भारत हेवी इलेक्ट्रिकल्स लिमिटेड
(भारत सरकार का उपक्रम)
BHARAT HEAVY ELECTRICALS LIMITED
(A Govt. of India Undertaking)

TCN – 08

Ref: PSER:SCT:FKK-S1998:19:TCN-08 Date: 14-02-2020

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| Sub | Tender Change Notice (TCN) - 08. | |
| Job | Receipt, Unloading, Storage, Dismantling, New Material Erection, Re-Erection of Old Items, Modification of existing Items, Restoration, Commissioning, Testing & PG Test of Combustion Modification System for NOx Mitigation of U#6, STG-III (1X500MW) at NTPC Farakka STPS, West Bengal. | |
| Ref | 1.0 | Tender no: PSER:SCT:FKK-S1998:19. |
| | 2.0 | BHEL's NIT, vide reference no: PSER:SCT:FKK-S1998:7704, Date: 11-12-2019. |
| | 3.0 | BHEL's TCN-01, vide ref no: PSER:SCT:FKK-S1998:19:TCN-01 Date: 31-12-2019. |
| | 4.0 | BHEL's TCN-02, vide ref no: PSER:SCT:FKK-S1998:19:TCN-02 Date: 08-01-2020. |
| | 5.0 | BHEL's TCN-03, vide ref no: PSER:SCT:FKK-S1998:19:TCN-03 Date: 13-01-2020. |
| | 6.0 | BHEL's TCN-04, vide ref no: PSER:SCT:FKK-S1998:19:TCN-04 Date: 14-01-2020. |
| | 7.0 | BHEL's TCN-05, vide ref no: PSER:SCT:FKK-S1998:19:TCN-05 Date: 21-01-2020. |
| | 8.0 | BHEL's TCN-06, vide ref no: PSER:SCT:FKK-S1998:19:TCN-06 Date: 28-01-2020. |
| | 9.0 | BHEL's TCN-07, vide ref no: PSER:SCT:FKK-S1998:19:TCN-07 Date: 07-02-2020. |
| | 10.0 | Other References, if any. |

With reference to above, following points/ documents, relevant to tender, may please be noted and complied with while submitting offer.

1) Revised Volume-IF-TCC-CML-Rev-02 is attached herewith, superseding Volume-IF-TCC-CML-Rev-01 issued earlier along with TCN-05. Bidder are requested to go through entire volume before submitting their bid.

2) Revised BOQ cum Price Schedule, VOLUME-III-PRICE SCHEDULE, REV-02 is attached superseding VOLUME-III-PRICE SCHEDULE, REV-01 issued earlier along with TCN-05. Bidders shall quote as per this revised Volume-III, Rev-02 only. Bidders are also requested to submit a declaration in techno-commercial offer that they have submitted their price bid as per REVISED Price Schedule format.

3) Revised `No deviation certificate' as per enclosed Annexure-2. Bidder shall submit no deviation certificate as per enclosed format only.

4) All other terms & conditions shall remain unchanged.

Thanking you,

Yours faithfully,
for BHARAT HEAVY ELECTRICALS LTD

Dy. Mgr. (SCT)

Encl: As Above.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)
POWER SECTOR EASTERN REGION, DJ-9/1, SECTOR-II, SALT LAKE CITY, KOLKATA - 700 091
फैक्स/Fax : (033) 23211960 फोन/Phone : बोर्ड/EPABX : (033) 2339-8000

## CONTENT

These special conditions shall be construed as part of tender document and shall be read along with general conditions of contract (GCC) and other volumes of tender. In case of any conflict or inconsistency between GCC, other volumes and these Technical conditions contract (TCC), the same shall be brought out by the bidder in writing to BHEL for clarification with stipulated date & before due date of submission of offer, failing which most stringent interpretation/ clause in favour of BHEL shall be adopted and the same shall be binding to the bidder.

| CL. NO | DESCRIPTION |
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| 1.0 | PROJECT SYNOPSIS AND GENERAL INFORMATION |
| | Name of the Owner : NTPC LTD<br><br>Address : FARAKKA SUPER THERMAL POWER STATION STAGE-III (1X500 MW),NTPC Ltd., District-Murshidabad, West Bengal, India<br><br>Nearest Railway Station : New Farakka Railway Station is situated about 1km from the FSTPS..<br><br>Nearest Road : The Kolkata-Siliguri Highway runs parallel to the railway track..<br><br>Nearest Airport : The nearest airport is at Bagdogra which is about 215 Km from site |
| 2.0 | SITE VISIT |
| | The bidder should visit project site and acquire full knowledge & information about the conditions prevailing at site and in & around the plant premises, together with all statutory, obligatory, mandatory requirements of various authorities before submission of offer. In line with the above, site visit confirmation will be required to be submitted by the bidder with nthe technical bid. |
| 3.0 | NAME OF WORK |
| | Receipt, unloading, storage, Dismantling, New Material Erection, Re-Erection of Old Items, Modification of existing Items, Restoration, Commissioning, Testing & PG Test of Combustion modification system for Nox mitigation of U#6, STG-III (1X500MW) at NTPC -FARAKKA STPS. |

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| 4.0 | SCOPE OF WORK |
| 4.1 | BROAD DETAILS |
| 4.1.1 | The job includes modification of U#6 at Stage-III (1x500MW), NTPC-FARKKA STPS in the Burner fuel nozzles (coal / oil/ air/ cc-ofa), Laying of duct from Windbox to BOFA Panels (above burners) & its control instrumentation work. Modification in floors to carry out aforsaid work. Detailed scope is mentioned below, however it may be noted that below mentioned scope of work is only a guide line if any additional work which is not written below and required for carrying out for completion of work is to be done without any additional extra cost. |
| 4.1.2 | Bidders are strongly advised to inspect the site, examine and obtain all information required and satisfy himself regarding all matters. The price quoted by the bidder shall be based on his knowledge and judgement of the conditions and hazards involved. Ignorance of site conditions shall not be accepted as basis for any claim for compensation or will not be considered a reason under force majeure. This is a major and skilled job, it requires precision and timely preparation before the start of job. contractor is advised to completely mobilize the site at-least 01 month before official date of shutdown for pre shutdown jobs like Planning of job, fabrication of ducts, dismatling / erection of structural floors,arrangements f T&P, gate pass preparation, fixing of winch and chain pulley blocks, removal of fouling structure etc. |
| 4.1.3 | <u>MECHANICAL ITEMS</u><br>a) Modification of Wind Box with BOFA panel.<br>• New/ modified Re-designed Wind box including new coal, oil and air nozzle tips for all four corners.<br>• New /Re-designed Tilting Tangential Burner Assembly.<br>• Burner Tilt Power cylinders (based on the assessment of actual condition vendor may reuse the existing items also<br>• Modification in coal piping, coupling & its supports.<br>• Strengthening/ modification of structure as required for carrying out combustion modification job (if required)<br>• Burner Panel matching with frames (water wall panel for fitting new redesigned tangential tilting burner assemblies and windbox).<br>• BOFA panel matching with frames (water wall panels for fitting in the new BOFA compartments).<br>• SADC Pneumatic actuators with Positioners & Position transmitters.<br>• BOFA Compartment with dampers and power operated actuators.<br>• Wind box connecting duct along with Expansion bellows between wind box connecting duct and wind box.<br>• Instrumentation Air piping for all pneumatic actuators and instruments being replaced, refurbished under this package.<br>b) Dismantling/Modification of existing Wind box assembly, Patforms/floors/starirs, Ducts, Pr Parts, coal burner, Coal nozzle tip, coal piping, hangers etc.<br>c) Preservation of Scanners and HEA Ignites and critical equipment which can be reused again shall be cleaned and stored in proper shed and shall be reused/ re erected/restored.<br>d) Necessary access, platforms, walkways, handrails, staircase, ladders and gratings etc. for proper approach shall be made by vendor for all equipments, instruments (for newly added items as per scope of supply of Combustion modification) including required during commissioning and testing and accessories.<br>e) Necessary handling/lifting arrangement with monorail and hoist alongwith suitable platform & approach<br>f) Insulation and Cladding.<br>g) Repair / replacement/modification of water wall tubes for installation of Separated over fire air damper/panel (part of scope of combustion modification only), failures during hydro test (hydro test is in Customer's Scope)<br>h)Vendor need to take approval from Boiler Directorate/Bihar under Section 392 of IBR. Vendor has to co-ordinate with Boiler Directorate/Bihar for approval of Drawings for the subject work. Arrangement for inspections/approval through Boiler Directorate/West Bengal upto hydro test/completion of work. |

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| | i) 100% RT of Pr Parts Weld Joints.<br>j) All associated Structural works.<br>k) Existing features where are interfering with the new arrangement of BOFA are to be suitably relocated at site to the extent required.<br>l) Duct stiffners and insulation at existing items to be adjusted at site for required clearance.<br>m)Dismantling of Mechanical Items like Floors/Platforms/stairs/Ducts/Pr Parts/Soot Blower/Buck stays/Insulation etc, Re-Erection/Re-use of old dismantled items/modification as per drawing/as instructed by Engr I/C. |
| 4.1.4 | Control & Instrumentation/Electrical:<br>Contractor's scope shall include but not limited to the following: -<br>• Dismantling of C&I/Electrical Items like Instruments/cables/cable trays/JB's/Light/Light Fittings/Soot Blower Connections etc & Preservation of same for re-use if requied,<br>• Erection, Testing & Commissioning of Pneumatic actuators with positioners and I/P converters for BOFA dampers.<br>• Erection, Testing & Commissioning of BOFA tilt power cylinders with positioners and shear pin failure indicator and alarm.<br>• Erection, Testing & Commissioning of Air Filter Regulator and pressure switches/ transmitters in BOFA signal airline.<br>• Erection, Testing & Commissioning of Flow elements (Aerofoil or as per the standard and proven practice of Contractor) with flow transmitter in BOFA secondary air duct<br>• Erection, Testing & Commissioning of Solenoids and pneumatic tubing for auto purging of BOFA flow element.<br>• Power/Control/Instrumentation cables Laying & termination for Powered-up, Control & interconnection/ integration of C&I instruments/equipment of system with existing unit DDCMIS.<br>• Erection, Testing & Commissioning LIE/LIR, including Erection, Testing & Commissioning Instrument(s) related to the LIE/LIR with necessary erection hardware, impulse tubing/ piping,fitting, racks, enclosures, junction boxes etc. for C&I.<br>• Erection of Branch cable trays up to field Junction boxes.<br>• Erection of Instrument air piping from the existing instrument airline to existing and new equipment/instruments.<br>• Erection, Testing & Commissioning of Instrument air distribution SS tubing, fittings for SADC /BOFA actuators, Corner Nozzle valves, HEA ignitors, Burner Tilt Power cylinders and BOFA Tilt Power cylinders.<br>• Erection, Testing & Commissioning of Two (02 Sets.) of CO analyzers and HD camera at Economizer outlets and hoper of each unit. Tapping points for CO analyzers and HD camera suitable for analyser mounting, shall be erected at Economizer outlet ducts.<br>• Erection, Testing & Commissioning of Microprocessor based electronic positioners with all the pneumatic operated control valves/ dampers for burner-tilt application. Microprocessor based electronic positioners with remote positioner units shall be provided. However, pneumatic positioners along with I/P converters are also a part for SADC BOFA dampers.<br>• Erection of required cable tray(s) along with supporting stuctures to be done. Cable trays may be different sizes & kind as per drawing.<br>• Cable Laying/ splicing, dressing, tagging, glanding, ferruling, terminating at both end, etc. as applicable including continuity checking & IR Value checking (if required) to be done towards commissioning of C&I & Electrical system/items realted to Nox mitigation system.<br>• All associated Electrical, Control & Instrumentation works realted to Nox mitigation of (1X500MW) at NTPC –Frakka TPS to be carried-out under the scope of work.<br>Note: - Dismantled HEA ignitors, Flame scanners, Burner tilt actuators & SADC actuators along with I/P converters, 1/4" Air Filter Regulator and pressure switches etc. shall be re-used. |
| 4.2 | DETAILS SCOPE OF WORK |
| 4.2.A | Dismantling activities and items(MECHANICAL/ELECTRICAL/ C&I) to be retained properly & to |

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| | be re-used/re-erected/alignment/modified/commissioned/painting(supply & application)/testing etc. |
| | The contractor shall carry out Dismantling, Removal, Shifting of any obstructing Pr Parts, structures, buck stay, pipe lines, cables & cable trays, boiler lighting arrangement,wall blowler system at BOFA panel elevation ,facilities etc. and upkeepment of the items for Re-Use/Re-Erection/Modification as per drawing/Instruction of Engr I/C.<br>A. Following Items to Be dismantled, preserved & to be re-used/ re-erected/ modified/ commissioned:-<br><u>MECHANICAL ITEMS</u>:<br>● Insulation cladding, wool, refractory etc as required.<br>● Structure components like Platform, hand rails, floor gratings, stair cases, ladders etc of Different Elevation as required.<br>● Existing Wind box assembly, coal burner, Coal nozzle tip, coal piping, hangers etc<br>● Misc structural items(channel, Angles, Beams etc.)<br>● Wall blower,soot blower, its piping as required.<br>● Duct, duct support, expansion below etc as required.<br>● Buckstay beams and its associated members like leveller guide, scalloped bar, pin etc.<br>● Water wall panels/tubes/ bends as required.<br>● Burner Nozzles (air/coal/oil).<br>● Coal Pipe Bends/elbows as required.<br>● Removal / dismantling of FIE (Fuel Inlet Elbows = 36 Nos) for all four corners at all elevation. Transporatation of FIE's to designated location as decided by BHEL/ Customer<br>● Removal of Oil Guns, Gun Guide Pipes, HEA Ignitor, its fittings & its guide pipes, Scanner & their guide pipes. Proper care shall be given while dismantling as these items shall be reused, Oil Gun Vice assy & Rack, Air Cooled Oil gun Assemblies, oil gun mainmtenance box, oil gun vice assy an rack.<br>● Burner station skid assemblies.<br>● Corner station piping, valves & fittings.<br>● Coal piping, coal pipe coouplings, supports etc( as required).<br>● Buckstays in the wind box and BOFA locations.<br>● Any other piping, supports, valves and fittings etc.<br>● Removal of all Coal Nozzles from coal compartment for all four corners.Replacement of Nozzle tips with new tips & inert back the nozzles to burners coal compartments.<br>●Instrument Air, Service Air Line as required.<br>● Any other mechanical items not mentioned above but required to be dismantled & re-erected/re-used/modified for completion of the sytem, same to be carried out by vendor as per instruction of Engr I/C without any extra cost<br><u>C&I & ELECTRICAL ITEMS</u> :<br>● 44 NOS Flame scanner Head assemblies, Cooling air piping, Scanner hoses.<br>● Furnace flame viewing camera/system.<br>● ASLD etc.<br>● SADC and Burner tilt power cylinders/actuators.<br>● Cable trays and cables, which are fouling with DE-NOX system duct panels etc.<br>● Existing Pressure gauges in Corner skid for oil and atomizing medium.<br>● Wind box to Furnace DP Transmitters and impulse piping.<br>● Tapping point for any Instrument in water wall.<br>● Field cables and Junction boxes in Boiler Operating Floor/Firing Floor/ air and flue gas path as applicable.<br>● Existing SADC I/P converters, 1/4" Air Filter Regulator in existing SADC signal airline, Existing SADC signal air Line pressure switches.<br>● Illumination items.<br>● Existing secondary air flow measurement element and transmitter along with cable & accssories.<br>● Existing corner oil skid, instruments in oil line, trip valves and control valves along with all associated cables. |

● Field JBs and impulse piping.
● All existing cables between existing SADC actuators I/P, pressure switch and SADC/FSSS panel.(including field cables till local JB).
● All existing cables between existing corner oil skid, HEA ignitors, oil gun, LGM box and FSSS panel(including field cables till local JB).
● All existing Power, Control & Instrumentation cables for Soot Blowers.
● Existing instruments in air and flue gas path, associated cabling, field JB's and Impulse piping.
● Any other C&I/Electrical items not mentioned above but required to be dismantled & re-ereted/re-used/modified for completion of the sytem, same to be carried out by vendor as per instruction of Engr I/C without any extra cost.

Note: - The above work includdes Erection, Testing & Commissioning, Laying, dressing, tagging, glanding, ferruling, terminating/splicing at both end, etc. as applicable including continuity checking & IR Value checking (if required) to be done towards commissioning of C&I & Electrical system/items realted to Nox mitigation systemThe above item list are tentative only.

B. Work to be done as under:-

i) Dismantling, Removal, Shifting of any obstructing items (Mechanical, C&I, Electrical) as mentioned above for De-Nox.
ii) Upkeepment/preservation of the items for re-use, re-erection, modification, welding, alignment, laying, termination / splicing, commissioning, PG Test as per instruction of Engr I/C/Drawing as reqd.
iii) Relaying/re-erection of Instrument air, service air, other dismantled pipe lines, lighting system, cables, cable trays, jb's etc.
iv) Disposal of scrap to the scrap yard or as instructed by Engr I/C inside plant premises.
v) Instrument air distribution SS tubing, fittings for SADC actuators, Corner Nozzle valves, HEA ignitors, Burner Tilt Power cylinders Power cylinders.
vi) Dismantling/Modification of existing Wind box assembly, coal burner, Coal nozzle tip, coal piping, hangers etc.
vii) Preservation of Scanners and HEA Ignites and critical equipment which can be reused again shall be cleaned and stored in proper shed and shall be reused/ re erected/restored.
viii) Restoration/re-erection of all removed structure, floor grills, air lines, hand rails, Re-erection of removed insulation and cladding with the help of hooks and retainer plates. Existing access openings/observation doors are to be retained. Restoring JB, cable, cable tray as and where applicable. Dismantling & Removal of scaffolding and other temporary structures & arrangements made for handling after completion of work & Transportation of removed material and other scraps generated during the work to disposal yard/handing over the same to NTPC customer. Any other alteration which is done for modification is to be restored in original position without any extra charge. If any modification of floor/ bracing is required to successfully complete this BOFA modification job which is not mention here, same has to be carried out with out any extra cost.
ix) Existing Floor at 51.850 Mtrs, & other Elevations to be modified to clear BOFA assembly & Ducting.
x) Modification of Existing Floors as per drawing/guidance of Engr I/C.
xi) Existing Buckstay at El 51.00 Mtrs to be modified at corners.
xii) Horizontal Bracings interfering with BOFA system to be modified to clear BOFA & Ducting.
xiii) Duct Stiffeners & Insulation at existing items to be adjusted locally at site for clearance.
xiv) All the existing features which are interfering with the proposed arrangement of BOFA are to be suitably relocated at site to the extent required.
xv) Supply & application of paints for the re-erected/re-used/modified items.
xvi) Fabrication of Floors/benches (where ever required)
xvii) 100% RT to be carried out for all pressure parts ( subject to DeNOx modification only )weld joints after re-erection / reuse / midification

Tentative quantity of work:

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| | • Approx weight to be dismantled will be 50 MT.<br>• Approx weight to be re-erected/re-used will be 30 MT.<br>• Qunatity mentioned above may vary to any extent, no extra paymnet shall be made for quantity variation to complete NOx modification job. |
| 4.2.B | SHIFTING OF MATERIALS FROM STORE/YARD TO SITE, ERECTION,ALIGNMENT,WELDING,NDT,PAINTING (SUPPLY&APPLICATION), TESTING, COMMISSIONING & PG TEST ETC.WORK OF NEWLY SUPPLIED MECHANICAL ITEMS. |
| | Tentative weight of new materials envisaged for erection is 201 MT per Unit (Refer Annexure –II of TCC). Quantity may be increase or decrese as per site requirement. Paymnet will be made on prorata rate basis as per actual quantity. |
| 4.2.B1 | TENTATIVE PRE SHUTDOWN / PREPARATORY WORKS |
| B1.1 | All Necessary arrangements are to be made for handling, lifting, shifting, erection, placement, assembly, matching, alignment, supporting, welding, cutting, grinding, drilling, DPT, Radiography, Heat Treatment and other associated works etc. for the materials to be erected/dismantled. Including providing of all required Manpower, T&Ps, MMDs, Consumables and Other Materials. |
| B1.2 | All necessary arrangements are to be made by the contractor for transportation of materials including providing of all required Manpower, Hydras, Trailers, Tractors and other means of transportation along with operators & fuel. |
| B1.3 | Removal & replacement of structural floors, beams, bracings, cable trays buckstays or any other structure and system fouling with duct routing. BOFA Duct laying from Hot air duct (Left & Right) near windbox (El 38.50 Mtr tentatively) to BOFA assembly above Burner area (El 50.20 Mtr tentatively). Relocation of stairs. |
| B1.4 | Removal of fouling structural floors at Elevation (tentative) 51.850 Mtr & other elevations as per BHEL requirement. |
| B1.5 | Modification of structural floor to accommodate New ducting (Hot air duct to BOFA Panels) system as per BHEL drawing/Instruction of Engr I/C. |
| B1.6 | Placement, erection of structual beams, bracings, floor grills, hand rails, pipes etc. Erection, fitup & welding of structures & platforms. Self drilling screw for floor grills is in subcontractor scope. |
| B1.7 | Erection & welding of structure as per BHEL standards & quality plan. LPI of all welded beams, bracings. Supply of all consumables including Welding electrodes is in subcontractor scope. |
| B1.8 | Modification of Stair & Floor as per drawing/as required. |
| B1.9 | Erection & Placement of Benches required for operation for all newly installed sytems. |
| B1.10 | Area cleaning for the placement of duct pieces before assembly. Pre assembly of Duct for BOFA system. Seal Welding of duct as per BHEL norms. Checking of dimensions as per quality plan. |
| B1.11 | Erection of temporary platforms at boiler floors for duct assembly work. |
| B1.12 | Routing & Erection of Duct from BOFA System to Hot secondary air duct (Left & Right side of furncace) to the extenet possible before shutdown. |
| B1.13 | Erection of duct supports, guides, hangers as per BHEL drawing & site requirement. |
| B1.14 | Erection of Access doors & providing acces structural platforms as per drawing & site requirement. |
| B1.15 | Erection of Junction Box (JB's) near the BOFA Panels. Erection of Cable trays & Laying of Cables to the extent possible during preshutdown. |
| B1.16 | Arrangement of Scaffolding materials & erection of scaffolding for outside furnace area as required. |
| B1.17 | Arrangement of sufficient Illumination for erection work to be arranged by vendor.<br>Note: 24 V DC lights with transformer to be arranged by vendor for confined area work. |
| 4.2.B2 | TENTATIVE SHUT DOWN WORKS |
| 4.2.B2.a | SCAFFOLDING |
| B2.a.1 | Arrangement of scaffolding materials & erection of same in outside boiler (except boiler 1st pass furnace inside) area is in vendor Scope. |

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| B2.a.2 | For Erection of scaffolding in inside Boiler Furnface 1st pass & arrangement of Scaffolding material for the same, refer sl no 4.2.E & 4.2.F of this TCC. |
| 4.2.B2.b | Windbox / Burner |
| B2.b.1 | Locking of Coal pipes before removal of Elbow / Gate valve from coal pipes. |
| B2.b.2 | Installation of New or dismantled FIE (Fuel Inlet Elbow) as decided by BHEL. Replacement of coal pipe couplings /gaskets. |
| B2.b.3 | Transporatation & handing over these items to BHEL / customer stores. |
| B2.b.4 | Replacement of Oil / Air / End Air /CC-OFA nozzle tips for all four corner burners including modification in winbox compartment to suit new desgined nozzles. Reinstallation of Guidepipes of Oil/HEA/Scanner. Scaffolding required to complete job shall be in subcontractor scope. |
| B2.b.5 | Modification in the windbox SADC dampers by welding of locking plates, shielding plates as per BHEL Drawing. After modification ensure free rotation of dampers in all compartments. |
| B2.b.6 | Scanner Air header modification / Rerouting as per site requirement. |
| B2.b.7 | if any modification required in new nozzle tips at site due to difficulty in reinstallation of guide pipe of OIL/HEA/Scanner same to be executed at site by agency without any cost impact |
| 4.2.B2.c | DUCT (Hot Air to BOFA) , Buckstay,Insulation & Structures |
| B2.c.1 | Routing & Erection of Duct from BOFA System to Hot secondary air duct (Left & Right side of furncace) as per drawing & site condition. |
| B2.c.2 | Supporting of duct as per drawing & site requirement. |
| B2.c.3 | Erection of duct expansion bellows & supporting as per drawing & site condition. |
| B2.c.4 | Buckstay (front & rear) to be relocated with & modified to link with BOFA Assy (Tentative EL51000). Buckstay (Left & Right) at El 47075(Tentative) to be removed as per drawing. |
| B2.c.5 | Relocation of Wall blowers at El 46050 (tentative) on left & right side (Approx.5 Nos Each side) to be lowered by 500( approximate) mm to clear BOFA ducting. Rerouting of wall blowers steam pipe header & its supports. |
| B2.c.6 | Gas / Air tightness test of Duct as per BHEL procedure. |
| B2.c.7 | Welding of insulation fixing components at ducts, fixing of mineral wool as per BHEL standards. |
| B2.c.8 | Laying of Insulation, Refractory & Cladding as per BHEL norms. Application of castable & pourbale refractory for buckstay, wall blowers, peepholes, acces doors, burners ww transition tubes etc. |
| B2.c.9 | Additional floors are to be added at EL (tentatively) 44850, 48350, 51850 & other Elevations as per Drawing/ Instruction of Engr I/C. Floor items wherever required to be fabricated from standard size structure materials, without any extra cost. |
| B2.c.10 | Kersone test to be carried out for duct welding. |
| 4.2.B2.d | BOFA Panels |
| B2.d.1 | Transporataion of BOFA panels to site from stores. |
| B2.d.2 | Cutting of Water wall above burner to accommodate new BOFA system. Fitup of WW tubes to BOFA Panel tubes. Welding of HP Joints by IBR welder. |
| B2.d.3 | Vendor need to take approval from Boiler Directorate/Bihar under Section 392 of IBR. Vendor has to co-ordinate with Boiler Directorate/Bihar for approval of Drawings for the subject work. Arrangement for inspections/approval through Boiler Directorate/Bihar upto hydro test/completion of work. |
| B2.d.4 | 100% Radiography of the new HP Joints as per IBR including necessary, rectification of the defects observed during radiography. Pre Heat & PWHT (if required). |
| B2.d.5 | Connection welding of BOFA system to newly erected duct. Supporting of BOFA system. |
| B2.d.6 | Erection of power cylinders for New BOFA system at four elevation in all for corners. Stroke adustment / tuning of power cylinders. Adjustment / tuning of existing SADC power cylinders. |
| B2.d.7 | Laying of Instrument air line from existing header to all newly installed power cylinders. & other installed systems as per site requirement. |

