&C of any electrical (except motors for all equipment’s and Chute Gate including erection & commissioning) & C&I as required in interconnection path is also in this bidder scope. Following items required in interconnection works (from Stage II to Stage IV) are also included in this bidder scope:

1. Dust Suppression System, dust extraction, service water, cooling water, drinking water systems, etc.
2. AC and Ventilation System
3. Station lighting, sump pumps etc
4. Coal sampling unit, Belt weigh scale, Metal detector
5. All elevators required in CHP
6. Any Hoists.
7. All safety switch & limit switches
8. Complete electrical power supply system consisting of transformers, switchgears, busdects, cables or any other items required to complete the system.

**However all necessary interconnection and interface for hooking up this main CHP with interconnection path is in the scope of this bidder only. All Engineering coordination between interconnection path and main CHP is also in this bidder scope.**

Bid Drawings exclusively prepared for Interconnection Package are included in this Bid for reference only in Volume IIA.

**- Drg. No. NBPPL/IC/CHP/01: Interconnection Path-Indicative Flow Diagram**
**- Drg. No. NBPPL/IC/CHP/02: Interconnection Path-GA Plan & Blow-Up Details.**
**- Drg. No. NBPPL/IC/CHP/03: Interconnection Path-Elevations (2 Shts.)**

Design of all civil works including pile design in the scope of bidder, however, all Civil construction work including Piling, Pile-cap, RCC Slabs / Floors, Foundations and foundation bolts are in NBPPL’s Scope.

The bidder is to specifically note that the entire basic design, detail design with all associated design calculation including submission of STADB-PRO printouts, Submission of all construction drawings and Data sheets/BOQ etc. of all civil works requirements covered in their Main Package is included the scope of work. Based on the civil construction
drawings and designs, the selected civil contractor will be executing the works which is covered in a separate construction package.

3.1 Structural Steel (Only Plates, Channels, Angles, Chequered Plates, Beams as per NTPC’s technical specification) required for CHP package (excluding steel required for technological structures, grating and handrails) shall be issued by NBPPL free of cost to bidder. However, grouting materials/ any type of cement (including grouting) required shall be in the scope of bidder. Further, the standard available sections of Structural steel shall only be supplied to Bidder free of cost and bidder has to design the structures accordingly.

3.2 Supply of any Materials (other than those mentioned in exclusions) other than those mentioned at Clause 3.1 above required to complete Coal Handling Plant shall be in the scope of bidder at no extra cost to NBPPL.

3.3 Fabrication & Erection of the free issue materials are also in the scope of bidder at no extra cost to NBPPL.

4.0 GENERAL TECHNICAL INSTRUCTIONS.

1. It is not the intent to specify herein all the details of design and manufacture. However the equipment shall confirm in all respect to high standards of design, engineering and workmanship, and shall be capable of performing the required duties in a manner acceptable to Engineer/owner, who will interpret the meaning of drawing and specifications and shall be entitled to reject any component, work or material, which in his opinion is not in conformity with the duty requirements.

2. The omission of specific reference to any component/accessory necessary for the proper performance of the equipments shall not relieve the bidder of the responsibility of providing such facilities to complete the supply/erection/commissioning etc. of entire coal handling plant at quoted prices.

3. NBPPL’s/ owner’s representative shall be given access to the shop in which the equipments are being manufactured or tested and all the test records shall be made available to him.

4. The equipments covered under this specification shall not be dispatched unless the same have been finally inspected, accepted and shipping release issued by NBPPL/NTPC.

5. In case any deviation from this technical enquiry, technical specification, General Technical conditions, the same shall be indicated in the schedule of deviations. In
the absence of duly filled schedules it will be assumed that the bid strictly confirms to the specifications.

6. Un priced copy of the price bid shall be furnished along with the technical bid.

7. With the reference of singrauli specification in contract document, the same shall be read along with the technical amendments which are attached in the specification and same shall be applicable for Unchahar project.

Bidder to refer Volume I for scope of work, terminal points and exclusions. For any other technical details volume II (NTPC Specification) will be applicable, unless otherwise specifically mentioned elsewhere in this document.

Bidder shall include the responsibility of getting drawings approved from Customer & NBPPL. Bidder shall be solely responsible for submission and getting the drawings/Data sheets/QAP/FQAP/Commissioning procedures/O&M manual /PG test procedure/Testing procedures approved from NBPPL/NTPC in time and shall plan the activities.

Bidder shall submit a signed copy of NBPPL’s tender documents (all volumes) as part of technical offer along with the bid without any deviations.

Complete detail engineering, drawings, calculations, selection of components etc. done by the bidder shall be subject to approval by NTPC/NBPPL engineers during detailed engineering.

Successful bidder shall take prior approval from NBPPL/NTPC while placing the orders to any sub- contractor(s). NBPPL/NTPC reserves the right to disapprove/reject any such sub-contractor which NBPPL/NTPC deems not fit for execution of this contract.

Note:
In case of failure of bidder to execute the work as specified elsewhere in this specification as per the completion schedule specified in this tender, NBPPL reserves the right to execute the same at the risk and cost of the bidder by engaging any agencies.

5.0 BROAD SCOPE OF CHP TURNKEY PACKAGE:

Bidder to consider following things in their scope apart from referred bid document and broad scope mentioned above:
1. An independent coal handling plant of capacity 1600 TPH to cater to one unit of 500 MW shall be in the scope of bidder as per the coal flow diagram of NTPC drawing (except coal flow from TP-14 through TP-28, TP-29, TP-30, TP-31, TP-32 & TP-33 up to Bunkers of stage IV) Complete electrical, C&I, structural works including design, supply (Except Free issue materials mentioned at Clause 3.0 above), fabrication and execution of 1600 TPH Stage IV CHP, for all sub structures and super structures for entire CHP shall be in the scope of bidder. Bidder shall submit piling design documents along with bid documents. Any civil work is not included in bidder scope but design of all civil works for this CHP is in bidder scope. The below structures & systems shall be considered in bidder scope for civil design but not limited to following for the completion of entire CHP.
   a) Transfer points (TP’s)
   b) Crusher house
   c) Wagon Tippler area foundations including control rooms
   d) Underground TP and tunnels
   e) Trestles
   f) Galleries
   g) Dust suppression pump houses including tanks/sumps.
   h) Stacker reclaimer foundations
   i) MCC rooms including transformer yards
   j) Control rooms
   k) RIO rooms (if any)
   l) Coal slurry settling pond and pump house.
   m) Drains all along Coal stock pile area.
   n) Machine foundations including VIS.
   o) Pent house
   p) Dismantling and relocation of any existing in CHP area structure.

2. The complete system design, and equipment design, supply, erection, commissioning, testing of below mentioned items but not limited to for the completion of CHP for Stage IV shall be in the scope of bidder.
   a) Wagon Tipplers with side arm charger.
   b) Apron feeders
   c) Vibrating Screen feeders
   d) Coal Crushers (Ring Granulator type)
   e) Rod gates and Rack and Pinion Gates
f) Movable Belt Feeders

g) Reversible Stacker cum Reclaimer along with rails and accessories.

h) In-Line Magnetic Separators (for complete CHP of 1x500 MW unit, stage IV)

i) Flap gates, Prism gates

j) Metal Detectors (for complete CHP of 1x500 MW unit, stage IV)

k) Belt weigh Scale (for complete CHP of 1x500 MW unit, stage IV)

l) Coal Sampling Units (for complete CHP of 1x500 MW unit, stage IV)

m) Suspended Magnets (for complete CHP of 1x500 MW unit, stage IV)

n) Complete conveyor drive system consisting of Motor, Gear box, Fluid coupling, geared coupling etc.

o) Conveyor system including belt, take-ups and accessories.

p) All Technological Structures, chutes, base fames etc.

q) Passenger cum goods elevator (for complete CHP of 1x500 MW unit, stage IV)

r) Complete Dust Suppression System (for complete CHP of 1x500 MW unit, stage IV)

s) Complete Dust Extraction System (for complete CHP of 1x500 MW unit, stage IV)

t) Service water, Potable Water and Cooling water system (for complete CHP of 1x500 MW unit, stage IV)

u) Electrically operated hoists and manual hoists (for complete CHP of 1x500 MW unit, stage IV)

v) Sump Pumps (for complete CHP of 1x500 MW unit, stage IV)

w) Coal Slurry Settling pond decanted pumps and accessories

x) Air Conditioning System for CHP (for complete CHP of 1x500 MW unit, stage IV)

y) Ventilation System for CHP (for complete CHP of 1x500 MW unit, stage IV)

z) Complete electrical system along CHP including design, supply & E& C of interconnection path from TP-14 of Stage II up to Bunker of stage IV (for details refer Electrical section at clause no.14.0) (for complete CHP of 1x500 MW unit, stage IV)

aa) Complete C&I system along CHP including design, supply & E& C of interconnection path from TP-14 of Stage II up to Bunker of stage IV (for
All the equipment design and detailed system design shall be as per NTPC Technical Specifications.

