

BHEL- ISG
BANGALORE



TECHNICAL ENQUIRY SPECIFICATION-CONVEYOR PACKAGE FOR
3X800 MW PATRATU TPS

DOCUMENT No.
PATRATU/CONV. PKG.

Customer :

PATRATU VIDYUT UTPADAN NIGAM LIMITED
(A Subsidiary of NTPC Ltd in Joint Venture with Jharkhand Bijli Vitran
Nigam Ltd)

IS-1-17-2005/CONV. PKG

TECHNICAL ENQUIRY SPECIFICATION

Main Conveyor Package (CHP, LHP, GHP & Ash-
Conveyor System)

for

3x800 MW NTPC PATRATU TPS

(PVUNL)



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A. PROJECT INFORMATION:

Present proposal is for setting up 3 x 800 MW NTPC Patratu Thermal Power Station, for Patratu Vidyut Utpadan Nigam Limited (PVUNL) with all the facilities as specified in the NIT. General information related to the project and site is available in ANNEXURE-1, which has been enclosed along with this enquiry specification.

B. BROAD SCOPE:

Scope for this package bidder shall include design, detail engineering, submission of engineering & civil assignment drawing/ doc./ datasheets/ QAPs/ FQPs, PG test procedure and obtaining the approval from PVUNL/NTPC/ /BHEL, procurement, supply including manufacturing/ fabrication, inspection/ shop floor testing, shop floor painting, packaging & transportation to site, all mechanical equipments/ systems with related electrics (refer separate electrical specs & scope), complete conveyor system for all CHP, LHP, GHP & Ash -conveyor system including items listed below in tabular form in this specification, complete with drives, electrics, C&I system and only technical specifications as per the enclosed NTPC PUVNL bid document no. CS-9585-001-2, amendments and clarifications (enclosed in the CD) except for items/ systems which are listed in exclusions list, however commercial terms and conditions shall be as per BHEL CTC.

The scope of this package bidder under installation services , E&C shall cover receipt & unloading at site, storage, preservation & security at site, shifting to erection work place, erection, initial supply of consumables, trial run, commissioning with supply of commissioning spares, functional testing, Performance& functional guarantee testing until final handing over to end customer PVUNL upon satisfactory completion and written confirmation from PVUNL for all CHP, LHP, GHP & ASH (conveyor system portion only) equipments and items including free supply issued to the successful bidder by BHEL.

Painting of all equipments/items, which are in bidder's scope, before dispatch and touch-up painting at site after erection & commissioning, submission of O & M manuals, as built drgs/ doc. shall also be in the bidder's scope of work.

Operation & maintenance for equipment and system under the scope of this package shall be in bidder's scope as defined elsewhere in this specification.

Bidder to note that E&C of all free issue items as mentioned elsewhere (in mechanical as well as electrical scope) in this specification shall also be in bidder's scope of work.

Achieving the PG parameters, for the bidder's supplied equipment/system and complete conveying system as a whole, during PG test conducted for coal handling, limestone handling, gypsum handling & ASH conveyor system shall be the responsibility of the

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bidder. Meeting any shortfall in PG parameters of the equipment/ system shall be the responsibility of bidder and shall be suitably corrected by the bidder to avoid LD.

- 1) **Bidders are encouraged to raise all ambiguities, conflict in the standard & specification and/or interpretation of clauses, if any, in this enquiry spec. and its enclosures during pre-bid stage itself. Failing which it shall be understood that bidder has no issue and at later date successful bidder shall have no right to take any technical and commercial advantage out of any ambiguity, conflict in the standard & specification and/or interpretation of clauses. In this regard the decision of BHEL shall be final and binding.**
- 2) It is not the intent to specify completely herein, all aspects of design and construction of Conveyor Package of CHP, LHP, GHP & ASH Conveyor system. However, Handling System shall conform in all aspects to high standard of engineering, design and workmanship and be capable of performing satisfactorily during continuous commercial operation in a manner acceptable to NTPC/BHEL, who shall interpret the meaning of the specification, drawings and shall have the right to reject or accept any work or material which in their assessment is not conforming to this specification and/or to applicable International Standards.
- 3) Supply & E & C of any other associated equipment/items/item of work not specifically mentioned here in this specification but required for successful operation ,completion, installation, and operation of the CHP, LHP, GHP and Ash conveyor system shall be deemed to be have been included in bidder's scope of work and bidder to quote accordingly.
- 4) Notwithstanding the details furnished in this document, it shall be the responsibility of the Contractor to complete the work in all respects, commission and complete the final trials & performance tests of CHP, LHP, GHP & Ash Handling System- Conveyor package to the satisfaction of NTPC/BHEL.
- 5) The battery limit of scope between this package bidder and ash handling package bidder pertaining to the Ash (BA +FA) conveyor system shall be as per **ANNEXURE-5**.
- 6) Tentative list of equipment is mentioned here, the list given below is only for reference and not exhaustive and any other associated equipment/items required for satisfactory completion of the systems shall be in bidder' scope. All the parameters of equipment indicated in various sections of this Technical Specification are the minimum requirements. Any increase in the sizes or quantity, if required to meet the system/maintenance/operational requirement shall be absorbed by the bidder without any extra cost implication to BHEL.
- 7) Operation & Maintenance with all resources (man & machine) for each equipment and system under the scope of this package shall be in bidder's scope. The O&M shall be done under the overall supervision & responsibility of bidder's resident manager and qualified engineers as mentioned elsewhere.

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Each O&M man shift shall be defined as deployment of following labour manpower for 8 working hours:

- Material handling operator: 1 no.
- Skilled labour: 2 nos.
- Un-Skilled labour: 3 nos.
- The charges for tools & tackles, all types of consumables required during Operation & maintenance shall be deemed included in the price quoted for O&M shifts.

Deployment for O&M man shifts at any particular area will be at the sole discretion of BHEL's resident manager. Provision for part or pro-rata payment for some portion of O&M man shift is allowed at mutual agreement with the BHEL's resident manager. Price quoted for O&M man shift shall be applicable uniformly for day as well as night shifts; no separate price will be given for night shifts. All payment will be made on certification of BHEL's resident manager. In case bidder fails to provide O&M services at site till contract completion, suitable pro-rata deductions shall be made from RAB payables, for the duration of such absence, at the prevailing rate of BHEL manpower cost as penalty at the sole discretion of BHEL's resident manager whose decision shall be final and binding.

This O&M provision is over and above the requirement of normal scope of work under installation services like erection, Pre-Commissioning & commissioning activities, integrated load trial, system stabilization, Performance Guarantee Tests, Reliability Test Run and attending warranty issues.

In case the number of O & M man shifts gets extended beyond the quantity indicated in the price format, it will be paid extra on the basis of unit rate agreed in the contract.

BROAD SCOPE OF SUPPLY:-

Sl. No.	ITEM DESCRIPTION	QTY.
1.	Complete Conveyor System (3500 MTPH rated /3850 MTPH design, 2000mm belt width, Belt speed of conveyors shall not be more than 3.4 m/s complete with idlers (with frames, brackets), all types of pulleys with plummer blocks and bearings, deflector rollers, drive chain system (gear boxes, all types of fluid couplings (fluid coupling, scoop coupling, flexible coupling, geared couplings, other input and output couplings), brakes, technological structures, including GTU towers (other than with TPs and conveyor trestles), GTU travel guide pipes, CI counter weights, cradles, short supports, stringers, stools, skirt board and skirt rubber, deck plates throughout conveyor length , maintenance platforms, inspection doors,	1 lot

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	inspection stools, ladders, bolts, anchor fasteners, templates, external scrappers, internal scrappers, foundation bolts & nuts, rubber sealing, chutes, drive base frame, base plate, shim plate etc. with all electricals and C&I (except for items indicated separately under Electrical , C&I as per Electrical Scope (Section D of this spec.).	
2.	Complete Reversible Belt Feeders in crusher house (2200 BW at 1.5 m/s approx. speed) Rated 1750TPH/ Design 1925 TPH (including supply of belt) with all electricals and C&I.	4 sets
3.	Inline Magnetic Separators with belt, drives, fixing lugs, slings, fixing accessories, tramp iron chute up to ground level, reject trolley and with all electricals and C&I etc.	6 Nos.
4.	Metal Detectors along with all electricals and C&I.	6 Nos.
5.	Suspended Magnet along with fixing lugs, slings, fixing accessories, tramp iron chute, reject trolley all electricals and C&I.	2 Nos.
6.	Belt weighers along with all electricals and C&I.	4 Nos.
7.	Chutes with chute support structure, chute block switches in building & Tunnel, Transfer Points, crusher house, wagon tippler complex, track hopper complex etc. including liners in crusher supporting RCC deck and with all electricals and C&I.	1 Lot
8.	Complete Travelling Tripper machine with drives, flap Gates (Motorized) with actuator, two way chute , including supports, rails, rail fixtures, clamps and other all electricals and C&I, drives & accessories. Rated 3500 TPH/ Design 3850 TPH (for drives geared motors are not acceptable, so bidder to provide conventional electro mechanical drive i.e. gearbox, brake and motor). Drive rating shall be min. 2 x 50 %.	6 sets
9.	Bunker Sealing arrangement complete with idlers, tensioning arrangement, etc. (including supply of belt).	6 sets
10.	Complete Coal Sampling Unit at Crusher House, (-)250 mm , occasional 400mm uncrushed coal with all electricals and C&I.	1 set
11.	Complete Coal Sampling Unit at TP-5, (-)20 mm crushed coal with all electricals and C&I	1 set
12.	Flap gates with motorized actuator including limit switches, fixing supports, maintenance access and all electricals and C&I.	1 Lot
13.	Rack and pinion gates with actuators, fixing supports, maintenance access and all electricals and C&I.	1 Lot

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14.	Rod gates, fixing supports, maintenance access.	1 Lot
15.	Fixed trippers with belt guards and other accessories.	1 Lot
16.	Electrical Hoist with all electricals and C&I for entire CHP, LHP & GHP transfer points, storage sheds, crusher house , bunker floors, GTU, wagon tippler complex, track hopper complex, pump houses etc.	1 Lot
17.	Manual Hoist with travelling trolley and chain pulley blocks for entire CHP,LHP & GHP transfer points, storage sheds, crusher house , bunker floors, GTU, wagon tippler complex, track hopper complex, pump houses etc.	1 Lot
18.	Motorised electric Winches (as applicable) for handling counter weight in GTU entire CHP,LHP & GHP with all electricals and C&I.	1 Lot
19.	Sump Pumps including discharge piping valves, accessories & support structure along with all electrics and C&I for entire CHP,LHP & GHP.	1 Lot
20.	1000Kg Rope & sheave type passenger cum goods elevator shall be provided along with electricals and C&I for Crusher House and TP-5). The elevator shall be designed as per Clause no 5.17.0 and data sheet of Elevator of Sub Section-A-23, of Part B of technical specifications	2 sets
21.	Belt vulcanizing machine with Tool Kit for 2200mm belt width with all accessories, consumables, etc with all electricals and C&I.	1 Nos.
22.	Online Coal Analyzer, (before main plant CSU) with all electricals and C&I.	2 Nos.
23.	Venturi Scrubber Type Wet Dust Collection System for Vibrating feeder and Belt Feeders after crusher in crusher house with all electricals and C&I.	2 sets
24.	Complete manual stone picking arrangement along with chutes & other accessories.	1 lot
25.	Rails & rail fixtures for Coal Paddle feeder machine (1750TPH) in CHP track Hoppers for paddle feeder travel.	1 lot
26.	Ring Granulator Crushers for coal complete with scoop couplings (air cooled type), hydraulic door opening mechanism, vibration isolation system, drive base frames and associated electrical (except HT motor) and control & instrumentation equipment along with startup and commissioning spares. 1750TPH Rated/ 1925TPH design/ 1925TPH guaranteed capacity.	4 sets
27.	Vibrating Feeders before crusher with solid deck with all electricals and C&I. 1750TPH Rated/ 1925TPH design/ 1925TPH guaranteed capacity.	4 sets
28.	Minimum Equipments to be considered for CHP Building and Workshop	1 lot
a.	3 phase welding machine	1 no

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b.	Bench Grinder	1 no
c.	Bench Drilling m/c (20mm)	1 no
d.	Bench Vice(Size 100mm -200mm)	2 no.
e.	Monorail hoist 5MT	1 no
f.	Induction bearing heater	1 no
g.	Portable T&Ps like grinder, drill machine, welding machine, mechanical and hydraulic jacks/pullers, cutting set, chain pulley blocks, max pullers, electronic weighing m/c	1 Lot
h.	10T EOT Crane along with all electricals and C&I for CHP Workshop Building with Rails and Rail fixing accessories for EOT cranes.	2 Nos.
29.	Minimum Equipments to be considered for DOZER SHED	
a.	Air compressor	1 no
b.	Gas cutting	1 no
c.	Gas welding	1 no
d.	Brazing set	1 no
e.	3 phase welding machine	1 no
f.	Bench Grinder	1 no
g.	Bench Drilling m/c(20mm)-	1 no
h.	Bench Vice(Size 100mm -200mm)	2 nos
30.	Minimum Tools and Tackles to be considered	
a.	Torque wrench required up to M24 bolts	1 no
b.	Bearing puller set to pull up to maximum bearing size in system	1 no
c.	Hydraulic jack 50 t	1 no
d.	Lifting trolley for It circuit breakers	1 no
e.	Electrical power winch with wire rope 7.5 t & 1500 m galvanized wire rope	1 no
f.	Bearing grease gun	1 no
31.	Nylon-Nylon belt for conveyors (as applicable), with splicing kit as per requirement and specification.	1 lot
32.	Steel Cord belt for conveyors (as applicable), with splicing kit as per requirement and specification	1 lot
33.	Following Electrical & C&I for CHP as per Electrical Scope (Section D of this spec.) shall be considered under this head: HT Motors, LT Motors, Trailing/Flexible cables, All Data cables/Special cables, Temperature transmitters, Power & Control Junction Boxes, All Electrical	1 lot