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| B2.d.8 | Approch Platform erection. Erection & placement of benches for operating the installed instruments / systems as per drawing and site reqirement. |
| B2.d.9 | Existing Flame viewing system (FVS) on left & right side wall to be relocated at El 51000 (Tentative). Cutting of water wall to accommodate FVS. Welding of spool ww piece. Erection of approch platform for FVS. |
| 4.2.B2.e | Other Work |
| B2.e.1 | Additional Floors to be added at tentative elevation El 44.850 Mtrs, El 48.350 Mtrs, and El 51.850 Mtrs as per drawing/guidance of Engr I /C. |
| B2.e.2 | Fabrication of Floors/benches (where ever required) |
| 4.2.B2.f | SUPPLY & APPLICATION OF PAINTS |
| B2.f.1 | The contractor's scope of work includes supply & application of paints of all equipment and structures which are supplied new & of those items which will be re-used as per the Employer's standard color coding scheme which shall be furnished to the Contractor. The painting of various components shall comply with the requirements stipulated in different part of this specification. However, for components where no specific requirement is stipulated, the painting conforming to the requirements stipulated below shall be provided. The quality and finish of paints shall be as per standards of BIS or equivalent. The surfaces which have surface temperature of 95 degree Celsius (with or without insulation) shall be applied with at least two coats of high temperature primer/ paint with total OFT not less than 40 micron. |
| B2.f.2 | Red oxide paints to be applied on all weld joints. |
| 4.2.B2.g | Inslutaion & Refractory Work |
| B.2.g.1 | Insulation to be applied in Pr Parts, Water Wall, Ducts as per drawing/Instruction of Engr I/C. |
| B.2.g.2 | Refractory to be applied as per drawing/instruction of Engr I/C. |
| B.2.g.3 | Self tapping screw for insulation to be supplied by vendor. |
| B.2.g.4 | Cutting of cladding sheets as per the profile of the equipment and painting on inner surface two coats of bituminous paint. Black Bituminous Paint will be supplied by Contractor |
| 4.2.B2.h | Commissioning Activities |
| B.2.h.1 | "Contractor shall provide qualified manpower with necessary T&P for testing and commissioning of system for conducting Hydro test, air tightness test, commissioing of SADC system & BOFA system etc. Attending any defects / deficiency observed during the commissioing activity." |
| 4.2.B.3 | Post Shutdwon Commissioning activities/fine tuning & Performance Guarntee test |
| B.3.1 | Contractor shall provide qualified manpower with necessary T&P for post shutdown testing, commissioning & fine tuning of the system.Full necessary assistance for conducting performance guarantee (PG) test etc as required to complete the system. Attending any defects / deficiency observed during this period for successful completion of PG Test. |
| 4.2.C | ERECTION, TESTING,COMMISSIONING & PG TEST WORK OF NEWLY SUPPLIED C&I & ELECTRICAL ITEMS (Refer Annex-III of this TCC for tentative list of New C&I & Electrical Items) |
| C.1 | Control instrumentation for New BOFA power cyilenders, erection of I/P converters, pressure switches, flow transmitters, LIE / LIR, hook ups, BOFA air flow pitot tube. Including laying of cables to Junction box. Erection of New Junction Boxes. C&I of all other work required to complete given scope of work. |
| C.2 | Pneumatic actuators with positioners and I/P converters for BOFA dampers, BOFA tilt power cylinders with positioners and shear pin failure indicator and alarm. Air Filter Regulator and pressure switches/ transmitters in BOFA signal airline. |
| C.3 | Flow elements (Aerofoil or as per the standard and proven practice of Contractor) with flow transmitter in BOFA secondary air duct.• Solenoids and pneumatic tubing for auto purging of BOFA flow element |
| C.4 | Instrumentation and control cables, power supply distribution cables, special cables (such as Scanner pig tail cable) along with accessories for interconnection/ integration of C&I instruments/equipment of system with existing unit DDCMI, Instrument hook up material, erection hardware, impulse tubing/ piping,fitting, racks, enclosures, junction boxes etc. for C&I: |
| C.5 | Branch cable trays up to field Junction boxes, Instrument air piping from the existing instrument airline to existing and new equipment/instruments, Instrument air distribution SS tubing, fittings for SADC /BOFA actuators, Corner Nozzle valves, HEA ignitors, Burner Tilt Power cylinders and BOFA Tilt Power |

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| | cylinders etc. |
| C.6 | Two (02 nos.) of CO analyzers at Economizer outlets of each unit and HD camera at hoper . Tapping points for CO analyzers, suitable for analyser mounting, shall be erected at Economizer outlet ducts |
| C.7 | Microprocessor based electronic positioners with all the pneumatic operated control valves/ dampers being erected and commissioined. For burner-tilt application, Microprocessor based electronic positioners with remote positioner units shall be provided. However, pneumatic positioners along with I/P converters are also a part for SADC BOFA dampers |
| C.8 | All associated Electrical, Control & Instrumentation works,cable termination/splicing etc. |
| C.9 | Erection & Commissiong of CO analysers at ECO Outlet duct and HD Cameras at hoper and its accesaries. Erection of approch platform & benches for CO analyser. CCTV;s are to be erected and commissioned at bottom ash hopper. |
| C.10 | Erection, installation, cable laying, cable termination/splicing, commissioning etc.of all newly supplied C&I & Electrical system. |
| C.11 | Installation of all pneumatic actuators including pneumatic cylinders, solenoid valves, and pneumatic accessories limit switches etc. |
| C.12 | Laying of instrument air pipes to various valves and instruments form the terminal points onward as required. |
| C.13 | Laying of cables, cable trays, JB's, cable termination with instruments, ferruling, tagging, testing, commissioning & PG test. |
| C.14 | Branch cable trays up to field Junction boxes for the newly supplied cables. |
| C.15 | Instrumentation and control cables, power supply distribution cables, special cables (such as Scanner pig tail cable) along with accessories for interconnection/ integration of C&I instruments/equipment of system being renovated/upgraded with existing unit DDCMIS |
| C.16 | Instrument air piping from the existing instrument airline to existing and new equipment/instruments |
| C.17 | Installation of CCTV cameras (High Definition (HD) fixed type) outside the furnace (one on left and right side) at about 10.5 M elevation(tentative). Installation of Seal Boxes fitted with sight glass in each side of boiler water walls as per drawings. |
| C.18 | Installation of of CCTV cameras (High Definition (HD) fixed type) outside the bottom ash hopper at about 8 M elevations( tentative) as per drawings. |
| C.19 | E&C of Burner Tilt shear pin failure system, Flame scanner pigtail cable, Furnace bottom ash viewing CCTV cameras etc. |
| C.20 | Instrumentation and control cables, power supply distribution cables, special cables (such as Scanner pig tail cable) along with accessories for interconnection/Integration of C&I instruments/equipment of system being renovated/upgraded with Existing unit DDCMIS. |
| C.22 | Quanitity & Size of C&I & Electrical Works/Items may vary to any aextent. No extra paymnet shall be made for quantity/size variation to complet NOx modification work. |
| 4.2.D | MATERIAL HANDLING JOB: RECEIPT, UNLOADING, TRANSPORTATION, STORAGE, WATCH & WARD OF MATERIALS TILL THE COMMISSIONING OF THE UNIT & RECONCILIATION OF THE MATERIALS. |
| 4.2.D.1 | NEW MATERIALS SUPPLIED BY BHEL MANUFACTURING UNIT / BHEL VENDOR |
| D1.1 | Material for combustion modification system shall be supplied by BHEL manufacturing unit / BHEL vendor. All the materials are to be unloaded and stored at BHEL / NTPC stores/ open yard by the contractor. Location of unloading will be intimated by BHEL site engineer. Unloading is to be done as per instruction of BHEL site engineer. |
| D.1.2 | Unloading, stacking, reloading the materials/ equipment received, wherever/whenever required, to trucks/ trailers etc. & transportation to stores/ storage yard/ work site at subject project, unloading and stacking at site stores/storage yard/ work site in line with BHEL storage manual and as per the instruction of BHEL engineer. |
| D.1.3 | Material Receipt/unloading/staticking/storage/upkeepment /verification /record keeping / issue / assistance for insurance /reconciliation/ watch & ward. All records are to be kept/entered in computer |

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| | as well as in registrar. |
| D1.4 | The contractor shall maintain computerised records as well as in Registrar for receipt of materials, issued to BHEL's vendors and return by BHEL's vendors in BHEL standard format/ BHEL Computerised system like (ISCMS/E-store etc). Monthly report shall be produced by contractor and Suitable soft & hard copy be maintained as a back up. Vendor need to keep record of all received items, its location of unloading, issue details etc. After completion of job vendor will have to provide reconciliation of materials. |
| D.1.5 | The contractor shall assist for raising insurance claim in case of damage, short supply, theft or any other cause in consultation with BHEL engineers and assist during survey work by the surveyor of insurance company. For theft of materials, contractor shall raise FIR with local police |
| D.1.6 | Complete manpower, T&P, crane/ hydra & its operator & consumables etc. required for convenient unloading, transportation to store & store to erection site of material is to be provided/ arranged by contractor. |
| D.1.7 | Services for watch & ward of BHEL Material, it may be its own store/BHEL store/ NTPC store/open yard. Agency have to arrange suitable watch and ward facility on round the clock basis along with store supervisor. |
| D.1.8 | Preliminary verification of materials at the time of unloading reporting discrepancies like damages and storages, raising insurance, coodinaton with insurance agency if noticed. The contractor shall raise insurance claim in case of damage, short supply, theft or any other cause in consultation with BHEL engineers and assist during survey work by the surveyor of insurance company. Inurence is under BHEL- scope. |
| D.1.9 | The contractor shall raise MDR & monthly MIR pertaining to material management in Consultation with BHEL engineers. |
| D.1.10 | Contractor is advised to keep ready his T&P, hydra etc. for unloading the material at site/stores and should report to site immediately for unloading of such item when ever asked for. Contractor will be intimated timely to mobilize for such activity. |
| D.1.11 | Stacking and storing of materials at Customer open storage yard or covered stores or semi-closed sheds as per BHEL site engineer instructions. Storage & Preservation of materials received inside the project premises up to erection of same shall be in accordance with BHEL's preservation manual or as per BHEL's instructions. Submission of stacking/storing records. All arrangements like Wooden sleepers / concrete blocks / steel frames and tarpaulins, preservatives, paints etc for this purpose wherever deemed necessary shall be made by sub-contractor. |
| D.1.12 | Detailed verification of materials within 07 days with reference to packing list and loading advice slip after unpacking of boxes; repacking after detailed verification; preparation of receipt inspection reports. |
| D.1.13 | Issue of materials for execution of work at site. Identification of Materials at Stores & their transportation from stores to site including Necessary shifting/removal of other materials stacked on the identified material, un packing of the materials, removal of any obstructions & hindrances etc |
| D.1.14 | Maintenance of area where the material will be kept by means of proper lighting, cleaning in and around storage yards and sheds. General cleaning, controlling vegetation growth and upkeep of storage yard, covered and semi-closed /stores sheds. |
| D.1.15 | Supply of material is expected to commence from February' 2020. Approximate weight of material to be unloaded at site is around 210 MT. Final weight for unloading may be increased / decreased as per actual shipment from BHEL Manufacturing units. Refer annex-II for New Mechanical Item List & Annex-III for C&I/Electrical Item list. Paymnet will be made on prorata rate basis as per actual quantity. If the consignment is not unloaded in time and BHEL had to pay any detention/ demurrage then the amount of such charges + 5% over head in each case shall be deducted from from contractor's R.A. bill or any other dues. |
| 4.2.D.2 | EXISTING OLD MATERAILS |
| D.2.1 | SHIFTING/RE-STACKING of existing old materials kept in covered Stores/semi covered store/open yard to create storage space for new material. |

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| D.2.2 | Approx weight of existing/old materials shifting/re stacking inside cover store/semi covered store/material yard is 5 MT. Paymnet will be made on prorata rate basis as per actual quantity. |
| 4.2.E | Erection of cup lock Scaffolding along with Steel Planks, Staircase, handrails etc. for 1 st Pass Inside Boiler Furnace: |
| 4.2.E.1 | a) Receipt & transportation of Scaffolding Materials from NTPC store to site.<br>b) Erection of Scaffolding.<br>c) Dismantling of Scaffolding on completion of work.<br>d) Return of Scaffolding material to customer store.<br>e) This scaffolding work to be carried out during shutdown period, however material shifting to be carried out during pre-shutdown period.<br>Note: sl. no.4.2.E may not be excuted in case customer carries out the same during execution, In that case payment shall not be made against sl no 4.2.E. |
| 4.2.F | Arrangement of cup lock Scaffolding materials along with Steel Planks, Staircase.hand rails etc. for 1 st Pass Inside Boiler Furnace: |
| 4.2.F.1 | a) For making/arrangement Scaffolding upto 55 Mtr Elevation inside Boiler furnace 1 st pass.<br>b) Approximate dimension of furnace inside is 19.939 Mtrs X 16.559 Mtrs.<br>c) Requirement of these scaffolding will be during shutdown perio, however all materials to be made available at site before commencement of shutdown.<br>Note: sl. no.4.2.F may not be excuted in case the same is arranged by customer during execution, In that case payment shall not be made against sl no 4.2.F. |
| 5.0 | GENERAL SCOPE OF WORK |
| 5.1 | Vendor need to take approval from Boiler Directorate/Bihar under Section 392 of IBR. Vendor has to co-ordinate with Boiler Directorate/Bihar for approval of Drawings for the subject work. Arrangement for inspections/approval through Boiler Directorate/Bihar upto hydro test/completion of work. |
| 5.2 | The Sub-contractor has to obtain all statutory clearances and permissions from concerned authorities as required for the work and they must observe and strictly adhere to all labor & industrial laws, and other statutory laws, acts & regulations as applicable for the contract. |
| 5.3 | The Sub-contractor has to provide all required skilled & semi-skilled labors & technicians, experienced engineers & supervisors, qualified Electricinan, qualified Quality & Safety Engineer/supervisor and other Manpower. |
| 5.4 | The Sub-contractor has to provide all required Tools & Plants (T&Ps) in sufficient quantities including Trucks/Tractors/Trailers, Hydra cranes, Winch Machines, Multi Sheave Pulley Blocks, Chain Pulley Blocks, Pulls & Lifts, Slings, Eye Bolts, D-Shackles, Turn Buckles, Hoists, Hydraulic Jacks, Manual Jacks, Torque Wrenches (up to 750 KG – M), Alignment Clamps, Pipe Clamps, Welding Machines. Gas Cutting Sets, Arc Welding Sets, Spanners (up to 90 mm), TIG set,Files, Grinders, Drill Machines, Taps & Dies, Tube Bending Machine, Tongue tester, meggar, Water Washing Hose Pipes and Attachments and all other types of Tools & Plants. Tentative Requirement shall be as per Annexure- V |
| 5.5 | The Sub-contractor has to provide all required Measuring & Monitoring Devices (MMDs) in sufficient quantity including Master Level (0.02 mm/m), Spirit Level, Straight Edge, Water Level, Dumpy Level, DPT Kit, Piano Wire, Plumb Line, Measuring TapeScale, Vernier Calipers, Column Alignment Checking Instruments, Tri Square and all other types of Measuring & Monitoring Devices (MMDs). Tentative Requirement shall be as per Annexure-V |
| 5.6 | The Sub-contractor has to provide all required Consumables including Welding Electrodes & Filler Wires (BHEL approved only), D.A., Oxygen, Argon, Nitrogen and other Industrial Gases, DPT & MPI Consumables, Blue Paste, Diesel, Petrol, Kerosene and other oil, Rust Remover Compound, Sealing & Jointing Compounds, Cloths, Emery Paper, Coir Rope and all other types of Consumables as per site requirement as per Annexure – VI |
| 5.7 | Vendor has to arrange following items like tarpaulin, plastic sheets, wire brushes and all other types of other materials & resources required for completion of work |
| 5.8 | The Sub-contractor has to provide following items like all lugs of size 2.5 sq mm & below, all ferules etc. asbestos ropes for manhole doors (if required). |

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| 5.9 | Proper Arrangement of House Keeping, strict compliance of Health Safety & Environment norms of BHEL, Day to Day cleaning of the entire working area and final area cleaning on completion of work including arrangement of water washing equipments and accessories is included in the Scope of Work of the Sub-contractor. |
| 5.10 | Electrical power connection at one point only and supply for execution of job shall be on chargeable basis & contractor has to arrange for distribution to various work place at site. Vendor has to arrange power cable, junction box, MCB's ELCB's etc as required power power intake.Supply used for stores and office shall be on chargeable basis. For this the sub-contractor shall apply to NTPC for electrical connection to concerned distribution agency of NTPC after completing all formalities. Bills for electricity consumed for office and stores will be settled by the sub-contractor. All necessary arrangements i.e. extension switch boards with MCBs of required capacity for tapping power shall be arranged by sub-contractor. |
| 5.11 | Space for Office and Stores shall be provided to the sub-contractor and the Sub-contractor has to build and furnish office & stores at their own cost. The sub-contractor shall arrange for sufficient nos. of flood lights and other arrangement for ensuring round the clock work. Necessary co ordination with stores and other agencies shall be in the scope of the sub-contractor. |
| 5.12 | The sub-contractor shall submit daily progress report and attend review meeting with BHEL on day to day basis. |
| 5.13 | The sub-contractor shall arrange accommodation, transport, medical, sanitary, safety and other arrangements for all Manpower at their own cost. |
| 5.14 | The sub-contractor must maintain proper system of documentation for Quality, Safety, HSE and other aspects so as to fulfill the requirement of ISO, OHSAS, 5S, SA 8000 and other National/International Standards |
| 5.15 | All necessary arrangements are to be made by the sub-contractor for transportation of materials including providing of all required Manpower and Cranes, Hydras, Trucks, Trailers, Tractors and other means of transportation |
| 5.16 | All Necessary arrangements are to be made for handling, lifting, shifting, erection, placement, assembly, matching, alignment, supporting, welding, cutting, grinding, drilling, DPT, RT, SR and other associated works etc. for the materials to be erected/dismantled. Including providing of all required Manpower, T&Ps, MMDs, Consumables and Other Materials. |
| 5.17 | The sub-contractor shall carry out Dismantling, Removal, shifting of any obstructing structures, pipe lines, cables & cable trays, facilities etc. as required including restoration of the same on completion of work. Any re routing of pipelines, cables and cable trays, equipments facilities etc, if required, shall be carried out by subcontractor free of cost and shall be done in the pre-shutdown period up to the extent possible. |
| 5.18 | All Necessary Preparation, Development, Barricading and Marking of the Area has to be made by the sub-contractor for Storage, Fabrication, and Pre Assembly & Erection of the Materials. |
| 5.19 | The sub-contractor has to carry out Erection of Scaffolding, Platforms, Approaches as required including arrangement of scaffolding materials for otherl areas except 1 st pass inside of Boiler Furnace. Dismantling of the same on completion of work.<br>Note: For Erection & supply/arrangement of scaffolding materials for 1 st Pass Inside Boiler Furnace, refer sl no 4.2.E & 4.2.F of this TCC. |
| 5.20 | Identification & Receipt of Materials at Stores & their transportation from stores to site including Necessary shifting/removal of other materials stacked on the identified material, un packing of the materials, removal of any obstructions & hindrances etc. |
| 5.21 | Transportation of dismantled components, scraps & debris generated and other materials removed to disposal yard/stores on day to day basis. After completion of work, cleaning & shifting of all type of scrap from site to scrap yard and Transportation balance/surplus materials to store. |
| 5.22 | RT, SR, DPT of Pr Parts weld joints and other components as per BHEL norms. |
| 5.23 | Fabrication of duct, support frame, Platform members etc to be carried out from standard size plates, structures without any extra work wherever required.. |
| 5.24 | Lying of Insulation, Refractory & Cladding as per BHEL norms including curing of the refractory. |

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| 5.25 | Laying of instrument air, service air for different equipments wherever required in Boiler. |
| 5.26 | All temp, pressure, flow sensing devices, pg test points, and tapping points (Up to root valve) for air /gas /water required for the Boiler shall be covered under the scope of work. |
| 5.27 | The erection/fabrication of platforms wherever required for approaching to the different types of instruments, pneumatic actuator and electrical actuator etc shall be covered under the scope of work. |
| 5.28 | Supply & application of Painting of the structures, piping, equipments & other components as per BHEL norms including supply of paints The codes and standards applicable, preparation of surfaces, primer paint, finish paint, shall be as per enclosed Annexure – VII. |
| 5.29 | Testing and commissioning of all equipments & systems including installation of testing equipments, tapping points etc. and rectification of defects observed including replacement/re erection/rectification of components as required. |
| 5.30 | Trial operations of all equipments & systems and rectification of defects observed including replacement/re erection/rectification of components as required. |
| 5.31 | Insulation of expansion joints, dampers, etc shall be carried out after NDT / gas tightness test is completed. |
| 5.32 | Necessary assistance for other Tests of Equipments & Systems and other pre commissioning & commissioning activities and rectification of defects observed including replacement/re erection/rectification of components as required. |
| 5.33 | Necessary assistance for Performance Guarantee Test including installation of testing equipments, tapping points etc. and necessary adjustments/rectification as required. |
| 5.34 | Necessary assistance for Hydro test, commissioning of the unit upto full load and rectification of defects observed including replacement/re erection/rectification of components as required. |
| 5.35 | All works are to be carried out as per drawings and as per instruction of BHEL Engineer and all necessary adjustments, setting, alignment, testing and other associated works shall be carried out as per drawings and as per instruction of BHEL Engineer |
| 5.36 | For completion of work, the contractor will have to work in round the clock basis. He will not be eligible for any extra charges on account of this. |
| 5.37 | All the contractor's employees shall carry identification cards/gate passes while working at site. |
| 5.38 | Vendor has to arrange following items like tarpaulin, plastic sheets, wire brushes and all other types of other materials & resources required for completion of work |
| 6.0 | GENERAL TECHNICAL REQUIREMENTS (CODES AND STANDARDS) |
| 6.1 | Unless otherwise specified, the plant/ equipment shall comply with appropriate Indian Standard or an agreed internationally accepted Standard Specification as mentioned elsewhere in tender, each incorporating the latest revisions at the time of tendering. Where no internationally accepted standard is applicable, the bidder shall give all particulars and details as necessary; to enable BHEL to identify all of the plant/ equipment in the same detail as would be possible had there been a standard specification. |
| 6.2 | Where the bidder propose alternative codes or standards, they shall include in their offer one copy (in English) of each standard specification to which materials/ process offered shall comply. In such case, the adopted alternative standard shall be equivalent or superior to the standards mentioned in the specification. |
| 6.3 | In the event of any conflict between the codes & standards referred above, and requirements of the tender, requirements which are more stringent shall govern. |
| 6.4 | Tools used during erection & commissioning/ completion shall not be accepted except with the specific approval of the engineer. |
| 6.5 | Wherever specified or required the plant/ equipment shall conform to various statutory regulations such as Indian Boiler Regulation, Indian Electricity Rules, Indian Explosive Act, Factories Act, etc, wherever required, obtaining approval for plant/ equipment supplied under the specification from statutory authorities shall be the responsibility of the successful bidder. |
| 7.0 | GENERAL SERVICES TO BE RENDERED BY THE BIDDER |
| 7.1 | Services for construction, fabrication, equipment erection, testing as well as trial run & commissioning of various equipment and accessories under the contract shall include but not be limited to the following. |
| 7.2 | Issuing materials from store/ storage yard from time to time for erection as per the construction |