3. The total water requirement for CHP including DUST SUPPRESSION SYSTEM shall be restricted to 150 m³/hr.

4. All modifications work on existing conveyors 5A/B and 18A/B for feeding coal into Stage I and Stage II conveyors from Stage IV conveyor shall be in bidders scope of design, supply, E&C. All modification work required in TP-28 for feeding coal from conveyor no 33A/B to conveyor no 34A/B in the scope of this bidder.

5. **All necessary interconnection and interface for hooking up this main CHP with interconnection path is in the scope of this bidder only. All Engineering coordination between interconnection path and main CHP is also in this bidder scope.**

6. Dismantling and relocation of existing coal slurry settling pond (CSSP) along with decanted water pump house, Central monitoring basin (CMB) along with effluent disposal pumps and CMB building falling under proposed coal stock pile area. The scope shall include mechanical, electrical, C&I, structural work and design of civil works but excluding civil works.

7. Equipments/items shall be replaced with new items/equipments if the same found not fit to be erected/operated again for successful operation after relocation. The proposed relocation detail is provided in Vol IIA.

8. Scope of services shall include but not limited to erection/testing/commissioning/trail run & performance test of this coal handling plant. Transportation of equipments, material to site, local clearance, storage at site etc & supply of all labour including supervision personnel, materials, erection tools & tackles etc. as necessary for expeditious execution of works etc are also included in bidder’s scope. It’s shall be the responsibility of the bidder to arrange all T&P required for the execution of complete job including erection and structural works.

9. Supply of mandatory spares as per the list in the NTPC technical specification (Corresponding to the scope of work for this package) shall be in the scope of bidder.

10. All operation and maintenance platforms for individual equipments, view holes, etc shall be in bidders scope of supply and E&C

11. System integration and PG test of entire CHP, until final handing over and written confirmation from NBPPL/NTPC shall be in bidder’s scope.
12. Bidder’s scope shall also include system integration & control requirements and control philosophy w.r.t. other systems/equipment, auxiliary systems like Dust suppression, service water, cooling water, drinking water systems, ventilation system and overall Coal handling plant.

13. Bidder shall submit the weekly engineering progress reports in NBPPL’s format and depute full project team for attending all project review meetings called by NBPPL and NTPC without fail.

14. Bidder to adhere to the NTPC sub-vendor list. If any additional vendors considered by bidder in their offer, same is subjected to approval from NBPPL & NTPC. If the same is not approved, then the original list shall be followed by bidder without any price implication to NBPPL in such event. If sub-vendor list for any equipments/items are not provided in the technical specification, then the same shall be subject to NTPC/NBPPL approval in the event of order.

15. Consumables like lubricants, oils, grease etc for initial flushing, first fill and initial operation with topping up to handover of entire CHP system to NBPPL/NTPC and Special tools and tackles, as required, commissioning spares, supply & application of rust preventive paints at shop floor and at site after erection as applicable for the equipment / system shall be in the scope of bidder.

16. Bidder to note that time is the essence of this contract, thus they shall submit the drg. Submission schedule for design activity, in no. of days starting from the zero date i.e. LOI date. No delay shall be entertained later on. Bidder shall also submit the manufacturing schedule for his self manufactured items and ordering schedule for all the other BOI. This shall be discussed before LOI is placed on the successful bidder and mutually agreed upon.

17. Engineering drg./doc. must essentially contain the following (individual to system, equipment and items) but not limited to these and any drg./doc. as deemed necessary by NBPPL/NTPC for thorough engineering of the CHP shall be furnished by the vendor during detail engineering:
   a. General arrangements drawings, floor plans of all CHP buildings, JTs, including crusher house, conveyors, etc.
   b. Civil & Steel structural design, construction drawings with all details for entire CHP excluding interconnection package, which is covered in other package.
   c. Various schedules
   d. Design calculations of all equipment’s.
   e. Data sheets
   f. Fabrication drawings of chutes & technological structures.
   g. O&M manuals
h. PG test procedures
i. QAP
j. FQP

In addition to the no. of copies indicated and desired by NTPC, bidder to ensure submission of additional 4 sets of all engineering drg./doc. to NBPPL and for all such subsequent revisions in hard form along with a soft copy sent thru email addressed to Project manager and concerned project team.

18. Bidder shall furnish the L-2 project schedule for complete project inline with NBPPL milestones along with the bid. Successful bidder shall furnish the L-3 project schedule in line with the L-2 schedule after award of the contract.

19. Bidder shall make their own arrangements well in advance for heavy erection equipment like bigger cranes, hydreas, pay loaders, etc. that are required for lifting, shifting & erection of equipment.

20. Bidder shall strictly adhere to and follow the erection & commissioning terms and conditions as mentioned in the enclosed NTPC documents.

21. Bidder shall confirm & strictly adhere to the time schedule which shall be furnished before the LOI to the bidder and discussed during post bid meeting as an ANNEXURE-2 and also bidder to give declaration of T&P deployment as per requirement in ANNEXURE-3.

22. Bidder to note that CHP fronts during erection will be given in a staggered manner. So, Bidder has to consider and envisage mobilization of all resources required, including manpower, in the shortest possible time during E&C at site. For this, the successful bidder has to consider advance resource planning so that E&C by the successful bidder is not delayed.

23. Bidder shall visit the Project Site for this Power Plant to get familiarized with the Coal Handling system and site constraints before submitting the complete offer to NBPPL in all respects. No issues arising out of site condition or layout constraints shall be entertained later on during detail engineering and any modification required due to site conditions.

24. All consumables like lubricants, oil, etc. required for initial operation of the equipment, till final handing over to NTPC, shall be in the scope of bidder. Also supply of commissioning spares shall be in the scope of bidder.

25. Cleaning of any debris produced by the bidder during E&C shall be done immediately at each front by the bidder.

26. Bidder to extend all help and documentary support for compliance and addressing any statutory issues raised at site which pertains to the area / work under bidder’s scope.
27. Supply and fixing of Side Cladding and Grating’s of any type Roof Sheeting required are in the scope of Bidder.

28. Glass pan required in conveyor/coal galleries and TPs and in any other structures required shall be in the bidder’s scope.

29. Bidder to design the civil/Structural/foundation’s etc. considering BOQ floated by M/s NBPPL for execution of civil works to the extent possible. However in case of undesirable circumstance bidder to take prior approval from M/s NBPPL to introduce extra item in the design.

30. Rain water down take pipes required for TP’s are Crusher house shall be supplied and erected by bidder.

31. Setting of Laboratory:
The bidder at his own cost shall set up his own laboratory in the very close vicinity of work site as per the direction of Engineer-In-Charge.
The laboratory shall be equipped with latest testing equipments in sufficient numbers to carry out the entire test required under the contract. The contractor shall ensure that the equipment is available well in advance of starting of the work to avoid stoppage of work on this account. (Tentative list of civil laboratory equipment’s enclosed as per ANNEXURE-4)

All the tests shall be carried out by the bidder in presence of Engineer’s representative and a joint record of all observations and result thereof shall be maintained, available with the engineer.

No separate payment for the operations/tests and for setting of laboratory shall be made. The cost of these operations shall be deemed to have been included in the tendered price.

**General Notes:**

1. Bidder to note that the above list is not exhaustive and any work required for completing the system and ensuring its satisfactory running shall be in the scope of work and supply for this package bidder.

2. In case of any ambiguity, conflict in the standard & /or interpretation of clauses in this enquiry spec. and its enclosures the decision of NTPC/NBPPL shall be final and binding and any change due to this shall have no price implication on NBPPL and shall have to be absorbed by successful bidder.