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	panels, All field devices, limit switches, Speed Control devices, All brakes and clamps with complete accessories, earthing & lightning, DCS, CHP Control Desk, Main MCC, LT Bus ducts, LT Transformers, Vibration Monitoring System for Crushers, Illumination, Cable Trays & Supports, Hooters, Power Distribution Boards, PLC, UPS, Cable Terminations, Brackets and Structural steel, Maintenance Tools & tackles, AC, ropes, conduits etc., as per Electrical scope Matrix.	
34.	Mechanical Mandatory spares for CHP as per Annexure-7	1 lot
35.	Electrical C& I Mandatory spares for CHP as per Annexure-7	1 lot
36.	Electrical C& I Mandatory spares common for all as per Annexure-7	1 lot
LIMESTONE HANDLING PLANT		
Sl. No.	ITEM DESCRIPTION	QTY.
37.	Conveyor System (1200 MTPH rated /1320 MTPH design, 1200mm belt width, 2 m/s approx. speed and & only for LS conv. 5A/B 200 MTPH rated /220 MTPH design, 1200mm belt width, 2 m/s approx. speed) complete with idlers (with frames, brackets), all types of pulleys with plummer blocks and bearings, deflector rollers, drive chain system (motors, gear boxes, all types of fluid couplings (fluid coupling, scoop coupling, flexible coupling, geared couplings, other input and output couplings), brakes, technological structures, including GTU towers (other than with TPs and conveyor trestles), GTU travel guide pipes, CI counter weights, cradles, short supports, stringers, stools, skirt board and skirt rubber, deck plates throughout conveyor length , maintenance platforms, inspection doors, inspection stools, ladders, bolts, anchor fasteners, templates, external scrappers, internal scrappers, foundation bolts & nuts, rubber sealing, chutes, drive base frame, base plate, shim plate etc. with all electricals and C&I (except for items indicated separately under Electrical , C&I as per Electrical Scope (Section D of this spec.).	1 lot
38.	Conveyor System (150 MTPH rated /165 MTPH design, 650mm belt width, 1 m/s approx. speed) complete with idlers (with frames, brackets), all types of pulleys with plummer blocks and bearings, deflector	1 lot

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	rollers, drive chain system (gear boxes, all types of fluid couplings (fluid coupling, scoop coupling, flexible coupling, geared couplings, other input and output couplings), brakes, technological structures, including GTU towers (other than with TP's and conveyor trestles), GTU travel guide pipes, CI counter weights, cradles, short supports, stringers, stools, skirt board and skirt rubber, deck plates throughout conveyor length , maintenance platforms, inspection doors, inspection stools, ladders, bolts, anchor fasteners, templates, external scrappers, internal scrappers, foundation bolts & nuts, rubber sealing, chutes, drive base frame, base plate, shim plate etc. with all electricals and C&I (except for items indicated separately under Electrical , C&I as per Electrical Scope (Section D of this spec.).	
39.	Complete reversible Belt Feeders (including supply of belt) with all electricals and C&I.	2 sets
40.	Inline Magnetic Separators with belt, drives, fixing lugs, slings, fixing accessories, tramp iron chute upto ground level, reject trolley and with all electricals and C&I etc.	2 Nos.
41.	Metal Detectors along with all electricals and C&I.	2 Nos.
42.	Suspended Magnet along with fixing lugs, slings, fixing accessories, tramp iron chute, reject trolley all electricals and C&I.	2 Nos.
43.	Belt weighers along with all electricals and C&I.	4 Nos.
44.	Chutes with chute support structure, chute block switches in TP's, crusher house, reclaim hopper complex, etc. including liners in crusher supporting RCC deck and with all electricals and C&I.	1 Lot
45.	Complete Travelling Tripper with drives, flap Gates (Motorized) with actuator, two way chute, including supports, rails, rail fixtures, clamps and other all electricals and C&I, drives & accessories. Rated/Design Capacity:- 1200/1320 TPH. (for drives geared motors are not acceptable, so bidder to provide conventional electro mechanical drive i.e. gearbox, brake and motor). Drive rating shall be min. 2 x 50 %.	2 sets
46.	Complete Limestone Sampling Unit with all electricals and C&I	1 set
47.	200TPH/ 220TPH Bulk material receiving unit or box feeder or surface feeder with dust enclosures with all electricals and C&I	2 sets
48.	Truck Tippler 20T capacity with all electricals and C&I	2 sets
49.	Flap gates with motorized actuator including limit switches, fixing supports, maintenance access and all electricals and C&I.	1 Lot
50.	Rack and pinion gates with actuators, fixing supports, maintenance access	1 Lot

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	and all electricals and C&I.	
51.	Rod gates, fixing supports, maintenance access.	1 Lot
52.	1000Kg Rope & sheave type passenger cum goods elevator shall be provided along with electricals and C&I for Limestone Crusher House. The elevator shall be designed as per Clause no 5.17.0 and data sheet of Elevator of Sub Section-A-23, of Part B of technical specifications.	1 set
53.	Belt vulcanizing machine with Tool Kit for 1400 mm belt width with all accessories, consumables, etc with all electricals and C&I.	1 No.
54.	Rails & rail fixtures for Limestone Paddle feeder machine (150TPH) in LHP reclaim Hoppers for paddle feeder travel.	1 lot
55.	Complete individual Dry type dust extraction system for following LHP buildings comprising of dust collection hoods, ducting & duct support, Centrifugal fans, stack, stack support, bag filter system with sequential controller, Rotary air lock, bag filter support structure, and dust collection hopper, including all structures, duct supports, supporting structures, bellows, Piping, Fittings, Gauges, Switches, other instrumentations, Valves, drive base frames, dampers (manual & electrical) etc. with all associated Electricals and C&I. The extraction capacity of dust extraction system shall be based on "American Conference of Governmental Industrial Hygienists"(ACGIH).	
a.	DE system for Limestone in LS JT-1	1 lot
b.	DE system for Lime stone in Crusher house of Limestone	1 lot
c.	DE system for Lime stone in LS JT-2	1 lot
d.	DE system for Lime stone in Bulk Material Receiving/ box feeder/ surface feeder Unit	1 lot
e.	DE system for Limestone in LS JT-3	1 lot
f.	DE system for Limestone in LS Day silo discharge point	1 lot
g.	Limestone storage area dust extraction system: For dust control in limestone storage shed during stacking and handling of limestone, roof extractors, ducting and collection hopper with bag filters shall be provided with all electricals and C&I. The dust collected in the dust collection hoppers shall be periodically emptied back to the reclaim conveyor below the shed.	1 lot
h.	Common compressed air system for LHP building & Limestone storage area DE system comprising of 2 sets of screw compressors (1W+1s) to be located in PH-A complete compressed air piping network with valves, fittings	1 lot

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	and air receivers for Dry DE system along with all associated Electricals and C&I.	
56.	Reversible Hammer Mill crusher for limestone , direct drive (no gear box or belt pulley drive is acceptable) with air cooled scoop coupling, vibration isolation system, hydraulic door opening mechanism drive base frames and associated electrical (except HT motor). and control & instrumentation equipment along with startup and commissioning spares. 1200TPH Rated/ 1320TPH design/ 1200TPH guaranteed capacity.	2 sets
57.	Vibrating Feeders before crusher with solid deck with all electricals and C&I. 1200TPH Rated/ 1320TPH design/ 1200TPH guaranteed capacity.	2 sets
58.	Nylon-Nylon belt for conveyors (as applicable) , with splicing kit as per requirement and specification.	1 lot
59.	Complete set of Plough diverter for tapping & diverting the Limestone flow from 2000mm belt towards limestone crusher house of capacity 1200TPH/ 1320TPH along with all accessories, chute work, plough actuators and enclosures for duct control.	2 sets
60.	Following Electrical & C&I for CHP as per Electrical Scope (Section D of this spec.) shall be considered under this head: HT Motors, LT Motors, Trailing/Flexible cables, All Data cables/Special cables, Temperature transmitters, Power & Control Junction Boxes, All Electrical panels, All field devices, limit switches, Speed Control devices, All brakes and clamps with complete accessories, earthing & lightning, DCS, CHP Control Desk, Main MCC, LT Bus ducts, LT Transformers, Vibration Monitoring System for Crushers, Illumination, Cable Trays & Supports, Hooters, Power Distribution Boards, PLC, UPS, Cable Terminations, Brackets and Structural steel, Maintenance Tools & tackles, AC, ropes, conduits etc., as per Electrical scope Matrix.	1 lot
61.	Mechanical Mandatory spares for LHP as per Annexure-7	1 lot
62.	Electrical C& I Mandatory spares for LHP as per Annexure-7	1 lot
GYPSUM HANDLING PLANT		
Sl. No.	ITEM DESCRIPTION	QTY.
63.	Conveyor System (150 MTPH rated /165 MTPH design, 650mm belt width, 1 m/s approx. speed) complete with idlers (with frames, brackets), all types of pulleys with plummer blocks and bearings, deflector rollers, drive chain system (gear boxes, all types of fluid couplings (fluid coupling, scoop	1 lot

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	coupling, flexible coupling, geared couplings, other input and output couplings), brakes, technological structures, including GTU towers (other than with TP's and conveyor trestles), GTU travel guide pipes, CI counter weights, cradles, short supports, stringers, stools, skirt board and skirt rubber, deck plates throughout conveyor length , maintenance platforms, inspection doors, inspection stools, ladders, bolts, anchor fasteners, templates, external scrappers, internal scrappers, foundation bolts & nuts, rubber sealing, chutes, drive base frame, base plate, shim plate etc. with all electricals and C&I (except for items indicated separately under Electrical , C&I as per Electrical Scope (Section D of this spec.).	
64.	Chutes with chute support structure, chute block switches in TP's with all electricals and C&I.	1 Lot
65.	Flap gates with actuators with supports, all electricals and C&I.	1 Lot
66.	Nylon-Nylon belt for conveyors (as applicable) , with splicing kit as per requirement and specification.	1 lot
67.	Complete Travelling Tripper with drives, flap Gates (Motorized) with actuator, two way chute , incl. supports, rails, rail fixtures, clamps and other all electricals and C&I, drives & accessories. Rated/Design Capacity:- 150/165 MTPH. (for drives geared motors are not acceptable, so bidder to provide conventional electro mechanical drive i.e. gearbox, brake and motor). Drive rating shall be min. 2 x 50 %.	2 sets
68.	Belt Sealing arrangement (including supply of belt).	1 Lot
69.	Following Electrical & C&I for GHP as per Electrical Scope (Section D of this spec.) shall be considered under this head: HT Motors, LT Motors, Trailing/Flexible cables, All Data cables/Special cables, Temperature transmitters, Power & Control Junction Boxes, All Electrical panels, All field devices, limit switches, Speed Control devices, All brakes and clamps with complete accessories, earthing & lightning, DCS, CHP Control Desk, Main MCC, LT Bus ducts, LT Transformers, Vibration Monitoring System for Crushers, Illumination, Cable Trays & Supports, Hooters, Power Distribution Boards, PLC, UPS, Cable Terminations, Brackets and Structural steel, Maintenance Tools & tackles, AC, ropes, conduits etc., as per Electrical scope Matrix.	1 lot
ASH HANDLING PLANT - CONVEYOR SYSTEM		
Sl. No.	ITEM DESCRIPTION	QTY.