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| | program. The successful bidder shall be the custodian of all the materials issued till the plant/ equipment is officially taken over by the owner/ BHEL after complete erection any successful trial run & commissioning. |
| 7.3 | Transport of material to their respective places of erection and erection of complete plant & equipment as supplied under this tender. |
| 7.4 | Trial run, commissioning of individual equipment/ sub-systems to the satisfaction of BHEL/ customer. |
| 7.5 | Deployment of all skilled & unskilled manpower required for erection, supervision of erection, watch & ward, commissioning and other services to the rendered under this tender. |
| 7.6 | Deployment of all erection tools & tackle, construction machinery, transportation vehicles, all other implements in adequate number & size, appropriate for erection work to be handled under scope of this tender, unless otherwise specified. |
| 7.7 | Supply of all consumables, eg welding electrodes, cleaning agents, diesel oil, lubricant, etc as well as materials required for temporary supports, etc as necessary for such erection work, unless specified otherwise. |
| 7.8 | Providing support services for successful bidder's erection staff, eg, construction of site offices, temporary stores, residential accommodation and transport to work site for erection personnel, watch & ward for security & safety of materials under the successful bidder's custody, etc, as required. |
| 7.9 | Maintaining proper documentation of all site activities undertaken by successful bidder as per the proforma mutually agreed with BHEL, submitting monthly progress reports as also any such document as & when desired by BHEL/ owner, taking approval of all statutory authorities, ie Boiler Inspector, Factory Inspector, Inspector of Explosives etc, as applicable, for respective portions of work under the jurisdiction of such statutes of laws. |
| 7.10 | All the materials issued to the bidder by BHEL shall be reconciled by the bidder and the unused materials have to be returned back to BHEL stores/ yard or any other place as specified by BHEL. |
| 7.11 | After completion of commissioning activity of equipment/ systems, the successful bidder shall prepare test reports which shall include all relevant information related to various commissioning checks, tests carried out, any deviations/ commissioning noticed wrt intended design requirements, sequence of various commissioning activities as actually adopted vis-à-vis as recommended in the procedures, programme schedule achieved and any other such information as required .These test reports shall be submitted in requisite number of copies to BHEL/ Alstom/ owner during the commissioning activities. |
| 8.0 | GENERAL GUIDELINES FOR FIELD ACTIVITIES |
| 8.1 | The successful bidder shall execute the works in a professional manner so as to achieve the target schedule without any sacrifice on quality and maintaining highest standards of safety and cleanliness. |
| 8.2 | The successful bidder shall co-operate with owner/ BHEL and other successful bidders working in site and arrange to perform his work in a manner so as to minimise interference with other successful bidder's works. BHEL's engineer shall be notified promptly of any defect in other successful bidders' works that could affect the successful bidder's work. If rescheduling of successful bidder's work is requested by the owner's/ BHEL's engineer in the interest of overall site activities, the same shall be compiled with by the successful bidder. In all cases of controversy, the decision of BHEL shall be final and binding on the successful bidder without any commercial implication. |
| 8.3 | The engineer shall hold daily meeting with the successful bidder working at site at a time and a place to be designated by the engineer. The successful bidder shall attend such meetings and take notes of discussions during the meeting and the decisions of the engineer and shall strictly adhere to those decisions in performing this work. In addition to the above weekly meeting, engineer may call for other meetings either with individual successful bidders or with selected number of successful bidders and in such a case the successful bidder, if called will also attend such meetings. |
| 8.4 | Time is the essence of the contract and the successful bidder shall be responsible for performance of his work in accordance with the specified construction schedule. If at any time the successful bidder is falling behind the schedule, he shall take necessary action to make good of such delays by increasing his work to comply with the schedule and shall communicate such action in writing to the engineer, satisfying that his action will compensate for the delay. The successful bidder shall not be allowed any extra compensation for such action. |
| 8.5 | The engineer shall however not be responsible for provision of additional labour and or materials or |

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| | supply of any other services to the successful bidder except for the co-ordination work between various successful bidders as set out earlier. |
| 8.6 | The works under execution shall be open to inspection & supervision by BHEL/ customer engineer at all times. The successful bidder shall give reasonable notice to BHEL before covering up or otherwise placing beyond the reach of inspection any work, in order that same may be verified, if so desired by owner/ BHEL. |
| 8.7 | Every effort shall be made to maintain the highest quality of workmanship by stringent supervision & inspection at every stage of execution. Manufacturer's instruction manual & guidelines on sequence of erection and precautions shall be strictly followed. Should any error or ambiguity be discovered in such documents, the same shall be brought to the notice of BHEL's engineer. Manufacturer's interpretation in such cases shall be binding on successful bidder. |
| 8.8 | Successful bidder shall comply with all the rules & regulations of local authorities, all statutory laws including Minimum Wages, Workmen Compensation etc. All registration and statutory inspection fees, if any, in respect of the work executed by the successful bidder shall be to his account. |
| 8.9 | All the works such as cleaning, checking, levelling, blue matching, aligning, assembling, temporary erection for alignment, opening, dismantling of certain equipment for checking and cleaning, surface preparation, edge preparation, fabrication of tubes and pipes as per general engineering practice at site, cutting, grinding, straightening, chamfering, filling, chipping, drilling, reaming, scrapping, shaping, fitting-up, bolting/ welding, etc, as may be applicable in such erection and necessary to complete the work satisfactorily, are to be treated as incidental and the same shall be carried out by the successful bidder as part of the work. |
| 8.10 | It is the responsibility of successful bidder to do alignment, etc if necessary, repeatedly to satisfy engineer, with all necessary tools & tackles, manpower, etc. The alignment will be complete only when jointly certified so, by the successful bidder's engineer and BHEL. Also, successful bidder should ensure that the alignment is not disturbed afterwards.E |
| 8.11 | Equipment & material, in case wrongly installed, shall be removed & reinstalled to comply with the design requirement at the successful bidder expense, to the satisfaction of BHEL/ owner. |
| 8.12 | After identification of erection materials by BHEL at BHEL's store/ storage yard, it shall be the responsibility of successful bidder to take delivery of materials from BHEL's store/ storage yard by successful bidder's own manpower and re-stack the leftover materials as per erection sequence at BHEL store at their own cost. The entire activities are to be carried out under supervision of BHEL's engineer. |
| 9.0 | DEVIATIONS/CLARIFICATIONS |
| | The bidder is required to submit with his offer in the relevant schedule/ format without any ambiguity. Any assumptions, presumptions, deviations etc indicated or implied anywhere by the bidder except those indicated in the deviation schedule/ format will not be recognized and will not form a part of consideration/ offer. In the absence of such filled-up schedule/ format it will be understood and agreed that the bidder's offer is based on strict conformance to the specification and no negotiation would be allowed in this regard. BHEL reserve the right not to recognize any/ all deviations submitted after opening of the bid. |
| 10.0 | DEWATERING |
| 10.1 | Vendor will have to arrange pumps, pipes etc in case dewatering is required. |
| 11.0 | QUALITY CONTROL & QUALITY ASSURANCE |
| | Contractor's engineers & supervisors shall be adequately qualified and also inclined to do a quality job. The quality assurance engineer shall co-ordinate all aspects of quality control, inspection, implementation of quality assurance procedures laid down in Quality Plan and technical specification by BHEL. He shall fill up quality assurance log sheets/ formats and submit to BHEL for joint inspection & acceptance. The contractor shall fill up, maintain & preserve the quality records in computerized media. BHEL's/ customer's authorized representative shall be given free access at all time to such quality related records etc for inspection, review etc. |
| 12.0 | QUALITY ASSURANCE PROGRAMME |
| 12.1 | The contractor shall arrange for suitable quality assurance programme to control all activities pertaining to the scope of work, as necessary. Such programs shall be outlined by the contractor and shall be |

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| | finally accepted by BHEL. A quality assurance programme of the contractor shall generally cover the following. |
| 12.2 | The organisation structure & qualification data of key personnel for management and implementation of the proposed quality assurance program. |
| 12.3 | System for site erection control including process controls and fabrication and assembly controls. |
| 12.4 | Control of non-conforming items and system for corrective actions. |
| 12.5 | Inspection and test procedure for all site related works. |
| 12.6 | Control of calibration and testing of measuring and testing equipment. |
| 12.7 | System for quality audit. |
| 12.8 | System for indication and appraisal of inspection status. |
| 12.9 | System for maintenance of records. |
| 12.10 | General requirements – quality assurance |
| 12.11 | All materials, components and equipment covered under the specification shall be procured, manufactured, erected, commissioned & tested, as applicable, at all stages as per comprehensive quality assurance program. An indicative program for inspection/ test, to be carried out by the successful bidder, for some of the major items is given in the respective volume of tender. |
| 12.12 | Field quality plan will detail out the quality practices and procedures etc to be followed by the successful bidder's site quality control organization, during various stages of site activities from receipt of material/ equipment at site. |
| 12.13 | BHEL reserve the right to carry out quality audit & quality surveillance of the systems & procedures of successful bidder's quality management. Successful bidder shall provide necessary assistance to enable BHEL to carry out such audit. |
| 12.14 | Quality audit/ approval of the results of test & inspection will not prejudice the right of BHEL to reject an equipment service not giving desired performance and shall not in no way limit the liabilities and responsibilities of the successful bidder in earning satisfactory performances of equipment/ service as per specification. |
| 12.15 | Repair/rectification procedure to be adopted to make any job acceptable shall be subject to the approval of BHEL. |
| 12.16 | All the latest relevant IS codes as per technical specification should be available with the successful bidder at site within 45 days from the date of placement of LOI or otherwise specified by Construction Manager/ Project Manager, BHEL. |
| 13.0 | AREA REQUIREMENT |
| | The contractor shall furnish the estimated area required for the construction of his office etc separately (based on BHEL's customer's design), in their technical bid. The same will be reviewed by BHEL and allotted to the extent available/ considered necessary, depending upon the area availability. Contractor shall also have to arrange the watch and ward of its office within the quoted price. |
| 14.0 | PROJECT MANAGEMENT/ CONSTRUCTION MANAGEMENT |
| | To meet the need of construction management at site, successful bidder shall provide the following services within accepted rates. |
| 14.1 | PLANNING & MONITORING |
| 14.1.1 | Within 15 days of placement of order/ LOI by BHEL, successful bidder shall interact with BHEL site for kick-off meeting to discuss & firm up item-wise/ activity-wise schedule of erection, testing, commissioning so as to complete the entire job within the stipulated completion period, matching with project schedule. |
| 14.1.2 | Based on the discussion of the kick-off meeting or otherwise, a master schedule shall be drawn and successful bidder shall submit the same within 7 days of kick-off meeting, for review & acceptance/ approval of BHEL. Successful bidder shall interact with BHEL to ensure acceptance/ approval of the master schedule within 7 days of submission. |
| 14.1.3 | On the basis of accepted/ approved master schedule, on every month, the successful bidder shall submit to Construction Manager, BHEL schedule-wise plan vs actual status of erection, testing, commissioning, along with action plan to make-up delay, if any. |
| 14.1.4 | The project schedule might undergo revision/ modification periodically, for which the successful bidder |

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| | may have to prepare/ modify schedule periodically in consultation with BHEL, so as to match with revised project milestones. |
| 14.1.5 | The successful bidder shall ensure monitoring of these activities at least on fortnight basis or at other frequency as mutually agreed with BHEL. |
| 14.1.6 | Successful bidder shall submit daily work program based on above schedule. Deferment of above schedule is not acceptable. Successful bidder will adhere to schedule & augment resources to ensure completion as per schedule. |
| 14.1.7 | Progress reviews on entire activities will be held periodically as per direction of BHEL, at site/ Kolkata. These meetings will be used as a forum for discussing all areas where progress needs to be expedited. The successful bidder shall be further responsible for ensuring that suitable steps are taken to meet various targets decided upon such meetings. |
| 14.1.8 | Successful bidder shall prepare progress report indicating progress on key activities, management summary for critical activities, list of actions require BHEL's attention. The schedule shall preferably be made in Primavera/ MS Projects, so that the same is compatible with BHEL's project management software. |
| 14.2 | INFRASTRUCTURE |
| 14.2.1 | The successful bidder shall install 1 no all in one PC (multimedia PC work station Core-i5, 2.1 GHz or above, 500 GB HDD, 4 GB RAM, 100/ 1000 MBPS LAN card) of HP/ Compaq/ Lenevo or equivalent make with window 8 or 7 O/S and required software like MS Office 2010 Professional, AutoCAD 2009 or higher, PageMaker (7.0, etc), ADOBE PDF CREATOR with one no laser jet printer compatible for A3 size printing (ink/ cartridge for which to be supplied as & when required), one no laser jet printer compatible for A4 size printing (ink/ cartridge for which to be supplied as & when required) with power backup at places, 01 no dongle/ broad band connection for internet(every month the dongle should be recharged by vendor for un-interrepted internet service) as per instruction of BHEL for exclusive use of BHEL. These computers/ printers shall remain successful bidder's property and they will be allowed to take out the same after completion of original contract period. The successful bidder shall provide data/ information, etc in prescribed formats for periodical updating of progress reports, material management reports, updating of network pertaining to the successful bidder's scope of work, etc.<br>The successful bidder shall also provide 1 no computer operator and 1 number service staff for miscellaneous service for BHEL's use at site for reconciliation, progress review & day-to-day planning purpose, documentation, etc. These facilities are to be provided within 10 days from date of Intimation of BHEL. These facility to be provided for 4 months (tentatively during pre shutdown, shut down & Post Shutdwon Commng period), including extension, if the reason for extension is attributable to successful bidder. If case successful bidder fail to provide computer/ printer or personnel as per requirement, for a continuous period of fifteen days or more, BHEL shall have the right to deduct as per following rates on prorate basis, from successful bidder's RA bill or any other dues. |
| 14.2.1.1 | @ Rs 15,000/- (Fifteen thousand) per month for computer operator or at actual rate +5%, whichever is lower. |
| 14.2.1.2 | @ Rs 10,000 (Ten thousand) per month for computer with printer or at actual rate +5%, whichever is lower. |
| 14.2.1.3 | @ Rs 12,000/- (Twelve thousand) per month for service staff or at actual rate +5%, whichever is lower. |
| 14.2.2 | In case BHEL extends the service of computer with printer, computer operator or service staff beyond the aforesaid mandatory period, the successful bidder shall extend the service to BHEL, for which BHEL will reimburse following rates. |
| 14.2.2.1 | @ Rs 11,000/- (Eleven thousand) per month for each computer operator or at actual rate +5%, whichever is lower. |
| 14.2.2.2 | @ Rs 8,000 (Eight thousand) per month for each computer with printer or at actual rate +5%, whichever is lower. |
| 14.2.2.3 | @ Rs 9,000/- (Nine thousand) per month for each service staff or at actual rate +5%, whichever is lower. |
| 14.2.3 | The successful bidder's site office must have facilities of communications like Fax, E-mail, and telephone with STD facility within a month from LOI. |
| 14.3 | PROGRESS REPORTING |

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| 14.3.1 | The bidder shall submit daily, weekly and monthly progress reports for work force, materials reports, consumables (gases/electrodes) report and other reports as per pro-forma considered necessary by BHEL. In case of any failure on successful bidder's part to comply with this, BHEL may at its discretion, consider to withhold part payment against their RA bills. | |
| 14.3.2 | The progress report shall indicate the progress achieved against planned with reasons indicating delays, if any, and shall give the remedial actions which the successful bidder intends to take to make good the slippage or lost time, so that further works again proceed as per the original program and the slippages do not accumulate and effect the overall program. | |
| 14.3.3 | The daily work force reports shall clearly indicate the work force deployed, category-wise specifying also the activities in which they are engaged. | |
| 14.3.4 | Weekly progress review meetings will be held at site during which actual progress during the week vis-à-vis scheduled program shall be discussed or actions to be taken for achieving targets. For discussions, the successful bidder shall present program of subsequent week. The successful bidder shall constantly update/ revise his work program to meet the overall requirement. | |
| 14.3.5 | Periodic progress reviews on the entire activities of execution in respect of supply and works in scope of successful bidder will be held once in a month at site/ Kolkata. These meetings will be attended by reasonably higher officials of the successful bidder and will be used as a forum for discussing all areas where progress needs to be speeded up. The successful bidder shall be further responsible for ensuring that suitable steps are taken to meet various targets decided upon such meetings. | |
| 14.3.6 | During construction successful bidder shall take adequate digital photograph/ slides (indicating date) each month (not less than nine per week) of the works during progress and submit the soft/hard copy to BHEL office. | |
| 14.3.7 | Successful bidder has to provide for electronic/ computerized storing and re-production/ printing/ plotting of various data, log sheets, protocols, measurements etc. These may be stored in CD (as per requirement) and handed over to BHEL as per requirement. | |
| 14.4 | SITE ORGANIZATION | |
| 14.4.1 | Successful bidder shall maintain a site organization of adequate strength in respect of manpower, construction machinery and other implements at all time for smooth execution of the contract headed by a competent Site In-charge (SIC) for site operations with sufficient level of authority to take site decisions. The successful bidder will submit organization chart (showing the name of SIC) with individual bio-data indicating various levels of experts to be posted for supervision in the fields of supervision & execution, quality, material management, planning, safety, etc. The organization shall be reinforced from time to time, as required to make up slippage (if any) from schedule without any commercial implication to BHEL. The organization chart is to be submitted within 10 days from date of LOI. | |
| 14.4.2 | Following (minimum) engineering manpower with power plant construction background to be deployed at site by the successful bidder for their day to day supervision, etc, within specified days from start of work or otherwise decided jointly with Construction Manager, BHEL. Regarding qualification & experience of each of following categories of manpower, successful bidder shall take prior approval of Construction Manager, BHEL, whose decision shall be final & binding regarding acceptance of any person. Details refer to annexure-IX. | |
| | Area | Quantity, deployment schedule |
| 14.4.2.1 | Site Incharge | 1 no, (To be deputed from the date of site mobilization.) |
| 14.4.2.2 | Qualified safety officer (Graduate + Diploma in Industrial Safety). | 1 nos. (Minimum) |
| 14.4.2.3 | Site engineer/Supervisor (Mechnical) | 3 nos. (Minimum) |
| 14.4.2.4 | Experts of boiler area(pr parts & Burner) to be deployed by the contractor for complete duration of contract till the completion of e&c of combustion modification system | 1 No for 35 days in each unit. (Expert to be deputed as per intimation of BHEL) |
| 14.4.2.5 | Site engineer/Supervisor (Electrical/C&I) | 1 no.(Minimum) |

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| 14.4.2.6 | Quality engineer /Supervisor | 1 no. (Minimum) |
| 14.4.2.7 | Material Management Supervisor | 1 no. |
| 14.4.3 | Engineer/ supervisor for other functions like store & purchase, material management, planning, FIN, administration etc are to be provided as per site requirement and not referred above. | |
| 14.4.4 | In the event of failure of the successful bidder to provide necessary manpower indicated above as per requirement, BHEL reserve the right to deduct Rs 50,000 per man-month for engineer/safety officer and Rs30,000 per man-month for the supervisor/ quality officer/electrician from the date of start of work as indicated as above from RA bills. Further induction of manpower regarding site supervisor & site engineer will be decided at site as per requirement. Further induction of manpower regarding site supervisor & site engineer will be decided at site as per requirement. | |
| 14.4.6 | In the event of failure of the successful bidder to provide necessary manpower indicated above as per requirement for a continuous period of 3 days or more, BHEL reserve the right to recover at the following rates.In the event of non-deputation of engineer/ supervisor by successful bidder, BHEL reserve the right to deduct Rs 50000 for Engr/Safety Officer & Rs 30,000 per man-month for supervisor/electrician, from the date of deputation as indicated as above from RA bills. | |
| 14.4.7 | In the event of failure of the successful bidder to depute 1 no Expert for Boiler Pr Parts & Burner area for period of 35 days in each unit duly vetted by BHEL Site Engineer In charge,an amount of Rs 7000/- per man day will be deducted from RA bills. | |
| 14.4.8 | BHEL reserve the right to reject or approve the list of personnel proposed by successful bidder. The persons whose bio-data have been approved by BHEL will have to be posted at site and deviation in this regard will not be permitted unless specific & reasonable justification is made. | |
| 14.4.9 | In addition to above, a well experienced qualified engineer to be designated, as 'Project Coordinator', shall be deployed by successful bidder. Such engineer shall have adequate exposure on the job and shall remain fully involved in all planning activities, guidance, etc. to successful bidder's own team during complete execution period of contract. | |
| 14.4.10 | Successful bidder should also submit to BHEL for approval a list of T&Ps along with their fitness certificates. The tools & tackles shall not be removed from site without written permission of BHEL. | |
| 14.4.11 | Successful bidder should also submit network programs for the erection of various items. These networks shall show owner/ BHEL hold points, which have to be cleared by BHEL/ customer, or their authorized representatives before further erection can take place. These programs for the erection would clearly identify responsibilities of successful bidder & BHEL/ customer. It is the responsibility of successful bidder to get the Networks approved by BHEL within four weeks of the date of finalization of award of work/ placement of LOI. | |
| 14.5 | CONSTRUCTION MANAGEMENT | |
| 14.5.1 | Based on approved program, successful bidder shall submit program of construction/ erection/ commissioning for implementation. These programs would be amplified showing start of erection & subsequent activities and shall form the basis for site execution & detail monitoring. Daily rolling program with first month's program being tentative based on the site condition would be prepared based on these programs. The successful bidder shall also be involved along with owner/ BHEL to tie up detailed resources mobilization plan over the period of the contract matching with the performance targets. | |
| 14.5.2 | The program would be jointly finalized by the site in-charge of successful bidder with BHEL/ customer's project coordinator as well as site-planning representative. Erection program will also identify sequential events matching financial turnover. | |
| 14.5.3 | Successful bidder is liable to furnish all documentary evidences towards payment of Works Contract Tax as and when required by BHEL. | |
| 14.6 | PROGRESS REPORTING | |
| 14.6.1 | The bidder shall submit daily, weekly and monthly progress reports for work force, materials reports, consumables (gases/ electrodes) report and other reports as per pro-forma considered necessary by the BHEL. In case of any failure on contractor's part to comply with this, BHEL may at its discretion, consider to withhold part payment against their RA bills. | |
| 14.6.2 | The progress report shall be in line with project L2 schedule and indicate the items to be erected | |

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| | and actual erected as per BHEL agreed format. A sample format is attached for your reference, however, it may be finalised at site. |
| 14.6.3 | The daily work force reports shall clearly indicate the work force deployed, category-wise specifying also the activities in which they are engaged. |
| 14.6.4 | Weekly progress review meetings will be held at site during which actual progress during the week vis-à-vis scheduled program shall be discussed or actions to be taken for achieving targets. For discussions, the contractor shall present program of subsequent week. The contractor shall constantly update/revise his work program to meet the overall requirement. |
| 14.6.5 | Periodic progress reviews on the entire activities of execution in respect of supply and works in scope of bidder will be held once in a month at Kolkata/site. These meetings will be attended by reasonably higher officials of the contractor and will be used as a forum for discussing all areas where progress needs to be speeded up. The contractor shall be further responsible for ensuring that suitable steps are taken to meet various targets decided upon such meetings. |
| 15.0 | LIQUIDATED DAMAGE |
| 15.1 | If the successful bidder fail to complete entire scope within completion period, for reasons attributable to them, BHEL shall have the right to recover as liquidated damages (LD) a sum INR 44,525 for each day of delay of each unit. |
| 15.2 | If the successful bidder fail to complete the stipulated work within shutdown period, for reasons attributable to them, BHEL shall have the right to recover as liquidated damages (LD) a sum INR 44,525 for each day of each unit of extension in Shut Down. |
| 15.3 | The total liability for delay shall not in any case exceed 5 % (Five percent) of the contract price, including taxes, duties, etc. Contract price for this purpose, shall be the final executed value exclusive of ORC, extra work executed, supplementary/ additional items and PVC. |
| 15.4 | BHEL shall deduct aforesaid amounts from any money due or which may become due to the successful bidder and/ or recover from the bank guarantees/ security deposit of the successful bidder. To be entitled to impose such compensation/ penalty/ recovery, BHEL will not be required to prove that they have incurred such amount as actual damage. |
| 15.5 | BHEL reserve the right to complete the job through other resource at the risk & cost of successful bidder as per tender provision, with/without cancelling the order/ contract. |
| 15.6 | BHEL reserve the right to cancel the order/ contract or a portion thereof for the work not so completed at the risk & cost of the successful bidder and the successful bidder shall be liable to BHEL for any excess costs thereof. |
| 15.7 | The successful bidder shall continue with performance of the order/ contract under all circumstances, to the extent not cancelled. |
| 15.8 | Where action is taken as per above, the successful bidder shall be liable for any loss, which BHEL may sustain on that account. The successful bidder shall not be entitled to any gain on such action and the manner & the method of such purchase shall be at the discretion of BHEL. It shall not be obligatory on the part of BHEL to serve a notice of such completion, through other resource, on successful bidder. |
| 15.9 | In case of LD recovery, the applicable GST shall also be recovered from vendor. Other provision shall be as per the GCC. |
| 16.0 | HEALTH, SAFETY & ENVIRONMENT |
| 16.1 | As per BHEL HSE Plan doc no. HSEP:14-ER, dtd. 25/04/19. |
| 17.0 | SPECIFIC REQUIREMENTS FOR ISO 9002 |
| 17.1 | Bidders shall ensure that all their staff/ employees are exposed to periodical training programmes conducted by qualified agencies/ personnel on ISO-9002 Standards. |
| 17.2 | Bidder shall ensure that the quality is maintained in all the works connected with this contract at all stages of the requirement of BHEL. |
| 17.3 | Bidder shall ensure that all Inspection, measuring and testing equipment that are used, whether owned by bidders or used on loan, are calibrated by the authorized agencies and valid calibration certificate will be available with them for verification by BHEL. A list of such instruments possessed by bidder at site with its calibration status is to be submitted to BHEL engineer for control. |