3. Bidder shall strictly follow and adhere to the guidelines laid down in the enclosed ECC.

4. Bidder shall submit the signed and stamped copy of all the pages which
constitute this technical enquiry specification, signed by authorized signatory to avoid any ambiguity in scope understanding & the scope division as a technical offer during bidding.

Special Note:

Bidder to note that “no deviation” from the enclosed NTPC’s technical specification (along with other documents) and the pre-bid MOMs, amendments and clarifications, vendor lists, spares list, etc. shall be acceptable until and unless written approval from customer NTPC/NBPPL has been accorded. Bidder shall submit a signed copy of NBPPL’s tender documents and enclosures as part of technical offer along with the bid without any deviations.

6.0 TECHNICAL DOCUMENTS AND DRAWINGS:

1. Bidder shall furnish the following details in their technical offer.
   a) System capacities and all equipment ratings as per their scope of supply.
   b) Motor ratings of all equipments Guaranteed power consumption details.
2. All drawing and data sheet are to be submitted in standard sheets having approved title blocks. NTPC’s and NBPPL’s name has to be incorporated in all the drawings.
3. As far as possible, first angle projection shall be followed.
4. Drawing shall be generally in A2 size. However, if inevitable, the size shall be A0 and A1.
5. Drawing shall be complete. Incomplete drawing shall not be accepted.
6. All drawings submitted shall indicate the type, size, arrangement, weight of each component, breakdown for packing and shipping, the external connections, fixing arrangements required, the dimensions required for installation with other equipment and material, clearances required between various portions of the equipment and any other information that is relevant or requested for.
7. Free hand drawing, lettering, overwriting etc., shall be totally avoided and the same shall be stenciled in ink.
8. The drawings mentioned for approval are to be submitted for approval. If drawings are approved with comments, then the same shall be resubmitted after incorporating...
the comments.

9. Test certificates shall invariably consist of details such as Nameplate data, projects and NTPC’s name.

10. Test certificates shall be strictly in A4 size

11. Records of test results / readings etc., made during internal testing shall be available during testing/ inspection in customer’s presence.

12. All drawings and test certificates etc., shall be marked as “CERTIFIED” and signed by the competent authority on the Bidder’s side.

7.0 INSPECTION AND TESTING:

1. Bidder shall give 15 days’ advance written notice of equipment being ready for testing. Such tests shall be to bidder’s account only. The customer / Inspector, unless the witnessing of the tests is virtually waived, will attend such tests within 15 days of the date on which the equipment is notified as being ready.

2. Type & routine test report / certificates shall include details of standard to which the tests are performed, test parameters, acceptance criteria, test set up etc. used during the testing along with the test piece details / rating and the detailed test record and final test result.

3. All inspection, measuring and test equipment used by the contractor shall be calibrated periodically. Bidder shall maintain all relevant records of periodic calibration, instrument identification, and shall provide for inspection by bidder wherever asked specifically; bidder shall calibrate measuring / testing equipment in the presence of employer.

4. The details of the checks to be carried out for various components (MQP) are to be submitted within one month from the date of Purchase order by bidder for customer approval. However, some indicative checks on different items are mentioned elsewhere in the tender specification which should necessarily form part of the Quality Assurance Plan to be agreed with the customer.
8.0 **ERECTION CONDITIONS OF CONTRACT:**

Bidder to note that CHP fronts during erection will be given in a staggered manner. So, Bidder has to consider and envisage mobilization of all resources required, including manpower, in a shortest possible time during execution time. For this bidder has to consider advance resource planning so that erection by the successful bidder is not delayed.

9.0 **SITE ACTIVITIES:**

1. All site activities like unloading, receipt, storage, security & handling material, civil/structural works in the bidder’s scope, erection and commissioning, trial run & PG test, handing over to customer the complete System shall be in bidder’s scope.

2. Bidder has to construct his site office, open storage yard and closed storage yard.

10.0 **OPERATION AND MAINTENANCE TILL HANDING OVER:**

**Scope of work for operation & Maintenance of the System:**

1. The bidder shall be responsible to carry out the “round the clock trouble free operation” of the complete COAL Handling System (DCS based) covered under this enquiry. The scope shall be either coal unloading to stacking or reclaiming to bunker or direct bunker feeding modes or combination or the above Operation and maintenance of the entire CHP system supplied by the bidder shall be in the scope of bidder.

2. All consumables (gasket, rope, diesel, rustoline, waste cloth, lapping paste, jute, emery papers, welding electrodes, grinding wheel, hacksaw-blade, cutting gas, Electric items like Insulation Tape, Lugs, Fuses, Push Buttons, Electrical contact cleaner etc.) required shall be in the scope of the bidder.

3. All tools, tackles, viz. chain pulley block, pulling & lifting equipment, Trolley, Crane, Hydra, Truck, Trailer, winch, wire rope, grinding machine, sling, D-shackle,
Coupler etc. including precision measuring instruments, welding machine & single phase portable welding machine that may be essential to execute the job shall be arranged by the bidder at no extra cost to NBPPL. Portable diesel generator machine will have to be arranged by the bidder for carrying out maintenance job outside the plant where power supply could not be arranged by NBPPL.

4. For electrical job, Megger (1 no.), Multimeter (02 nos.), Clamp meter (1 no.), Tester and screw driver set (02 nos.), Spanners/Plyers/Small tools kit (1 set)/Crimping tools for power and control cables/ cutter (2 nos.)/ wire stripper (2 nos.)/Blower to be arranged by the bidder at no extra cost to NBPPL.

5. Necessary shifting of materials, spares, equipments etc. from store to work site and unserviceable materials from work site to store/yard, is to be done by the bidder at their own cost.

6. The bidder must have adequate resources to undertake routine, preventive maintenance jobs of CHP. They should have adequate resources to mobilize the site for carrying out three to four jobs simultaneously without any delay.

7. Bidder has to compulsorily maintain log book for the O & M staff engaged for O&M jobs and submit to Engineer in charge for certification for realization of the bills. After certification of the bill by Engineer in charge of NBPPL, bidder shall claim the amount after completion of minimum 100 shifts.

Additional responsibility of the bidder:

The bidder shall also be responsible for following operational activities:

1. Top up of oil/grease/lubricant as required during operation of system shall be done by the bidder.

2. Removal of stones in the manual stones picking area shall be in the scope of bidder.

3. During coal unloading at wagon tippler area necessary manpower shall be deploy necessary manpower for breaking of lumps as and when required in shift during coal unloading.

4. During coal stacking in bunker necessary manpower both in field and control room...
shall be deployed for proper coordination and filling up of bunker during the coal firing of the boiler.

5. The bidder should remove all the technical waste including coal in CHP area after each maintenance and operational activities to keep the place clean and according to the satisfaction of NBPPL Engineer in charge within 3(three) days after completion of work, failing which NBPPL will get the cleaning done at the risk and cost of the bidder.

6. In case there is choking due to formation of blockage in chutes in running condition of the system, utmost effort is to be given to remove those blockage. Necessary Safety arrangement as deemed fit is to be undertaken in course of removing choking. Poking at chutes and above to dislodge choking as and when required.

7. The bidder shall do the servicing of field instruments like Limit/Pressure/Temperature /Level switches, Pressure/Temperature/Level Gauges, Solenoid valves, Cylinders, Air filters.

8. To maintain the daily log book for shift wise system operations this will include all activities. A copy of observation and recording of salient operational readings of the unit to be submitted by the bidder to the Engineer-in-charge of NBPPL for record and further processing.

9. Housekeeping: Cleaning of all equipment and housekeeping to be carried out dedicatedly in total Coal Plant area and its office premises.

10. All routine, preventive, predictive and breakdown maintenance of equipments of Coal Handling System in bidder scope.

11. Removal of all types of choking in nozzles, pipes in Dust suppression system.

12. In case of dumping of coal from the hoppers/chutes on the floor the same has to be cleaned. The coal has to be transported to the specified place by the bidder as per the instruction of the Engineer-in-charge.

13. Fabrication and erection of platform/extra support for CHP area if felt necessary during operation and maintenance of the System has to be done by the bidder. Materials like channels, beam, angle etc as required shall be arranged by bidder
itself.

14. Leakages/Spillages/Debris etc. generated on account of repairs during operation and maintenance of the System at various locations in the coal handling system has to be collected, cleaned and disposed at designated area as marked by NBPPL.