BHEL- ISG BANGALORE 	TECHNICAL ENQUIRY SPECIFICATION-CONVEYOR PACKAGE FOR 3X800 MW PATRATU TPS Customer : PATRATU VIDYUT UTPADAN NIGAM LIMITED (A Subsidiary of NTPC Ltd in Joint Venture with Jharkhand Bijli Vitran Nigam Ltd)	DOCUMENT No. PATRATU/CONV. PKG. IS-1-17-2005/CONV. PKG
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70.	Conveyor System (267 MTPH rated /294 MTPH design, 800mm belt width, 2 m/s approx. speed) complete with idlers (with frames, brackets), all types of pulleys with plummer blocks and bearings, deflector rollers, drive chain system (gear boxes, all types of fluid couplings (fluid coupling, scoop coupling, flexible coupling, geared couplings, other input and output couplings), brakes, technological structures, including GTU towers (other than with TPs and conveyor trestles), GTU travel guide pipes, CI counter weights, cradles, short supports, stringers, stools, skirt board and skirt rubber, deck plates throughout conveyor length , maintenance platforms, inspection doors, inspection stools, ladders, bolts, anchor fasteners, templates, external scrappers, internal scrappers, foundation bolts & nuts, rubber sealing, chutes, drive base frame, base plate, shim plate etc. with all electricals and C&I (except for items indicated separately under Electrical , C&I as per Electrical Scope (Section D of this spec.).	1 lot
71.	Conveyor System (800 MTPH rated /880 MTPH design, 1200mm belt width, 2.2 m/s approx. speed) complete with idlers (with frames, brackets), all types of pulleys with plummer blocks and bearings, deflector rollers, drive chain system (gear boxes, all types of fluid couplings (fluid coupling, scoop coupling, flexible coupling, geared couplings, other input and output couplings), brakes, technological structures, including GTU towers (other than with TPs and conveyor trestles), GTU travel guide pipes, CI counter weights, cradles, short supports, stringers, stools, skirt board and skirt rubber, deck plates throughout conveyor length , maintenance platforms, inspection doors, inspection stools, ladders, bolts, anchor fasteners, templates, external scrappers, internal scrappers, foundation bolts & nuts, rubber sealing, chutes, drive base frame, base plate, shim plate etc. with all electricals and C&I (except for items indicated separately under Electrical , C&I as per Electrical Scope (Section D of this spec.).Bidder to note that for conveyor BA BCN # 5A/B HT drive shall be considered irrespective of drive rating arrived after calculation. HT motor shall be provided by BHEL as per Electrical & C&I scope matrix and as mentioned elsewhere but bidder to accordingly consider scoop type fluid coupling and gear box for BA BCN # 5A/B.	1 lot
72.	Conveyor System (2600 MTPH rated /2860 MTPH design, 1800mm belt width,3 m/s approx. speed) complete with idlers (with frames, brackets), all types of pulleys with plummer blocks and bearings, deflector	1 lot

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	rollers, drive chain system (motors, gear boxes, all types of fluid couplings (fluid coupling, scoop coupling, flexible coupling, geared couplings, other input and output couplings), brakes, technological structures, including GTU towers (other than with TP's and conveyor trestles), GTU travel guide pipes, CI counter weights, cradles, short supports, stringers, stools, skirt board and skirt rubber, deck plates throughout conveyor length , maintenance platforms, inspection doors, inspection stools, ladders, bolts, anchor fasteners, templates, external scrappers, internal scrappers, foundation bolts & nuts, rubber sealing, chutes, drive base frame, base plate, shim plate etc. with all electricals and C&I.	
73.	Complete Belt Feeders under Main Fly Ash silo 1 to 6 (1200 BW at 1.5 m/s approx. speed) Rated 325TPH/ Design 358TPH (including supply of belt) with all electricals and C&I.	12 sets
74.	Complete Belt Feeders under Main Bottom Ash silo 1 to 3 (1400 BW at 1.5 m/s approx. speed) Rated 650TPH/ Design 715TPH (including supply of belt) with all electricals and C&I.	6 sets
75.	Complete Belt Feeders in BA TP-6 (1400 BW at 1.5 m/s approx. speed) Rated 800TPH/ Design 880TPH (including supply of belt) with all electricals and C&I.	2 sets
76.	Belt weighers (on conveyor with 267 MTPH rated /294 MTPH design, 800mm belt width, 2 m/s approx. speed) along with all electricals and C&I.	6 Nos.
77.	Belt weighers (on conveyor with 800 MTPH rated /880 MTPH design, 1200mm belt width, 2.2 m/s approx. speed) along with all electricals and C&I.	2 Nos.
78.	Belt weighers (on conveyor with 2600 MTPH rated /2860 MTPH design, 1800mm belt width, 3 m/s approx. speed along with all electricals and C&I.	2 Nos.
79.	Chutes with chute support structure, chute block switches in TP's, Silo Buildings etc with all electricals and C&I.	1 Lot
80.	Travelling Tripper 800TPH/880TPH incl. supports, rails, rail fixtures, clamps and other all electricals and C&I, drives & accessories.	2 sets
81.	Belt Sealing arrangement (including supply of belt).	1 Lot
82.	Flap gates (two way & three way) with actuators with supports, all electricals and C&I.	1 Lot
83.	Electrical Hoist with all electricals and C&I. (all ASH conveyor Buildings	1 Lot

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	including Bottom ash tripper floor)	
84.	Manual Hoist with travelling trolley and chain pulley blocks.	1 Lot
85.	Sump Pumps including discharge piping valves, accessories & support structure along with all electrics and C&I with all electricals and C&I for Ash conveyor system.	1 Lot
86.	Nylon-Nylon belt for conveyors (as applicable), with splicing kit as per requirement and specification.	1 lot
87.	Following Electrical & C&I for CHP as per Electrical Scope (Section D of this spec.) shall be considered under this head: HT Motors, LT Motors, Trailing/Flexible cables, All Data cables/Special cables, Temperature transmitters, Power & Control Junction Boxes, All Electrical panels, All field devices, limit switches, Speed Control devices, All brakes and clamps with complete accessories, earthing & lightning, DCS, CHP Control Desk, Main MCC, LT Bus ducts, LT Transformers, Vibration Monitoring System for Crushers, Illumination, Cable Trays & Supports, Hooters, Power Distribution Boards, PLC, UPS, Cable Terminations, Brackets and Structural steel, Maintenance Tools & tackles, AC, ropes, conduits etc., as per Electrical scope Matrix.	1 lot
88.	Mechanical Mandatory spares for ASH conveyors as per Annexure-7	1 lot
89.	Electrical C& I Mandatory spares for ASH conveyors as per Annexure-7	1 lot

BROAD SCOPE OF INSTALLATION SERVICES, E&C and PG TEST:-

SI. No.	DESCRIPTION	UNIT
1.	Packaging, Dispatch and Transportation of all equipments for CHP,LHP, GHP & ASH conveyor system from works to site, receipt, unloading, lifting/shifting to closed/open storage, shifting to erection location, Storage, to make approach road wherever required, Round the clock security for both open storage yard , closed storage shed & erected material till completion of work, Erection, alignment, Carrying out Pre-Commissioning, Commissioning, Performance Guarantee Tests, Reliability Test Run, obtaining Provisional Acceptance Certificate (PAC), Final Acceptance Certificate (FAC) and handing over of the equipment's which is under the scope supply and service of the bidder and BHEL free supplied items. (except for items indicated separately under Electrical , C&I as per Electrical Scope (Section D of this spec.).	1 lot
2.	Receipt at Site, Unloading, and Storage of all BHEL free issue items like HT	1 lot



Customer :

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(A Subsidiary of NTPC Ltd in Joint Venture with Jharkhand Bijli Vitran
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	Motor and its Erection, testing & commissioning.	
3.	Construction of open storage yard and closed storage shed: a. Closed storage shed :Construction of temporary closed covered storage shed for storage & preservation of all supplied material for this package (including free issue items) with minimum dimension - length 40m x width 20m x height 8m) with brick wall construction, concrete flooring, sloped roof, rolling shutter, RCC column with max. span of 6 meters, RCC beams at every 3m height from finished floor level, brick infill up to total height of shed, Windows and access doors shall be provided and it shall be in the scope of bidder. b. Open storage yard: Bidder shall also consider fencing of open storage and site fabrication area as and when allocated at site. c. Bidder to build its own site office and make arrangement for field hostel for its staff.	1 lot
4.	Final painting at site after erection	1 lot
5.	Operation & Maintenance (O&M shifts as defined above)	300 man shifts
6.	TRAINING MODULE for CHP, LHP, GHP & ASH CONVEYOR SYSTEM COMPRISING FOLLOWING ASPECT: Product design - Basic design features - Theory & principle of operation - Latest technological trends in Coal handling plant and design Plant Visit - Testing facilities - Operational feedback - O&M history/problems related to Coal handling plant Visit to Manufacturer's Work - Manufacturing process of Coal handling equipments Operation & Maintenance of Plant - Trouble shooting and fault analysis - Familiarization of special maintenance techniques - Special tool and tackles familiarization	1 lot

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7.	The Contractor shall provide three (3) years of comprehensive annual maintenance contract which will start after defect liability period (defect liability period is defined in contract specifications) as a part of offer/bid by the bidder. This shall include calibration of analyzers, supply/replacement of any required sensor/material (including nucleonic source, if applicable for analyzer technology, which requires top up/replacement up to three year AMC period), rectification of faults reported (within 48 hours), to keep analyzer fully functional, during defect liability period/AMC period. In case of nucleonic type analyzers, all regulations required by Indian Law including that by AERB/other agencies will be complied by Contractor. All necessary arrangements to get regulatory clearances will be responsibility of Contractor. NTPC site will provide necessary documentation/NOC to facilitate this process. Any other requirement related to AERB clearances will be discussed & tied up before award of contract. The Contractor shall follow all guidelines of AERB /other regulatory agencies for proper installation /operation of nucleonic type coal analyzers.	1 lot
8.	)Packaging, Dispatch and Transportation of all items indicated separately under Electrical , C&I as per Electrical Scope (Section D of this spec.) for CHP,LHP, GHP & ASH conveyor system from works to site, receipt, unloading, lifting/shifting to closed/open storage, shifting to erection location, Storage, to make approach road wherever required, round the clock security of closed & open storage and erected material, Erection, alignment, Carrying out Pre-Commissioning, Commissioning, Performance Guarantee Tests, Reliability Test Run, obtaining Provisional Acceptance Certificate (PAC), Final Acceptance Certificate (FAC) and handing over of the equipment's which is under the scope supply and service of the bidder and BHEL free supplied items	1 lot

Note:

- a) Bidder's scope shall also include supply of start-up & commissioning spares applicable for bidder's supplied equipment / systems in this package deemed to have been included in the total bid price.**
- b) Bidder's scope shall include supply of Mandatory spares as per Annexure-7.**
- c) Bidder shall furnish list of recommended spares for three years of operation with the offer.**

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d) Bidder shall submit the credentials for PQR and sub-PQR clearance as per ANNEXURE-24 Sub-vendor questionnaire & contractor's proposal cum evaluation report for BHEL & NTPC approval.

- 11) Commissioning Spares as required till completion and handing over of project shall be in bidder' scope and **deemed to have been included in the total bid price.**
- 12) Miscellaneous steel fabricated ladders/ maintenance platforms, structural supports/ base frames for equipments, pipe supports etc. shall be in bidder' scope and **deemed to have been included in the total bid price.**
- 13) First Fill of Lubricants, hydraulic oil & any other oils etc. up to COD including top up requirements at the time of issuance of PAC/declaration of COD shall be in bidder' scope and **deemed to have been included in the total bid price.**
- 14) Successful bidder to strictly adhere to the completion of bidder's bought out item ordering as per **Annexure-17** and submits the sub-vendor accepted un-priced PO to BHEL. If Successful bidder fails to complete the ordering for bought-out items within this schedule the BHEL reserves the right to place order to NTPC approved sub-vendors at Successful bidder risk and cost.

Bidder shall place the order for ELEVATORS and COAL/LIME SAMPLING UNITS on approved sub-vendors within 30 days of LOI after taking sub-QR clearance so that the drawings of these equipments are submitted to BHEL within 45 days of LOI for civil design of Crusher House and Junction Towers, as these equipment details are critical for design of crusher house and junction towers. No delay on this shall be entertained.
- 15) The capacity of the limestone storage hopper up to ground level shall be minimum 20% of the total storage capacity.
- 16) The gearboxes shall be designed for 24 hours continuous duty. Gearboxes with cooling coils or external cooling are not acceptable.
- 17) Bidder shall submit a signed copy of BHEL's this Tender Enquiry Specification with all enclosures along with their "Technical Offer" without any deviations.
- 18) Bidder shall submit complete drive schedule including motor ratings for all equipment in this package without which the bidder's offer shall not be considered for evaluation.
- 19) During detail engg. the layout and general arrangement drawings of buildings namely Transfer Points, Crusher House, storage shed etc. shall be prepared considering the following parameters.

- a. Working space around the equipment shall be approx. 1000 mm as a good engineering practice:

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- b. Generally 1200 mm passage all around inside periphery of the Transfer points/ Crusher House (except at Conveyor entry/ exit) shall be provided.
- c. Building height shall take care of the following parameters:
 - (i) In case of handling of the equipment one over the other, the clearance between moving & stationary equipment shall be 500 mm (minimum).
 - (ii) In case of handling of the equipment on the side of the other equipment, ground clearance of moving equipment shall be 2500 mm (minimum).

20)For conveyors of belt conveyor systems- *110% of actual power at drive motor output shaft at specified design capacity. The same shall be applicable for all drive motors of belt conveyors of Coal handling system, Ash handling system, Limestone and gypsum handling system.

21)Bidder to provide monorail electric hoist for handling of wagon tippler sub-assemblies.

22)Wagon tippers shall be provided in staggered manner, in case wagon tippler hoppers facing each other.

23)There shall be two (2) nos. track hopper for handling of coal received in Indian railways BOBR rakes. The track hopper shall be 330m long (**excluding machinery hatches**) and of 7000MT coal capacity with machinery hatches at both ends.

24)**The scope of supply and E&C of rails and rail fixtures, clamps and other accessories for Paddle feeder travel for all paddle feeders in CHP track Hoppers and LHP reclaim hopper (i.e. for 8 nos. for CHP + 2 nos. for LHP) shall be in the bidder's scope. Bidder to ensure that there is no fouling with the technological structures, rails fixtures with paddle feeder machine and its accessories like DS tank, CRD, CRD pendulum in the entire travel and machine parking zone. Any hindrance during erection shall be suitably modified without altering the machine. Therefore, bidder to carefully study the paddle feeder GA drg(to be supplied by BHEL's other vendor) during detail engg.**

25)Minimum two (2) Nos. sump pumps in gypsum storage shed complete with motors, local control panel, level switches, individual discharge piping with fittings and valves to nearest plant drain including pipes etc. upto disposal point.

26)Return Idlers shall be provided as per below:

- a. Single Roll, for conveyors upto 400 m c/c length and for below 2000mm belt width.
- b. Two roll with 10 degree angle for conveyors more than 400 m c/c length and for all conveyors of 2000mm and above belt width.

27)Complete detail engineering drawings, calculations, selection of components etc. shall be reviewed & subject to approval of BHEL CUSTOMER'S CONSULTANT /CUSTOMER during detail engineering.