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| 17.4 | Bidder shall ensure that fitness certificate of the tools & plants, that are in use, whether owned by bidder or issued on loan, are tested by authorised agency & valid fitness certificate are available for verification by BHEL. |
| 17.5 | Bidders shall arrange for the inspection of the works at various stages as required by BHEL. Bidders shall take immediate corrective action for the non-conformances if any, observed and pointed out by BHEL. |
| 18.0 | LAND |
| 18.1 | Land will be provided free of cost by BHEL to the extent available/ considered necessary by BHEL to the successful bidder for their office, store, within plant premises. Availability of land within plant boundary is very limited and successful bidder have to plan & use existing land considering use of land by other civil/ mechanical/ electrical successful bidders and storage of plant machineries & materials. The existing land shall be shared by all agencies. |
| 18.2 | The successful bidder shall arrange at his own cost cleaning and grading of area allotted, construction of their temporary office, stores, godown, fabrication yards etc. and also the watch & ward, etc. |
| 18.3 | On completion of work, all the temporary buildings, structures, pipelines, cables, etc. shall be dismantled & leveled and debris shall be removed as per instruction of BHEL by the successful bidder at their cost. In the event of failure to do so, the same will be removed and expenditure thereof will be recovered from successful bidder. Decision of BHEL in this regard shall be final & binding. However, the scope of dismantling & leveling the area is limited only to the successful bidder's site office, yard and other spaces occupied by successful bidder. |
| 18.4 | The bidder, however, may make a note that only limited space is available at site and it shall be amicably used by all the vendors available at site. |
| 19.0 | WATER |
| 19.1 | BHEL will provide single point supply for construction water inside the project premises for office free of cost. |
| 19.2 | Further necessary network for construction water system shall be done by the bidder at his own cost. |
| 19.3 | Contractor should arrange for water for labour colony of their own. |
| 19.4 | BHEL shall not be responsible for any inconvenience or delay caused due to any interruption of water supply and the contractor shall claim no compensation for delay in work for such interruption. Contractor may make standby arrangement for water at their own cost. |
| 19.5 | Contractor will have to arrange for storage of water to meet the day-to-day requirement. |
| 19.6 | The availability of water (construction) may be limited. Contractor shall ensure that no water is wasted. In this regard the contractor shall take all necessary measure towards preservation of water. |
| 19.7 | Contractor to arrange drinking water at its own cost. |
| 20.0 | ELECTRICITY |
| 20.1 | BHEL shall provide construction power on chargeable basis at 415V level at one point. Contractor has to make their own distribution arrangement to draw electricity by arranging all required items e.g power cable, construction cable, ELCB,MCCB, JB's, Switch Borads etc to be arranged by vendor at his own cost. |
| 20.2 | The bidder shall have to provide earth leakage circuit breaker at each point wherever human operated electrical drives/ T&Ps are deployed. |
| 20.3 | The power supply will be from the available grid. BHEL shall not be responsible for any inconvenience or delay caused due to any interruption of power supply/ variation in voltage level and no compensation for delay in work can be claimed by the contractor due to such non-supply on the grounds of idle labour, machinery or any other grounds. |
| 20.4 | Bidder will have to arrange sufficient illumination at their own work areas. |
| 20.5 | The contractor should ensure that the work in critical areas is not held up in the event of power breakdown. In the event of breakdown in the electric supply, if the progress of work is hampered, it will be the responsibility of the contractor to step up the progress of work after restoration of electric supply so that overall progress of work is not affected. |
| 20.6 | The contractor shall have to make arrangement at their own cost for illumination that will be required in the working area for execution of the work & safety of workmen. |

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| 20.7 | Contractor shall make arrangement of electricity of their own for labour colony.If the same is provided by customer, it will be chargeable. |
| 21.0 | CONSTRUCTION OF TEMPORARY OFFICE, BIDDER'S OWN STORES ETC |
| | The contractor shall arrange at their own cost -cleaning of area allotted, construction of his temporary office, his own stores, etc and also the watch & ward of all the above. Materials required for the same shall be arrnged by contractor at their own cost. |
| 22.0 | CONSUMABLE |
| 22.1 | All consumables, like gas, electrodes, chemicals, lubricants etc required for the scope of work, shall be arranged by the contractor at his cost unless otherwise specifically mentioned in the contract. |
| 22.2 | All consumables to be used for the job shall have to be approved by BHEL/ customer prior to use. |
| 22.3 | In the event of failure of contractor to bring necessary and sufficient consumables, BHEL may arrange for the same at the risk & cost of the contractor. The entire cost towards this along-with overhead shall be paid by the contractor or deducted from the contractor's bills. |
| 23.0 | TEST CERTIFICATE FOR T&P |
| | All T&P, lifting tackles and pulling devices to be deployed by the contractor must bear valid/ latest test certificates for their suitability, and the documents shall be preserved at site & copy to be submitted to BHEL. |
| 24.0 | MMD |
| | The contractor shall ensure deployment of reliable & calibrated instrument, measuring and test equipment (MMD). The MMD shall have test calibration certificate from authorized/ Govt approved agencies. The contractor shall also keep provision of alternate engagement for such MMD so that the work does not suffer when a particular MMD is sent for calibration. Re-testing/ re-calibration shall also be arranged by the contractor at their own cost at regular interval during the period of use as advised by BHEL. Refer Annex-V of TCC for Tentative list of MMD.. |
| 25.0 | ISSUE OF T&P BY BHEL |
| 25.1 | NIL |
| 26.0 | TOOLS & PLANTS (TO BE PROVIDED BY CONTRACTOR) |
| 26.1 | Tentative list of tools & plants to be deployed by bidder is furnished in the tender. It may be noted that the list is not exhaustive and is only for general guidance. The contractor is required to provide all necessary T&P measuring (calibrated) instruments & handing equipments for timely completion of total work as per contract. In case of project requirement, some activities may have to pre-pone. In such cases the contractor may have to deploy additional T&P. Quoted rate shall be inclusive of such requirements. Refer Annex-V of TCC for tentative list of T&P. |
| 26.2 | In the event of any failure of the part of contractor, BHEL may at his discretion also terminate the contract on this ground and take out any or whole amount of the contract from the scope of contractor. In the event of failure of contractor to deploy necessary and sufficient T&P/ MMDs, BHEL will be at liberty to arrange the same at the risk & cost of contractor including transportation cost of same from any of BHEL site/ other agency & charges as applicable shall be deducted from contractor's RA bill. Decision of BHEL in this regard will be final & binding on contractor. |
| 26.3 | T&P shown in the list of tender are minimum requirement. Further requirement will be reviewed time to time at site and vendors will provide additional T&P/ equipments to ensure completion of entire work within schedule time without any financial implication to BHEL. Contractor will give advance intimation & certification regarding capacity etc prior to dispatch of heavy equipment. |
| 26.4 | For balance T&P as per above list and any other Item required for carrying out the job, no separate payment shall be made and deployment of same will be within quoted rate. |
| 26.5 | In case of non-deployment within the period indicated, BHEL reserves the right to arrange the same at the vendor's risk & cost or suitable recoveries will be made from RA bills at site. |
| 26.6 | All T&P and all MMDs, which are required for successful and timely execution of the work covered within the scope of this tender, shall be arranged and provided by the contractor at his own cost in working condition. |
| 26.7 | In the event of non mobilsation of any T&P by the successful bidder and as a result progress of work is sufferred, BHEL reserve the right to deduct suitable amount from the dues of contrctor. BHEL's decision |

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| | in this regard shall be final & binding on contractor. |
| 26.8 | It is not obligatory on the part of BHEL to provide any tools and tackles or other materials other than those specifically agreed to do so by BHEL. However, depending upon the availability, BHE's handling equipment and other plants may be made available to the contractor free of cost, subject to the conditions laid down by BHEL from time to time. Unless paid in advance, such hire charges, if applicable shall be recovered from contractor's bill /security deposit or any other payment in one installment. |
| 27.0 | FACILITIES TO BE PROVIDED BY THE SUCCESSFUL BIDDER |
| 27.1 | All tools and tackles, machinery, equipment, instruments required for the work have to be arranged by the successful bidder including its transportation before and after work and including storage, insurance etc. |
| 27.2 | The successful bidder shall provide all required tools and plants, inspection, measuring and test equipment and handling & transportation equipment for the scope of work covered under these specifications. Some of the major T&Ps to be necessarily provided by the successful bidder is listed in relevant appendix of this tender. BHEL will provide the services of their T&Ps listed vide appendix-II, free of charge, on sharing basis. |
| 27.3 | All tools and tackles to be deployed by the successful bidder for the work shall have the prior approval of BHEL engineer with regard to brand, quality and specification. |
| 27.4 | Successful bidder shall provide all the necessary scaffolding(except for 1 St Pass furnace inside) materials, temporary structures, as may be required and necessary safety devices etc. |
| 27.5 | Successful bidder's responsibilities with regard to operator, fuel, lubricants and daily upkeep of T & Ps provided by BHEL is further detailed in relevant section. |
| 27.6 | Timely deployment of adequate quantity of T&P is the responsibility of the successful bidder. The successful bidder shall be prepared to augment the T & P at short notice to match the planned program and to achieve the milestones. |
| 27.7 | Successful bidder shall maintain and operate his tools and plants in such a way that major breakdowns are avoided. In the event of major breakdown, successful bidder shall make alternative arrangements expeditiously so that the progress of work is not hampered. |
| 28.0 | RESPONSIBILITIES WITH REGARD TO EMPLOYMENT OF LABOUR, ETC |
| 28.1 | Successful bidder shall also comply with the requirements of local authorities/ project authorities calling for police verification of antecedents of the workmen, staff, etc. |
| 28.2 | BHEL/ customer may insist for witnessing the regular payment to the labour. They may also like to verify the relevant records for compliance with statutory requirements. Successful bidder shall enable such facilities to BHEL / Customer. |
| 28.3 | It is the responsibility of the successful bidder to arrange gate pass for all his employees, T & P etc. for entering the project premises. Necessary coordination with customer officials is the responsibility of the successful bidder. Successful bidder to follow all the procedures laid down by the customer for making gate passes. Where permitted, by customer/ BHEL, to work beyond normal working hours, the successful bidder shall arrange necessary work permits for working beyond normal working hours. |
| 28.4 | If at any time during the execution of work, it is noticed that the work is suffering on account of non-availability/shortfall in provision of resources from the successful bidder's side BHEL will make suitable alternate arrangements at the risk and cost of successful bidder. The expenditure incurred with overheads thereby shall be recovered from the successful bidder. |
| 28.5 | The successful bidder shall deploy all the skilled/semiskilled/ unskilled labour including highly skilled workmen etc. These workmen should have previous experience on similar job. They shall hold valid certificates wherever necessary. BHEL reserves the right to insist on removal of any employee of the successful bidder at any time if he is found to be unsuitable and the successful bidder shall forthwith remove him. Successful bidder should furnish a tentative deployment plan of his manpower as required in GCC. Also the actual deployment will be so as to satisfy the erection and commissioning targets set by BHEL. |
| 28.6 | It is the responsibility of the successful bidder to engage his workmen in shifts and or on overtime basis for achieving the targets set by BHEL. This target may be set to suit BHEL's commitments to its customer or to advance date of completion of events or due to other reasons. The decision of BHEL in |

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| | regard to set the erection and commissioning targets will be final and binding on the successful bidder. |
| 28.7 | Successful bidder shall deploy only qualified and experienced engineers/ supervisors. They shall have professional approach in executing the work. |
| 28.8 | The successful bidder's supervisory staff shall execute the work in the most professional manner in the stipulated time. Accuracy of work and aesthetic finish are essential part of this contract. They shall be responsible to ensure that the assembly and workmanship conform to dimensions and tolerances given in the drawings/instructions given by BHEL engineer from time to time. |
| 28.9 | The supervisory staff employed by the successful bidder shall ensure proper outturn of work and discipline on the part of the labour put on the job by the successful bidder. Also in general they should see that the works are carried out in a safe and proper manner and in coordination with other labour and staff employed directly by BHEL or other successful bidders of BHEL or BHEL's client. |
| 28.10 | If at any time, it is found that the successful bidder is not in a position to deploy the required engineers/supervisors/workmen due to any reason, BHEL shall have the option to make alternate arrangements at the successful bidder's risk and cost. |
| 29.0 | RECONCILIATION OF BHEL ISSUED MATERIALS |
| 29.1 | Successful bidder shall submit a reconciliation statement of material s issued to them, once in two months. The same may be submitted along with RA bill. |
| 29.2 | Successful bidder shall properly account for the material issued to them as specified herein to the satisfaction of BHEL certifying that the balance material are available with successful bidder's custody at site. |
| 30.0 | INSURANCE |
| 30.1 | It is the entire responsibility of successful bidder to insure their workmen against accident & injury while at work, as required by relevant rules and to pay compensation, if any, to their workmen as per workmen's compensation act. The successful bidder shall also insure their staff against accident/ injury. |
| 30.2 | The successful bidder shall take insurance cover for all materials, tools & plants, etc, required to be provided & deployed for the job by them. |
| 30.3 | The insurance coverage have to be taken prior to start of work and successful bidder shall make the policy available to Construction Manager, BHEL for necessary verification before start of work. However, irrespective of such verification/ acceptance, sole responsibility to maintain adequate insurance cover at all times during the period of contract shall lie with successful bidder. Regarding aforesaid insurance cover, successful bidder shall directly deal with the insurance company for all matters regarding the insurance in their scope. |
| 30.4 | BHEL/ customer shall arrange comprehensive insurance policy for total supply & services for main equipment/ system covering transit risks & loss, destruction or damage during handling at site, storage, civil work, erection, testing, commissioning, etc up to trial operation/ completion of unit(s) including theft, sabotage, fire, lightning and other natural calamities. |
| 30.5 | Successful bidder shall timely intimate discrepancy during contract operation, to the underwriter. Name of the underwriter and Policy No shall be intimated in due course of time. |
| 30.6 | Successful bidder shall be responsible for timely submission of loss/ damage/ theft for the materials under vendors custody to the underwriter, assistance in lodging & settlement of claim for losses/ damages/ theft/ lodging of FIR with police. Any consequential loss arising out of non-compliance of this stipulation will be borne by successful bidder. |
| 30.7 | Successful bidder will take necessary precautions/ due care to protect the material at project site, while in their custody from any damage/ loss till the same is handed over to BHEL/ customer at project site. For lodging/ processing of insurance claim, the successful bidder will submit necessary documents. BHEL reserve the right to recover the loss from the successful bidder in case the damage/ loss is due to negligence/ carelessness on the part of the successful bidder. In case of theft of material under successful bidder's custody, erected & commiisioned items upto handing over to customer, the same shall be reported to police by the successful bidder immediately and copy of FIR and subsequently police investigation report shall be submitted to BHEL/ customer for taking up with insurance. However this will not relieve the successful bidder of their contractual obligation for the materials in their custody. |
| 30.8 | In case the damage/ loss/ theft of materials are attributable to negligence/ failure in discharging the duties and obligations of the successful bidder, the expenses incurred for repair/ replacement of such |

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| | components in excess of the amount realized from the underwriters, limited to Normal Excess (Deductible Franchise) shall be recovered from the successful bidder. |
| 30.9 | In case the claim is summarily rejected by the underwriters due to WILFUL NEGLIGENCE of successful bidder, the entire cost of repair/replacement will be recovered from successful bidder. |
| 30.10 | It will be responsibility of successful bidder to replenish the items lost/ damaged in time without hampering the schedule of work and without waiting for settlement of insurance claim. Amount received from the underwriters on settlement of insurance claim shall be passed on to successful bidder as and when available. |
| 30.11 | Other conditions of Insurance shall be as per relevant clause of GCC. |
| 31.0 | SECURITY DEPOSIT, PERFORMANCE BOND & FINAL BILL |
| 31.1 | Security deposit shall be applicable as per relevant clause of GCC (Volume-IB). |
| 31.2 | Performance bond is not applicable for the tender. |
| 31.3 | RELEASE OF SD BG AND FINAL BILL |
| | In addition to other provisions of tender regarding release of SD and final bill, following provisions shall also be governing to this tender. |
| 31.3.1 | For SD BG- further extension beyond date of acceptance of final bill will not be enforced if the following is fulfilled. |
| 31.3.1.1 | Successful bidder discharges their responsibility in r/o of submission of final bill along with absolute 'No Demand Certificate' and other documents as detailed below to the satisfaction of BHEL |
| 31.3.1.2 | Joint protocol of set of documents as submitted as detailed in below is certified by site & successful bidder's representative. |
| 31.3.1.3 | There is no negative value of the final bill (after release of SD BG) - site to certify the same before release of SD BG. |
| 31.3.1.4 | Successful bidder has returned the property belonging to BHEL - site to certify the same before release of SD BG. |
| 31.3.1.5 | Successful bidder has submitted joint protocol against `Delay analysis', if applicable for delayed execution of job. |
| 31.3.2 | List of documents to be submitted & jointly protocoled indicating acceptance of final bill by BHEL. |
| 31.3.2.1 | Final bill. |
| 31.3.2.2 | Measurement for final bill signed, jointly signed by BHEL & successful bidder's representative. |
| 31.3.2.3 | Statement having cumulative joint measurement for the contract, jointly signed by BHEL & successful bidder's representative. |
| 31.3.2.4 | Claim by successful bidder for refund of security deposit. |
| 31.3.2.5 | Jointly signed material reconciliation statement. |
| 31.3.2.6 | Statement of payment received from BHEL – Bill wise (Including RA/ PVC/ ORC/ rate revision/ extra work). |
| 31.3.2.7 | No claim certificate by successful bidder. |
| 31.3.2.8 | Clearance certificates wherever applicable, viz clearance certificates from customer, various statutory authorities, like Labour Department, PF Authorities, Commercial Department, etc. |
| 31.3.2.9 | Notarized Indemnity Bond as per prescribed format. |
| 32.0 | COMPLETION PERIOD |
| 32.1 | The entire work of Erection, Testing and Commissioning, Material Handling up to handing over shall be completed within a period of 11 months (Eleven months) from the date of start of work as certified by BHEL Site Construction Manager. |
| 32.2 | The successful bidder shall arrange to mobilize within 15 days from the date of written notice/intimation by BHEL. |
| 32.3 | Material supply at site is expected from Feb'2020. |

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| 32.4 | Dismantling, Erection, Re-erection, Modification and Commissioning of combustion modification work<br>Pre shut down period is tentatively 25 Days, Shutdown Period of 35 Days,<br>Testing /Commissioning Period of 60 Days.<br><br>Tentative Shutdown schedule of Unit U#6 ref. Annexure-VIII |
| 32.5 | The actual date of contractual start of work will be certified by Construction Manager, BHEL after adequate mobilization of manpower, T&P by successful bidder. This certificate date will be deemed as start of work at site for purpose of the contract time schedule. |
| 32.6 | The work under the scope of contract will be deemed to be completed in all respects only when all the components are erected and trial runs, testing and commissioning of all individual equipment including trial operations with full load are conducted and handed over. The decision of BHEL shall be final and binding on the successful bidder. |
| 33.0 | CONSTRUCTION SCHEDULE |
| 33.1 | Entire work shall be carried out in accordance with the broad schedule of this package as furnished below, within the stipulated completion period. This schedule will undergo review and based on progress vis-à-vis project requirement, successful bidder may have to submit revised schedule for approval of BHEL. |
| 33.2 | Total completion schedule for this work in all respect is 11 Months from start of work. For detail schedule refer Annexure- VIII |
| 33.3 | Periodic progress reviews on the entire activities of execution in respect of supply & works in scope of successful bidder will be held once in a month at Kolkata/ site. These meetings will be attended by reasonably higher officials of the successful bidder and will be used as a forum for discussing all areas where progress needs to be speeded up. The successful bidder shall be further responsible for ensuring that suitable steps are taken to meet various targets decided upon such meetings. |
| 34.0 | CERTIFICATE TOWARDS COMPLETION |
| | The work under the scope of the successful bidder shall be deemed to have been completed in all respects only when so certified by BHEL/ owner. The decision of BHEL in this regard shall be final and binding on the successful bidder. |
| 35.0 | EXTENSION OF TIME FOR COMPLETION |
| 35.1 | If the completion of work as detailed in the scope of work gets delayed beyond the contract/ completion period, the successful bidder shall request for an extension of the contract and BHEL at its discretion may extend the contract. |
| 35.2 | Based on the reviews jointly signed, the works balance at the end of original contract period less the backlog attributable to the successful bidder shall be quantified, and the number of months of 'Time extension' required for completion of the same shall be jointly worked out. Within this period of 'Time extension', the successful bidder is bound to complete the portion of backlog attributable to the successful bidder. Any further 'Time extension' or 'Time extensions' at the end of the previous extension shall be worked out similarly. |
| 35.3 | However, if any 'Time extension' is granted to successful bidder to facilitate continuation of work & completion of contract, due to backlog attributable to successful bidder alone, then it shall be without prejudice to the rights of BHEL to impose penalty/ LD for the delays attributable to successful bidder, in addition to any other actions BHEL may take at the risk and cost of successful bidder. |
| 35.4 | A joint programme shall be drawn for the balance amount of work to be completed during the period of 'Time Extension', along with matching resources to be deployed by the successful bidder as per specified format. Review of the programme and record of shortfall shall be done. |
| 35.5 | During the period of 'Time extension', successful bidder shall maintain their resources as per mutually agreed program |
| 35.6 | At the end of total work completion as certified by BHEL engineer, and upon analysis of the total delay, the portion of time extensions attributable to (i) Successful bidder, (ii) Force majeure conditions, and (iii) |

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| | BHEL, shall be worked out and shall be considered to be exhausted in the same order. The total period of time extensions shall be the sum of (i), (ii) and (iii) above and shall be equal to period between the scheduled date of completion and the actual date of completion of contract. LD shall be imposed/ levied for the portion of time extensions attributable to successful bidder and recoverable from the dues payable to the successful bidder. |
| 36.0 | MOBILIZATION ADVANCE/ INTEREST BEARING RECOVERABLE ADVANCE |
| | Not applicable for this tender. |
| 37.0 | OVER RUN CHARGES |
| | Not applicable for this tender |
| 38.0 | PRICE VARIATION COMPENSATION (PVC)/ ESCALATION |
| | PVC Applicable as per relevant provision of GCC. |
| 39.0 | TAXES & DUTIES, ETC. |
| 39.1 | All taxes excluding GST with applicable cess & BOCW Cess (mentioned elsewhere in the Tender) but including, Charges, Royalties, , any State or Central Levy and other Taxes for materials if any obtained for the work and for the execution of the contract shall be borne by the bidder and shall not be payable extra by BHEL. |
| 39.2 | Any increase in the above at any stage during execution including extension of the contract, if any, shall have to be borne by the contractor. Quoted/ accepted rates/ price shall be inclusive of all such requirements. |
| 39.3 | GST with applicable Cess, legally leviable & payable by the successful bidder as per GST Law, shall be paid extra by BHEL. Hence, Bidder shall not include GST with applicable Cess in their quoted price. |
| 39.4 | The successful bidder shall furnish proof of GST registration with GSTN Portal covering the services under this contract. Registration should also bear endorsement for the premises from where the billing shall be done by the successful bidder on BHEL for this project/ work. |
| 39.5 | Since GST on output will be paid by BHEL separately as enumerated above, bidder's quoted rates/ price should be after considering the Input Credit under GST law at their end. |
| 39.6 | TDS under Income Tax shall be deducted at prevailing rates on gross invoice value from the running bills unless exemption certificate from the appropriate authority/ authorities is furnished. |
| 39.7 | TDS under GST shall be deducted at applicable rates on gross invoice value from the running bills. |
| 39.8 | Bidder shall note that the GST Tax Invoice complying with GST Invoice Rules (Section 31 of GST Act & Rules referred there under) wherein the 'Bill To' details shall be as per following.<br>BHEL GSTN – 19AAACB4146P1ZC<br>NAME - BHARAT HEAVY ELECTRICALS LIMITED<br>ADDRESS – BHEL Site office, R&M of Combustion modification system for Nox mitigation, STG-III (1x500 MW), NTPC Farakka Site, West bengal |
| 39.9 | Bidder to intimate immediately on the day of removal of Goods(in case of any supply of goods) to BHEL along with all relevant details and a scanned copy of Tax Invoice through following communication mode for enabling BHEL to meet its GST related compliances<br><br>Portal Address – Shall be intimated later.<br>And<br>Email Address – Shall be intimated later.<br><br>In case of delay in submission of the abovementioned documents on the date of dispatch, BHEL may incur penalty /interest for not adhering to Invoicing Rules under GST Law. The same will be liable to be recovered from the successful bidder, if such delay is attributable to the bidder. |
| 39.10 | In case of raising any Supplementary Tax Invoice (Debit / Credit Note) Bidder shall issue the same |