15. Transportation of new pipes, spares, equipments from stores to site including loading, unloading and return the damaged pipes, spares, equipments to the designated place in the store in scope of bidder.

16. To maintain the daily Maintenance log book in which details of overhauling / breakdown / maintenance of any equipment including replacement of spares / components to be recorded. Recording of any abnormality of equipments, malfunctioning of system of the CHP also to be noted in the Log book and informed to the Engineer-in-charge of NBPPL for initiating immediate corrective action by the contractor.

17. The bidder shall take approval from Engineer-in-charge of NBPPL by submitting organization Chart of O&M staff for this site clearly indicating man power deployment with their educational background & experience with supporting documents.

18. The bidder shall be solely and wholly responsible for safety and security of workers engaged in the job and the NBPPL property. In case of any accident the contractor shall pay proper compensation to the workers as per workmen’s compensation act and repair/replace NBPPL property at their own cost & arrangement. The bidder shall also make adequate provision of insurance for their workers at their own cost to cover them against the risk of accident.

19. The bidder and their workers engaged in the job shall follow all safety rules at the time of execution of work. It shall be responsibility of the bidder to supply all safety equipment as necessary to its O&M staff.

20. The bidder shall comply with all laws, rules & regulations of the land including but not limited to, i) Labour rules & Acts, ii) Factories Act, iii) Minimum wages Act, IV) Payment of Wages Act, v) Bonus Act, vi) EPF rules, vii) Contract Labour (Regulation & Abolition) Act as in vogue or comes in to vogue from time to time.
NBPPL will be kept indemnified against any claim arising out of non-compliance of such Acts/rules.

21. NBPPL shall not be responsible in matters of employment of workers engaged in the job at any point of time. The bidder shall be fully responsible for his workers with regard to terms of employment of services. NBPPL shall not be held responsible in any manner, whatsoever, in respect of workers engaged by the contractor for carrying out the works at site. Regarding engagement of workers preference should be given towards experienced and competent workers with bonafide testimonials.

22. Beyond general shift if any trouble/breakdown occurs in the System, Maintenance team must reach the plant without any delay along with Engineer/Site In charge.

23. If any additional manpower is required during O&M whatsoever under the scope of contract the same shall be made available by bidder in time within the cost. To cater the need of time bound maintenance jobs, the bidder shall depute additional manpower without any cost implication to NBPPL.

24. During execution of work if any personnel is found not suitable for the job or his presence inside powerhouse premises is felt undesirable, the personnel has to be replaced within 15 days.

25. NBPPL will not be responsible for payment towards idle labour charges.

11.0 **TOOLS & TACKLES, COMMISSIONING SPARES:**

- Bidder to include Special tools and tackles, Commissioning spares along with CHP package.
- Commissioning Spares as per the system requirement till commissioning of the equipment shall have to be supplied by bidder without any cost implication to NBPPL.

12.0 **OPERATION & MAINTENANCE MANUAL:**

O & M manual shall contain the following.

1. Principle of operation of the equipment.
2. Details of preventive / repair maintenance for equipment and accessories used.
3. Details about the general specifications, design capacities of equipment, their function.
4. Equipment Bidder’s address, telephone nos., contacts person details to be furnished.
5. Required Dismantling devices, tools etc.
6. List of DO’s and DO NOT's.
7. Test certificates.
8. All drawings.
10. Storage and erection instructions.
11. Proper procedures & sequence of operation.
12. Details of consumable.

Note:
   a) All manual shall be supplied in proper bound books or in folders, preferably in A4 size.
   b) Prospective Bidder will submit the regular progress reports for self manufactured & their bought out items equipment ordering /manufacturing status, drawings status once in fifteen days.

13.0 **LIST OF FORMATS/ ENCLOSURES:**

Following Formats/ enclosures attached is an integral part of this technical enquiry and must be dully filled, signed and stamped and submitted along with the offer:
1. Past performance format Attachment - 3F
2. Format for Manufacturing capability and Plant loading of Bidder and sub Vendor Attachment - 3D.
3. Present Order Book Position for Coal Handling System Attachment – 3E
14.0 SCOPE OF ELECTRICAL FOR CHP PACKAGE:

SCOPE MATRIX BETWEEN NBPPL AND BIDDER

<table>
<thead>
<tr>
<th>SL. NO.</th>
<th>DETAILS</th>
<th>SUPPLY</th>
<th>E &amp; C</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Transformers (Indoor/Outdoor) 11KV/3.45KV and 3.3kV/0.433KV</td>
<td>Bidder</td>
<td>Bidder</td>
<td>1. 11kV power supply from HT board of NBPPL to transformer I/C panel along with cable tray and accessories shall be in the scope of NBPPL. 2. Control cable between 11kV switchgear (NBPPL) to transformer I/C panel shall be in NBPPL scope.</td>
</tr>
<tr>
<td>2</td>
<td>3.3kV Switchgears</td>
<td>Bidder</td>
<td>Bidder</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>415V Switchgear (PCC/PMCC, MCC)</td>
<td>Bidder</td>
<td>Bidder</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Local Push button station, JBs and Local control panels</td>
<td>Bidder</td>
<td>Bidder</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Power cables, control cables and screened control cables as required.</td>
<td>Bidder</td>
<td>Bidder</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Any special type of cable like compensating, co-axial, prefab, MICC, optical fibre etc</td>
<td>Bidder</td>
<td>Bidder</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Cable trays, accessories &amp; cable tray supporting system</td>
<td>Bidder</td>
<td>Bidder</td>
<td>1. Civil works of RCC cable trench along with insert plates as per the approved drawings provided by bidder during detailed engg. shall in the scope of NBPPL civil contractor throughout CHP. Cable trays, cable tray supporting structures and accessories shall be in bidders scope of supply and E&amp;C.</td>
</tr>
<tr>
<td>8</td>
<td>Cable glands and lugs for</td>
<td>Bidder</td>
<td>Bidder</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Equipment Description</td>
<td>Bidder</td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------------------------------------------</td>
<td>--------</td>
<td>-------</td>
<td></td>
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<tr>
<td>9</td>
<td>Equipment grounding &amp; lightning protection</td>
<td>Bidder</td>
<td>Bidder</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Material and sizes shall be as per specification and subject to NBPPL/NTPC approval during detailed engineering stage.</td>
<td></td>
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</tr>
<tr>
<td>10</td>
<td>Below grade grounding</td>
<td>Bidder</td>
<td>Bidder</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connection with main plant Earth mat shall be in bidder scope as per NBPPL/NTPC approval during detailed engineering stage</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>11</td>
<td>LT/HT motors with base plate and foundation hardware</td>
<td>Bidder</td>
<td>Bidder</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Make shall be subject to NBPPL/NTPC approval at contract stage.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Lighting system</td>
<td>Bidder</td>
<td>Bidder</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In addition to other lighting system items, vendor shall consider lighting distribution board (LDB) with 50k VA transformer, lighting panels (LP) with 8 outgoings &amp; timer control as per requirement.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Any other equipment/material/service including interconnection between Stage-II &amp; Stage-IV required for completeness of CHP but not specified above.</td>
<td>Bidder</td>
<td>Bidder</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Engineering activities during detailed engineering stage, including those listed below.</td>
<td>Bidder</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Electrical load data submission in NBPPL/NTPC format</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Electrical equipment GA drawings and layout drawings</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>c. Cable trench/tray layout drawings</td>
<td></td>
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<tr>
<td></td>
<td>d. Control cable schedules showing routing</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>1. Documentation shall be submitted as per project schedule for NBPPL/NTPC approval.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>2. Vendor shall be responsible for necessary coordination with NBPPL/NTPC for required engineering interfacing during contract stage.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Any approval required from electrical inspection</td>
<td></td>
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</tr>
</tbody>
</table>
Technical Enquiry Specification for Equipment portion of Main Coal Handling Plant (other than interconnection path) Package

Customer : NTPC Ltd.  

NOTES:

1. Sub-Vendor List provided for Electrical Equipments/items is indicative only and it requires prior approval from NBPPL/NTPC before finalising the sub-vendor.

2. All QAPs shall be subject to approval of NBPPL/NTPC after award of contract without any price implication to NBPPL. If bidders have any reference QAP of NTPC projects then same shall be applicable. QAP attached with specification is for reference only.

Design, supply, transportation, loading/unloading at site, receipt, storage, security, transportation to erection location, Erection, Testing & Commissioning of the following electrical items for the completion of CHP package but not limited to shall be in the scope of successful bidder.