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- 28) Successful bidder shall take prior approval from BHEL while placing the E&C order for this package to their sub-contractor. BHEL reserves the right to disapprove/reject any such E&C contractor which BHEL deems not fit for executing E&C for this contract.
- 29) Bidder's scope shall also include supply and filling of consumables, lubricants, hydraulic oil for flushing, first fill, and further top up for bidder's equipment as well as free issue items, till final handing over to the end customer i.e. PVUNL.
- 30) Bidder to quote for total conveyor system considering drawings enclosed in **ANNEXURE-3** i.e. Plot Plan, drg. no. 9585-001-999-POC-F-001 and Flow Diagram, drg. no. 9585-001-155-PVM-L-002, 9585-001-155-PVM-L-003 and 9585-001-155-PVM-L-004 and **ANNEXURE-13** Railway DPR for marshalling yard area. During detail engineering, bidder shall review the building GA drgs, conveyor drgs, power calculations, and sizing calculations, etc. prepared by BHEL and follow the same. Changes if any have to be informed to BHEL. After confirmation by BHEL regarding these changes, the same shall be incorporated by the bidder. Please note that bidder shall be responsible for the performance and guarantee of complete conveying system.
- 31) All technological structures of conveyors, HGTU tower structures, hoist maintenance platforms, access stools & ladders, flap gate support with access ladders, chutes & chute supporting structures, supporting arrangement for flap gate actuators, tramp iron chute upto ground level, mounting brackets for switches etc. in TPs/JTs, Pent Houses, Track Hopper complex, Wagon Tippler complex, Reclaim Hopper complex, Crusher House, etc. shall be in the bidder's scope of work and supply.
- 32) Technological structure of HGTU/VGTU shall also include the HGTU/VGTU tower along with other items like HGTU trolley, trolley support, sheaves, wire rope; counter weight box, cradle etc. and all these shall be in bidder's scope. Structural design & supply of structural steel for VGTU (except for the ones appearing along with buildings or in between conveyor trestles) & HGTU tower shall also be in bidder's scope. Fabrication and erection of such towers is also in the scope of bidder. BHEL Civil shall provide foundation based on the inputs provided by bidder.
- 33) The guide pipes/ channels and fixing brackets for take-up units shall be in bidder's scope. Guide Pipes for counterweights/ take-up travel in VGTU and HGTU shall be supported at various elevations to avoid any bending of guide pipes. The cradle is to be designed accordingly.
- 34) **Loading point: Impact idlers shall be provided in uncrushed coal zone only. In crushed coal zone normal carrying idlers with 400mm spacing (min. 6 nos.) shall be provided.**
- 35) The idler rolls shall be supported from fabricated steel brackets and **Idler bracket shall be inverted channel for 2000mm and above belt width.**

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- 36) Bidder to note that stringers, short-posts and other technological structures for conveyors below CHP track hopper and LHP reclaim hopper shall be designed and supplied by bidder considering the load of paddle feeder machines. Bidder to also note that impact idler shall be provided **throughout the paddle feeder travel zone** and spacing shall be minimum **600mm**, throughout these conveyors is as per NTPC spec.
- 37) Discharge hood, spout, chute work from apron feeder discharge & below floor in wagon tippler complex, complete discharge hood, spout, interconnecting chute work in crusher house (i.e. (a) above & below vibrating feeders, (b) between vibrating feeders and crushers, (c) below crushers, and (d) including chutes with liners in GERB VIS deck and rubber bellows at inlet and outlet flanges of crusher and vibrating feeders), and track hopper & limestone reclaim hopper complex shall be in bidder's scope of supply and E&C. Bidder shall prepare interconnecting chute drgs. based on equipment GA drawings furnished by BHEL. BHEL's other package vendors will supply only the standalone machines like crusher, vibrating feeders, paddle feeders, apron feeders etc. without any interconnecting chute so, later on no claim shall be raised by bidder. So, entire chute work shall be in the scope of this bidder.
- 38) Bidder shall consider minimum inside dimension of chute for CHP, LHP, GHP & ASH conveyors with various belt width meeting following minimum conditions :
- The cross-sectional area of chute shall not be less than five (5) times of material flow area.
 - The chutes shall be liberally sized to avoid choking problems.
 - Min. Sizes as specified for CHP conveyor chutes for Coal Handling system shall be Minimum clear cross section of chute: 1800mm X 1300 mm (inside both ways).
- 39) However, chute sizes for apron feeder, dribble conveyor, crusher, vibrating feeder etc shall be as per the OEM's recommendation which shall be furnished during detail engg.
- 40) The location of chute block switch in chutes shall be based on the approved coasting time calculation of that conveyor.
- 41) **Gear boxes shall be Bevel Helical type for conveyors to optimize building sizes.**
- 42) Bidder shall get the selected pulley diameter vetted for its adequacy from the belt supplier. Any changes suggested in pulley diameter or its type by belt supplier thereof shall be incorporated by the bidder. Minimum pulley diameter and face width will be selected as per IS-8531 or recommendation of belt manufacturers, whichever is higher.
- 43) Skirt board shall ensure centralized loading of conveyor belt to avoid material spillage. Suitable 'Skirt Plates' shall be provided for entire feeding chute and shall be extended minimum 3m ahead of front edge of chute and 500 mm beyond rear edge of chute. The width of the Skirt Boards shall

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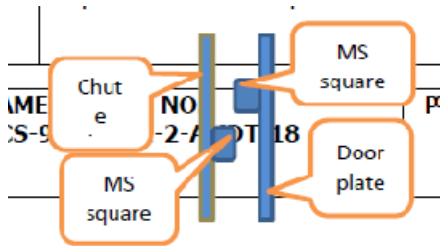
be two-third the conveyor belt width. In the belts where coal/limestone of appreciable lump size (250 mm) is being conveyed, the gap between the bottom of the skirt board and the belt shall be made to increase uniformly in the direction of belt travel. The height of the skirt boards shall be sufficient to contain the material volume as it is loaded on the belt and **shall not be less than 1000 mm for all CHP conveyors and min 750mm for LHP, GHP and ash conveyors.** The height of the skirt board for belt feeders/ reversible belt feeders (if any) shall be minimum 1000 mm. However same shall be finalized after confirmation from DFDS vendor. The skirt plates shall be fitted with replaceable belt piece having facility of adjusting the pressure on the belt conveyor.

- 44) Guard to be provided to all pulleys.
- 45) Fixed idlers pulley shall be provided at return side of conv. gallery at suitable location for lying of new belt. Take-up shall be provided with mark-up scale to monitor belt stretch.
- 46) Chute loads are to be considered and indicated in drawing for clogged conditions.
- 47) FOR COAL ANALYSER: The Contractor shall provide three (3) years of comprehensive annual maintenance contract which will start after defect liability period (defect liability period is defined in contract specifications) as a part of offer/bid by the bidder. This shall include calibration of analyzers, supply/replacement of any required sensor/material (including nucleonic source, if applicable for analyzer technology, which requires top up/replacement up to three year AMC period), rectification of faults reported (within 48 hours), to keep analyzer fully functional, during defect liability period/AMC period.

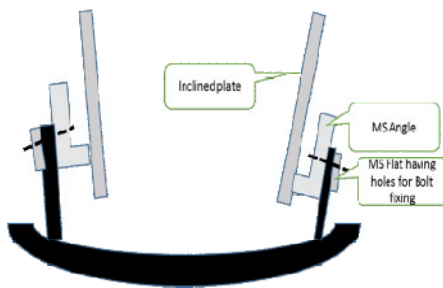
In case of nucleonic type analyzers, all regulations required by Indian Law including that by AERB/other agencies will be complied by Contractor. All necessary arrangements to get regulatory clearances will be responsibility of Contractor. NTPC site will provide necessary documentation/NOC to facilitate this process. Any other requirement related to AERB clearances will be discussed & tied up before award of contract. The Contractor shall follow all guidelines of AERB /other regulatory agencies for proper installation /operation of nucleonic type coal analyzers.

- 48) Guide rollers to be provided at the discharge point of coal from the skirt board in Plow Feeder, Stacker Reclaimer, before start of SR /tripper inclined flight, in belt feeder, reversible belt feeders and in the side of pulley in GTU.
- 49) In the inspection doors & chute plate jointing area joints area to be provided with MS round or strip to give a labyrinth effect as shown below. Inspection doors to be provided with hinge.

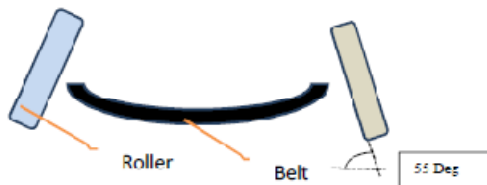
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50) Bidder to note & confirm that skirt board shall ensure centralized loading of conveyor belt to avoid coal spillage and height & length of skirt board shall be as per the Dry Fog DS system requirement to be done by BHEL's other vendor. The skirt board shall also meet the coal feeding requirements.



51) Guide rollers to be provided at the discharge point of coal from the skirt board in Plow Feeder, Stacker Reclaimer, before start of SR /tripper inclined flight in yard conveyor, in belt feeder, in reversible belt feeders and in the side of pulley in Gravity Take-up as per the sketch shown below.

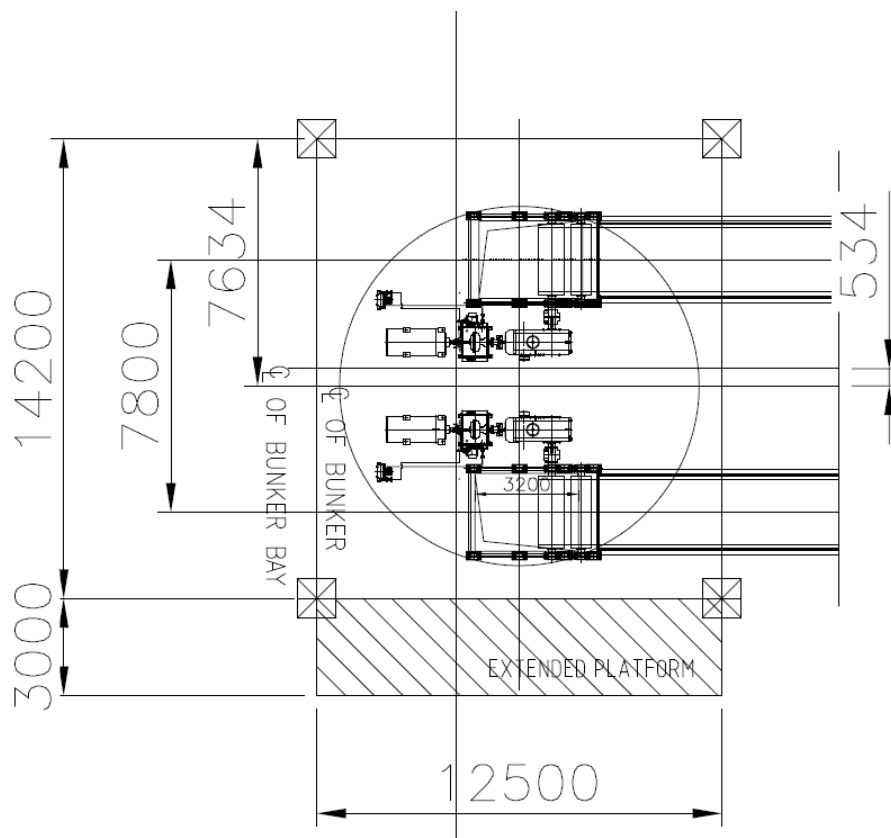


52) For Traveling Tripper the discharge chute shall be of tapered section as shown in the sketch below.

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- 53) Bunker Slot Width Shall be at least 100mm more than the chute width of tripper at bunker feeding.
- 54) On the bunker floor the CHP travelling tripper rails support post shall be minimum of ISMB 200 and it shall be mounted on the stools as shown in the **ANNEXURE-23**. CHP Travelling Tripper rail c/c shall be maintained at 2650mm. Top of Idler for tripper conveyor shall be maintained at 1500mm. CHP Bunker conveyors conv. 7 A/B shall be at a c/c distance of 7800mm. Clear width between of Bunker floor column available is 14200mm. Accordingly bidder to design travelling tripper structure to meet all the clearances as mentioned in NIT specification and ensure no interferences during detail engg.



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Bidder to take special care in selecting Gear box, scoop coupling and its air cooler vendors and select sub-vendors whose design is compact as shown in the sketch above. Later on BHEL will not entertain any request to increase any dimensions of bunker floor, other building sizes.

55) Bidder shall provide guards for belt for all Fixed Trippers and Travelling Trippers.