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| | containing all the details as referred to in Section 34 read with Section 31 of GST Act & Rules referred there under. | |
| 39.11 | Bidder shall Comply with the Time limit prescribed under the GST Law and rules thereof for raising of the tax invoice. If any supply of goods is applicable, Bidder shall also ensure prompt delivery of Goods after dispatch. | |
| 39.12 | Bidder shall note that in case GST credit is delayed/ denied to BHEL due to delayed / non receipt of goods and /or tax invoice or expiry of the timeline prescribed in GST Law for availing such ITC, or any other reasons attributable to the bidder, GST amount shall be recoverable from the bidder along with interest levied / leviable on BHEL, as the case may be. | |
| 39.13 | Bidder shall upload the Invoices raised on BHEL in GSTR-1 within the prescribed time as given in the GST Act. Bidder shall note that in case of delay in declaring such invoice in your return and GST credit availed by BHEL is denied or reversed subsequently as per GST Law , GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from the bidder along with interest levied / leviable on BHEL. | |
| 39.14 | Way Bill: Successful Bidder shall arrange way bill / e-waybill for any transfer of goods for the execution of the contract.<br><br>The Bidder has to make their own arrangement at their cost for completing the formalities, if required, with Issuing Authorities, for bringing materials, plants & machinery at site for execution of the works under this contract, Road Permit/ Way Bill, if required, shall be arranged by the contractor and BHEL will not supply any Road Permit/ Way Bill for this purpose. | |
| 39.15 | Any new taxes & duties, if imposed subsequent to the due date of offer submission as per NIT & TCN, by statutory authority during contract period (including extensions for which delay is not attributable to the bidder), shall be reimbursed by BHEL on production of relevant supporting document to the satisfaction of BHEL. However, bidder shall obtain prior approval from BHEL before depositing any such new taxes and duties.<br>Benefits and/or abolition of all existing taxes must be passed on to BHEL against new taxes, if any, introduced at a later date. | |
| 40.0 | TERMS OF PAYMENTS (The quoted / awarded amount shall be released progressively on pro-rata basis as per the following milestone) | |
| | STAGES OF PAYMENT | PAYMENT BREAK UP IN % |
| 40.1 | PAYMENT BREAK UP FOR SL NO.A OF PRICE SCHEDULE (VOL-III, SCH-2) | |
| 40.1.1 | On pro rata basis progressively for Dismantling of Mechanical, Electrical & C&I items of each unit.e.g Pr Parts, Structure, Instruments, Electrical/C&I items and disposal of scraps of each unit, Up keepment/storage of items which will be re-used & Re-Erection/re-use/modification, alignment, welding & commissioning of old dismantled items | 41% |
| 40.1.2 | On pro rata basis progressively for disposal of Scrap Items & Upkeepment of Items to be re-used | 10% |
| 40.1.3 | On pro rata basis progressively for Re-Erection/Re-use/Modification of Mechanical, Electrical & C&I items of each unit | 41% |
| 40.1.4 | Supply & Application of Paints for re-erected/re-used/modified items | 3% |
| 40.1.5 | On pro rata basis progressively for System Commissioning & Assistance for PG Test | 5% |
| | SUB TOTAL | 100% |
| 40.2 | PAYMENT BREAK UP FOR SL NO.B OF PRICE SCHEDULE (VOL-III, SCH-2) | |
| 40.2.1 | Pre-Assy & Erection | 44% |
| 40.2.2 | Alignment & welding,application of insulation | 35% |
| 40.2.3 | Hydro Test of Pr Parts | 4% |
| 40.2.4 | Air Leak Test | 5% |

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| 40.2.4 | Supply & Application of Paints | 3% |
| 40.2.5 | System Commissioning & Assistance for PG Test | 5% |
| 40.2.6 | House Keeping, Scrap Disposal | 1% |
| 40.2.7 | Submission of as Built Drawing | 1% |
| 40.2.8 | Punch Point Liquidation | 1% |
| 40.2.9 | Material Reconciliation | 1% |
| | SUB TOTAL | 100% |
| 40.3 | PAYMENT BREAK-UP FOR SL NO.C OF PRICE SCHEDULE (VOL-III, SCH-2) | |
| 40.3.1 | On pro-rata basis progressively as & when erection work/ cable laying/cable dressing/Cable tagging/termination/Instrument fixing/cable tray/ferruling/testing/house keeping/painting(supply & application)/disposal of scrap is complete as per BHEL drawing & instructions | 90% |
| 40.3.2 | Successful commissioning of Instruments/system, as bult drawing submission, material reconciliation & punch point liquidation. | 10% |
| | SUB TOTAL | 100% |
| 40.4 | PAYMENT BREAK-UP FOR SL NO.D.1 OF PRICE SCHEDULE (VOL-III, SCH-2) | |
| 40.4.1 | Receipt/ taking delivery of material at plant, unloading from truck/ trailor, re-loading/ shifting to site store/ storage yard/ work site, verification, stacking, storage, etc, including providing material management service and arrange suitable watch and ward facility round the clock basis along with store supervisor as per tender & as directed by BHEL engineer, for various item/ material). | 40% |
| 40.4.2 | Updation of store documents (both hard & soft) of above. | 10% |
| 40.4.3 | Proper stacking, as per direction of BHEL | 20% |
| 40.4.4 | Verification, as required, as per direction of BHEL | 20% |
| 40.4.5 | Material Re-conciliation | 10% |
| | SUB TOTAL | 100% |
| 40.5 | PAYMENT BREAK-UP FOR SL NO.D.2 OF PRICE SCHEDULE (VOL-III, SCH-2). | |
| 40.5.1 | existing/old materials shifting/re stacking inside cover store/semi covered store/material yard | 100% |
| 40.6 | PAYMENT FOR SL NO.E OF PRICE SCHEDULE (VOL-III, SCH-2). This item may not be excuted in case the same is carried out by customer during execution, in that case payment shall not be made for this. | |
| 40.6.1 | Scaffolding Materials receipt & shifting/transporatation from NTPC store/yard to site | 60% |
| 40.6.2 | Erection of Scaffolding. | 30% |
| 40.6.3 | Dismantling of Scaffolding & handing over in customer store/yard | 10% |
| | SUB-TOTAL | 100% |
| 40.7 | PAYMENT FOR SL NO.F OF PRICE SCHEDULE (VOL-III, SCH-2). This item may not be executed in case the same is supplied by customer during execution, in that case payment shall not be made for this. | |
| 40.7.1 | Arrangement of Cup lok scaffolding along with steel planks, hand rails, stair case at site for each unit | 100% |
| i | Payment shall be made on the basis of progress of work on pro-rata basis as certified by BHEL-Engineer as per above break up | |
| ii | All payments shall be subject to statutory deduction as per rule. | |
| iii | Necessary documents as specified in GCC shall be submitted with bill. | |
| iii | All payment shall be made by Electronic Fund Transfer and necessary Bank Details shall be furnished by the sub-contractor. | |
| iv | Successful bidder shall submit RA bill once in a month at the end of each month as per billing break-up of the tender. The measurement will be taken by BHEL engineer as per relevant clause of GCC and certify regarding the actual work executed in the measurement book and bills for work. | |

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| v | Progressive payment shall be made by BHEL against successful bidder's RA bill, complete & correct in all respects accompanied by BHEL engineer's certified/ measurement sheet, jointly signed; requisite statutory certificates, certified by BHEL; within 60 days of submission of the bill. The bill shall also accompany monthly progress report as per clause no. 14.6 of this TCC. |
| vi | The RA bill, complete in all respects accompanied by BHEL engineer's certificate/ jointly signed measurement sheet will be paid, as indicated elsewhere, subject to its completeness & correctness in all respects. The measurement will be taken by BHEL engineer as per relevant clause of GCC and certify regarding the actual work executed in the measurement book and bills for work. All admissible recoveries/ adjustments etc shall be made from the interim payable amount of each RA bill on completion of item of work. Contractor shall make his own arrangement for making payment of impending labour wages and other dues in the meanwhile. |
| vii.a. | Out of above break up for payment, 5% will be retained from each bill which will be released on completion of guarantee period and after confirmation of full GST credit to BHEL However, this 5 %, retained from each RA bill, may be released against submission of a separate bank guarantee as per Performance Bank Guarantee format, to be kept valid till guarantee period, subject to (i) Receipt of certificate that all works are completed in all respects; (ii) Reconciliation of materials/ T&P/ MMD; (iii) Completion of final bill formalities and (iv) Handing over to BHEL/ customer. The submission of bank guarantee towards above is separate and the bank guarantee towards security deposit cannot be utilized for this purpose. The security deposit / Retention amount will be refunded as per GCC. |
| vii.b. | Out of above break up for payment, 2.5 % of gross bill amount shall be paid in the following manner on certification by BHEL engineer after compliance of each of following activity in each month. In case of non-fulfillment of respective activity by successful bidder in each month, no payment shall be made by BHEL against corresponding activity and no claim of successful bidder, at a later date, whatsoever, in this regard will be entertained by BHEL. |
| vii.c | 0.5 % shall be paid on compliance of house-keeping of successful bidder's working area and store/ office areas. |
| vii.d | 0.5 % shall be paid on compliance of general illumination of successful bidder's working area and stores, office area. |
| vii.e | 0.5 % shall be paid on compliance of applicable OHSAS requirement as per guidelines of BHEL and as specified in the tender. |
| vii.f | 0.75 % shall be paid on compliance of applicable safety requirement as per guidelines of BHEL and as specified in the tender. |
| vii.g | 0.25 % shall be paid on compliance of applicable security requirement as per guidelines of BHEL. |
| viii. | Each RA bill shall accompany with latest agreed & jointly signed L-3/ construction schedule, as enumerated in this tender. |
| ix. | All admissible recovery/ adjustment, etc. shall be made from interim payable amount. |
| x | GST shall be released to the vendor upon compliance of following: - |
| x.a | Vendor declaring such Invoice in his GSTR-1 |
| x.b | Material Receipt Certificate (MRC) / Engineering Protocol by BHEL |
| x.c | Confirmation of payment of GST thereon by vendor on GSTN Portal |
| x.d | Above is subject to receipt of goods / service and tax invoice thereof along with vendor declaring invoice in his return and paying GST within timeline prescribed for availing ITC by BHEL. |
| x.e | Last percentage payment, will be released after confirmation of full GST Credit to BHEL. Any Interest if levied thereon, for reasons elaborated in tax & duties clause of the tender and attributable to the bidder, will be recovered from the Final Payment / Retention amount. |
| 41.0 | CONTRACT PRICE |
| 41.1 | The bidder shall quote their rates in compliance with specification and terms & conditions of tender and strictly in accordance with prescribed Price Schedule, Volume-III (Latest Revision). |
| 41.2 | The quantities of the various items mentioned in the BOQ cum rate schedules of items of Volume-III are approximate, based on very preliminary information and may vary to any extent or to be deleted altogether. The quoted rates of each item will remain firm throughout the period of execution including extension, for reasons whatsoever, as long as variation in the total value of the work executed under |

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| | any part of the this contract including extra items, if any, but excluding any price variation, remains within +/- 15 % (plus/minus fifteen percent) of the awarded price as per LOI / WO. |
| 41.3 | All other provisions of GCC on quantity variation shall be applicable for this tender. |
| 42.0 | GUARANTEE/ WARRANTY PERIOD/DEFECT LIABILITY |
| 42.1 | Even though the work will be carried out under supervision of BHEL, the successful bidder will be responsible for the quality of workmanship, quality of materials/ items and design for which the successful bidder is responsible. |
| 42.2 | The successful bidder shall guarantee the work executed under the scope of the contract for a period of eighteen (18) months from the date of successful Completion of the Facilities (or any part thereof) or twelve (12) months from the date of Operational Acceptance of the Facilities (or any part thereof), whichever occurs first. The date of start of guarantee period is considered as certified by the engineer (i.e. on completion of total work under scope of work and/ or handing over to BHEL/ owner) and shall rectify free of cost all defects due to faulty work done, supply (if applicable) within the gurantee/warrantee/defect liability period. In case the successful bidder fails to repair/ replace the defective works within the time specified by the engineer, BHEL may proceed to undertake the repairs/ replace such defective works at successful bidder's risk & cost without prejudice to any other rights and recover the same from security deposit/ other dues. |
| 42.3 | Other provision shall be as per the GCC. |
| 43.0 | DELETED |
| 44.0 | REVISION ON ACCEPTED CONTRACT RATE |
| | Rate revision is not applicable for this tender. |
| 45.0 | EXTRA WORKS |
| | As per GCC |
| 46.0 | OTHER TERMS |
| 46.1 | All other term & conditions of this specification, not mentioned above shall be governed by the pertinent provisions of GCC, Volume-IB. |
| 47.0 | Terminal Points:- |
| 47.1 | Instrument and service air:- at one point in Boiler area (4-6 Ksc)<br>• Marshalling panel of NTPC DDCMIS.<br>• 230V Single phase AC UPS and 24 DC power supply feeder from NTPC ACDB and DCDB in CER.<br>• Marshaling cabinet of NTPC DDCMIS in CER for input/output signals |
| 48.0 | Exclusions |
| 48.1 | • LDO oil skid<br>• Existing pressure gauges in corner skid for oil and atomizing medium. |

**ANNEXURE-I**
**[REF. PRICE SCHEDULE, VOL-III, SCH-2, SL. NO.A]**

**TENTATIVE WEIGHT OF ITEMS (**Mechanical/ C&I/ Electrical**) TO BE DISMANTLED & RE-USED/RE ERECTED/MODIFIED/COMMISSIONED IS MENTIONED BELOW. HOWEVER ACTUAL QTY OF ITEMS TO BE DECIDED AS PER SITE CONDITION/ENGINEER I/C.**

The contractor shall carry out Dismantling, Removal, Shifting of any obstructing Pr Parts, structures, buck stay, pipe lines, cables & cable trays, boiler lighting arrangement,wall blowler system at BOFA panel elevation ,facilities etc. and upkeepment of the items for Re-Use/Re-Erection/Modification as per drawing/Instruction of Engr I/C.

A. Following Items to Be dismantled, preserved & to be re-used/ re-erected/ modified/ commissioned:-

MECHANICAL ITEMS:

- Insulation cladding, wool, refractory etc as required.
- Structure components like Platform, hand rails, floor gratings, stair cases, ladders etc of Different Elevation as required.
- Existing Wind box assembly, coal burner, Coal nozzle tip, coal piping, hangers etc.
- Misc structural items(channel, Angles, Beams etc.)
- Wall blower,soot blower, its piping as required.
- Duct, duct support, expansion below etc as required.
- Buckstay beams and its associated members like leveller guide, scalloped bar, pin etc.
- Water wall panels/tubes/ bends as required.
- Burner Nozzles (air/coal/oil).
- Coal Pipe Bends/elbows as required.
- Removal / dismantling of FIE (Fuel Inet Elbows = 36 Nos) for all four corners at all elevation. Transporatation of FIE's to designated location as decided by BHEL/ Customer
- Removal of Oil Guns, Gun Guide Pipes, HEA Ignitor, its fittings & its guide pipes, Scanner & their guide pipes. Proper care shall be given while dismantling as these items shall be reused, Oil Gun Vice assy & Rack, Air Cooled Oil gun Assemblies, oil gun mainmtenance box, oil gun vice assy an rack.
- Burner station skid assemblies.
- Corner station piping, valves & fittings.
- Coal piping, coal pipe coouplings, supports etc( as required).
- Buckstays in the wind box and BOFA locations.
- Any other piping, supports, valves and fittings etc.
- Removal of all Coal Nozzles from coal compartment for all four corners.Replacement of Nozzle tips with new tips & inert back the nozzles to burners coal compartments.
- Instrument Air, Service Air Line as required.
- Any other mechanical items not mentioned above but required to be dismantled & re-ereted/re-used/modified for completion of the sytem, same to be carried out by vendor as per instruction of Engr I/C without any extra cost

C&I & ELECTRICAL ITEMS :

- 44 Nos ( approx..) Flame scanner Head assemblies, Cooling air piping, Scanner hoses.
- Furnace flame viewing camera/system.
- ASLD etc.
- SADC and Burner tilt power cylinders/actuators.
- Cable trays and cables, which are fouling with DE-NOX system duct panels etc.
- Existing Pressure gauges in Corner skid for oil and atomizing medium.
- Wind box to Furnace DP Transmitters and impulse piping.
- Tapping point for any Instrument in water wall.
- Field cables and Junction boxes in Boiler Operating Floor/Firing Floor/ air and flue gas path as applicable etc..
- Existing SADC I/P converters, 1/4" Air Filter Regulator in existing SADC signal airline, Existing SADC signal air Line pressure switches etc..
- Illumination items.
- Existing secondary air flow measurement element and transmitter along with cable & accssories.

● Existing corner oil skid, instruments in oil line, trip valves and control valves along with all associated cables.
● Field JBs and impulse piping.
● All existing cables between existing SADC actuators I/P, pressure switch and SADC/FSSS panel.(including field cables till local JB).
● All existing cables between existing corner oil skid, HEA ignitors, oil gun, LGM box and FSSS panel(including field cables till local JB).
● All existing Power, Control & Instrumentation cables for Soot Blowers.
● Existing instruments in air and flue gas path, associated cabling, field JB's and Impulse piping.
● Any other C&I/Electrical items not mentioned above but required to be dismantled & re-ereted/re-used/modified for completion of the sytem, same to be carried out by vendor as per instruction of Engr I/C without any extra cost.

Note: - The above item list are tentative only. If any other item required to be dismantled for completion of De-Nox system, the same to be carried out by vendor without any extra cost.

B. Work to be done as under:-

i) Dismantling, Removal, Shifting of any obstructing items (Mechanical, C&I, Electrical) as mentioned above for De-Nox.
ii) Upkeepment/preservation of the items for re-use, re-erection, modification, welding, alignment, laying, termination, commissioning, PG Test as per instruction of Engr I/C/Drawing as reqd.
iii) Relaying/re-erection of Instrument air, service air, other dismantled pipe lines, lighting system, cables, cable trays, jb's etc.
iv) Disposal of scrap to the scrap yard or as instructed by Engr I/C inside plant premises.
v) Instrument air distribution SS tubing, fittings for SADC actuators, Corner Nozzle valves, HEA ignitors, Burner Tilt Power cylinders Power cylinders etc..
vi) Dismantling/Modification of existing Wind box assembly, coal burner, Coal nozzle tip, coal piping, hangers etc.
vii) Preservation of Scanners and HEA Ignites and critical equipment which can be reused again shall be cleaned and stored in proper shed and shall be reused/ re erected/restored etc..
viii) Restoration/re-erection of all removed structure, floor grills, air lines, hand rails, Re-erection of removed insulation and cladding with the help of hooks and retainer plates. Existing access openings/observation doors are to be retained.Restoring JB, cable, cable tray as and where applicable. Dismantling & Removal of scaffolding and other temporary structures & arrangements made for handling after completion of work & Transportation of removed material and other scraps generated during the work to disposal yard/handing over the same to NTPC customer. Any other alteration which is done for modification is to be restored in original position without any extra charge. If any modification of floor/ bracing is required to successfully complete this BOFA modification job which is not mention here, same has to be carried out with out any extra cost etc..
ix) Existing Floor at 51.850 Mtrs(approx..), & other Elevations to be modified to clear BOFA assembly & Ducting etc..
x) Modification of Existing Floors as per drawing/guidance of Engr I/C.
xi) Existing Buckstay at El 51.00(approx..) Mtrs to be modified at corners etc..
xii) Horizontal Bracings interfering with BOFA system to be modified to clear BOFA & Ducting etc.
xiii) Duct Stiffeners & Insulation at existing items to be adjusted locally at site for clearance.
xiv) All the existing features which are interfering with the proposed arrangement of BOFA are to be suitably relocated at site to the extent required.
xv) Supply & application of paints for the re-erected/re-used/modified items.
xvi) Fabrication of Floors/benches (where ever required)
xvii) 100% RT to be carriedout for all pressure parts weld joints after re-erection / reuse / modification limited to DeNOx modification portion only.

C)Tentative quantity of work:

C.1 Approx weight to be dismantled will be 50 MT.
C.2 Approx weight to be re-erected/re-used will be 30 MT.

Note: Qunantity for Dismantling work & old dismantled items to be retained/re-used/modified may vary to any

extent. No extra paymnet shall be made for quantity variation for C.1 & C.2 mentioned above as required to complete the NOx modification package.

**ANNEXURE-II**

**[REF. PRICE SCHEDULE, VOL-III, SCH-2, SL. NO.B]**

**TENTATIVE LIST OF NEWLY SUPPLIED MECHANICAL ITEMS/UNIT FOR SHIFTING FROM STORE/ STORE YARD TO SITE, ERECTION, ALIGNMENT, WELDING, PAINTING(SUPPLY & APPLICATION), NDT,TESTING, COMMISSIONING & PG TEST ETC. FOR DE-NOX SYSTEM OF BOILER U#6 500 MW AT NTPC FARAKKA STPS**

| DU | PGMA | Description | Unit | DU Qty/Unit | DU Wt In Kgs/Unit |
|---|---|---|---|---|---|
| **A. PRESSURE PARTS** | | | | | |
| F4240106500001 | 06-500 | BOFA PANEL (OFA-1 &OFA-3) | NO | 2 | 3,228.960 |
| F4240106500002 | 06-500 | BOFA PANEL (OFA-2 &OFA-4) | NO | 2 | 3,214.420 |
| F4240106500003 | 06-500 | ERECTION MATERIALS | NO | 1 | 213.120 |
| F4240106655001 | 06-655 | RIFLED TUBE D51X7.1 | NO | 4 | 26.080 |
| F4240106655002 | 06-655 | PLATE 6 THK. | NO | 4 | 1.160 |
| F4240106655003 | 06-655 | ROD D6 | NO | 2 | 0.340 |
| F4240106655004 | 06-655 | SEAL BOX | NO | 2 | 57.000 |
| F4240106655005 | 06-655 | SCALLOPED BAR | NO | 2 | 6.000 |
| F4240106655006 | 06-655 | SCALLOPED BAR | NO | 2 | 4.400 |
| F4240106655007 | 06-655 | PLATE 6 THK. | NO | 2 | 2.200 |
| F4240108006001 | 08-006 | WIND BOX TRUSS | NO | 2 | 1,398.368 |
| F4240108006002 | 08-006 | WIND BOX TRUSS | NO | 2 | 1,179.048 |
| F4240108006003 | 08-006 | PLATE 16 | NO | 2 | 232.612 |
| F4240108006004 | 08-006 | PLATE-12 | NO | 4 | 16.400 |
| F4240108006005 | 08-006 | PLATE | NO | 4 | 35.200 |
| F4240108006006 | 08-006 | LINK | NO | 8 | 79.200 |
| F4240108006007 | 08-006 | PIN | NO | 8 | 10.400 |
| F4240108006008 | 08-006 | WASHER | NO | 16 | 6.400 |
| F4240108006009 | 08-006 | PLATE | NO | 2 | 27.200 |
| F4240108006010 | 08-006 | LINK | NO | 8 | 116.800 |
| F4240108006011 | 08-006 | PIN | NO | 8 | 20.000 |
| F4240108006012 | 08-006 | WASHER | NO | 16 | 12.800 |
| F4240108006013 | 08-006 | PLATE-25 | NO | 4 | 6.800 |
| F4240108006014 | 08-006 | PLATE | NO | 2 | 27.800 |
| F4240108006015 | 08-006 | PLATE-16 | NO | 2 | 150.720 |
| F4240108006016 | 08-006 | LUG | NO | 120 | 52.800 |
| F4240108006017 | 08-006 | VERTICAL BUCKSTAY BEAM | NO | 4 | 2,860.000 |
| F4240108006018 | 08-006 | ISA 100 X 100 X 10 | NO | 8 | 36.320 |
| F4240108006019 | 08-006 | ANGLE | NO | 8 | 35.200 |
| F4240108006020 | 08-006 | ANGLE | NO | 8 | 138.400 |
| F4240108006021 | 08-006 | T-PLATE | NO | 4 | 54.400 |
| F4240108006022 | 08-006 | LINK | NO | 8 | 52.000 |
| F4240108006023 | 08-006 | PLATE | NO | 44 | 158.400 |
| F4240108006024 | 08-006 | PLATE-16 | NO | 44 | 189.200 |
| F4240108006025 | 08-006 | PLATE | NO | 4 | 40.800 |

| | | | | | |
|---|---|---|---|---|---|
| F4240108006026 | 08-006 | BOLT HEX GR C4.6 M20X 70 | NO | 16 | 3.728 |
| F4240108006027 | 08-006 | NUT HEX GR C M20 | NO | 16 | 1.120 |
| F4240108006028 | 08-006 | WASHER PNCHD A20 | NO | 16 | 0.272 |
| F4240108006029 | 08-006 | PLATE-36 | NO | 8 | 13.600 |
| F4240108006030 | 08-006 | HSFG BOLT & NUT M24 X 90 | NO | 32 | 19.264 |
| F4240108006031 | 08-006 | WASHER M24 A (HSFG WASHER) | NO | 32 | 1.376 |
| F4240108006032 | 08-006 | PLATE-16 | NO | 12 | 5.640 |
| F4240108006033 | 08-006 | PLATE-16 | NO | 4 | 1.884 |
| F4240108006034 | 08-006 | PLATE-16 | NO | 2 | 23.300 |
| F4240108006035 | 08-006 | PLATE-16 | NO | 4 | 35.360 |
| F4240108006036 | 08-006 | SCALLOPED BAR | NO | 60 | 72.000 |
| F4240108006037 | 08-006 | PLATE-16 | NO | 2 | 26.600 |
| F4240108006038 | 08-006 | PLATE-16 | NO | 7 | 124.600 |
| F4240108006039 | 08-006 | SCALLOPED BAR | NO | 2 | 6.600 |
| F4240108006040 | 08-006 | LUG | NO | 88 | 114.400 |
| F4240108006041 | 08-006 | SCALLOPED BAR | NO | 2 | 6.600 |
| F4240108006042 | 08-006 | LUG | NO | 8 | 9.968 |
| F4240121600001 | 21-600 | PIPE OD 60.3 X 3.91 - SA106GRB | M | 8 | 43.496 |
| F4240121992001 | 21-992 | ER 70S-A1 GTAW ROD DIA2.4MM | KG | 0.70 | 0.700 |
| **SUB-TOTAL WEIGHT OF PR PARTS ITEMS** | | | | | 14201.456 |
| **B. INSULATION ITEMS** | | | | | |
| F4240132310001 | 32-310 | PLATE - 5 | NO | 2 | 24.492 |
| F4240132310002 | 32-310 | PLATE - 5 | NO | 4 | 11.020 |
| F4240132310003 | 32-310 | PLATE - 5 | NO | 4 | 5.652 |
| F4240132310004 | 32-310 | PLATE - 5 | NO | 4 | 4.900 |
| F4240132310005 | 32-310 | PLATE - 5 | NO | 4 | 2.512 |
| F4240132310006 | 32-310 | OUTER PIPE | NO | 2 | 1.928 |
| F4240132310007 | 32-310 | CAFJOINTING GRW/1 2MM OD111/ID105 | NO | 4 | 0.180 |
| F4240132310008 | 32-310 | HR GLASS DIA109MM X 5MM THK | NO | 4 | 0.800 |
| F4240132310009 | 32-310 | PIPE CAP DIA 130 | NO | 2 | 9.184 |
| F4240132310010 | 32-310 | INNER PIPE | NO | 2 | 4.284 |
| F4240132310011 | 32-310 | ERW TUBE NB25 MEDIUM | NO | 2 | 0.714 |
| F4240132310012 | 32-310 | FLEX HOSE 25MM BORE RAYON BRAIDED | NO | 2 | 10.000 |
| F4240132310013 | 32-310 | HEX HD SCRU-M12X50 -4.6-IS1363P2 | NO | 44 | 2.596 |
| F4240132310014 | 32-310 | NUT -M12 -CL4-IS1363P3 | NO | 44 | 0.880 |
| F4240132310015 | 32-310 | PUN WASHER-M12 -IS2016-A | NO | 44 | 0.440 |
| F4240132310016 | 32-310 | MILL BOARD 25 MM - TP 23296 | KG | 5 | 5.000 |
| F4240132310017 | 32-310 | FIXING PIN L - 225 | NO | 6,800 | 340.000 |
| F4240132310018 | 32-310 | RETAINER TYPE-A | NO | 6,800 | 414.800 |
| F4240132310019 | 32-310 | AL CASING SUPPORT 03-650L | NO | 2,270 | 340.500 |
| F4240132310020 | 32-310 | TAPSCREW-ST 4.2X13C | NO | 45,000 | 45.000 |
| F4240132310021 | 32-310 | WIRE DIA 0.914 MM - GI - IS280 | KG | 120.000 | 120.000 |
| F4240132310022 | 32-310 | PLAINALUMINI SH 1.6 MM THK IS737/19000H2 | M2 | 1,150.000 | 4,968.000 |
| F4240132310023 | 32-310 | NUT -M10 -CL4-IS1363P3 | NO | 218.000 | 2.180 |
| F4240132310024 | 32-310 | SHEET 1.6 MM | NO | 20.000 | 55.020 |