1. Transformers (Outdoor & Indoor) (11KV/3.45kV and 3.3kV/0.433kV)
2. HT Switchgears
3. HT switchgear protections, control and metering equipments.
4. LT switch gears
5. HT Cables
6. LT cables
7. HT Motors
8. LT Motors
9. Medium voltage bus ducts
10. LT bus ducts
11. Cabling, Earthing & Lightning Protection
12. Station Lighting
13. Fire Proof cable Penetration Sealing system
14. Battery
15. Battery Charger
16. Electrical Actuators with integral starters

authority for electrical equipment shall be arranged by vendor.
16. LT control cables
17. Screened control Cables
18. Local Control Panels for equipments.
19. Earthing Protection system.
20. LPBS, JB’s (CJB & PJB) & Power distribution boards (PDB).

**ELECTRICAL GENERAL:**

The following electrical items for the completion of entire CHP package shall also be in the bidders scope of Supply, Erection, Testing & Commissioning with respect to the NTPC technical specifications.

1. All electrical panels (like Panel for Scoop Coupling control, JB etc.)
2. All types of Cabling between Scoop Coupling Panel/JB and the Coupling, field devices. This includes cables and cabling accessories like cable trays / conduits, JBs, glands, wiring lugs, ferrules, etc.
3. All safety switches/solenoid valves / actuators / limit/temperature/ pressure / flow switches etc. for the coupling.
4. VFD panel as per requirement shall be in the scope of Bidder
5. Design, manufacturing, supply and erection and commissioning of lighting package along the galleries, TPs, crusher house, pump houses, MCC rooms, control room, penthouse, wagon tippler area, tunnels, underground TPs and structures, stock yard etc shall be in the scope of bidder.
6. Pull cord rope, for the operation of the Pull Cord Switch, all along the walkway shall be in the Bidders scope of supply and E&C.
7. PCS/BSS/ZSS/UBS/ESS/CBS/Other switches in underground areas shall be of flameproof design.(if specified)
8. Specification of various electrical equipment shall be as per Customer spec. & the attached. However, please note that these are submitted for the approval of customer and if any changes done in the same shall be binding on the bidder without any commercial implication
9. Potential free NO-NC contacts are required from all equipments for interlocking purpose to DDCMIS.
10. Type test reports shall be submitted as per NTPC specification wherever applicable. In case of non-availability of type test reports for the similar rating/type, M/s BIDDER shall conduct the type test at no extra cost to NBPPL.
11. Vendor should obtain prior customer approval for make, GA, OGA, schematics,
data sheet, QAP for all sub vendor items.

12. NTPC specification shall be followed without any Deviation.

13. Minimum rear space for local panels and distribution boards shall be sufficient from the nearest obstruction. Cabling shall be done clearing any interference between collars, greasing points and dust collection. There shall be minimum headroom below runoff cable trays.

14. Local control panels requiring operator’s attention shall not be located in dust prone areas. Local panels in each area shall be housed in a dust proof cabin to minimize dust nuisance.

15. Cable schedule shall be prepared by the bidder and shall furnish during detailed engineering stage.

16. If speed control is required for any of the drives, drive panel for the same shall be in the scope (supply and E&C) of bidder.

17. List of Deliverables/documents/drawings for coal handling system relating to C&I is given in Vol IIA.

Design, Engineering, Supply, E&C of any electrical (except motors for all equipment’s and Chute Gate including erection & commissioning) as required in interconnection path (from TP-14 of stage II up to Bunker of stage IV) is also in this bidder scope.

15.0 **SCOPE OF C&I FOR CHP PACKAGE :**

<table>
<thead>
<tr>
<th>SL. NO.</th>
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<th>SUPPLY</th>
<th>E &amp; C</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DDCMIS PANEL</td>
<td>NBPPL</td>
<td>NBPPL</td>
<td>Instrument cables, signal cables from DDCMIS panel (CHP control room) to main control room shall be in the scope of NBPPL.</td>
</tr>
<tr>
<td>2</td>
<td>UPS</td>
<td>NBPPL</td>
<td>NBPPL</td>
<td>Power supply cables from UPS to the DDCMIS panels shall be in NBPPL scope</td>
</tr>
<tr>
<td>3</td>
<td>Instrument cables (Signal, Communication cables)</td>
<td>Bidder</td>
<td>Bidder</td>
<td></td>
</tr>
<tr>
<td>Package</td>
<td>Measuring instruments</td>
<td>PLC for Wagon tippler and stacker cum reclaimer.</td>
<td>Control desk, LVS and panels</td>
<td>Furniture of control room</td>
</tr>
<tr>
<td>----------</td>
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<td>------------------------------</td>
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</tr>
<tr>
<td>4</td>
<td>Bidder</td>
<td>Bidder</td>
<td>NBPPL</td>
<td>NBPPL</td>
</tr>
<tr>
<td>5</td>
<td>Bidder</td>
<td>Bidder</td>
<td></td>
<td>Instrument cables, signal cables from RIO panels to DDCMIS panel (CHP control room and main control room) shall be in the scope of NBPPL.</td>
</tr>
<tr>
<td>7</td>
<td>NBPPL</td>
<td>NBPPL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

1. Make of all C&I / Electrical equipments/items supplied shall be reputed make & shall be subject to approval of NBPPL/NTPC before finalising on them.
2. All Operational Philosophies and QAPs shall be subject to approval of NBPPL/NTPC after award of contract without any price implication to NBPPL. If bidders have any reference QAP of NTPC projects then same shall be applicable. QAP attached with specification is for reference only.

Design, supply, transportation, loading/unloading at site, receipt, storage, security, transportation to erection location, Erection, Testing & Commissioning of the following C&I/Electrical items for the completion of CHP package but not limited to shall be in the scope of successful bidder.

1. Measuring instruments (Primary and Secondary)
2. Electrical power supply system
3. Instrumentation and Power supply cables
4. Type test requirements
5. PLC Based Control System.
6. Instruments/field devices/other equipments.
7. Instrument Cables
8. Vibration Monitoring System with sensors
9. Vibration Isolation System

C&I GENERAL:
1. Equipment PLC specifications, Hook up, Interface between Equipment PLC and Main plant DCS shall be as per NTPC specifications.
2. ZSS switches for Crusher and conveyors and other safety switches & accessories like pull cord switch/belt sway switches etc. along with the mounting brackets of above switches, wherever applicable, shall be in the scope of bidder.
3. Input-output signal cabling for PLC and field instruments or local control stations or junction box up to marshalling cubicle (DDCMIS) in control room is included in bidder scope. Cabling includes supply of cable, cable trays, support, glands, lugs, tags ferrules, laying and termination up to JB.
4. For successful implementation of control system bidder shall furnish control philosophy, I/O list, drive list along with KKS code and all other details/drawings/data/information like write-ups and detailed logic diagrams for controls, interlock and protection of bidder’s equipment, recommended control loops, recommended mimics/graphics. Any other data as might be required by Employer during detailed engineering stage shall also be forwarded without any cost repercussions. M/s BIDDER shall depute his engineer to NTPC, Noida for approval of above documents.
5. Bidder shall furnish termination details for all I/Os to be connected to Employer’s RIO/control system cabinets as per philosophy approved by Employer during detail engineering stage. The format and exact details by M/s BIDDER shall be approved by employer during detail engineering. While preparing I/O list and drive list during detail engineering M/s BIDDER shall obtain details of exact DDCMIS/RIO configuration from employer and include details of the same in these lists to be furnished by M/s BIDDER. M/s BIDDER shall depute his engineer to NTPC, Noida
for approval of above documents.

6. All the instruments / equipments including vibration monitoring system, vibration isolation system, sensors, transmitters, transducers, temperature elements, switches which are required to implement the control philosophy as specified in technical specification for overall CHP package shall be in the scope of bidders scope of supply and E&C. Bidder shall provide full support during FAT & SAT for implementation of Control scheme in Employer supplied DDCMIS.

7. Temperature transmitters are also to be supplied by Bidder for the temperature elements supplied by bidder (Motor RTDs). These temperature transmitters shall be mounted in junction boxes, supplied by bidder. The instrumentation cables/thermocouples extension cables up to temperature transmitters and from junction boxes to control rooms shall also be in bidder’s scope of supply and E&C.