56) Bidder shall carefully read all the NIT document and specifically flowing Chapters from NTPC **document and its corresponding clarifications and amendments:**

- a. TECHNICAL SPECIFICATION SECTION-VI, PART-B BID DOC. NO. CS-9585-001-2 , SUB-SECTION-A-22, LIMESTONE HANDLING PLANT (LHP) all 73 pages
- b. TECHNICAL SPECIFICATION SECTION-VI, PART-B BID DOC. NO. CS-9585-001-2 , SUB-SECTION-A-23, COAL HANDLING PLANT (CHP) all 121 pages
- c. TECHNICAL SPECIFICATION SECTION-VI, PART-B BID DOC. NO. CS-9585-001-2 , SUB-SECTION: A-24, ASH HANDLING PLANT all 31 pages
- d. TECHNICAL SPECIFICATION SECTION-VI, PART-A, BID DOC. NO. CS-9585-001-2, SUB-SECTION-IIA-15 COAL HANDLING PLANT all 5 pages
- e. TECHNICAL SPECIFICATION SECTION-VI, PART-A, BID DOC. NO. CS-9585-001-2, SUB-SECTION- IIA-14 LIMESTONE HANDLING PLANT all 4 pages
- f. TECHNICAL SPECIFICATION SECTION-VI, PART-A, BID DOC. NO. CS-9585-001-2, SUB-SECTION-IIA-16 ASH HANDLING SYSTEM all 16 pages
- g. TECHNICAL SPECIFICATIONS SECTION – VI, PART-A BID Doc. No.- CS-9585-001-2 SUB-SECTION-IV, FUNCTIONAL GUARANTEES ALL 98 PAGES
- h. TECHNICAL SPECIFICATION SECTION-VI, PART-B, BID DOC. NO.: CS-9585-001-2, SUB SECTION-A-02, EQUIPMENT SIZING CRITERIA
- i. TECHNICAL SPECIFICATIONS SECTION VI, PART-C BID DOC. NO.: CS-9585-001-2 , GENERAL TECHNICAL REQUIREMENTS ALL 111 PAGES
- j. TECHNICAL SPECIFICATIONS SECTION VI, PART-B BID DOC. NO.: CS-9585-001-2 , ELECTRICAL 610 PAGES
- k. TECHNICAL SPECIFICATIONS SECTION VI, PART-B BID DOC. NO.: CS-9585-001-2 , CONTROL & INSTRUMENTATION 249 PAGES

57) Rated capacity (corresponding to CHP capacity OF 3500tph) shall be guaranteed capacity for 100% duty equipment under coal handling plant. For 50% duty equipment design capacity shall be guaranteed capacity. For purpose of guaranteed power consumption rated capacity shall be considered in either case.

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58) Design capacity of the conveyor system shall be considered for the selection of belt width, belts speed and the continuous motor rating at 50 deg C Ambient.

59) Rated capacity of CHP conveyor shall be 3500 TPH and minimum belt width shall be 2000 mm. Belt speed of conveyors shall not be more than 3.4 m/s.

60) All conveyors (except boom conveyor of S/R) shall be designed for 110% of rated capacity. The boom conveyor of S/R shall be designed for 125% of rated capacity.

61) 2x100 % (one working + one standby) conveying stream shall be provided in the CHP, LHP, GHP & ASH Ash conveyor system.

62) Belt conveyor system shall be designed as per the 5th edition of 'Belt Conveyors for Bulk Materials' published by Conveyor Equipment Manufacturer's Association' or equivalent International Standard. Ai value for idler shall be considered 2.8lb (min.) for the purpose of conveyor design calculation only.

63) All mechanical, civil and structural system design shall consider:

- a) Simultaneous running of both conveyors at rated capacity.
- e) Starting of one stream with other stream in standstill condition.
- f) Starting of one stream with other stream in operation at rated capacity.
- g) Round the clock operation of Coal Handling Plant.
- e) The following aspects shall be taken care of coal / limestone:

64) The coal / limestone delivered to power station shall be of size 250mm and below. However, occasionally 1-2% coal of 400 mm lump size may also be encountered.

65) HGI of coal shall be between 44 to 65. Normally, moisture content in coal varies between 12% to 15%. However, for design purposes moisture content of 20% shall be considered for both coal and limestone.

66) Complete set of Plough diverter for tapping & diverting the Limestone flow from 2000mm belt towards limestone crusher house of capacity 1200TPH/ 1320TPH along with all accessories, chute work, plough actuators and enclosures for duct control.

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- 67) Due to open cast method of mining involved, the coal may contain shale and sand stone as high as 20%.
- 68) Also occasionally, metal pieces like broken shovel teeth, brake shoe, wires etc. may also come along with coal/ Limestone.
- 69) The coal / limestone as received' shall contain varying percentage of fines. This may form adhesive lumps particularly during monsoon when surface moisture is at its maximum value. The sizing and selection of all equipment shall take care of above.
- 70) **All bottom ash conveyors (BA BCN 1A/B, 2A/B,3A/B, 4A/B,5A/B, 6A/B, 7A/B , BA BF-1/2/3/4/5/6/7/8) & common ASH CONVEYOR BCN 8A/B shall be with heat resistant grade belting to withstand continuous conveying of bottom ash at temperature of 150 deg Celsius.**
- 71) Design capacities & margins, Drive equipment Rating, Gear Box Rating, Coupling, Hoists, Belting and Pulleys for CHP shall be as per NTPC NIT specification and subsequent amendment & clarifications.
- 72) Complete individual Dry type dust extraction system for following LHP buildings comprising of dust collection hoods, ducting & duct support, Centrifugal fans, stack, stack support, bag filter system with sequential controller, Rotary air lock, bag filter support structure, and dust collection hopper, including all structures, duct supports, supporting structures, bellows, Piping, Fittings, Gauges, Switches, other instrumentations, Valves, drive base frames, dampers (manual & electrical) etc. with all associated Electricals and C&I. The extraction capacity of dust extraction system shall be based on "American Conference of Governmental Industrial Hygienists"(ACGIH).
- DE system for Limestone in LS JT-1
 - DE system for Lime stone in Crusher house of Limestone
 - DE system for Lime stone in Bulk Material Receiving/ box feeder/ surface feeder Unit
 - DE system for Lime stone in JT-2
 - DE system for Lime stone in JT-3
 - DE system for Limestone in LS Day silo discharge point
 - Limestone storage area dust extraction system:** For dust control in limestone storage shed during stacking and handling of limestone, roof extractors, ducting and collection

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hopper with bag filters shall be provided. The dust collected in the dust collection hoppers shall be periodically emptied back to the reclaim conveyor below the shed.

- 73) Common compressed air system for LHP building, Bulk Material Receiving/ box feeder/ surface feeder unit & **Limestone storage area** DE system comprising of 2 sets of screw compressors (1W+1S) to be located in CHP PH-A complete compressed air piping network with valves, fittings and air receivers for DE system along with all associated Electricals and C&I.
- 74) Complete Wet type Dust extraction system shall be Venturi scrubber type and location: Belt feeder after CHP crusher & Vibrating Feeders at CHP crusher house. Bidder shall consider all necessary structures, stack , stack support, duct with supports, staircase, access platforms , handrails, make up water pumps(1 w +1s) in PH-A, re-circulation pump (2w +2s) in crusher house ground floor with all piping, valves, strainers, instruments in their scope of work, later on no claim shall be entertained regarding any exclusion of scope.
- 75) For both wet type and dry type dust extraction system bidder shall submit design basis report prepared by NTPC approved OEM, for NTPC's approval. All details which are not mentioned in the NTPC specification shall be finalized in DBR during detail engg. stage. Bidder shall ensure all the requirements of NTPC are taken care without any cost implication to BHEL later on. The Wet type Dust extraction scheme in **ANNEXURE-20** and Dry Dust extraction scheme in **ANNEXURE-8** are indicative and only for guidance purpose and doesn't indicate comprehensive scope of work.

76) **Bidder to consider following density of materials:**

Coal Handling System:

- For volumetric computation -800 kg/Cu. m
- For load/ strength - 1100 kg/m³
- 2x100 %(one working + one standby) conveying stream shall be provided in the coal handling system.

Limestone Handling System:

- For volumetric computation -1400 kg/Cu. m
- For load/ strength - 1700 kg/m³
- 2x100 %(one working + one standby) conveying stream shall be provided in the limestone handling system.
- The covered storage shed for limestone shall be sufficient to store limestone equivalent to consumption of minimum 7 days.

Gypsum Handling System:

- For volumetric computation -900 kg/Cu. m
- For load/ strength - 1250 kg/m³

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- c) 2x100 %(one working + one standby) conveying stream shall be provided in the Gypsum handling system.
- d) The covered storage shed for gypsum shall be sufficient to store gypsum equivalent to generation of minimum 7 days.

Ash Handling Conveyor System:

Bottom Ash Conveyors

- a) For volumetric computation -650 kg/Cu. m
- b) For load/ strength - 1600 kg/m³
- c) 2x100 %(one working + one standby) conveying stream shall be provided in the BA handling system.

Fly Ash Conveyors

- a) For volumetric computation -750 kg/Cu. m
- b) For load/ strength - 1600 kg/m³
- c) 2x100 %(one working + one standby) conveying stream shall be provided in the FA handling system.

77) Belt scale shall be designed for a range of 20% to 120% of rated capacity with an accuracy of at least (+) 0.25 percent throughout its range. Belt scale provided on Stacker Reclaimer Boom Conveyor shall have accuracy (in the horizontal position of Boom) of (+) 1 percent for the range of 20% to 120% of boom conveyor rated capacity.

78) **Limestone Handling Plant and Gypsum Handling Plant:** The coal conveyors shall also be suitable for handling limestone unloaded at wagon tippers/ track hopper and being conveyed to limestone crusher house at 1200 MTPH rated/ 1320TPH design. Limestone conveyors before limestone crusher house and upto limestone storage shed shall be rated for 1200 MTPH rated/ 1320TPH design. The capacity of limestone reclaimer conveyors from storage shed to limestone mill bunkers shall be 150TPH rated/ 165TPH design. The capacity of all gypsum handling conveyors shall be 150TPH rated/ 165TPH design.

79) Belting and Pulleys for 150TPH rated conveying capacity (LHP &GHP):

- a) Belt ratings shall be selected in such a way that there are only three (3) ratings of belting. This however excludes and belting of belt feeders. Belting shall be completely interchangeable among same rating of belt.
- b) Minimum number of plies shall be three (3). Other details of belting shall be as specified elsewhere in the specification.
- c) For Pulley, following minimum parameters shall be followed:
 - (i) Maximum allowable deflection of shaft at hubs : 5 Minutes
 - (ii) End disc plate thickness : 12 mm (min.)

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(iii) Shell plate thickness : 12 mm (min.)

(iv) Diameter:

i. All drive pulleys : 630 dia (min)

ii. All balance pulleys : 500 dia (min)

d) Further approval from belt manufacturers shall be obtained by the contractor regarding the adequacy of the pulley diameters.

e) Maximum type of pulleys permitted based on pulley diameter and shaft diameter shall be limited to three (3) nos. These shall comprise of two (2) nos. drive pulleys & one (1) no. for all balance pulleys excluding tripper & SS pulleys.

80)The rotor/shaft of the pulleys etc. should be turned through several rotations periodically to prevent point deformation between rollers and races of the bearings. It should be ensured that rotor doesn't stop at the same point; but preferably at 90 degrees from the original point.

81)Ground conveyors to be provided to the extent possible based on layout. Open/close type hood shall be provided for ground conveyor portion only and it shall be in bidder's scope, only structural gallery is excluded from bidder's scope. For remaining portion, conveyor gallery shall be provided. However, yard conveyor shall be kept open.

82)Fire resistant fibre grating/ steel grating for walk ways on nd trippers to be provided to reduce weight.

83)Local shed shall be provided wherever Metal detector, Belt scales are present and it shall be in bidder's scope of supply.

84)**Successful bidder shall prepare and submit in editable 2D AutoCAD as well as 3D PDMS design review model of all GA of Transfer Points, GA of Wagon tippler complex, GA of track hopper, GA of conveyors, Bunker floors, coal stockpile area, Limestone storage shed, , gypsum storage shed, equipments associated with the scope of work of this package as indicated in the flow diagram of CHP, LHP, GHP , ASH and also for CHP Pump houses, MCC buildings with electrical equipment & Cable Rack. For Pump houses, pumps, HT motors, CHP MCC buildings & cable rack BHEL shall furnish the 2D PDF models which shall be converted in 3D model. The 3D models shall include visual interference check, walk-through animation, video simulation for major equipment placement and removal, visual effect, photo realism etc.).After the completion of engineering of the corresponding complete 3D model shall be handed over to the NTPC& BHEL for its reference. Successful bidder shall ensure that the 3D model preparation is started within 1 month of LOA and are available to make a presentation of the same every 2 months to BHEL & NTPC for review the progress of engineering or as & when**

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required by BHEL & NTPC, if bidder fails to provide 3D Model drgs on time then BHEL reserved the right to place the order for 3D modeling at successful bidder's risk and cost. Also, the 3D models shall be integrated with BHEL's intelligent 3D software and bidder shall depute their engineers in assisting such integration in BHEL PEM Noida premises as and when required.

The price of 2D AutoCAD drgs and 3D PDMS shall be deemed to have been included in the total bid price.

- 85)Preparation of belt schedule including endless belt length and splice joint length in line with detail drgs of conveyor shall be in bidder's scope.
- 86)Hoist GA drawings & schedule shall indicate hoist cap, no. of fall, lift, monorail beam size, tag no., the hoist quantity & its supply shall be as per requirement and NTPC drgs approved during detail engg. Capacity of Hoist in the Buildings shall be decided considering the heaviest equipment or the belt drum lifted to the top floor of building, whichever is heavy. Hoist Pendent shall be provided with fluorescent up/down/forward/reverse travel push buttons and indicating lamps. The control panel shall be wall mounted type and easily approachable from the floor by a standing man.
- 87)Base frame and fixing/foundation bolts for all mechanical equipment /items and related electrical equipments and motors including its alignment shall be in bidder's scope.
- 88)During erection of technological structures, interconnection activities such as fixing of stringer post in gallery runner - cutting of seal plate, drilling hole, gas cutting & notches, nut & bolt and/or welding if required shall be in bidder's scope of work.
- 89)Breaking of wall/ brick cladding and re-doing it for laying conveyor belt for underground tunnel portion shall also be in bidder's scope.
- 90)Bidder shall provide Sump pumps along with level switches & piping at all locations, wherever natural drainage is not possible and its discharge shall be led to waste water service sump. The capacity of each pump shall not be less than 50 m³/hr. Minimum 10% margin on capacity and 20% margin on computed head shall be considered for selection of pumps. Size of the drain pit shall not be less than 2.0 meters x 2.0 meters x 1.8 meters deep. One no. of settling pit shall also be provided before sump pit so that water without heavy coal, limestone, gypsum particles goes into sump pump pit. High and low level switches shall be provided in the sump pump pit.
- 91)Bidder's scope shall include sump pumps complete with all mechanical & electrical accessories, with sump covers, drive, control panels, valves, fittings, pipe work, support hangers, level switches, drain pit in wagon tippler complex, track hopper complex, underground buildings,

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reclaim hopper, gypsum storage shed, areas where natural drainage is not possible etc. shall be in bidder's scope.