| | | | | | |
|---|---|---|---|---|---|
| F4240132310025 | 32-310 | SHEET:3.15 | NO | 8.000 | 296.736 |
| F4240132310026 | 32-310 | WELD STUD M10 | NO | 218.000 | 47.306 |
| F4240132310027 | 32-310 | WASHER A11 | NO | 250.000 | 10.000 |
| F4240132310028 | 32-310 | BENT SHEET | NO | 218.000 | 361.880 |
| F4240132310029 | 32-310 | BRACKET | NO | 218.000 | 94.394 |
| F4240132310030 | 32-310 | SUPPORT SHEET | NO | 41.000 | 8.774 |
| F4240132310031 | 32-310 | CASING SUPPORT | NO | 13.000 | 78.585 |
| F4240132310032 | 32-310 | CASING SUPPORT | NO | 13.000 | 121.810 |
| F4240132310033 | 32-310 | SHEET 2 | NO | 13.000 | 163.280 |
| F4240132310034 | 32-310 | ROD D 6.0 MM-IS2062GRA SAE1010/SAE1018 | NO | 40.000 | 53.280 |
| F4240132310035 | 32-310 | RETAINER TYPE 'C' | NO | 800.000 | 33.600 |
| F4240132310036 | 32-310 | WELD MESH 50 X 50 WIRE DIA 3MM - IS 1566 | M2 | 170.000 | 377.230 |
| F4240133210001 | 33-210 | CASTABLEREFRACTORY GR A | KG | 9,325.000 | 9,325.000 |
| F4240133230001 | 33-230 | POURABLE INSULATION | KG | 1,000.000 | 1,000.000 |
| F4240133321001 | 33-321 | WOOL-100KG/CU.M-50MM ONE SIDE GI WIRENET | M2 | 850.000 | 4,675.000 |
| F4240133321002 | 33-321 | WOOL-100KG/CU.M-60MM-ONE SIDE GI WIRENET | M2 | 2,110.000 | 13,715.000 |
| F4240133321003 | 33-321 | WOOL-100KG/CU.M-50MM-BOTH SIDE GI WIRENE | M2 | 900.000 | 5,400.000 |
| **SUB-TOTAL WEIGHT OF INSULATION** | | | | | 42131.957 |
| **C. NON PRESSURE PARTS** | | | | | |
| F4240136321001 | 36-321 | FLB321-101 ISMB150 | NO | 4.000 | 83.680 |
| F4240136321002 | 36-321 | FLB321-102 ISMB125 | NO | 2.000 | 24.656 |
| F4240136321003 | 36-321 | FLB321-104 ISMB125 | NO | 1.000 | 12.301 |
| F4240136321004 | 36-321 | FLB321-105 ISMB150 | NO | 4.000 | 73.584 |
| F4240136321005 | 36-321 | FLB321-106 ISMB450 | NO | 4.000 | 275.120 |
| F4240136321006 | 36-321 | FLB321-107 ISMB125 | NO | 6.000 | 42.210 |
| F4240136321007 | 36-321 | FLB321-108 ISMB125 | NO | 1.000 | 12.361 |
| F4240136321008 | 36-321 | FLB321-109 ISMB125 | NO | 13.000 | 172.185 |
| F4240136321009 | 36-321 | FLB321-110 ISMB200 | NO | 3.000 | 157.746 |
| F4240136321010 | 36-321 | FLB321-111 ISMB200 | NO | 1.000 | 52.582 |
| F4240136321011 | 36-321 | FLB321-112 ISMB125 | NO | 16.000 | 133.872 |
| F4240136321012 | 36-321 | FLB321-113 ISMC75 | NO | 2.000 | 8.362 |
| F4240136321013 | 36-321 | FLB321-114 ISMC75 | NO | 10.000 | 78.080 |
| F4240136321014 | 36-321 | FLB321-115 ISMB200 | NO | 2.000 | 110.074 |
| F4240136321015 | 36-321 | FLB321-116 ISMB125 | NO | 2.000 | 21.980 |
| F4240136321016 | 36-321 | FLB321-117 ISMB500 | NO | 2.000 | 1,497.930 |
| F4240136321017 | 36-321 | FLB321-118 ISMB400 | NO | 2.000 | 1,093.258 |
| F4240136321018 | 36-321 | FLB321-119 ISMB125 | NO | 1.000 | 6.776 |
| F4240136321019 | 36-321 | FLB321-120 ISMB125 | NO | 1.000 | 7.266 |
| F4240136321020 | 36-321 | FLB321-121 ISMB150 | NO | 2.000 | 60.604 |
| F4240136321021 | 36-321 | FLB321-122 ISMB125 | NO | 1.000 | 13.245 |
| F4240136321022 | 36-321 | FLB321-123 ISMC75 | NO | 2.000 | 4.192 |
| F4240136321023 | 36-321 | FLB321-124 ISMB450 | NO | 2.000 | 975.264 |
| F4240136321024 | 36-321 | FLB321-125 ISMB125 | NO | 4.000 | 53.056 |

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|---|---|---|---|---|---|
| F4240136321025 | 36-321 | FLB321-126 ISMB250 | NO | 2.000 | 297.568 |
| F4240136321026 | 36-321 | FLB321-127 ISMB125 | NO | 10.000 | 199.610 |
| F4240136321027 | 36-321 | FLB321-128 ISMB125 | NO | 3.000 | 36.984 |
| F4240136321028 | 36-321 | FLB321-129 ISMB150 | NO | 1.000 | 14.925 |
| F4240136321029 | 36-321 | FLB321-130 ISMB150 | NO | 1.000 | 14.860 |
| F4240136321030 | 36-321 | FLB321-131 ISMB125 | NO | 2.000 | 14.070 |
| F4240136321031 | 36-321 | FLB321-132 ISMB150 | NO | 3.000 | 88.656 |
| F4240136321032 | 36-321 | FLB321-133 ISMB125 | NO | 1.000 | 12.395 |
| F4240136321033 | 36-321 | FLB321-134 ISMB125 | NO | 1.000 | 17.329 |
| F4240136321034 | 36-321 | FLB321-135 ISMB125 | NO | 1.000 | 17.329 |
| F4240136321035 | 36-321 | FLB321-136 ISMB150 | NO | 1.000 | 29.552 |
| F4240136321036 | 36-321 | FLB321-137 ISMB400 | NO | 2.000 | 1,310.090 |
| F4240136321037 | 36-321 | FLB321-138 ISMB200 | NO | 2.000 | 102.624 |
| F4240136321038 | 36-321 | POST321-201 ISMC75 | NO | 9.000 | 206.883 |
| F4240136321039 | 36-321 | POST321-202 ISMC75 | NO | 1.000 | 22.987 |
| F4240136321040 | 36-321 | POST321-203 ISMC75 | NO | 4.000 | 89.184 |
| F4240136321041 | 36-321 | POST321-204 ISMC75 | NO | 2.000 | 45.974 |
| F4240136322001 | 36-322 | FBR322-501 DBA75X75X6 | NO | 1.000 | 39.452 |
| F4240136322002 | 36-322 | FBR322-502 DBA75X75X6 | NO | 1.000 | 39.452 |
| F4240136322003 | 36-322 | FBR322-503 DBA75X75X6 | NO | 1.000 | 40.015 |
| F4240136322004 | 36-322 | FBR322-504 DBA75X75X6 | NO | 1.000 | 40.015 |
| F4240136322005 | 36-322 | FBR322-505 DBA75X75X6 | NO | 2.000 | 78.396 |
| F4240136322006 | 36-322 | FBR322-506 DBA75X75X6 | NO | 1.000 | 39.198 |
| F4240136322007 | 36-322 | FBR322-507 DBA75X75X6 | NO | 1.000 | 39.198 |
| F4240136322008 | 36-322 | FLB322-401 ISMB200 | NO | 1.000 | 52.582 |
| F4240136322009 | 36-322 | FLB322-402 ISMB200 | NO | 1.000 | 52.582 |
| F4240136322010 | 36-322 | FLB322-403 ISMB200 | NO | 5.000 | 278.420 |
| F4240136322011 | 36-322 | FLB322-404 ISMB200 | NO | 1.000 | 55.782 |
| F4240136322012 | 36-322 | FLB322-405 ISMB125 | NO | 2.000 | 16.770 |
| F4240136322013 | 36-322 | FLB322-406 ISMB200 | NO | 2.000 | 128.024 |
| F4240136322014 | 36-322 | FLB322-407 ISMB200 | NO | 2.000 | 110.074 |
| F4240136322015 | 36-322 | FLB322-408 ISMB150 | NO | 1.000 | 23.007 |
| F4240136322016 | 36-322 | FLB322-409 ISMB150 | NO | 1.000 | 23.007 |
| F4240136322017 | 36-322 | FLB322-410 ISMB125 | NO | 6.000 | 48.384 |
| F4240136322018 | 36-322 | FLB322-411 ISMB150 | NO | 2.000 | 46.732 |
| F4240136322019 | 36-322 | FLB322-412 ISMB200 | NO | 2.000 | 105.164 |
| F4240136322020 | 36-322 | FLB322-413 ISMB200 | NO | 1.000 | 63.745 |
| F4240136322021 | 36-322 | FLB322-414 ISMB250 | NO | 1.000 | 93.610 |
| F4240136322022 | 36-322 | FLB322-415 ISMB150 | NO | 2.000 | 26.618 |
| F4240136322023 | 36-322 | FLB322-416 ISMB125 | NO | 1.000 | 13.309 |
| F4240136322024 | 36-322 | FLB322-417 ISMB150 | NO | 2.000 | 39.730 |
| F4240136322025 | 36-322 | FLB322-418 ISMB125 | NO | 1.000 | 13.309 |
| F4240136322026 | 36-322 | FBR322-201 DBA80X80X8 | NO | 2.000 | 125.272 |
| F4240136322027 | 36-322 | FBR322-202 DBA80X80X8 | NO | 1.000 | 62.636 |
| F4240136322028 | 36-322 | FBR322-203 DBA80X80X8 | NO | 4.000 | 254.300 |
| F4240136322029 | 36-322 | FBR322-204 DBA80X80X8 | NO | 2.000 | 126.142 |
| F4240136322030 | 36-322 | FBR322-205 DBA80X80X8 | NO | 4.000 | 254.300 |

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|---|---|---|---|---|---|
| F4240136322031 | 36-322 | FBR322-206 DBA80X80X8 | NO | 1.000 | 67.871 |
| F4240136322032 | 36-322 | FBR322-207 DBA80X80X8 | NO | 1.000 | 67.850 |
| F4240136322033 | 36-322 | FBR322-208 DBA80X80X8 | NO | 1.000 | 63.071 |
| F4240136322034 | 36-322 | FBR322-209 DBA80X80X8 | NO | 2.000 | 135.686 |
| F4240136322035 | 36-322 | FBR322-210 DBA80X80X8 | NO | 2.000 | 135.570 |
| F4240136322036 | 36-322 | FBR322-211 DBA80X80X8 | NO | 2.000 | 135.584 |
| F4240136322037 | 36-322 | FBR322-212 DBA80X80X8 | NO | 1.000 | 63.071 |
| F4240136322038 | 36-322 | FBR322-213 DBA80X80X8 | NO | 1.000 | 62.636 |
| F4240136322039 | 36-322 | FLB322-103 ISMB250 | NO | 4.000 | 912.656 |
| F4240136322040 | 36-322 | FLB322-104 ISMB250 | NO | 4.000 | 922.952 |
| F4240136322041 | 36-322 | FLB322-105 ISMB600 | NO | 2.000 | 2,143.464 |
| F4240136322042 | 36-322 | FLB322-106 ISMB250 | NO | 4.000 | 573.092 |
| F4240136322043 | 36-322 | FLB322-107 ISMB125 | NO | 1.000 | 25.589 |
| F4240136322044 | 36-322 | FLB322-108 ISMB125 | NO | 3.000 | 79.143 |
| F4240136322045 | 36-322 | FLB322-109 ISMB200 | NO | 4.000 | 390.256 |
| F4240136322046 | 36-322 | FLB322-110 ISMB125 | NO | 2.000 | 50.710 |
| F4240136322047 | 36-322 | FLB322-111 ISMB125 | NO | 2.000 | 52.558 |
| F4240136322048 | 36-322 | FLB322-112 ISMB150 | NO | 4.000 | 134.372 |
| F4240136322049 | 36-322 | FLB322-113 ISMB600 | NO | 4.000 | 4,969.200 |
| F4240136322050 | 36-322 | PLATE 16.0 MM - IS2062E250A | NO | 16.000 | 477.280 |
| F4240136322051 | 36-322 | PLATE 25.0 MM -IS2062E250BR | NO | 8.000 | 357.176 |
| F4240136322052 | 36-322 | PLATE 10.0 MM - IS2062E250A(FE410W) | NO | 8.000 | 54.952 |
| F4240136322053 | 36-322 | SLIDE BEARING PLATE(ASBESTOS FREE) | NO | 8.000 | 36.296 |
| F4240136322054 | 36-322 | ANGLE 50 X 50 X 6 -IS2062E250A | NO | 16.000 | 12.240 |
| F4240136322055 | 36-322 | PLATE 16.0 MM - IS2062E250A | NO | 8.000 | 95.504 |
| F4240136810001 | 36-810 | LSEFFGG 32 X305X6000 | NO | 10.000 | 892.880 |
| F4240136810002 | 36-810 | LSEFFGG 32 X515X6000 | NO | 15.000 | 2,194.800 |
| F4240136810003 | 36-810 | LSEFFGG 32 X995X6000 | NO | 15.000 | 4,149.600 |
| F4240136810004 | 36-810 | CADMIUM PLATED CLIPS | NO | 480.000 | 28.320 |
| F4240136810005 | 36-810 | PLATE 5.00 MM-IS2062E250A | NO | 20.000 | 75.360 |
| F4240136820001 | 36-820 | STAIR-1 | NO | 2.000 | 1,449.488 |
| F4240136820002 | 36-820 | HOOD LADDER-1 | NO | 2.000 | 251.406 |
| F4240136820003 | 36-820 | VERTICAL LADDER | NO | 4.000 | 131.528 |
| F4240136850001 | 36-850 | HAND RAIL & POST FOR PLATFORM 3M ASSY | NO | 2.000 | 69.090 |
| F4240136850002 | 36-850 | HAND RAIL & POST FOR PLATFORM 4.5M ASSY | NO | 6.000 | 324.828 |
| F4240136850003 | 36-850 | HAND RAIL & POST FOR PLATFORM 6M ASSY | NO | 4.000 | 294.920 |
| F4240136850004 | 36-850 | HAND RAIL POST FOR PLATFORM | NO | 40.000 | 129.920 |
| F4240136850005 | 36-850 | MIDDLE HANDRAIL FOR PLATFORM | NO | 52.000 | 241.280 |
| F4240136850006 | 36-850 | HAND RAIL & POST FORSTAIRS 4.5M ASSY | NO | 4.000 | 166.676 |
| F4240136850007 | 36-850 | HAND RAIL POST FOR STAIR | NO | 4.000 | 13.212 |
| F4240136850008 | 36-850 | MIDDLE HANDRAIL FOR STAIR | NO | 4.000 | 18.560 |
| F4240136850009 | 36-850 | 90 DEGREE BEND | NO | 116.000 | 164.024 |

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| F4240136850010 | 36-850 | 135 DEGREE BEND | NO | 8.000 | 9.376 |
| F4240136850011 | 36-850 | SPL.BEND | NO | 4.000 | 9.772 |
| F4240136850012 | 36-850 | ERW TUBE DIA. 42.4 X 3.2 | NO | 11.000 | 204.138 |
| F4240136850013 | 36-850 | ISA 65X65X6 | M | 6.000 | 34.800 |
| F4240136850014 | 36-850 | GUARD PLATE 6 | NO | 26.000 | 306.150 |
| F4240137810001 | 37-810 | CORRU.ALU.SHEET 1.6X920X1400-QTY-68 NOS | KG | 497.409 | 497.409 |
| F4240137810002 | 37-810 | CORRU.ALU.SHEET 1.6X920X2500-QTY-34 NOS | KG | 444.115 | 444.115 |
| F4240145200001 | 45-200 | SADC POWER CYLINER 4" X 4" (UPWARD MTG) | NO | 8.000 | 120.000 |
| F4240145200002 | 45-200 | SADC POWER CYLINER 4" X 4"(DOWNWARD MTG) | NO | 8.000 | 120.000 |
| F4240145200003 | 45-200 | BURNER TILT POWER CYLINDER | NO | 4.000 | 800.000 |
| F4240145220001 | 45-220 | FLAT 50 X 6; L=130 | NO | 24.000 | 7.200 |
| F4240145220002 | 45-220 | FLAT 50X6; L=17 | NO | 8.000 | 0.320 |
| F4240145220003 | 45-220 | PIPE CLAMP FL 50X6; L=97 | NO | 20.000 | 4.560 |
| F4240145220004 | 45-220 | TUBE D14X2; L=1000 | NO | 16.000 | 9.600 |
| F4240145220005 | 45-220 | TUBE NB 40 D48.3 X 3.68 | M | 10.000 | 40.500 |
| F4240145320001 | 45-320 | ANGLE FOR EA ISA75X75X6-1215L | NO | 16.000 | 132.192 |
| F4240145320002 | 45-320 | SHIELDING PLATE FOR EA PL5X186X1215 | NO | 16.000 | 141.920 |
| F4240145320003 | 45-320 | ANGLE FOR OIL/AIR/COAL ISA 50X50X6-1215L | NO | 140.000 | 765.520 |
| F4240145320004 | 45-320 | SHIELDING PLATE FOROIL/AIR PL5X521X1215 | NO | 32.000 | 795.040 |
| F4240145320005 | 45-320 | SHIELDING PLATE FOR COAL PL5X519X1215 | NO | 36.000 | 891.612 |
| F4240145320006 | 45-320 | SHIELDING PLATE FOR COAL PL5X417X1215 | NO | 36.000 | 716.400 |
| F4240145320007 | 45-320 | STOPPER PLATE PL6X50X1215L | NO | 36.000 | 103.428 |
| F4240145320008 | 45-320 | LOCKING PLATE PL6X60X100L | NO | 108.000 | 30.564 |
| F4240145321001 | 45-321 | PLATE WELDMENT-I FORCORS 1&3 | NO | 2.000 | 317.762 |
| F4240145321002 | 45-321 | PLATE WELDMENT-II FOR CORS 2&4 | NO | 2.000 | 249.996 |
| F4240145321003 | 45-321 | SLOTTED PL(TRUSS) PL25X200X310 | NO | 4.000 | 47.200 |
| F4240145321004 | 45-321 | SLOTTED PL(BS SIDE) PL 20X150X370 | NO | 4.000 | 28.800 |
| F4240145321005 | 45-321 | PL 20X200X235 | NO | 4.000 | 28.000 |
| F4240145321006 | 45-321 | SHIM PL 10X150X150 | NO | 8.000 | 14.000 |
| F4240145321007 | 45-321 | SHEAR PIN D 25;69 | NO | 4.000 | 1.096 |
| F4240145321008 | 45-321 | SUPPORT PLATE PL 6X75X200 | NO | 32.000 | 15.040 |
| F4240145321009 | 45-321 | TUBE D42.4X3.20 L=230 | NO | 16.000 | 11.360 |
| F4240145321010 | 45-321 | ANCHOR PIVOT PIN D 33 ; 244 | NO | 16.000 | 17.600 |
| F4240145321011 | 45-321 | SPLIT PIN 4X56MM | NO | 16.000 | 0.128 |
| F4240145321012 | 45-321 | FRAME | NO | 8.000 | 315.400 |
| F4240145321013 | 45-321 | PLATE PL.6X199X2614 | NO | 8.000 | 195.936 |
| F4240145321014 | 45-321 | PLATE PL.6X150X1223 | NO | 8.000 | 68.952 |
| F4240145321015 | 45-321 | SH.2.5X272X1187 | NO | 8.000 | 50.712 |
| F4240145321016 | 45-321 | SUPPORT CLIP | NO | 96.000 | 54.720 |

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|---|---|---|---|---|---|
| F4240145321017 | 45-321 | CERAMIC CLOTH SH.3X 80;10MR | NO | 4.000 | 7.680 |
| F4240145321018 | 45-321 | HEX HD BOLT M24X65 CL:10.9 | NO | 184.000 | 62.560 |
| F4240145321019 | 45-321 | HEX NUT M24-10 | NO | 184.000 | 20.240 |
| F4240145321020 | 45-321 | MACHINED WASHER 25 | NO | 40.000 | 1.280 |
| F4240145321021 | 45-321 | BURNER FRAME WASHER | NO | 144.000 | 10.080 |
| F4240145321022 | 45-321 | PEDESTAL | NO | 4.000 | 56.400 |
| F4240145321023 | 45-321 | BOLT-M16X60 | NO | 16.000 | 1.968 |
| F4240145321024 | 45-321 | HEX NUT M16 | NO | 16.000 | 0.480 |
| F4240145321025 | 45-321 | PLAIN WASHER A16 | NO | 16.000 | 0.608 |
| F4240145321026 | 45-321 | INNER PANEL INT AIR CORNER 1 AND 3 | NO | 6.000 | 368.238 |
| F4240145321027 | 45-321 | INNER PANEL INT AIR CORNER 2 AND 4 | NO | 6.000 | 368.238 |
| F4240145321028 | 45-321 | INNER PANEL OFA CORNER 1 AND 3 | NO | 4.000 | 235.704 |
| F4240145321029 | 45-321 | INNER PANEL OFA CORNER 2 AND 4 | NO | 4.000 | 235.704 |
| F4240145321030 | 45-321 | FRONT OUTER PANEL (INT.AIR)(COR 1&3) | NO | 6.000 | 97.560 |
| F4240145321031 | 45-321 | FRONT OUTER PANEL (OFA)(COR 1&3) | NO | 2.000 | 54.654 |
| F4240145321032 | 45-321 | SCRU HEX M8X16 | NO | 100.000 | 1.100 |
| F4240145321033 | 45-321 | CAP NUT M8 | NO | 100.000 | 1.200 |
| F4240145321034 | 45-321 | PUN WASHER-M8 | NO | 100.000 | 0.200 |
| F4240145321035 | 45-321 | FRONT OUTER PANEL (INT.AIR)(COR 1&30 | NO | 6.000 | 97.560 |
| F4240145321036 | 45-321 | FRONT OUTER PANEL (OFA)(2&4) | NO | 2.000 | 54.654 |
| F4240145321037 | 45-321 | SCRU HEX M8X16 | NO | 100.000 | 1.100 |
| F4240145321038 | 45-321 | CAP NUT M8 | NO | 100.000 | 1.200 |
| F4240145321039 | 45-321 | PUN WASHER-M8 | NO | 100.000 | 0.200 |
| F4240145321040 | 45-321 | HEX HD SCRU-M12X30 | NO | 800.000 | 32.800 |
| F4240145321041 | 45-321 | NUT -M12 | NO | 800.000 | 16.000 |
| F4240145321042 | 45-321 | PUN WASHER-M12 | NO | 800.000 | 8.000 |
| F4240145321043 | 45-321 | PACKING CLOTH SH 3X40X 140M | NO | 4.000 | 53.760 |
| F4240145321044 | 45-321 | HIGH TEMP (750F & ABOVE) SPRAY LUBRICANT | NO | 4.000 | 2.000 |
| F4240145321045 | 45-321 | ANTI SIEZE THREAD LUBRICANT | KG | 2.000 | 2.000 |
| F4240145325001 | 45-325 | ANGLE 150 X 150 X 12(FOR IA & OIL COMPT) | NO | 32.000 | 707.616 |
| F4240145325002 | 45-325 | OVERFIRE AIR NOZZLE TIP - CORNERS 1&3 | NO | 4.000 | 579.184 |
| F4240145325003 | 45-325 | END AIR NOZZLE TIP CORNERS 1&3 | NO | 4.000 | 276.560 |
| F4240145325004 | 45-325 | COAL NOZZLE TIP ASSLY - CORNERS 1&3 | NO | 18.000 | 3,782.700 |
| F4240145325005 | 45-325 | OIL NOZZLE TIP CORNERS 1&3 | NO | 10.000 | 911.520 |
| F4240145325006 | 45-325 | INTER AIR NOZZLE TIPCORNERS 1&3 | NO | 6.000 | 731.568 |
| F4240145325007 | 45-325 | SEAL PLATE FOR COAL TIP - CORNERS 1&3 | NO | 18.000 | 317.880 |
| F4240145325008 | 45-325 | TUBULAR REACH ROD CORNERS 1&3 | NO | 42.000 | 327.516 |