8. Temperature elements shall be suitably grouped depending on physical locations and shall be connected to the JBs in which temperature transmitters are mounted. The arrangement of temperature transmitters in junction boxes and location of junction boxes will be discussed and finalised during detail engineering.

9. JBs shall be strategically located in each area to enable usage of multicore cables to DDCMIS. Cables and Cabling of all field devices up to JB (JB in Bidder’s scope) and from JB to Marshalling cubicle (DDCMIS) in control room shall also be in Bidders scope of supply and E&C.

10. Type test reports shall be submitted as per NTPC specification wherever applicable. In case of non availability of type test reports for the similar rating/type, bidder shall conduct the type test at no extra cost to NBPPL.

11. NTPC’s Technical specification shall be followed without any deviation for all equipments design, supply testing and E&C.

12. Cable schedule shall be prepared by the bidder and shall be furnished during detailed engineering stage.

Design, Engineering, Supply, E&C of any C&I as required in interconnection path (from TP-14 of stage II up to Bunker of stage IV) is also in this bidder scope.
16.0 **Loading Criteria (Structural Steel):**

Loading for the cost of Structural Steel (based on the quantities furnished by bidder in the Schedule of Prices Sl. No. - B) shall be made.

For the same the bidder shall furnish the total qty of Structural Steel in the Schedule of Prices. The evaluation rates for Structural Steel shall be as follows:

- Structural Steel – Rs. 57000 per MT.

17.0 **Bid Evaluation Criteria:**

The price for evaluation shall be the sum of following prices and loadings:

- a) Total lump sum price (including freight, insurance, taxes & duties etc.) for entire scope (including mandatory spares) as per Schedule of Rates Sl. No. -A.
- b) All costs on account of loading as described at Cl 16.0 above.

The sum of a) & b) shall be called as the “Total Evaluated Price (TEP)” of bidder. The lowest of the Total Evaluated Price (TEP) of the bids shall be considered as lowest bidder (L1).

18.0 **CONSTRUCTION FACILITIES:**

**A. Land**

1. Depending upon the availability, Land for contractors office, storage and other facilities will be allocated with certain time frame and to the extent available/ considered necessary. The contractor has to plan and use the existing land inside the project premise 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 erctions agencies.

2. The contractor will be responsible for handing back all lands, as handed over to him by EMPLOYER/Customer.

3. Area within plant premises for fabrication, batching plant, office, storage area etc. for construction purpose shall be provided as per availability free of cost.

**B. Construction of temporary office, stores etc.**

The contractor shall arrange at his own cost cleaning of area allotted, construction of his temporary office, stores, cement godown etc. and also the watch and ward of all
C. Electricity

1. Contractor shall have to deploy the DG sets for carrying out the tender works. However electricity (for construction purpose only) may be provided free of cost at customers single point source subject to availability. Bidders have to make his own distribution arrangement to draw electricity.

2. Contractor will have to procure & install general illumination system during construction right from start of his work. This system will include temporary pole lighting, portable lighting towers with dg back-up for different floors/working areas for execution of the work & safety of workmen till the permanent illumination system is established, within the quoted rate. The illumination should be such that minimum illumination requirement as specified by Indian standards for general illumination is maintained.

3. Supply of electricity shall be governed by Indian Electricity Act and Installation Rules and other Rules and Regulation as applicable. The contractor shall ensure usage of electricity in an efficient manner and the same may be audited by EMPLOYER time to time. In case of any major deviation from normally accepted norms is observed, EMPLOYER will reserve the right to impose penalty as deemed fit for such cases.

4. Demobilization of the facilities after completion of works shall be in Contractors scope.

5. The bidder shall have to provide earth leakage circuit breaker at each point wherever human operated electrical drives/ T&Ps are deployed.

6. The power supply will be from the available grid. EMPLOYER shall not be responsible for any inconvenience or delay caused due to any interruption of power supply/ variation in voltage level and no compensation for delay in work can be claimed by the contractor due to such non-supply on the grounds of idle labour, machinery or any other grounds.

7. The contractor should ensure that the work in critical areas is not held up in the event of power breakdown. In the event of breakdown in the electric supply, if the progress of work is hampered, it will be the responsibility of the contractor to step
up the progress of work after restoration of electric supply so that overall progress of work is not affected.

D. Water

1. Contractor has to make his own arrangement for construction and drinking water by resorting to the methods like bore well, water tankers etc. Necessary network for construction & drinking water system shall be done by the bidder at his own cost. Contractor is to get the construction water tested and approved by the customer at his own cost.
2. Contractor should arrange on their own, drinking water in their labour colony.
3. Contractor will have to arrange for storage of water to meet the day-to-day requirement. Bidder will ensure adequate supply of construction water to meet the requirement of water during major concreting.

19.0 TERMINAL POINTS:

<table>
<thead>
<tr>
<th>S.No:</th>
<th>ITEM DESCRIPTION</th>
<th>TERMINAL POINT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dust Suppression water supply</td>
<td>TP: 13B+63, 13A+18 (As per BHEL P&amp;ID)</td>
</tr>
<tr>
<td>2</td>
<td>Service water</td>
<td>TP: 13B+63, 13A+18 (As per BHEL P&amp;ID)</td>
</tr>
<tr>
<td>3</td>
<td>Portable Water</td>
<td>TP: 13B+63, 13A+18 (As per BHEL P&amp;ID)</td>
</tr>
<tr>
<td>4</td>
<td>11KV power Supply</td>
<td>11 kV transformer bushings</td>
</tr>
<tr>
<td>5</td>
<td>All control signal cables etc.</td>
<td>IN and OUT termination with DDCMIS and RIO panels</td>
</tr>
<tr>
<td>6</td>
<td>Station lighting</td>
<td>Station lighting all along the roads of CHP area shall be in bidder scope.</td>
</tr>
<tr>
<td>7</td>
<td>COAL</td>
<td>Wagon outlet doors</td>
</tr>
</tbody>
</table>
20.0 Steel Consumption and Wastage

20.1 Structural Steel Consumption

1. The theoretical consumption of various sections shall be based on approved drawings.
2. Weights shall be calculated considering the sectional weights as per Indian standard as mentioned in relevant clause. No extra shall be payable to you for any deviation in weights for the two different procedures adopted for issue and calculation of the theoretical consumption including rolling tolerances.
3. Actual consumption = Issue – Surplus.
4. Surplus = Untempered, unused, uncut quantity of steel returned by you to EMPLOYER store.
5. Wastage = Actual consumption – Theoretical consumption.

20.2 Structural Steel Wastage

1. Allowable wastage: 4% (four percent) of the theoretical consumption shall be considered. Wastage is further classified as cut pieces and scrap measured as per actual weightment basis. Invisible wastage (loss of materials due to gas cutting, straightening of edges etc.) shall be limited to 0.5% (zero point five percent) of theoretical consumption and shall be considered for reconciliation purposes only. But this invisible wastage shall be considered to be included in allowable wastage (i.e. four percent).

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Structural steel and SS liner</th>
<th>Basis of issue &amp; penal recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-1</td>
<td>Theoretical consumption (without considering any wastage, scrap or loss) as per specification &amp; drg.</td>
<td>Free</td>
</tr>
<tr>
<td>S-2</td>
<td>Wastage limited to plus four percent (+4%) of the aforesaid theoretical consumption (S-1) towards allowable wastage.</td>
<td>Free</td>
</tr>
<tr>
<td>S-3</td>
<td>Wastage beyond four percent (4%) of the aforesaid theoretical consumption (S-1).</td>
<td>Recovery rate</td>
</tr>
</tbody>
</table>

2. All wastage reinforcement, MS round and structural steel shall be returned to EMPLOYER.

21.0 Reconciliation of EMPLOYER Issued Materials

1. The contractor shall submit a reconciliation statement of cement and steel issued to him every month. The same may be submitted along with RA Bill.
2. The contractor shall properly account for the material issued to him as specified herein to the satisfaction of EMPLOYER certifying that the balance material are
available with contractor’s custody at site.

3. If it is noticed by EMPLOYER that the wastage is high and calls recovery at the penal rate, then EMPLOYER will proceed for recovery for the excess wastage as per penal recovery rates as specified from RA bill.

4. The approved drawings/ bar bending schedules are to be considered for the purpose of reconciliation of materials.

### 22.0 Recovery of material

If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly RA bill as per rate stipulated below.