92) Necessary provisions shall be considered in the equipment/ items/ systems. Integration of conveyor system with complete CHP w. r. t. other systems / equipments, auxiliary systems such as dust extraction, dust suppression, service water, drinking water system, AC, CW, VS & other coal handling equipment done by BHEL/BHEL's other vendor and final handing over to NTPC upon satisfactory completion and written confirmation from NTPC for complete system / machines shall be in bidder's scope only.

93) Construction of open storage yard and closed storage shed:

- a. Closed storage shed :Construction of temporary closed covered storage shed for storage & preservation of all supplied material for this package (including free issue items) with minimum dimension - length 40m x width 20m x height 8m) with brick wall construction, concrete flooring, sloped roof, rolling shutter, RCC column with max. span of 6 meters, RCC beams at every 3m height from finished floor level, brick infill up to total height of shed, Windows and access doors shall be provided and it shall be in the scope of bidder.
- b. Open storage yard: Bidder shall also consider fencing of open storage and site fabrication area as and when allocated at site.
- c. Bidder to build its own site office and make arrangement for field hostel for its staff.

94) Round the clock security for storage shall be maintained by bidder by employing minimum 4 persons per shift till completion of bidder's scope of work.

Bidder to note that scoop coupling of all HT motors for conveyors and crushers shall be air cooled type. But to optimize the floor plan the air heat exchanger shall be kept suitably and for this if additional circuit of piping required same shall be considered without any additional price impact to BHEL later on. Bidder to take special care in selecting scoop coupling and air cooler vendors and select sub-vendors whose design is compact. Later on BHEL will not entertain any request to increase any dimensions of bunker floor, other building sizes.

95) The successful bidder shall supply with the equipment one complete set of following minimum special tools and tackles required for the erection, assembly, disassembly and proper maintenance of the plant and equipment and systems. These tools and tackles shall be separately packed and sent to site. The successful bidder shall also ensure that these tools and tackles are not used by him during erection, commissioning and initial operation. For this period the successful bidder

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should bring his own tools and tackles. All the tools and tackles shall be of reputed make acceptable to the NTPC.

1	Torque wrench required up to M24 bolts	1 no
2	Bearing puller set to pull up to maximum bearing size in system	1 no
3	Hydraulic jack 50 t	1 no
4	Lifting trolley for It circuit breakers	1 no
5	Electrical power winch with wire rope 7.5 t & 1500 m galvanized wire rope	1 no
6	Bearing grease gun	1 no

The price of any other special tools as per manufacturer's manual shall be deemed to have been included in the total bid price.

96) Training of customer personnel at equipment manufacturer's factory premises and O&M training at site, as per equipment manufacturer's standard training modules, is also in the scope of bidder.

97) Bidder shall supply, erect & commission equipment handling systems (such as chain pulleys, manual hoist, electric hoist, EOT cranes etc.) as per system requirement in the entire coal, limestone, gypsum & ASH conveyor system (Track Hopper complex, Wagon Tippler complex, Crusher house, other buildings, pent houses, complexes, reclaim Hopper, bunker floors, TPs, dozer shed, pump houses, work shop building, Coal settling pump area, AC & ventilation rooms, etc.

98) All Idler sets along with brackets shall be provided. Self aligning idlers for yard conveyors shall be in bidder's scope.

99) For all conveyors & belt feeders, deck plate of min. 3.15 mm thickness shall be provided throughout the conveyor length.

100) Bidder to note that the belt width of the ILMS shall be 200 mm more than the belt width of the conveyor.

101) The min. 1250mm diameter (without lagging) pulley shall be provided for CHP conveyors 6A/B and 3A/B, accordingly bidder to consider the same in their scope.

102) Bidder shall submit the detail manufacturing drgs of all technological structures, chutes etc along with inspection call, without this the inspection call shall not be processed.

103) **Bidder to refer to ANNEXURE-22 for pro-rata progressive payment for drg submission and approval.**

104) The coal flow diagram, profile drgs and Plot plan attached with this specification are for tender purpose indicative only and don't show comprehensive scopes of work and actual things

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may vary during detail engineering. No reference shall be drawn during detail engg from these drgs if there is any discrepancy in technical information or requirement or any commercial issue. So, bidder to carefully study the proposed Plot plan, prepare their own profile drg and study the corresponding BHEL prepared profile drgs and any discrepancy found must be brought to BHEL notice during bid stage, later on no claim arising of any such discrepancy shall be entertained. Further bidders to make all efforts to optimize the sizes of JTs and Crusher house (i.e. L x B x H) which shall be prepared by BHEL. These drgs shall also not be referred for qty of hoists, flap gates, chute work etc. as it shall be finalized during detail engg as per system requirement. The discharge hood shown in BHEL: prepared profile drg is only indicative, during detail engg. successful bidder to prepare the discharge hood size based on the actual trajectory calculation.

105) Painting scheme shall be submitted by bidder in line with specification as enclosed in **ANNEXURE-19** and same shall be subject to NTPC approval.

106) For ash handling conveyor system bidder to refer the attached flow diagram and the scope includes conveyors and buildings the flow diagram is only indicative and does not indicate the comprehensive scope of work relates to these conveyor or buildings.

107) Belt vulcanizing machine for CHP shall be suitable for both Nylon –Nylon and Steel cord belt and it shall accommodate the belt joining of the highest belt width coming for CHP.

C. LIMITING GUARANTEE POWER:

Sl. No.	Area	Flow Path	Total power consumption BKW	Duty Factor	Total Limiting Guaranteed Power in KW with duty factor for path
1.	ASH Conveyor system	Total power consumption for all the equipments including auxiliaries with single stream operation at its guaranteed capacity for: (i) Flow Path IA (Direct Stream): Vibrating feeders taking feed of incoming ash from BA intermediate Storage silos discharging bottom ash (BA) on to BA Main storage silos conveyors located near plant boundary (exact location shall be decided during detail engineering) including all intermediate Conveyors and equipment. Except: - Lighting, Hoists, DS, Ventilation, SW		0.33	200.14KW



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		System, Potable water system.			
2.	ASH Conveyor system	Total power consumption for all the equipments including auxiliaries with single stream operation at its guaranteed capacity for: (i) Flow Path IA (Direct Stream): Vibrating feeders taking feed of incoming ash from BA intermediate Storage silos discharging bottom ash (BA) on to NTPC's Ash mound conveyors located near plant boundary (exact location shall be decided during detail engineering) including all intermediate Conveyors and equipment. Except: - Lighting, Hoists, DS, Ventilation, SW System, Potable water system.		0.33	184.29KW
3.	ASH Conveyor system	Total power consumption for all the equipments including auxiliaries with single stream operation at its guaranteed capacity for: (ii)Flow Path IB (Direct Stream): Vibrating feeders taking feed of incoming ash from BA Main storage silos & discharging bottom ash on to NTPC's Ash mound conveyors located near plant boundary (exact location shall be decided during detail engineering) including all intermediate Conveyors and equipment. Except: - Lighting, Hoists, DS, Ventilation, SW System, Potable water system.		0.33	62.55KW

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4.	ASH Conveyor system	Total power consumption for all the equipments including auxiliaries with single stream operation at its guaranteed capacity for: (ii)Flow Path IB (Direct Stream): Rotary feeders taking feed of incoming ash from FA Main storage silos & discharging fly ash on to NTPC's Ash mound conveyors located near plant boundary (exact location shall be decided during detail engineering) including all intermediate Conveyors and equipment. Except: - Lighting, Hoists, DS, Ventilation, SW System, Potable water system.		0.33	78.26KW
5.	Coal Handling Plant	Total Power Consumption for all the equipments including auxiliaries with single stream operation at its guaranteed capacity for: - Coal Flow Path IA (Direct Stream) - Apron feeders 1&2 taking feed of incoming coal from Wagon Tiplers 1&2 discharging crushed coal into last bunker of Unit #3 through travelling tripper mounted on Bunker Conveyor including all intermediate conveyors and equipment. - two nos. stacker-reclaimers, - yard conveyors (maximum of stacking / reclaiming modes), - two (2) nos. wagon tipplers and associated side arms chargers apron feeders - Four (4) nos. Paddle feeders.		0.5	2836.32KW
6.	Limestone Handling Plant	Limestone Flow Path iv (a) - Apron feeders 1&2 taking feed of incoming limestone from Wagon Tiplers 1&2 discharging crushed limestone to limestone storage shed through travelling tripper including all intermediate Conveyors and equipment.(excluding equipments and		0.2	231.71KW

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		auxiliaries already covered under h(i))			
7.	Limestone Handling Plant	Limestone Flow Path (v) - Reclaiming limestone from limestone reclaim hopper using paddle feeder and feeding to last bunker of limestone mill bunker including all intermediate equipment.		0.2	19.58KW
8.	Gypsum Handling Plant	Gypsum Flow Path-vi - Gypsum conveyor taking feed from gypsum dewatering unit and feeding to gypsum storage shed through travelling tripper provided on last conveyor.		1	25.00KW

Note:

1. Individual conveyor & associated equipment's power consumption at the input terminals of all the drive motors shall be limited to figures as mentioned in **ANNEXURE-6** enclosed, when the system/equipment is operating at rated/guaranteed capacity.
2. Bidder to furnish the guarantee declaration as per enclosed **ANNEXURE-9**.
3. Bidder shall furnish the complete drive list in line with enclosed **ANNEXURE-16. Without the drive list bid may get rejected.**

D. Electrical Scope:

For detail scope of Electrical & C&I Scope bidder to refer attached **ANNEXURE-2**.

E. SUB- QUALIFICATION REQUIREMENT

Bidder to note that following sub-Qualification requirements to be met and clearance to be taken from BHEL/NTPC before placement of order on sub-vendors:

a) Bulk material receiving unit or box feeder or surface feeder:

The Bidder/ its Sub-vendor shall source **Bulk material receiving unit or box feeder or surface feeder** from a manufacturer/ supplier who has engineered and supplied minimum one (1) number of 100 MTPH or above capacity **Bulk material receiving unit or box feeder or surface feeder** for bulk unloading of limestone /other bulk mineral and which should have been in successful operation for at least one (1) year as on techno-commercial bid opening date for this package.

b) Coal Sampling System:

The Bidder/ its Sub-vendor shall source coal sampling system from a manufacturer/ supplier who has engineered and supplied minimum one (1) number of coal sampling

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systems for sampling coal /other bulk mineral from conveyor of 1000 MTPH or above and which should have been in successful operation for at least one (1) year as on 3rd March 2017.

c) Ring Granulator Crusher:

Successful Bidder shall source ring granulators from manufacturer/ supplier who has supplied minimum two (2) nos. ring granulator crushers of at least **1600TPH** capacity for crushing coal which should be in successful operation for a minimum period of two years as on bid opening dated.

d) Reversible Hammer Mill Crusher:

Successful Bidder shall source Reversible Hammer Mill Crushers from manufacturer/ supplier who has supplied minimum one (1) no. Reversible Hammer Mill Crusher of at least **1000TPH capacity** or above for crushing limestone or other minerals of equivalent volumetric capacity which should be in successful operation for a minimum period of two years as on bid opening dated.

e) Vibrating Feeder:

Successful Bidder shall source Vibrating Feeder from manufacturer/ supplier who has supplied minimum two (2) nos. Vibrating Feeder/ Vibrating screening feeder of at least **1600TPH capacity** for handling coal which should be in successful operation for a minimum period of two years as on bid opening dated.

F. OTHER IMPORTANT POINTS

Points mentioned in this section also form part of Technical Specification and bidder to also consider these things in their scope apart from referred bid documents and broad scope mentioned above.

- 1) The RL levels for the CHP, LHP ,GHP & ASH conveyor system and associated facilities shall be as per the site leveling plan NIT spec drg no. 9585-001-POC-A-001 REV. B as enclosed.
- 2) **The length of conveyors shall be generally as per the tender drgs of Layout of Coal Handling Plant and conveyor profile furnished to bidder in ANNEXURE-4 with the enquiry specification. These are indicative and for the guidance of the bidders. The same shall be detailed/improved upon by successful bidder during detailed engineering. There shall not be any price implication for any variation up to $\pm 2.5\%$ of total length and any lift of the conveyors during detailed engineering.**

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- 3) The design, engineering, manufacture, inspection and testing of the equipment shall comply with all the currently applicable statutes, regulations and safety codes in the locality where the equipment is to be installed and shall also conform to the latest edition of Indian and other international standards and codes. Nothing in this specification shall be construed to relieve the contractor of the required statutory responsibility. In case of any conflict & ambiguity in the standard to be followed the decision of BHEL shall be final and binding.
- 4) Bidder shall strictly follow and adhere to the guidelines laid down in the enclosed BHEL's health, safety and environment manual (HSE) and PPE as per **ANNEXURE-21**.
- 5) Bidder shall visit the site to familiarize with the Coal, limestone, gypsum & ash Handling System and site constraints before submitting the complete offer to BHEL 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 condition or layout constraints shall be done by successful bidder without any cost implication to BHEL.
- 6) Supply of grouting cement and grouting of all mechanical equipment / items and its base frame along with free issue items shall be in the bidder's scope. BHEL / BHEL's civil contractors shall provide only the foundation pockets for pedestals (wherever necessary) as per GA drgs of the bidder.
- 7) Bidder shall submit all fabrication and erection drgs for technological structures, chutes with liners, drive base frame, head, tail & bend pulley frames, discharge hoods, GTU structures etc. progressively after manufacturing clearance is given from BHEL for respective GA drg.
- 8) Bidder shall furnish the fabrication details of all stools and inserts to be incorporated in the GA drg. Any other details for of stools and inserts which are required by our civil & structural shall be provided on time and as and when demanded failing which it shall be supplied by bidder at their own cost without any cost implication to BHEL.
- 9) Supply of foundation bolts shall be in scope of bidder. Erection of the same will be done by BHEL's civil contractor. However, timely supply & correctness of erection shall be ensured & checked by bidder. Also bidder to furnish the foundation bolt schedule for all items during detail engg.
- 10) Motorised winches for gravity take-up units and counter weights wherever applicable shall be in bidder's scope.
- 11) Drilling of holes on structural members for crusher deck dampers springs shall be in bidder's scope of work and it shall be done in consultation with BHEL's civil & structural contractor and VIS supplier. Similarly, drilling of any holes on stools and inserts during erection of equipments shall be in bidder's scope of work. Accordingly bidder shall mobilize suitable drilling machine to site.