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|---|---|---|---|---|---|
| F4240145325009 | 45-325 | REACH ROD PIN D16.6;38L | NO | 42.000 | 2.520 |
| F4240145325010 | 45-325 | CONNECTING LINK ASSLY "L"=1985 | NO | 10.000 | 52.870 |
| F4240145325011 | 45-325 | REACH ROD PIVOT PIN,D50,L107 | NO | 42.000 | 25.200 |
| F4240145325012 | 45-325 | L-LEVER ROUND PIN,D19,L=44 | NO | 42.000 | 7.140 |
| F4240145325013 | 45-325 | HIGH TEMP (750F & ABOVE) SPRAY LUBRICANT | NO | 2.000 | 1.000 |
| F4240145325014 | 45-325 | ANTI SIEZE THREAD LUBRICANT | KG | 1.000 | 1.000 |
| F4240145325015 | 45-325 | CN PIVOT PIN(D22.5);D31,L-63 | NO | 36.000 | 7.920 |
| F4240145325016 | 45-325 | SPARE SHEAR PIN;D25 L-69 | NO | 8.000 | 2.192 |
| F4240145325017 | 45-325 | ANGLE 150 X 150 X 12(FOR IA & OIL COMPT) | NO | 32.000 | 707.616 |
| F4240145325018 | 45-325 | OVERFIRE AIR NOZZLE TIP - CORNERS 2&4 | NO | 4.000 | 579.184 |
| F4240145325019 | 45-325 | END AIR NOZZLE TIP CORNERS 2&4 | NO | 4.000 | 276.560 |
| F4240145325020 | 45-325 | COAL NOZZLE TIP ASSLY - CORNERS 2&4 | NO | 18.000 | 3,782.700 |
| F4240145325021 | 45-325 | OIL NOZZLE TIP CORNERS 2&4 | NO | 10.000 | 911.520 |
| F4240145325022 | 45-325 | INTER AIR NOZZLE TIPCORNERS 2&4 | NO | 6.000 | 731.568 |
| F4240145325023 | 45-325 | SEAL PLATE FOR COAL TIP - CORNERS 2&4 | NO | 18.000 | 317.880 |
| F4240145325024 | 45-325 | TUBULAR REACH ROD CORNERS 2&4 | NO | 42.000 | 327.516 |
| F4240145325025 | 45-325 | REACH ROD PIN D16.6;38L | NO | 42.000 | 2.520 |
| F4240145325026 | 45-325 | CONNECTING LINK ASSLY "L"=1985 | NO | 10.000 | 52.870 |
| F4240145325027 | 45-325 | REACH ROD PIVOT PIN,D50,L107 | NO | 42.000 | 25.200 |
| F4240145325028 | 45-325 | L-LEVER ROUND PIN,D19,L=44 | NO | 42.000 | 7.140 |
| F4240145325029 | 45-325 | HIGH TEMP (750F & ABOVE) SPRAY LUBRICANT | NO | 2.000 | 1.000 |
| F4240145325030 | 45-325 | ANTI SIEZE THREAD LUBRICANT | KG | 1.000 | 1.000 |
| F4240145325031 | 45-325 | CN PIVOT PIN(D22.5);D31,L-63 | NO | 36.000 | 7.920 |
| F4240145325032 | 45-325 | SPARE SHEAR PIN;D25 L-69 | NO | 8.000 | 2.192 |
| F4240145804001 | 45-804 | BOFA ASSY CORNER 1 AND 3 | NO | 2.000 | 9,952.488 |
| F4240145804002 | 45-804 | BOFA ASSY CORNER 2 AND 4 | NO | 2.000 | 10,515.158 |
| F4240147200001 | 47-200 | PIPE COUPLING GASKET - 26" H | NO | 50.000 | 65.000 |
| F4240148207001 | 48-207 | HOLLOW SQUARE PITOTTUBE | NO | 2.000 | 944.520 |
| F4240148262001 | 48-262 | STRAIGHT DUCT WALL | NO | 4.000 | 174.568 |
| F4240148262002 | 48-262 | PLATE 6.0 ; 300.0x2800.0 | NO | 4.000 | 158.256 |
| F4240148262003 | 48-262 | TRUSS | NO | 2.000 | 47.804 |
| F4240148262004 | 48-262 | TRUSS | NO | 2.000 | 47.724 |
| F4240148262005 | 48-262 | TRUSS | NO | 2.000 | 46.274 |
| F4240148262006 | 48-262 | TRUSS | NO | 2.000 | 46.198 |
| F4240148262007 | 48-262 | STRAIGHT DUCT WALL | NO | 4.000 | 1,058.580 |
| F4240148262008 | 48-262 | STRAIGHT DUCT WALL | NO | 4.000 | 994.516 |
| F4240148262009 | 48-262 | STRAIGHT DUCT WALL | NO | 4.000 | 773.104 |
| F4240148262010 | 48-262 | STRAIGHT DUCT WALL | NO | 4.000 | 718.288 |
| F4240148262011 | 48-262 | TRUSS | NO | 4.000 | 72.444 |
| F4240148262012 | 48-262 | TRUSS | NO | 2.000 | 57.776 |
| F4240148262013 | 48-262 | TRUSS | NO | 2.000 | 57.780 |

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| F4240148262014 | 48-262 | STRAIGHT DUCT WALL | NO | 4.000 | 1,400.180 |
| F4240148262015 | 48-262 | STRAIGHT DUCT WALL | NO | 2.000 | 647.850 |
| F4240148262016 | 48-262 | STRAIGHT DUCT WALL | NO | 2.000 | 647.850 |
| F4240148262017 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 700.880 |
| F4240148262018 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 983.302 |
| F4240148262019 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 1,222.570 |
| F4240148262020 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 261.108 |
| F4240148262021 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 312.450 |
| F4240148262022 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 1,206.464 |
| F4240148262023 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 459.944 |
| F4240148262024 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 459.944 |
| F4240148262025 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 1,206.464 |
| F4240148262026 | 48-262 | TRANSITION DUCT WALL | NO | 1.000 | 305.723 |
| F4240148262027 | 48-262 | TRANSITION DUCT WALL | NO | 1.000 | 367.986 |
| F4240148262028 | 48-262 | TRANSITION DUCT WALL | NO | 1.000 | 438.310 |
| F4240148262029 | 48-262 | TRANSITION DUCT WALL | NO | 1.000 | 390.355 |
| F4240148262030 | 48-262 | T-DUCT WALL | NO | 2.000 | 263.226 |
| F4240148262031 | 48-262 | T-DUCT WALL | NO | 2.000 | 619.642 |
| F4240148262032 | 48-262 | T-DUCT WALL | NO | 2.000 | 121.582 |
| F4240148262033 | 48-262 | T-DUCT WALL | NO | 2.000 | 1,411.640 |
| F4240148262034 | 48-262 | T-DUCT WALL | NO | 2.000 | 1,411.640 |
| F4240148262035 | 48-262 | T-DUCT WALL | NO | 2.000 | 1,320.292 |
| F4240148262036 | 48-262 | T-DUCT WALL | NO | 2.000 | 224.736 |
| F4240148262037 | 48-262 | T-DUCT WALL | NO | 2.000 | 511.372 |
| F4240148262038 | 48-262 | ISMC150 ; 4312.0 | NO | 4.000 | 289.772 |
| F4240148262039 | 48-262 | T-DUCT WALL | NO | 2.000 | 216.462 |
| F4240148262040 | 48-262 | T-DUCT WALL | NO | 2.000 | 973.924 |
| F4240148262041 | 48-262 | T-DUCT WALL | NO | 2.000 | 973.924 |
| F4240148262042 | 48-262 | TRUSS | NO | 2.000 | 50.542 |
| F4240148262043 | 48-262 | TRUSS | NO | 2.000 | 50.542 |
| F4240148262044 | 48-262 | TRUSS | NO | 2.000 | 23.368 |
| F4240148262045 | 48-262 | TRUSS | NO | 2.000 | 23.366 |
| F4240148262046 | 48-262 | TRANSITION DUCT WALL | NO | 2.000 | 431.076 |
| F4240148262047 | 48-262 | TRANSITION DUCT WALL | NO | 2.000 | 431.076 |
| F4240148262048 | 48-262 | TRANSITION DUCT WALL | NO | 2.000 | 387.782 |
| F4240148262049 | 48-262 | TRANSITION DUCT WALL | NO | 2.000 | 387.782 |
| F4240148262050 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 362.582 |
| F4240148262051 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 353.704 |
| F4240148262052 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 511.372 |
| F4240148262053 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 635.458 |
| F4240148262054 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 121.582 |
| F4240148262055 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 1,060.352 |
| F4240148262056 | 48-262 | ELBOW DUCT WALL | NO | 2.000 | 1,060.352 |
| F4240148262057 | 48-262 | TRUSS | NO | 4.000 | 101.084 |
| F4240148262058 | 48-262 | TRUSS | NO | 4.000 | 101.084 |
| F4240148262059 | 48-262 | TRUSS | NO | 4.000 | 46.736 |
| F4240148262060 | 48-262 | TRUSS | NO | 4.000 | 46.732 |

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| F4240148262061 | 48-262 | STRAIGHT DUCT WALL | NO | 2.000 | 827.842 |
| F4240148262062 | 48-262 | STRAIGHT DUCT WALL | NO | 2.000 | 233.362 |
| F4240148262063 | 48-262 | STRAIGHT DUCT WALL | NO | 2.000 | 567.994 |
| F4240148262064 | 48-262 | STRAIGHT DUCT WALL | NO | 2.000 | 698.644 |
| F4240148262065 | 48-262 | STRAIGHT DUCT WALL | NO | 2.000 | 698.644 |
| F4240148262066 | 48-262 | STRAIGHT DUCT WALL | NO | 2.000 | 698.414 |
| F4240148262067 | 48-262 | STRAIGHT DUCT WALL | NO | 2.000 | 233.362 |
| F4240148262068 | 48-262 | STRAIGHT DUCT WALL | NO | 2.000 | 632.708 |
| F4240148262069 | 48-262 | STRAIGHT DUCT WALL | NO | 2.000 | 698.644 |
| F4240148262070 | 48-262 | STRAIGHT DUCT WALL | NO | 2.000 | 698.644 |
| F4240148262071 | 48-262 | STRAIGHT DUCT WALL | NO | 4.000 | 284.324 |
| F4240148262072 | 48-262 | STRAIGHT DUCT WALL | NO | 4.000 | 239.724 |
| F4240148262073 | 48-262 | STRAIGHT DUCT WALL | NO | 4.000 | 285.584 |
| F4240148262074 | 48-262 | STRAIGHT DUCT WALL | NO | 4.000 | 240.824 |
| F4240148262075 | 48-262 | T-DUCT WALL | NO | 1.000 | 293.061 |
| F4240148262076 | 48-262 | T-DUCT WALL | NO | 1.000 | 69.972 |
| F4240148262077 | 48-262 | T-DUCT WALL | NO | 1.000 | 58.912 |
| F4240148262078 | 48-262 | T-DUCT WALL | NO | 1.000 | 305.638 |
| F4240148262079 | 48-262 | T-DUCT WALL | NO | 1.000 | 292.886 |
| F4240148262080 | 48-262 | PLATE 6.0 ; 489.0x1950.0 | NO | 1.000 | 44.910 |
| F4240148262081 | 48-262 | T-DUCT WALL | NO | 1.000 | 70.795 |
| F4240148262082 | 48-262 | T-DUCT WALL | NO | 1.000 | 66.804 |
| F4240148262083 | 48-262 | T-DUCT WALL | NO | 1.000 | 18.102 |
| F4240148262084 | 48-262 | T-DUCT WALL | NO | 1.000 | 157.256 |
| F4240148262085 | 48-262 | T-DUCT WALL | NO | 1.000 | 292.818 |
| F4240148262086 | 48-262 | T-DUCT WALL | NO | 1.000 | 324.983 |
| F4240148262087 | 48-262 | T-DUCT WALL | NO | 1.000 | 435.748 |
| F4240148262088 | 48-262 | PLATE 6.0 ; 483.0x1950.0 | NO | 1.000 | 44.358 |
| F4240148262089 | 48-262 | T-DUCT WALL | NO | 1.000 | 293.061 |
| F4240148262090 | 48-262 | T-DUCT WALL | NO | 1.000 | 69.972 |
| F4240148262091 | 48-262 | T-DUCT WALL | NO | 1.000 | 300.718 |
| F4240148262092 | 48-262 | T-DUCT WALL | NO | 1.000 | 58.912 |
| F4240148262093 | 48-262 | T-DUCT WALL | NO | 1.000 | 287.966 |
| F4240148262094 | 48-262 | PLATE 6.0 ; 489.0x1950.0 | NO | 1.000 | 44.910 |
| F4240148262095 | 48-262 | T-DUCT WALL | NO | 1.000 | 70.795 |
| F4240148262096 | 48-262 | T-DUCT WALL | NO | 1.000 | 435.748 |
| F4240148262097 | 48-262 | T-DUCT WALL | NO | 1.000 | 157.256 |
| F4240148262098 | 48-262 | T-DUCT WALL | NO | 1.000 | 66.804 |
| F4240148262099 | 48-262 | T-DUCT WALL | NO | 1.000 | 18.102 |
| F4240148262100 | 48-262 | T-DUCT WALL | NO | 1.000 | 292.818 |
| F4240148262101 | 48-262 | T-DUCT WALL | NO | 1.000 | 324.983 |
| F4240148262102 | 48-262 | PLATE 6.0 ; 483.0x1950.0 | NO | 1.000 | 44.358 |
| F4240148262103 | 48-262 | TRANSITION DUCT WALL | NO | 1.000 | 305.723 |
| F4240148262104 | 48-262 | TRANSITION DUCT WALL | NO | 1.000 | 367.961 |
| F4240148262105 | 48-262 | TRANSITION DUCT WALL | NO | 1.000 | 438.310 |
| F4240148262106 | 48-262 | TRANSITION DUCT WALL | NO | 1.000 | 390.355 |
| F4240148264001 | 48-264 | FULLSIZE ROUNDCORNER EXPJT | NO | 8.000 | 6,378.816 |

| | | | | | |
|---|---|---|---|---|---|
| | | 2040X2040#4 | | | |
| F4240148264002 | 48-264 | FS RC EXPN JOINT 2890X2890 #2 | NO | 6.000 | 4,045.920 |
| F4240148264003 | 48-264 | FULLSIZE ROUNDCORNER EXPJT 2634X1260 #2 | NO | 4.000 | 1,902.040 |
| F4240148265001 | 48-265 | RESTRAINT-1 | NO | 32.000 | 309.952 |
| F4240148265002 | 48-265 | PLT 16;250X200 | NO | 22.000 | 138.160 |
| F4240148265003 | 48-265 | PLT 16;475X200 | NO | 10.000 | 119.320 |
| F4240148265004 | 48-265 | PLT 16;476X475 | NO | 2.000 | 56.796 |
| F4240148265005 | 48-265 | CHANNEL BOX-2 | NO | 4.000 | 570.588 |
| F4240148265006 | 48-265 | CHANNEL BOX-3 | NO | 8.000 | 540.832 |
| F4240148265007 | 48-265 | CHANNEL BOX-4 | NO | 4.000 | 543.708 |
| F4240148265008 | 48-265 | CHANNEL BOX-5 | NO | 4.000 | 420.456 |
| F4240148265009 | 48-265 | CHANNEL BOX-6 | NO | 2.000 | 223.720 |
| F4240148265010 | 48-265 | CHANNEL BOX-7 | NO | 2.000 | 223.720 |
| F4240148265011 | 48-265 | CHANNEL BOX-8 | NO | 2.000 | 226.860 |
| F4240148265012 | 48-265 | RESTRAINT-2 | NO | 18.000 | 309.402 |
| F4240148265013 | 48-265 | CHANNEL BOX-9 | NO | 4.000 | 243.136 |
| F4240148265014 | 48-265 | CHANNEL BOX-10 | NO | 4.000 | 426.480 |
| F4240148265015 | 48-265 | CHANNEL BOX-11 | NO | 4.000 | 210.856 |
| F4240148265016 | 48-265 | CHANNEL BOX-12 | NO | 8.000 | 599.872 |
| F4240148265017 | 48-265 | CHANNEL BOX-13 | NO | 8.000 | 955.552 |
| F4240148265018 | 48-265 | RESTRAINT-3 | NO | 16.000 | 249.584 |
| F4240148265019 | 48-265 | STOPPER | NO | 28.000 | 41.216 |
| F4240148265020 | 48-265 | EXPANSION JOINT (W.BCONN. DUCT) | NO | 8.000 | 122.520 |
| F4240148265021 | 48-265 | EXPANSION JOINT (W.BCONN. DUCT) | NO | 8.000 | 119.976 |
| F4240148265022 | 48-265 | EXPANSION JOINT (W.BCONN. DUCT) | NO | 2.000 | 21.694 |
| F4240148265023 | 48-265 | OMEGA EXP. JOINT | NO | 2.000 | 56.272 |
| F4240148265024 | 48-265 | OMEGA EXP. JOINT | NO | 2.000 | 73.424 |
| F4240148265025 | 48-265 | OMEGA EXP. JOINT | NO | 4.000 | 22.712 |
| F4240148915001 | 48-915 | MAN HOLE DOOR 450X450 - CS | NO | 6.000 | 346.296 |
| F4240148915002 | 48-915 | GRAB BAR-1 | NO | 6.000 | 20.400 |
| F4240148915003 | 48-915 | GRAB BAR-2 | NO | 6.000 | 51.600 |
| F4240148993001 | 48-993 | PLATE 6 | M2 | 25.000 | 1,177.500 |
| F4240148993002 | 48-993 | ISA 75X75X6; 15 RM | M | 15.000 | 102.000 |
| F4240148993003 | 48-993 | ISMC 100; 10 RM | M | 10.000 | 95.600 |
| F4240148993004 | 48-993 | ISMC 150; 15 RM | M | 15.000 | 252.000 |
| F4240148993005 | 48-993 | ISMC 200; 7 RM | M | 7.000 | 239.400 |
| F4240148993006 | 48-993 | PIPE DIA 89.5: 10 RM | M | 10.000 | 98.500 |
| F4240148993007 | 48-993 | SH 2;  25 | M2 | 25.000 | 196.250 |
| F4240148993008 | 48-993 | PLATE 10 MM-IS2062E250A | M2 | 2.000 | 157.000 |
| F4240148993009 | 48-993 | PLATE 16 | M2 | 2.000 | 251.200 |
| F4240148993010 | 48-993 | ISMC 125; 15 M | M | 15.000 | 196.500 |
| **SUB TOTAL WEIGHT OF NON PRESSURE PARTS** | | | | | **144386.739** |
| TOTAL WEIGHT(PP+INS+NPP)/UNIT | | | | | 200720 kGS |
| TOTAL WEIGHT //UNIT | | | | | 200.72 MT SAY 201 MT |

**Note: Quanitity variation as per GCC shall be applicable.**

**ANNEXURE-III**
**[REF. PRICE SCHEDULE, VOL-III, SCH-2, SL. NO.C]**

**TENTATIVE LIST OF NEWLY SUPPLIED C&I & ELECTRICAL ITEMs DETAIL FOR SHIFTING FROM STORE/YARD TO SITE,ERECETION,ALIGNMENT , CABLE TRAY ERECTION,CABLE LAYING, CABLE DRESSING AND TAGGING, GLANDING, FERRULING & CABLE TERMINATION /SPLICING,PRE-COMMISSIONING & TESTING,COMMISSIONING ,CHARGING & PG TEST ETC. FOR DE-NOX SYSTEM OF BOILER U#6 AT NTPC FARAKKA STPS**

A) NEWLY SUPPLIED ITEMS

| DU/MTL CODE | PGMA | Description | Unit | Qty/Unit |
|---|---|---|---|---|
| F4240197282001 | 97-282 | NORMALLY CLOSED - SOLENOID VALVE | NO | 6 |
| F4240197282002 | 97-282 | NORMALLY OPEN - SOLENOID VALVE | NO | 6 |
| F4240197591001 | 97-591 | BURNER TILT SHEAR PIN FAILURE INDI. BOX | NO | 1 |
| F4240197591002 | 97-591 | HEAVY DUTY LIMIT SWITCH | NO | 6 |
| | 95-088 | FSSS FLAME SCANNERS items | Set | 1 |
| | | Flame Scanner Pigtail Cable | No | 9 |
| L424119759201001 | 97592 | CONNECTOR,1/2" NPT(F) X 1/4" OD, SS | No | 40 |
| L424119759201002 | 97592 | CONNECTOR,1/2" NPT(F) X 3/8" OD, SS | No | 5 |
| L424119759201003 | 97592 | CONNECTOR,1/4" NPT(M) X 1/4" OD, SS | No | 70 |
| L424119759201004 | 97592 | CONNECTOR,3/8" NPT(M) X 3/8" OD, SS | No | 10 |
| L424119759201005 | 97592 | EQUAL TEE UNION, 1/4", SS | No | 30 |
| L424119759201006 | 97592 | EQUAL TEE UNION, 3/8", SS | No | 5 |
| L424119759201007 | 97592 | STRAIGHT CONNECTOR,1/4" OD, SS | No | 55 |
| L424119759201008 | 97592 | BULKHEAD CONNECTOR,1/4" BSP(M) X 1/4" OD | No | 60 |
| L424119759201009 | 97592 | ELBOW,1/4" BSP(M ) X 1/4" BSP(F), SS | No | 60 |
| L424119759201010 | 97592 | TAPE, 1/2" -10 METERS, TEFLON | Nos | 10 |
| L424119759201011 | 97592 | ALUMINIUM STRIPS - 300 MM X 25 MM X 3 MM | Nos | 50 |
| L424119759202001 | 97592 | 1/4" OD SS TUBE | Mtrs | 650 |
| L424119759202002 | 97592 | 3/8" OD SS TUBE | Mtrs | 10 |
| L424119759203001 | 97592 | 1/4" TEFLON HOSE- 2 METER PER PIECE | Mtrs | 28 |
| L424119759204001 | 97592 | EQUAL TEE, 3/4", A105, CL: 3000 | Nos | 10 |
| L424119759204002 | 97592 | REDUCER, 3/4" SW X 1/2" NPT(M), A105 | Nos | 12 |
| L424119759204003 | 97592 | EQUAL TEE, 3/4", SS304, CL:3000 | Nos | 2 |
| L424119759204004 | 97592 | REDUCER, 3/4" SW X 1/2" NPT(M), A105 | Nos | 4 |

| | | | | |
|---|---|---|---|---|
| L424119759204005 | 97592 | SEAMLESS TUBE, 3/4" SCH 40, A213 TP304 | Nos | 24 |
| L424119759204006 | 97592 | REDUCER, 1" SW X 3/4" SW, A105 | Nos | 2 |
| L424119759204007 | 97592 | COUPLING, 3/4", SS304, CL: 3000 | Nos | 20 |
| L424119759204008 | 97592 | PIPE NIPPLE, 1" SCH 40, PLAIN, SS304 | Nos | 4 |
| L424119759204009 | 97592 | EQ TEE, 1" SW X 1" NPT(F) X 1" SW, SS304 | Nos | 2 |
| L424119759204010 | 97592 | GATE VALVE, 3/4" SW, CL:150, A105 | Nos | 6 |
| L424119759204011 | 97592 | NIPPLE, 1" SCH40, 1"NPT(M)X1" SW, A105 | Nos | 2 |
| L424119759204012 | 97592 | REDUCER, 1" SW X3/4" SW, SS304 | Nos | 2 |
| L424119759601001 | 97596 | FIXED HD CCTV CAMERA FOR HOPPER VIEWING | Nos | 4 |
| L424119759601002 | 97596 | ACCESSORIES FOR FIXED HD CAMERA SYSTEM | Set | 1 |
| | 95-282 | Flowmeters | Set | 1 |
| | 95-591 | BURNER TILT SHEAR PIN FAILURE SYSTEM<br>a) Junction Box for Shear pin failure indication-4 Nos<br>b)Limit switch for shear pin failure indication-20 Nos | Set | 1 |
| | | **INSTRUMENTATION CABLES:**<br>a) 2PX0.5 Sq mm I & OA shielded : 1200 mtrs<br>b) 4PX0.5 Sq mm I & OA shielded : 3000 mtrs<br>c) 8PX0.5 Sq mm I & OA shielded: 900 mtrs | Set | 1 |
| | | POWER CABLES:<br>a) 2CX2.5 Sq mm power cable:Qty1080 Mtrs<br>b) 3CX2.5 Sq mm power cable:Qty 900 Mtrs<br>c) 10CX2.5 Sq mm power cable:Qty 800 Mtrs<br>d) 3CX10 Sq mm power cable: Qty 400 Mtrs | Set | 1 |
| | | CONTROL CABLES FOR CO ANALYSER: 5CX2.5 Sq MM, 12CX2.5 Sq MM,19CX1.5 Sq MM | Mtrs | 1500 |
| | | CABLE TRAYS<br>a) Height 25 mm, Width 50 mm, Qty 125 Mtrs<br>b) Height 50 mm, Width 100 mm, With Cover: Qty 175 Mtrs<br>c) Height 40 mm, Width 150 mm, With Cover: Qty 312.5 Mtrs | Set | 1 |
| | | JUNCTION BOX<br>a) 24 Way JB: Qty 5 Nos<br>b) 48 Way JB: Qty 2 Nos | Set | 1 |

| | | | | |
|---|---|---|---|---|
| | | | | |
| | 95-596 | CCTV system | Set | 4 |
| | | CO Analyser & Panel | Nos | 1 |
| | | Flow/Electronic Transmitters | Nos | 2 |
| | | Local Instrument Enclosure | Nos | 3 |
| | | SOCKET WELD FITTINGS | Set | 1 |
| | | Airfilter Regulator | Nos | 4 |
| | | Pr switch | Nos | 4 |
| | | E/p Converter | Nos | 4 |
| | | LIE/LIR | Nos | 3 |
| | | Impulse Pipe, ASTM A106 GR C 3/4" NB SCH 80 | Mtrs | 300 |
| | | | | |
| | | GI PIPE-1/2" NB<br>"GI pipe-1/2" NB Heavy grade /<br>as per IS1239 threaded ends (1/2" NPT)<br>to be protected Running length 6 Meters" | Mtrs | 50 |
| | | MS Channel 100x50x5 mm Web thick as per IS 2062 Grade A, | Mtrs | 200 |
| | | MS Angle 50x50x6 mm Web thick as per IS 2062 Grade A | Mtrs | 400 |
| | | MS Plate 10mm thick IS2062 | Kgs | 100 |
| | | HR Sheet 2.5mm thick as per IS 1079 | Kgs | 100 |
| | | NIPPLE MAT: ASTM A106 Gr.B SIZE: 1" PLAIN SCH 40 LENGTH = 100 mm | Nos | 2 |
| | | NIPPLE MAT: ASTM A106 Gr.B SIZE: 3/4" NB SCH 80 / LENGTH = 100 mm ONE END -3/4" NTPM ,OTHER END : PLAINCAP/ ASTM A 105 -SIZE - 3/4" NPTF | Nos | 4 |
| | | Flexible Hose SS Braided 1/2" OD x 1 Meter with clamps.One end with adopter of 1/2" NPTM and other end with Bras adopter of 1/2" NPTF Rating10 KG/CM2 | Set | 1 |
| | | "Isolation valve Ball type body a 105 & Trim=SS 316. Size:1/2"NPTF Pr.Testing:900PSI" | Nos | 2 |
| | | COUPLING, MAT spec: ASTM A105 GALVANISED TO 10/15 MICRONS SIZE: 1/2" NPTF/ PR. TESTING: 800 PSI | Nos | 35 |
| | | ELBOW, MAT Spec: ASTM A105 GALVANISED TO 10/15 MICRONS SIZE: 1/2" NPTF/ PR. TESTING: 800 PSI | Nos | 10 |
| | | EQUAL TEE, MAT Spec: ASTM A105 GALVANISED TO 10/15 MICRONS SIZE: 1/2" NPTF/ PR. TESTING: 800 PSI | Nos | 10 |
| | | THREE PIECE UNION, MATL: ASTM A105<br>GALVANISED TO 10/15 MICRONS,<br>SIZE: 1/2" NPTF, | Nos | 8 |

| | | | | |
|---|---|---|---|---|
| | | PRESSURE RATING: 800 PSI. | | |
| | | U CLAMP - TO SUIT 3/4" NB PIPE WITH NUTS AND WASHERS CS GALVANISED TO 10/15 MICRONS | Nos | 500 |