Recovery rate of materials

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Item</th>
<th>Recovery rate (Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Structural steel materials.</td>
<td>70,000/- per MT</td>
</tr>
</tbody>
</table>

### 23.0 Inspection and stage approval of the work

All work embracing more than one process shall be subject to examination and approval at each stage thereof and the Contractor shall give due notice in writing to the Engineer In charge (EIC) when each stage is ready. In default of such notice being received, the Engineer In charge (EIC) shall be entitled to approve the quality and extent thereof at any time he may choose and in the event of any dispute, the decision of the Engineer In charge (EIC) thereon shall be final and conclusive.

### 24.0 EXCLUSIONS:

1. Station lighting for roads along CHP plant, travelling tripper area (Bunker floor).
2. Roads all along the CHP area.
3. Site levelling required at CHP area.
4. DDCMIS panels (including UPS, battery and battery charger required for DDCMIS panel), Control desk, LVS, RIO panel, Marshalling Cubicle (DDCMIS) and Furniture’s for main control room.
5. EPABX and Public Addressing System of CHP area.
6. Complete fire protection and detection system of CHP area.
7. Coal flow path from TP-14 of stage II upto coal bunkers of stage IV via TP-28, TP-29, TP-30, TP-31, TP-32 & TP-33. However all modification work required in TP-28 for feeding coal from conveyer no 33A/B to conveyer no 34A/B in the scope of this bidder. All necessary interconnection and interface for hooking up this main CHP with interconnection path is in the scope of this bidder only.
8. All Civil Works are excluded. However, design of all civil works including design of foundation bolts for all TPs are in the scope of bidder.
9. Supply of structural steel (Only standard available sections of Plates, Channels, Angles, Chequered Plates, Beams as per NTPC’s technical specification) and reinforcement steel.
10. Any RCC, Floor, Slab including metal deck sheet as required.
11. All Railway wagons
ANNEXURE- 1

Refer NIT for PRE-QUALIFICATION CRITERIA FOR THIS PACKAGE
ANNEXURE – 2

TIME SCHEDULE

1. It is clearly understood and agreed that time is the essence of this Contract and shall be strictly adhered to by the Contractor. The program of furnishing, erecting, testing, commissioning, completion of facilities and putting into satisfactory operation and site delivery of mandatory spares, identifying the key phases in various areas of work like design, procurement, manufacture, field activities shall be as per Master Network to be submitted by the bidder. However, the key milestones for completion of facilities shall be furnished during post bid meeting.

2. After the Notification of Award, the Contractor shall plan the sequence of work of manufacture and erection to meet the above stated dates of Completion of Facilities and shall ensure all work, manufacture, shop testing, inspection and shipment of the equipments in accordance with the required construction/erection sequence.

3. Within one month of the Notification of Award, the Contractor shall submit to the Employer for his review and approval two copies (one reproducible and one print) of detailed PERT Network (L1) schedules with Master Network activities further exploded based on the Master Network mutually agreed by the Employer and Contractor, showing the logic and duration of the activities covered in Contracts in the following areas; Engineering, Procurement, Manufacturing and Supply, Detailed Engineering, Procurement (including Bought Out Items), Manufacturing, Dispatch, Shipment, Receipt at Site, Erection, Commissioning & activities related to it and Completion of Facilities.

4. Further, all engineering data related to civil input, interface engineering details, requiring Employer's approval/information for shop manufactured items are to be
Technical Enquiry Specification for 
Equipment portion of Main Coal Handling Plant 
(other than interconnection path) Package 

Customer : NTPC Ltd. 

Page 38 of 44

given within the agreed schedule but in no case later than 30 days from the date of Notification of Award. For bought out items, the Contractor shall furnish the engineering input data to the Employer within the agreed schedule but in no case later than 30 days from placement of respective purchase order on the sub-vendors.

5. **Detailed Manufacturing program:**
   Detailed Manufacturing PERT Network for all the manufacturing activities at Contractor's/sub-Contractor's works shall also be furnished within 60 days of Notification of Award. The Manufacturing Network shall be supported by detailed procurement program for critical bought out items / raw materials.

6. **Pre-Erection Activity Program:**
   The Erection Network will be supported by detailed Pre-Erection Activity Programme covering the following:
   - A. Manpower Deployment
   - B. T&P Mobilization
   - C. Detailed Site Mobilization Plan

6.1 An indicative list of Tools & Plants (T&P) required for satisfactory execution of the Contract to meet the time schedule stipulated at para 1.0 above is enclosed as ANNEXURE-3 where the Schedule is to be duly filled up by the Bidder.

7. Within one week of approval of the Network Schedule, the Contractor shall forward to the Project Manager, copies of the Computer Initial Run-Data. The type of outputs and number of copies of each type to be supplied by the Contractor shall be determined by the Project Manager.

8. All the networks shall be updated every month or at a frequency mutually agreed upon. Within seven days following the Monthly Review, a progress meeting shall be held, whenever possible at the works, wherein the major items of the plant or equipments are being produced. The meeting will be attended by the Project Manager.
and responsible representative of Contractor that the Project Manager considers necessary for the meeting.

9. Access to the Contractor's and Sub-Contractor's work shall be granted to the Project Manager at all reasonable times for the purpose of ascertaining the progress
ANNEXURE-3

INDICATIVE LIST OF T&P TO BE DEPLOYED BY THE CONTRACTOR

An indicative list of Major T&P required to be deployed necessarily by the bidder is furnished below. However, the actual deployment at site shall not be limited to these and additional T&P required to meet the work schedule shall be mobilized by the Contractor.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Type and Description of the T&amp;P</th>
<th>Indicative Qty. of T&amp;P to be deployed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Excavator</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Dumpers</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>Dozers</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Dewatering Pumps</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>Concrete Batching Plant 30M3/Hr</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Transit Mixer (4-6M3 capacity)</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>Concrete mixers</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Concrete pumps</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Vibrators</td>
<td>25</td>
</tr>
<tr>
<td>10</td>
<td>Total Station</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Welding transformers</td>
<td>8</td>
</tr>
<tr>
<td>13</td>
<td>Welding Generators</td>
<td>20</td>
</tr>
<tr>
<td>14</td>
<td>Crane (75T Capacity)</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>Hydra (8T Capacity)</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>Trailer 10T Capacity</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>Electric Winch (5T)</td>
<td>4</td>
</tr>
<tr>
<td>18</td>
<td>300 CFM Compressor</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>Leveling Instrument</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>Testing Pump</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>Water Tanker</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>Grouting Injection Pump</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Quantity</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>23</td>
<td>Shuttering Steel</td>
<td>5000 sq.m.</td>
</tr>
<tr>
<td>24</td>
<td>Shuttering plywood</td>
<td>900 sq.m.</td>
</tr>
<tr>
<td>25</td>
<td>Scaffolding Pipes</td>
<td>3000 nos</td>
</tr>
<tr>
<td>26</td>
<td>Portable Drilling M/c</td>
<td>2</td>
</tr>
<tr>
<td>27</td>
<td>AG-7</td>
<td>10</td>
</tr>
<tr>
<td>28</td>
<td>Hand Cutting Set</td>
<td>5</td>
</tr>
<tr>
<td>29</td>
<td>Chain Pulley Block 1T Capacity</td>
<td>5</td>
</tr>
<tr>
<td>30</td>
<td>Chain Pulley Block 2T Capacity</td>
<td>4</td>
</tr>
<tr>
<td>31</td>
<td>Chain Pulley Block 10T Capacity</td>
<td>2</td>
</tr>
<tr>
<td>32</td>
<td>Hydraulic Pilling Rig</td>
<td>4</td>
</tr>
<tr>
<td>33</td>
<td>Crane (250T or more Capacity) for TP erecting at min 80 Mtr height</td>
<td>1</td>
</tr>
</tbody>
</table>

*The above list of equipment is tentative.

*The deployment of equipment’s shall be made as per actual requirement at site to meet project implementation schedule.