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- 12) Supply of wire mesh guards for equipments, VGTU, and HGTU shall be in bidder's scope.
- 13) Minor chipping i.e. up to 50mm thickness, micro leveling and providing shim plates for erection of equipment / items shall be in the scope of bidder.
- 14) Cleaning of any debris produced by the bidder during E&C shall be done immediately at each front.
- 15) Rust preventive paint after inspection at shop floor before dispatch shall be in bidder's scope.
- 16) Input and out couplings with coupling guards shall be in the scope of bidder's scope.
- 17) Electro-Thruster brakes for conveyors shall be provided as per the coasting time calculation.
- 18) Provision of any temporary supports/platforms required for E& C of mech. equipment / items shall be in the scope of bidder.
- 19) Dust seal shall be provided for all equipment.
- 20) Periodic checks for stored items such as rotation of bearings ends, belt drum and other condition checks shall be the responsibility of bidder. The objective is to ensure that the equipments/items are not damaged due to long storage.
- 21) Bidder shall co-ordinate with BHEL's Stacker and Reclaimer vendor during E&C of yard conveyors.
- 22) Material of construction for all equipment shall be subject to BHEL/ NTPC'S Consultant /NTPC approval during detail engineering.
- 23) Bidder shall make their own arrangements well in advance for erection equipments such as crane, hydra, trolley, truck, trailer, all tools& tackles, via chain pulley block, wire ropes, grinding machine, welding machines (including single phase portable welding machine), cutting sets, coupler, pulling & lifting tools such as slings, D-shackles, winches, etc. including precision measuring instruments that are required for E&C purposes at no extra cost to BHEL.
- 24) Bidder shall submit weekly engineering progress reports in BHEL's format and depute full project team for attending all project review meetings called by BHEL/NTPC'S Consultant /NTPC without fail.
- 25) **Bidder shall submit with their bid offer, their proposed sub-vendor list as per the NTPC format attached in ANNEXURE-12 for reference. The proposed sub-vendor list of only successful bidder will be put up for NTPC approval. NTPC will be categorized each sub-vendors either as "A- approved" or DR- document required for NTPC's evaluation. Successful bidder will get 30 days from LOI to convert all DR category sub-vendors into "A" category by NTPC/BHEL by providing requisite documentation to BHEL/NTPC. Any sub-vendor approval going beyond 30 days by any means from LOI shall not be**

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considered for procurement by BHEL and in such event Successful bidder will go ahead with procurement from only approved sub-vendors, without any price implication to BHEL-ISG. Delay in any new vendor approval from NTPC shall not be considered for delay analysis.

- 26) Bidder to note that time is the essence of this contract, thus bidder to adhere to the submission schedule as per enclosed **ANNEXURE-15** and overall project execution time schedule as per **ANNEXURE-18**.
- 27) Bidder shall furnish the L-2 project schedule indicating various milestones and constraints along with the bid. Successful bidder shall furnish the L-3 project schedule in-line with L-2 schedule after award of the contract.
- 28) Bidder to note that all fronts during erection will be given progressively 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.
- 29) Bidder to ensure sufficient manpower throughout the contract for carrying out engineering and erection & commissioning activities in parallel at site.
- 30) During detail engg, bidder to strictly adhere to BHEL/NTPC'S Consultant /NTPC drg. formats, document numbering, quality plan & FQP formats.
- 31) Construction Power and Construction Water Facilities shall be provided at one location (which shall be allocated after mutual discussions at site among successful bidder, BHEL&NTPC). Bidder to make his own arrangements to take it to his working location.
- 32) List of drawings to be submitted for each item / system shall be intimated to the successful bidder during detailed engineering and drawings shall be submitted in line with the list.
- 33) Bidder shall make their own arrangements well in advance for heavy erection equipments like cranes of higher capacity, hydra, winch etc. that are required for erection of equipment. List of minimum handling facilities, tools and tackles required at site during erection shall be as mentioned below. For any reason, if such facilities are not made available by successful bidder; then BHEL has the right to arrange the same from other agencies on hire basis as per the agencies norms and the same shall be recovered/ adjusted contractor's subsequent running bill.
- (1) 75/100 Tons crawling crane (02 nos.),
 - (2) Hydraulic type mobile crane (Hydra) 12MT Capacity -04 nos.,
 - (3) Trailer-02 nos.,
 - (4) 03/05/10 Ton capacity winch in good working condition 1 no. each,

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(5) 10 nos. Other handling equipment like chain pulley blocks etc.

34) Document and drawings must essentially contain the following but not limited to these and any drg/doc required by BHEL shall be furnished by bidder during detail engineering:

- a. General Arrangement drgs of equipments/items
- b. Inputs for Civil assignment drgs along with Load data
- c. Various schedules
- d. Design & capacity calculations
- e. Data sheets
- f. Operation Philosophy
- g. Fabrication drgs
- h. O&M manuals
- i. PG test procedures, QAPs, FQPs

35) Bidder to ensure submission of hard copies as per NTPC's requirement for all engineering drg/doc and for all subsequent revisions along with a soft copy sent thru' email addressed to Project manager and concerned project team. Bidder to also ensure submission of additional 4 sets of hard copies over NTPC's requirement to BHEL's site office. However all the engineering related information shall be furnished in soft editable form to BHEL.

36) 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.

37) Open Storage of items at site shall be done over concrete sleepers.

38) All working parts requiring lubrication shall be of sealed construction so that dust, dirt and other foreign matter do not come in contact with wearing surface.

39) All bearings shall be properly lubricated. Grease nipples and reservoirs shall be furnished wherever necessary.

40) Successful bidder shall furnish the detail packing /shipment box details with information like packing box size, type of packing, weight of each consignment, sequence no. of dispatch, no. of consignment for each deliverable item against each billing break up units/ billable blocks. Without these details the BBU shall not be approved during detail engineering as per attached **Annexure-10**.

41) Also, complete billing break-up with above mentioned details as per attached format shall be submitted within 10 days of LOI.

42) For 2000mm belt width the stringer shall be ISMC 150 and stringer short post shall be ISMC125.

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- 43) All items/equipment shall be dispatched in properly packed condition (i.e. no item shall be dispatched in loose condition such that it becomes difficult to store/identify its location at site at a later stage).
- 44) All critical items like idlers, critical loose items which normally get misplaced / pilfered at site must be sent to site in containers (container shall be free from corrosion against saline water), if space is available in container from previous item dispatch, then same container can be used for subsequent dispatches which need container storage.
- 45) During the operation period of Coal Handling Plant, if the conveyor belts get elongated then cutting, re-splicing and joining of the belt shall be done by the bidder and it shall be in bidder's scope of work.
- 46) All the equipment shall be of robust construction, suitable for operation in dusty, humid and outdoor operation.
- 47) Quality assurance and inspection of equipment shall be as per NTPC specification.
- 48) Bidder shall ensure the correctness of civil assignment drawings which shall be an input for BHEL's civil and structural design agency.
- 49) Material of construction (MOC) for all equipment/components if not mentioned in NTPC NIT spec shall be subject to BHEL/ NTPC approval during detail engineering. Accordingly bidder shall consider MOC for all equipment/component as per best engineering practice, global standard and global references.
- 50) BHEL shall provide only the pedestals at locations as indicated in bidder's drawings. Any extra pedestal if not indicated in the civil assignment drawing but is required at site, then the same shall have to be taken care by the bidder at site by engaging his own resources without any cost implication to BHEL.
- 51) Quality assurance and inspection of equipment shall be as per NTPC specification. However, modalities of inspection (Stage, Final, In-process) shall be finalized during detail engineering after submission of quality assurance plan (QAP).
- 52) BHEL shall provide insert plates at locations as indicated in bidder's drawings. Any extra insert plate if not indicated in the mech. GA drawings and required at site, then the same shall have to be taken care by the bidder at site by engaging his own resources without any cost implication to BHEL.
- 53) Bidder shall prepare and furnish equipment GA drawings, conveyor GA drawings, Building GA drawings, civil assignment drawings and load data drawings of all CHP, LHP, GHP and Ash conveyor Buildings and conveyors based on which BHEL will prepare the Civil & structural design, which will be sent to

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bidder's for review, checking the correctness & acceptance of sizes, floor plans, and equipment load details etc.

54) Bidder shall depute continuously and maintain & depute following minimum nos. of engineers and supervisors, at site for supervision of E&C, coordination and commercial activity for the package.

- a. Resident Manager – 1 member
- b. Mechanical Engineer (min 2 years site experience) or mechanical supervisor (min 5 years site experience) – 8 members
- c. Civil & structural Engineer (min 5 years site experience) - 2 members and their role shall be to cross-check the correctness/ compatibility of civil & structural works w.r.t E & C of bidder's mechanical systems / equipment. Signing joint protocol and raising alerts to BHEL resident Manager wherever there is deviation in civil casting and structural erection which may affect mechanical erections. Bidder shall engage min. 2 qualified civil engineers with min. 5 year site experience to supervise the correct implementation of bidder's civil assignment drgs. at site, as civil works are done by BHEL's other contractor. Also a joint protocol to be prepared and signed by bidder and BHEL civil for record. Later on, no claims from bidder shall be entertained about misalignment and about pedestal castings, footings, cutouts, pockets etc. not prepared as per bidder's drg.
- d. Electrical Engineer (min 2 years site experience) or Electrical Supervisor (min 5 years site experience) - 2 members
- e. Qualified Quality cum safety engineer (Minimum 2 years site experience) – 2 member
- f. Storekeeper - 1 member
- g. Commissioning engineer – 2 Nos.
- h. For commercial activity - 1 member

In case bidder fails to maintain the above minimum manpower at site till contract completion, suitable pro-rata deductions shall be made from RAB payables, for the duration of such absences, at the prevailing rate of BHEL manpower cost as penalty at the sole discretion of BHEL's resident manager whose decision shall be final and binding.

55) Bidder's staff shall necessarily comply and ensure following at site:-

- a) Correctness checking during civil construction as per mechanical drawings.
- b) Frequent condition checks of stored material and its transportation to erection front.
- c) Stage wise erection of all Mechanical, Electrical and C&I equipments & accessories.
- d) Arranging technical specialist for supervision of specialized jobs from respective OEMs.
- e) Measurement Protocols
- f) Preparation of Protocols

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g) Any Protocols as per FQP

h) Any other activity required for successful E&C at site

56) Bidder shall necessarily comply and ensure following w.r.t **Testing, Trial Run & Commissioning activities:-**

- Initiate start-up and commission the complete unit (all mechanical, electrical & C&I equipments and machine as a whole) in an integrated manner under his sole responsibility.
- Perform the required adaptation, adjustment and hot run the equipment to demonstrate its guaranteed capacity.
- Rectify the defects observed during commissioning under his sole responsibility.
- Results of start-up tests and commissioning etc. will be recorded jointly by the bidder and Customer/ Consultant.

57) Bidder shall necessarily comply and ensure following w.r.t **Post-Commissioning, PG testing, Reliability Run Test of the equipments /machine and preparation and submission of signed test protocols:-**

- Submit all final documents in compliance with the provisions of this specification.
- Submit test procedures, and test evaluation methods prior to taking up Performance Tests etc.
- Offer the machine for conducting Performance Guarantee Tests, Reliability Run Test etc.
- Carry out the PG tests and Reliability Run Test etc. under their instruction and take full responsibility of the operation.
- Supply all consumables, change parts, special tools and tackles and commissioning spares in coordination with bidder's headquarter.
- Undertake O&M Services (as described and required for the subject package).

Note:

- Bidder should have met, to the satisfaction of Customer/ Consultant, all the observation, if any, contained in the Preliminary Acceptance Certificate.
- The performance tests for all plant equipment will be carried out to satisfy all operating parameters as per the relevant clauses of the contract technical specification for the equipment under consideration.

58) It shall be the sole responsibility of bidder's staff to do measurement and other protocols, prepare, maintain (record keeping) and follow all stage wise erection & commissioning protocols in line with FQP and customer requirement. Also, getting the protocols signed by all concerned agencies -

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BHEL's Engineer and Customer/Consultant shall be the responsibility of bidder's staff. Special care shall be taken for all payment linked protocols so that it is ensured that such protocols are signed well within time and no payment to BHEL is held up by NTPC on account of these protocols.

59) Bidder to ensure that there shall be no loss of erection time due to any of the following reasons:-

- a) Faulty/ Defective supply of parts/equipments
- b) Improper packing and transportation
- c) Any short supply/ delay in supply
- d) Any mismatch/ wrong supply
- e) Non-availability of replacement item
- f) Any site modification, if it is due to mismatch between bidder's GA, detail drgs. etc.