**Note: Quanitity & Size of C&I & Electrical Works/Items as mentioned above may vary to any extent. No extra paymnet shall be made for quantity/size variation to complet the NOx modification package.**

ANNEXURE-IV

**[REF. PRICE SCHEDULE, VOL-III, SCH-2, SL. NO.D]**

**TENTATIVE WEIGHT OF ITEMS (Mechanical/Electrical/C&I) FOR MATERIAL HANDLING IS MENTIONED BELOW. HOWEVER, ACTUAL QTY OF ITEMS TO BE DISMANTLED TO BE DECIDED AS PER ENGINEER I/C.**

Approximate weight of Items (Mechanical/Electrical/C&I) for Material Handling/Material Management is 210 MT (Refer Annex-II & III for list of items)

Shifting/re-stacking of Existing Materials inside coverd store/semi covered store/matl yard for is 5 MT

**Note: Quanitity variation as per GCC shall be applicable.**

## ANNEXURE-V
## TENTATIVE LIST OF T&P & MMD TO BE PROVIDED FOR FOR DE-NOX SYSTEM OF U#6 AT NTPC FARAKKA STPS

| SL NO | DESCRIPTION OF EQUIPMENT | CAPACITY | MINIMUM QUANTITY |
|---|---|---|---|
| A | T&P | | |
| 01 | Tyre mounted mobile crane/hydra | 12/ 14 T | 02 Nos Minimum (1 No For Materail Management & 1 no for Erection Work) |
| 02 | Trailer (45-50 ft) | 28 T, flat bed | As Required |
| 03 | Truck/ tractor trolley | 9T/ 12T capacity | 01 No minimum |
| 04 | Welding Generator / transformer (with welding cables) | As required | As Required |
| 05 | Heating torch along with regulator & hoses | As per requirement | As Required |
| 06 | TIG set with Argon regulator | As required | As Required |
| 07 | Tube Cutting Machine-As reqd | As required | As Required |
| 08 | Pre Heat, PWHT/Stress relieving Equipment & accessories | As required | As Required |
| 09 | Radiography Equipment | As required | As Required |
| 10 | 3 phase distribution board with complete set up for drawl of construction power. | 400 amp | As Required |
| 11 | Winches (electric)<br>(winches also includes wire ropes)<br><br><br>Winches (Hand operated) | 10 T<br>05 T<br>3 T<br>2 T<br>1T | 10 T-02 Nos Minimum<br>Others, as required |
| 12 | Electric cable for drawl & distribution of construction power | As per requirement | As Required |
| 13 | Semi-automatic welding m/c | As per requirement | As Required |
| 14 | Baking oven and holding oven with thermostat and temperature gauge for baking coated welding electrodes | As per requirement | As Required |
| 15 | Portable oven for coated welding electrodes | As per requirement | As Required |
| 16 | Hydraulic jacks | As per requirement | As Required |
| 17 | Slings, pulleys and de-shakles (from 1T to 10 T) | From 1T to 10 T capacity | As Required |
| 18 | Scaffolding pipes | As per requirement | As Required |
| 19 | Digital coat meter | As per requirement | As Required |
| 20 | LPI kit | As per requirement | As Required |

| | | | |
|---|---|---|---|
| 21 | All Ring & D.E. Spanners upto 36mm | As per requirement | As Required |
| 22 | Slogging spanners from 36mm to 100 mm | As per requirement | As Required |
| 23 | Adjustable Spanners | As per requirement | As Required |
| 24 | Allen key set upto (17 mm) | As per requirement | As Required |
| 25 | Hammer upto (05 Kg.) | As per requirement | As Required |
| 26 | Screw Driver all sizes | As per requirement | As Required |
| 27 | Hack – saw Frame | As per requirement | As Required |
| 28 | Files (smooth, rough) round, half round | As per requirement | As Required |
| 29 | Inside & Outside Circlip pliers | As per requirement | As Required |
| 30 | Wire rope (sling) 8mm, 12mm & 16mm (duly tested) Inappropriate length | As per requirement | As Required |
| 31 | D. Shackle 2T, 3T, 5T (duly tested) | As per requirement | As Required |
| 32 | Cutting torch along with regulator & hoses | As per requirement | As Required |
| 33 | Straight grinder | As per requirement | As Required |
| 34 | Chain Pulley block (2T, 3T) (duly tested) | As per requirement | As Required |
| 35 | Chain Pulley block (5T) (duly tested) | As per requirement | As Required |
| 36 | Angle Grinder | As per requirement | As Required |
| 37 | FF2 Grinder | As per requirement | As Required |
| 38 | Chisel 5", 12" | As per requirement | As Required |
| 39 | Try Square | As per requirement | As Required |
| 40 | Portable Electrode Heating oven | As per requirement | As Required |
| 41 | Vernier caliper | As per requirement | As Required |
| 42 | Measuring Tape (5 M) | As per requirement | As Required |
| 43 | Measuring Tape (10 M, 15 M) | As per requirement | As Required |
| 44 | Torch | As per requirement | As Required |
| 45 | 24 V lamps and transformers | As per requirement | As Required |
| 46 | Lighting/ Extension Boards with ELCB, indutrial plugs 5 point | As per requirement | As Required |
| 47 | Multipoint Welding Transformer | As per requirement | As Required |
| 48 | winding resistance measuring equipment | As per requirement | As Required |
| 49 | Multimeters | As per requirement | As Required |
| 50 | LT cable termination equipment | As per requirement | As Required |
| 51 | 2.5 & below lugs. | As per requirement | As Required |
| 52 | PVC tape | As per requirement | As Required |
| 53 | Other MMD's | | |
| | Leakage Tester (DC/AC) - mA Range, Voltmeter (mV – 750V Range, Insulation Resistance Tester (Megger), mV/mA Calibrator , Cable Continuity Tester, Micro ohm meter, Special cable (FO/UTP/Ethernet etc) termination kit, 3-Phase/ 1-Phase Variac, Ferrule Typing machine, Drill Machine, Cable crimping tools , Electric blower (Normal/Hot), straight edge, master level, square level, inside & outside micrometer, taper gauge, filler gauge, dial gauge,tape, etc | As per requirement | As per requirement |

| NOTE | |
|---|---|
| 1.0 | Bidder shall note that, this list is not exhaustive and they may be required to provide additional T&Ps not |

| | |
|---|---|
| | stated in the list for proper execution of job, at no extra cost to BHEL. |
| 2.0 | MMD and T&P shall be mobilized and deployed by successful bidder, as required at site for successful execution of the job. Deployment plan of T&P, MMD shall be jointly finalised based on project requirement prior to start of work. The plan might undergo revision depending on project requirement. Depending upon the jointly agreed deployment program, any additional T&P, MMD, if required, for proper completion of job, shall have to be deployed by successful bidder. Similarly, if any of the aforesaid items is not required for the job as per jointly agreed program, successful bidder need not have to deploy the same. |
| 3.0 | Apart from above, in case successful bidder fail to deploy other T&Ps as per jointly agreed schedule, BHEL reserve the right to deploy the same at the risk & cost of successful bidder or levy penalty at a rate, to be rationally derived by BHEL. Decision of BHEL shall be final & binding on successful bidder. |
| 4.0 | The contractor shall ensure deployment of reliable & calibrated instrument, measuring and test equipment (MMD). The MMD shall have test calibration certificate from authorized/ Govt approved agencies. The contractor shall also keep provision of alternate engagement for such MMD so that the work does not suffer when a particular MMD is sent for calibration. Re-testing/ re-calibration shall also be arranged by the contractor at their own cost at regular interval during the period of use as advised by BHEL. |
| 5.0 | Sufficient measures shall be taken by the successful bidder to minimise the radiography test at site and maximise the use of Ultrasonic testing wherever applicable. |
| 6.0 | The above major T&P list is indicative only. Additional T&Ps, if required have to be mobilized by the successful bidder within the accepted rate. |
| 7.0 | In addition to the above necessary lifting tackles like slings, D-shackles, chain pulley blocks, tripods etc. are to be arranged by bidder. T&P shown in the above mentioned list are minimum requirement. Further requirement will be reviewed time to time at site and vendors will provide additional T&P/ equipments to ensure completion of entire work within schedule time without any financial implication to BHEL. Vendor will give advance intimation & certification regarding capacity etc prior to dispatch of heavy equipment. |

## ANNEXURE-VI

## TENTATIVE LIST OF CONSUMABLES /PROTECTIVE MATERIAL AS REQUIRED TO BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST

| SL NO | DESCRIPTION OF ITEMS |
|---|---|
| 01 | Electrodes & Filler Wire for CS, SS, AS – As required except for the special electrodes supplied by BHEL manufacturing units. |
| 02 | Different gases like O2, CO2, Nitrogen, Argon, D/A, etc. |
| 03 | CTC, petrol, diesel, kerosene, Rustolene. |
| 04 | Lapping pastes. |
| 05 | NDE consumables. |
| 06 | Hoses and clamps of different sizes. |
| 07 | Touch-up paints, preservatives and other consumables. |
| 08 | Cotton wastes, jutes etc. |
| 09 | Primer and finish paint (To be sourced from BHEL approved manufacturer). |
| 10 | Grouting cement as applicable. |
| 11 | Other consumables to complete the job. |
| 12 | All materials including cement, reinforcement steel, structural steel, AC sheeting, Windows, doors, MS/ Aluminum fittings, plastering, painting, flooring, roofing, etc, complete as per drawings, specification, etc, as required for construction of the pit. |

| NOTE | |
|---|---|
| 1.0 | Bidder shall note that this list is not exhaustive and they may be required to provide additional consumables not stated in list for proper execution of job, at no extra cost to BHEL. Successful bidder may have to provide nut, bolt, washer, etc. as referred in exceptional cases in case of any shortage of supply from BHEL's end. Accordingly, total implication in this regard is insignificant in comparison to total magnitude of work and bidder may work out implication of these items base on their previous exposure. |
| 2.0 | Deployment plan of major consumables shall be jointly finalised based on project requirement prior to start of work. The plan might undergo revision depending on project requirement. Depending upon the jointly agreed deployment program, any additional consumables, if required for proper completion of job, shall have to be deployed by the successful bidder. Similarly, if any of the aforesaid items is not required for the job as per jointly agreed program, the successful bidder need not have to deploy the same. |

## ANNEXURE-VII

## SPECIFICATION OF PAINTING WORK

| | |
|---|---|
| 1.0 | The following Indian Standards may be referred to for carrying out the painting job: IS - 1303, 2379, 1477, 2524, 2395, 2338, 6278, 3140, 158, 2074, 104, and 2932. |
| 2.0 | All surfaces to be painted shall be thoroughly cleaned of all grease, oil, loose mill scale, dust, rust and any other foreign matter by mechanical cleaning with power tool, scrapping with steel wire brushes, and sand scrapping with wire brush/emery paper as per requirement. Cleaning with solvents shall be adopted only after approval of the customer. |
| 3.0 | After the surface is prepared, one coat of Zinc Phosphate primer conforming to IS: 2074 shall be applied. After first coat is dried up completely, second coat of red oxide primer shall be applied by brushing to ensure continuous film. The dry film thickness of each coat shall be minimum 25 microns. |
| 4.0 | Synthetic enamel paint conforming to IS: 2932 shall be used for finish coats. The color/ shade shall be as approved by the customer. After cleaning the dust on the dried up primer, first coat of synthetic enamel shall be applied. After this first coat dries up hard, the surface should be wet scrubbed cutting down to smooth finish and ensuring that at no place the first coat is completely removed. After applying second coat, allowing the water to get evaporated completely, third finish coat of painting shall be applied. |
| 5.0 | For all electrical equipment, powder coating shall be done as per the relevant standard. |
| 6.0 | Painting and Marking/Labeling of the materials erected. Supply of paints is included in the Scope of Work of the Sub-contractor. |

## Annexure-VIII

## TENTATIVE UNIT WISE COMPLETION SCHEDULE (IN DAYS) FOR DE-NOX SYSTEM OF U#6 AT NTPC FARAKKA STPS

| | | U#6 | |
|---|---|---|---|
| | | Start | Finish |
| Sl No | Description of area/major milestones | | |
| 1. | Material Handling | February-2020 till commissioning of Unit & reconciliation of Material | |
| 2. | Pre Shutdown Activities (25 Days/ Unit) | 08/09/2020 | 02/10/2020 |
| 3. | Shutdown/Renovation activities of Boiler De-Nox System (35 Days/Unit) | 29/09/2020 | 01/11/2020 |
| 4. | Post Shutdown Commissioning Activities/Completion of All facilities (60 Days/Unit) | 02/11/2020 | 31/12/2020 |

Note:

1. The above schedule is tentative only. The shutdown month/date, may get pre-pond /post pond, vendor will have to arrange full mobilization as per intimation of BHEL site I/C.
2. “Finish” means last day of completion of the period of particular activity.

**Annexure -IX**

**Receipt, unloading, storage,transportation from store to site, Dismantling, New Material Erection, Re-Erection of Old Items, Modification of existing Items, Rstoration, Commissioning,Testing & PG Test etc. of Combustion modification system for Nox mitigation at U#6 at NTPC -FARAKKA (1x500 MW).**

List of **Minimum manpower** required for the job is mentioned below. Contractor is to depute sufficient manpower to ensure round the clock working

| MANPOWER | CATEGORY | MINIMUM NO. OF MANPOWER PER UNIT | |
|---|---|---|---|
| | | DURING SHUTDOWN | DURING PRE-SHUTDOWN |
| Site Incharge | Highly Skilled | 1 | 1 |
| Safety Engr | Highly Skilled | 1 | 1 |
| Quality Engr/Quality Supervisor | Skilled | 1 | 1 |
| Engineer/Supervisor(Mechnaical) | Skilled | 3 | 1 |
| Engineer/Supervisor(C&I) | Skilled | 1 | 1 |
| Storekeeper | Semi Skilled | 1 | 1 |
| HP Welder(IBR) | Highly Skilled | 3 | 1 |
| Welder(Non-IBR) | Skilled | 4 | 1 |
| Structural welder | Skilled | 2 | 2 |
| fitter(Pressure parts) | Highly Skilled | 2 | 1 |
| fitter(Ducts) | Skilled | 2 | 2 |
| fitter(Structures) | Skilled | 2 | 1 |
| Gas cutter | Skilled | 4 | 2 |
| Sarang | Skilled | 2 | 2 |
| Electrician | Skilled | 4 | 1 |
| Jr. Fitter | Semi-Skilled | 4 | 2 |
| Grinder | Semi-Skilled | 4 | 2 |
| Rigger | Un-skilled | 12 | 8 |
| Helper | Un-skilled | 26 | 8 |
| Expert for Boiler Pr Parts&Burner | Expert | 1 | 0 |
| MM -supervisor | skilled | 1 | 1 |
| | **Total** | **81** | **40** |

Note: 1) The above list is for tentative minimum required manpower for the subject job. During execution, as per requirement vendor has to mobilize sufficient manpower to complete the job as per shutdown schedule.In case vendor failed to mobilize sufficient manpower, BHEL shall arrange the same at the risk & cost of the vendor with applicable Overhead.

2) Time is the essence of this contract. Hence contractor must mobilize site with adequate manpower for round the clock 12 hours shifts work during the entire duration.

**VOLUME-III**
**PRICE SCHEDULE, REV-02**

**Job: Receipt, Unloading, Storage, Dismantling, New Material Erection, Re-Erection of Old Items, Modification of existing Items, Restoration, Commissioning, Testing & PG Test of Combustion Modification System for NOx Mitigation of U#6 , STG-III (1X500MW) at NTPC Farakka STPS, West Bengal.**

**TENDER NO -PSER:SCT:FKK-S1998:19**

**SCH-2 - BREAK UP OF TOTAL PRICE**

| SL. NO. | DESCRIPTION OF EQUIPMENT/ ITEM | Quanity | Weightage for Total price of each item total price |
|---|---|---|---|
| **A** | Dismantling of Boiler items as per scope of work & Re-Erection/re-use/modification, alignment, welding & commissioning of old dismantled items.<br>a.1 Approx weight to be dismantled: **50** MT<br>a.2 Approx weoght of Old dismantled Items to be retained/re-erected, rectified,aligned, welded, commissioned is **30** MT.<br>For details refer annexure-I & scope of work of TCC REV-02.<br>**Note: Quantity for Dismantling work & old dismantled items to be re-erected/re-used/modified, commissioned may vary to any extent. No extra paymnet shall be made for quantity variation for a.1 & a.2 mentioned above complet the NOx madification package.** | 1 lot | 0.119857970 |
| **B** | Erection of new items:<br>Approx weight of new items to be erected, aligned, commissioned including Erection & arrangement of Scaffloding for Boiler: **201** MT (Pr Parts : 14 + Insulation:42+Non Pr Parts:145).<br>For details refer Annex-II & scope of work of TCC REV-02<br>**Note: Erection & arrangement of scaffolding in required areas excluding 1 st pass Boiler Furnace Inside(refer E&F of this schedule). Payment shall be made on proarata basis as per acutal quanity.** | 201 MT | 0.483231260 |
| **C** | C&I & Electrical work:<br>For details refer Annex-III & scope of work of TCC REV-02<br>**Note: Quantity & Size of C&I & Electrical Works/Items may vary to any extent. No extra paymnet shall be made for quantity/size variation to complete the NOx madification package.** | 1 Lot | 0.073137810 |
| **D.1** | Material Handling work for 210 MT(refer Annex-IV & scope of work of TCC REV-02). Payment shall be made on proarata basis as per acutal quanity. | 210 MT | 0.074518850 |
| **D.2** | Approx weight of existing/old materials shifting/re stacking inside cover store/semi covered store/material yard is 5 MT (refer Annex IV & scope of work of TCC REV-02). Payment shall be made on proarata basis as per acutal quanity. | 5 MT | 0.000609150 |
| **E** | Erection of cup lock Scaffolding along with Steel Planks, Staircase, handrails etc. for **1 st Pass Inside Boiler Furnace:**<br>a) Scaffolding Materials receipt & transportion/shifting from NTPC store to site.<br>b) Erection of Scaffolding.<br>c) Dismantling of Scaffolding on completion of work.<br>d) Return of Scaffolding material to customer store.<br>e) This scaffolding work to be carried out during shutdown period, however material shifting to be carried out during pre-shutdown period.<br>For details refer scope of work of TCC REV-02<br>**Note: sl. no.E may not be executed in case the same is carried out by customer during execution, in that case payment shall not be made against sl no E.** | 1 lot | 0.078430540 |
| **F** | Arrangement of cup lock Scaffolding materials along with Steel Planks, Staircase.hand rails etc. for **1 st pass inside Boiler Furnace**<br>a) For making/arrangement Scaffolding upto 55 Mtr Elevation inside Boiler furnace 1 st pass.<br>b) Approximate dimension of furnace inside is 19.939 Mtrs X 16.559 Mtrs<br>c) Requirement of these scaffolding will be during shutdown perio, however all materials to be made available at site before commencement of shutdown.<br>For details refer scope of work of TCC REV-02<br>**Note: sl. no.F may not be executed in case the same is arranged by customer during execution, in that case payment shall not be made against sl no F.** | 1 lot | 0.170214420 |
| TOTAL | | | 1.00000000 |

**ANNEXURE - 2**

## FORMAT FOR NO DEVIATION CERTIFICATE
## (To be submitted in the bidder's letter head)

BHARAT HEAVY ELECTRICALS LIMITED,
Power Sector - Eastern Region,
Plot no 9/1, DJ Block, Sector – II, Salt Lake City,
Kolkata – 700 091

| | | |
|---|---|---|
| Sub | No Deviation Certificate. | |
| Job | Receipt, Unloading, Storage, Dismantling, New Material Erection, Re-Erection of Old Items, Modification of existing Items, Restoration, Commissioning, Testing & PG Test of Combustion Modification System for NOx Mitigation of U#6, STG-III (1X500MW) at NTPC Farakka STPS, West Bengal. | |
| Ref | 1.0 | Tender no: PSER:SCT:FKK-S1998:19. |
| | 2.0 | BHEL's NIT, vide reference no: PSER:SCT:FKK-S1998:7704 Date: 11-12-2019. |
| | 3.0 | BHEL's TCN-01, vide ref no: PSER:SCT:FKK-S1998:19:TCN-01 Date: 31-12-2019. |
| | 4.0 | BHEL's TCN-02, vide ref no: PSER:SCT:FKK-S1998:19:TCN-02 Date: 08-01-2020. |
| | 5.0 | BHEL's TCN-03, vide ref no: PSER:SCT:FKK-S1998:19:TCN-03 Date: 13-01-2020. |
| | 6.0 | BHEL's TCN-04, vide ref no: PSER:SCT:FKK-S1998:19:TCN-04 Date: 14-01-2020. |
| | 7.0 | BHEL's TCN-05, vide ref no: PSER:SCT:FKK-S1998:19:TCN-05 Date: 21-01-2020. |
| | 8.0 | BHEL's TCN-06, vide ref no: PSER:SCT:FKK-S1998:19:TCN-06 Date: 28-01-2020. |
| | 9.0 | BHEL's TCN-07, vide ref no: PSER:SCT:FKK-S1998:19:TCN-07 Date: 07-02-2020. |
| | 10.0 | BHEL's TCN-08, vide ref no: PSER:SCT:FKK-S1998:19:TCN-08 Date: 14-02-2020. |
| | 11.0 | All other pertinent issues till date. |

Dear Sirs,

With reference to above, this is to confirm that as per tender conditions, we have visited site before submission of our offer and noted the job content & site conditions etc. We also confirm that we have not changed/ modified the tender documents as appeared in the website/ issued by you and in case of such observance at any stage, it shall be treated as null and void.

We hereby confirm that we have not taken any deviation from tender clauses together with other references as enumerated in the above referred NIT. We hereby confirm our unqualified acceptance to all terms & conditions, unqualified compliance to technical specification, integrity pact (if applicable) and acceptance to reverse auctioning process.

In the event of observance of any deviation in any part of our offer at a later date whether implicit or explicit, the deviations shall stand null & void.

We confirm to have submitted/uploaded offer/documents in accordance with tender instructions with acceptance of the terms & conditions of the tender by us and as per aforesaid references.

Thanking you,

Yours faithfully,

(Signature, date & seal of authorized
representative of the bidder)