* Any additional equipment required shall be deployed by bidder as per site requirement without any extra cost to NBPPL

**Date:** (Signature) ……………………
**Place:** (Printed Name) …………………
**Designation:** (Designation) …………………
**Common Seal:** (Common Seal) …………………

**Note:** Continuation sheets of like size and format may be used as per Bidders requirements and shall be appended to this Attachment.
# ANNEXURE- 4

## LIST OF EQUIPMENTS FOR CIVIL SITE LABORATORY

<table>
<thead>
<tr>
<th>SL NO.</th>
<th>NAME OF TEST</th>
<th>NAME OF EQUIPMENT</th>
<th>SIZE OF EQPIMENT</th>
<th>IS REF.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Initial &amp; final setting time, Consistency of cement</td>
<td>Vicat Apparatus with desk pot</td>
<td>Standard</td>
<td>IS 5513</td>
</tr>
<tr>
<td>2</td>
<td>Shrinkage of cement, Auto Clave Test</td>
<td>Le Chatelier's apparatus Auto Clave Equipment</td>
<td>Standard</td>
<td>IS 5514</td>
</tr>
<tr>
<td>3</td>
<td>Abrasion value test</td>
<td>Los Angles Abrasion testing machine</td>
<td>Standard</td>
<td>IS 2386</td>
</tr>
<tr>
<td>4</td>
<td>Aggregate Impact value test</td>
<td>Aggregate Impact value testing machine with blow counter</td>
<td>Standard</td>
<td>IS 9377</td>
</tr>
<tr>
<td>5</td>
<td>Aggregate crushing value test</td>
<td>Crushing value apparatus</td>
<td>Standard</td>
<td>IS 2386</td>
</tr>
<tr>
<td>6</td>
<td>Flakiness index</td>
<td>Thickness gauge for measuring flakiness index</td>
<td>Standard</td>
<td>IS 2386</td>
</tr>
<tr>
<td>7</td>
<td>Elongation Index</td>
<td>Elongation gauge</td>
<td>Standard</td>
<td>IS 2386</td>
</tr>
<tr>
<td>8</td>
<td>Bulk density, voids and bulking apparatus</td>
<td>Measuring cylinders</td>
<td>3, 5,10 &amp; 15 liters cylinders</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Cement motor cube casting</td>
<td>Mortor Cube mould</td>
<td>70.6 x 70.6 x 70.6 mm, minimum 06 sets desired.</td>
<td>IS 10086</td>
</tr>
<tr>
<td>11</td>
<td>Concrete Cube casting</td>
<td>Concrete Cube Mould</td>
<td>150x150x150mm, min. 20 sets desired considering TG Raft major concreting activity.</td>
<td>IS 10086</td>
</tr>
<tr>
<td>12</td>
<td>Workability of concrete</td>
<td>Slump cone</td>
<td>Standard, at least 04 nos.</td>
<td>IS 456</td>
</tr>
<tr>
<td>13</td>
<td>Specific gravity of aggregates</td>
<td>Pycnometer</td>
<td>Standard, atleast 02 nos.</td>
<td>IS 383</td>
</tr>
<tr>
<td>14</td>
<td>Cement mortor cube vibrating</td>
<td>Motorised vibration machine for cement testing</td>
<td>Standard</td>
<td>IS 4031</td>
</tr>
</tbody>
</table>
### Technical Enquiry Specification for Equipment portion of Main Coal Handling Plant (other than interconnection path) Package

**Customer:** NTPC Ltd.  
**Package:** Page 43 of 44  
**Code:** NBPPL-004-101-27-P1G-A2 R0

<table>
<thead>
<tr>
<th>No.</th>
<th>Test Description</th>
<th>Equipment Details</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Course aggregate Sieve analysis (Concrete &amp; Road Works)</td>
<td>Sieve set 450mm dia GI Frames Size: 125 mm, 90 mm, 75 mm, 63 mm, 53 mm, 40 mm, 20 mm, 16 mm, 12.5 mm, 10 mm, 4.75 mm, Pan and cover</td>
<td>IS 383</td>
</tr>
<tr>
<td>16</td>
<td>Fine aggregate sieve analysis</td>
<td>Sieve set 200 mm dia Brass sieves; Size 4.75 mm, 2.36 mm, 1.18 mm 600 micron, 300 micron, 150 micron, 75 micron, 75 micron, Pan and cover</td>
<td>IS 383</td>
</tr>
<tr>
<td>17</td>
<td>Seive Shaker</td>
<td>Motorized Sieve shaker Mfg. Catalogue</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Silt content check</td>
<td>Sand silt content beaker Standard</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Ultrasonic pulse velocity test</td>
<td>UPV apparatus for concrete Standard</td>
<td></td>
</tr>
</tbody>
</table>

### Soil Testing Equipment (Leveling & Grading)

<table>
<thead>
<tr>
<th>No.</th>
<th>Test Description</th>
<th>Equipment Details</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Liquid limit test</td>
<td>Liquid limit apparatus Standard</td>
<td>IS 2720</td>
</tr>
<tr>
<td>2</td>
<td>Core Cutter test</td>
<td>core cutter apparatus Rammer, 6 nos of std core cutter mould, dolly</td>
<td>IS 2720</td>
</tr>
<tr>
<td>3</td>
<td>Proctor density test</td>
<td>Std proctor Compaction apparatus Standard</td>
<td>IS 2720</td>
</tr>
<tr>
<td>4</td>
<td>Moisture Content</td>
<td>Rapid moisture meter Standard, at least 04 nos.</td>
<td>IS 2720</td>
</tr>
</tbody>
</table>

### Process Control Accessories

<table>
<thead>
<tr>
<th>No.</th>
<th>Test Description</th>
<th>Equipment Details</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hot air oven</td>
<td>Temperature range 50°C to 300°C 600x600x600mm (min.size)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Electronic balance</td>
<td>3 nos 600gx0.01g, 10g and 50 kg</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Physical balance</td>
<td>5 kg capacity Weights upto 5 kg</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Thermometer</td>
<td>Temperature range 0°C to 150°C Digital</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Poker Thermometer (Concrete Road)</td>
<td>Temperature range 0°C to 50°C &amp; 150°C 02 nos each required</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Measuring jars</td>
<td>2 nos set of each size 100ml, 200ml, 500ml &amp; 1000 ml</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Equipment Description</td>
<td>Quantity</td>
<td>Details</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------------------------------</td>
<td>----------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>7</td>
<td>Gauging trowlers</td>
<td>4 nos</td>
<td>100mm &amp; 200 mm with wooden handle</td>
</tr>
<tr>
<td>8</td>
<td>Spatula</td>
<td>2 nos each size</td>
<td>100mm &amp; 200 mm with long blade wooden handle</td>
</tr>
<tr>
<td>9</td>
<td>Stainless steel scoop</td>
<td>2 nos each</td>
<td>2 kg and 5 kg</td>
</tr>
<tr>
<td>10</td>
<td>Vernier calipers</td>
<td>2 nos each</td>
<td>12 and 6&quot; Sizes &quot;</td>
</tr>
<tr>
<td>11</td>
<td>Digital pH meter</td>
<td>01 nos</td>
<td>.01 mm least count</td>
</tr>
<tr>
<td>12</td>
<td>Digital micrometer</td>
<td>01 no</td>
<td>0.01 mm least count</td>
</tr>
<tr>
<td>13</td>
<td>Digital paint thickness meter for steel</td>
<td>02 nos.</td>
<td>500 micron Range</td>
</tr>
<tr>
<td>14</td>
<td>GI tray</td>
<td>02 nos. each</td>
<td>600x450x50mm, 450x300x40mm, 300x250x40mm</td>
</tr>
<tr>
<td>15</td>
<td>Electric mortar mixer</td>
<td>01 no</td>
<td>0.25 CUM capacity</td>
</tr>
</tbody>
</table>
| 16  | Rebound hammer test                           | 01 no    | Digital Rebound hammer  
IS 13311                                                                  |
| 17  | Screw Gauge                                  | 02 nos.  | 0.1 mm-10mm, Least count 0.05                                           |
| 18  | Digital paint thickness meter for masonry/   | 02 nos.  | 150 micron range                                                      |
|     | concrete painting measurement                |          |                                                                         |

*The above list of equipment is tentative.

*The deployment of equipment’s shall be made as per actual requirement at site to meet project implementation schedule.

* Any additional equipment required shall be deployed by bidder as per site requirement without any extra cost to NBPPL

Date: ……………………………
Place: …………………………..
(Signature) ………………………..
(Printed Name) ………………………..
(Designation) ………………………..
(Common Seal) ………………………..

**Note:** Continuation sheets of like size and format may be used as per Bidders requirements and shall be appended to this Attachment.