60) Bidder shall take care of following points:

- a. In general BHEL's working hours/Holidays/weekly off at site shall be followed by bidders and it shall be informed time to time by BHEL's Resident Manager. Accordingly, bidder to align their site staff's working hours/Holidays/weekly off at site so that there is no loss of work and delay in project milestones & targets.
- b. BHEL's Resident Manager (at his sole discretion) may require bidder's services on weekly off/ holidays due to project exigencies; bidder to extend necessary support required during such events.
- c. While leaving the site, bidder's staff shall inform & take written permission from BHEL's resident manager as well.
- d. Suitable replacement shall be ensured during any personal emergency to the bidder's executive deputed at site at any given point of time and all such changes shall be brought to the notice of BHEL's Resident Manager.

61) Bidder shall necessarily comply and ensure following w.r.t **Storage & Preservation** for main supply material & mandatory spares at site:-

- a) Prepare and submit the "Dispatch & Receipt Reconciliation Report".
- b) Make periodic condition checks for the safety of boxes/items during storage of main material, mandatory spares etc.
- c) Maintain requisite inventory records.
- d) Bidder has to keep the material properly as per storage WI. In case bidder fails to adhere the WI and any consequential damage/missing items due to non-adherence of storage WI, No insurance claim can be entertained by BHEL and items shall be replaced by vendor without cost implication to BHEL.

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e) Monthly inspection report to be submitted by successful bidder to BHEL site-in charge / Resident Manager for storage and preservation of materials kept under closed / open stores as part of RAB. In case bidder fails to report the status in anyone of the month, further any damages reported in the subsequent month will not be entertained by BHEL and entire item has to be supplied by bidder at their own cost. No insurance claim shall be entertained.

62) On completion of erection of any major items along with its auxiliaries, the same shall be thoroughly inspected by the Contractor together with BHEL/ NTPC's Engineers for correctness, completeness and acceptability for Pre-Commissioning Tests. Though the NTPC's Engineers associate themselves with such inspection, the responsibility for declaration for correctness, completeness and acceptability shall rest with the Contractor and the pre-commissioning tests shall be carried out after such declaration. The pre-commissioning tests to be performed at site as well as necessary documentation and formats for the protocols to be signed during and after the tests shall be prepared by the Contractor taking into account relevant Indian/International Manufacturer's standards as applicable and finalized by the NTPC sufficiently in advance through mutual discussions. On conclusion of satisfactory pre-commissioning tests of each equipment, the trial operation shall start consistent with parameters of the technical specifications.

The duration of trial operation shall be for 14 days during which period the system/equipment shall run as follows: The trial operation the equipment including standby auxiliary equipment shall run for a minimum period of more than 72 hours during which period the equipment including standby equipment shall run at its rated capacity for a maximum period of 24 hrs. Any interruption caused by the Contractor up to 24 hours will not affect the period of 14 days trial operation indicated above. In case of such interruption occurring for more than 24 hours, the above period shall be extended correspondingly. The system/equipment is deemed to be commissioned on successful completion of the above trial operation. Upon successful completion of trial operation, a protocol shall be signed by the both parties.

A document shall be prepared on the results of trial operation. This document besides recording the details of the various observations during the trial run will also include the date of start and finish of the trial operation and will, be signed by the representative of both the parties. The document of the trial operation shall have log sheets and all adjustments, repairs, interruptions etc., shall be recorded therein. The readiness of the system/equipment for the trial operation shall be intimated by written notice to NTPC.

The trial operation shall be carried out in compliance with relevant manufacturer's standards and/or relevant Indian / International standards and manufacturer's operation directions before starting them. Defects shall be listed in the above mentioned documents and shall be rectified by the Contractor in accordance with the agreement in all respects.

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63) Bidder shall submit the signed and stamped copy of all the pages which constitutes this technical enquiry specification signed by authorized signatory and clearly mentioning each clause under following two categories to avoid any ambiguity in scope understanding & the scope division along with technical offer.

- a. "Accepted without deviation and considered in scope of work"
- b. "Not considered in scope of work"

Bidder shall note that "no deviation" from the enclosed NTPC tender documents shall be acceptable unless and until written approval from BHEL/NTPC'S Consultant /NTPC has been accorded.

64) Bidder to note and follow the scope matrix between mech. vendor and civil & structural vendor as attached in **Annexure-11**.

65) **Bidder to note this being a rear mill arrangement and due to 6 months phase difference in commissioning of Unit #1, Unit #2 and Unit #3 , it may so be required that the drive unit of CHP tripper conveyor 7A/B to be first place in Unit #1 and then shifted to Unit#2 and finally to Unit #3. So, bidder to consider this shifting of drive unit along with other associated services like cutting re-joining of belt, belting extension, motor alignment etc. No extra claim from bidders shall be entertained later on account of this modification of conveyor extension and drive unit shifting.**

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G. WORK INSTRUCTIONS FOR STORAGE & HANDING OVER OF MANDATORY SPARES:-

Following work instructions for storage & handing over of mandatory spares shall be complied and ensured by the bidder:

1. Spares shall be sent in pre-decided lots in containers/secure boxes. This shall be applicable to both shop items as well as BOIs.
2. All boxes/containers are to be distinctly marked in red color with boldly written "S" mark on each face of the containers
3. Unless technically not feasible, BBU number should be put on the item(s) in a durable manner (punching/painting, etc.), so that items can be easily linked with approved BBU for ease of handing over to customer.
4. Expiry date for short shelf life items (oils, chemicals, insulation material etc.) should be put on the item as well as on the packing box.
5. Storage, safety of boxes/items and maintaining requisite inventory records will be the responsibility of bidder's representative at site.
6. Bidders shall make periodic checks for safety of boxes/items, as the case may be.
7. For handing over of mandatory spares, getting MRC from customer and physical reconciliation with customer shall be the joint responsibility of the bidder's site representative and BHEL's site representative.
8. Delivery Schedule & category of Mandatory Spares shall be as per Annexure-I to Amendment Amdt.3 to BDS enclosed in **ANNEXURE-14**:
 - a) Category I Items - 50 % Items to be supplied one month before scheduled synchronization of the 1st Unit and Balance one month before scheduled Synchronization of the last Unit.
 - b) Category II Items -25% of each items to be supplied one month before scheduled synchronization of U#1 and U#2 respectively and balance 50 % to be supplied one month before scheduled Synchronization of U#3.
 - c) Category I & Category II Items shall be as enclosed in, Sec-III.
 - d) Category I – High value item, delivery schedule 1 month before COD of last unit.
 - e) Category II – Other item delivery schedule, proportionate quantity (i.e. for 4 units 25%) 1 month before COD of each unit.

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H. FACILITIES TO BE PROVIDED BY THE OWNER/ BHEL:

1. Land at free of charge as available for the construction of handling plant. No space will be provided by the Customer/ BHEL for the Contractor's labour colony. All facilities for labour housing shall be the sole responsibility of the Contractor.
2. Construction power (chargeable): BHEL will provide one Source of Construction Power from where Vendor to tap power by installing Electric Meter and Electricity charges will be deducted from their bill at per rates prevailing to Site. Further distribution including tariff/energy meter, Power Cabling and other equipments required installation, shall be carried out by the bidder as per his requirement. Location of the tap point shall be at any place in the power plant. Location shall be provided during detailed engineering.
3. All temporary wiring must comply with safety erection regulations and shall be subjected to Engineers inspection/ approval before connection to supply. BIFPCL/BHEL shall not be responsible for any interruption in power supply. Contractor shall make his own arrangement for alternative source of power supply through deployment of adequate capacity and number of DG sets to meet the construction needs without any extra cost to BIFPCL/BHEL. The non-availability of supply or its quality shall not be cited as hindrance of work execution.
4. Construction Water (free of charge): The Contractor shall make his own arrangement for water for erection & drinking purposes. Vendor may draw construction water, if required, from one source provided in CHP area.

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I. MILESTONE SCHEDULE:-

Bidder to prepare L2 schedule and submit to BHEL within 10 days of LOI for BHEL's approval. In this L2 schedule Bidder to indicate following milestone activities along with detailed micro level planning and ensure that the schedule is within the overall time period as indicated in the CTC and ensure all resources are mobilized accordingly.

1. Completion of basic engineering
2. Completion of detail engineering
3. Completion of bidder's bought out items ordering - (un-priced PO to be submitted to BHEL)
4. Completion of construction of temporary open & closed storage shed
5. Start of dispatches
6. Completion of all dispatches
7. Start of erection
8. Completion of erection
9. Readiness of System /Equipments / Machines

J. DOCUMENTS / INFORMATION TO BE FURNISHED ALONGWITH TECHNICAL OFFER:

1. Consumed power values and motor ratings of all the equipment
2. Confirmation of scope in line with Tender.
3. Drawing/document submission schedule
4. L-2 schedule
5. Type and quantity of oil, lubricants & consumables for initial fill and till successful commissioning and handing over of equipment.
6. Un-priced price schedule for supply & erection work mentioning "Quoted" against each item in BHEL price format.
7. List of recommended spare parts list
8. Electrical Load list/Feeder list with type/rating/power requirement.

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K. EXCLUSIONS:

Following equipment/items and systems are excluded from bidder's scope w.r.t. NIT specifications, MOMs, amendments and clarifications (contained in the CD):

- 1) Civil & structural design, supply and construction of all TPs, Pent Houses, Crusher houses, conv. galleries, conveyor trestles, Wagon Tippler complexes, Track Hopper complex, pump houses, tunnels, etc **are excluded from bidder's scope**. However, bidder shall prepare and furnish equipment GA drgs, Building GA drgs, civil assignment drgs. and load data drgs. of all CHP,LHP, GHP and Ash conveyor Buildings and conveyors based on which BHEL will prepare the Civil & structural design, which will be sent to bidder's for review, checking the correctness & acceptance of sizes, floor plans, and equipment load details etc.
- 2) Design, supply, transportation, loading/unloading at site, receipt, storage, security, transportation to erection location and E&C of complete stacker and reclaimer machines, wagon tipplers, side arm chargers, apron feeders and dribble conveyors, **is excluded from bidder's scope**. However, bidder's scope shall include system integration/control requirements and control philosophy w.r.t. overall coal handling plant.
- 3) Design, supply, transportation, unloading, receipt, storage, and security of Paddle Feeder machines are excluded from bidder's scope. **However, supply, transportation, unloading, receipt, storage, and security, erection etc. of rails , rail fixtures, clamps and other accessories for Paddle feeder travel shall be in bidder' scope.**
- 4) Supply of all HT motors (except for compressors , if applicable) are excluded from bidders scope as HT motors will be free issue to bidder by BHEL, however its E&C alignment with conveyor drive system shall be in bidder' scope. Also refer electrical and C&I scope matrix for details.
- 5) Supply and erection of seal plates is excluded from the bidder's scope of work.
- 6) Supply of RCC counter weight is excluded from the bidder's scope of supply. However, if for any conveyor Cast Iron counter weight is required due to layout constraint then same shall be in bidder's scope of supply. Bidder to note erection of all types of counter weight shall be in bidder's scope of work.
- 7) Design, supply, transportation, loading/unloading at site, receipt, storage, security, transportation to erection location and E&C of coal run off pond/pit along with pumps, valves, pipes etc is excluded from bidders scope. Civil works related to coal run off pond is excluded from bidder's scope. However, hoist for decant pump house shall be in bidder's scope.

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8) Supply and erection & commissioning of AC & Ventilation system, Dust Suppression and Water system are excluded from the bidder's scope. However, integration with the overall CHP system and supply of hoist for pump houses shall be in bidder's scope.

L. LIST OF ENCLOSURES:

Following enclosures are an integral part of this technical enquiry and must be signed and stamped and submitted along with the offer (enclosed in soft form in CD):

1. NTPC NIT Specification BIDDING DOCUMENT NO. : CS-9585-001-2 (total 7836 pages)
2. Amendment & Clarification (66 documents)
3. Annexure-1 Project information
4. Annexure-2 Electrical , C&I scope for conveyor package
5. Annexure-3 Plot plan and Flow diagrams (Tender purpose)
6. Annexure-4 Conveyor Profile (Tender purpose)
7. Annexure-5 Ash conveyor scope Matrix(Terminal point for Ash conveyor)
8. Annexure-6 Auxiliary Power Format
9. Annexure-7 Mandatory Spares List & Spare Category
10. Annexure-8 Dry Dust extraction system scheme.
11. Annexure-9 Guarantee Declaration Functional Guarantee
12. Annexure-10 Billing Break-Up format
13. Annexure-11 Scope Matrix between Mechanical & Civil-Structural Vendors
14. Annexure-12 Sub- Vendor List format
15. Annexure-13 Railway DPR
16. Annexure-14 Category of Mandatory spares
17. Annexure-15 Drg & document Submission Schedule
18. Annexure-16 Drive List To Be Filled By Bidder
19. Annexure-17 Bought Out Ordering Schedule
20. Annexure-18 Time Schedule
21. Annexure-19 Surface Preparation And Painting (10 Pages)
22. Annexure-20 Wet Type Venturi Scrubber DE system
23. Annexure-21 BHEL's HSE Manual & PPE Manual (16 Pages + 142 Pages)
24. Annexure-22 Weightage for drgs & BOI ordering for Pro-rata Payment
25. Annexure-23 Travelling Tripper Rail Support Details
26. Annexure-24 Sub-vendor questionnaire & contractor's proposal cum evaluation report

Note: The above documents digitally signed and stamped shall be submitted to BHEL.