

# **TENDER SPECIFICATION BHEL PSSR SCT 2121**

**FOR**

**Balance Civil and Architectural works of Superstructure of Power house,  
Bunker and Balance Civil and Architectural works in other areas of  
Main plant of Yadadri TPS Units 4&5**

## **PRICE BID VOLUME –II**



**BHARAT HEAVY ELECTRICALS LIMITED**  
(A Government of India Undertaking)  
Power Sector – Southern Region  
BHEL Integrated Office Complex, TNEB Road  
Pallikaranai, Chennai -600100

**TENDER SPECIFICATION CONSISTS OF**

**Tender Specification**

**Volume - I**

**Book-I**

**Notice Inviting Tender**

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**Part I**

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## PRICE BID

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## PRICE BID

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### **PART A**

#### **Instruction to Bidders:**

1. The quantity indicated in the BOQ / Price bid (Part C) is approximate only and is liable for variation. Payment will be as per actual quantity executed as certified by BHEL Engineer.
2. Tenderers are requested to affix their company seal and authorized signature in all pages.
3. Bidders shall quote 'Total Amount' in the format enclosed as a separate Excel File in BHEL NIC e-Procurement portal for the subject tender and upload the same under 'Packet details - > Tender covers -> Finance '(Cover Type Description – Price Bid)' and same shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope of work defined in specification and in accordance with terms & conditions of the tender. Any other entry elsewhere in the price bid shall be treated as Null and Void. Quoting of rates in any other form/ formats will not be entertained.
4. The above mentioned 'Total amount' is for the entire Bill of Quantity (BOQ) given in Part -C of the Price Bid.
5. BHEL has pre-fixed the weightages for the amount of individual items of Bill of Quantity with respect to the 'Total Amount' in Part-C.
6. Based on the pre-fixed weightages, the amount for the individual items of the Bill of Quantity shall be arrived at. This amount shall be rounded off to the nearest rupee.
7. Based on the quantities of individual item and the amount arrived in SI No: 6 above, unit rate of individual items shall be derived. This unit rate shall be rounded off to four decimal places.
8. Bidders to note that this is an item rate contract. Payment shall be made for the actual quantities of work executed at the unit rate arrived at as per SI No.7 above.

| Part C : Bill of Quantities   |  |     |          |           |
|---|--|-----|----------|-----------|
| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |     |          |           |
| Ref.No.   | Description  | UOM | Quantity | Weightage |
| 100.0   | <b>EARTHWORK:</b> Earth work in excavation in all types of soil including ash which can be excavated by any means including setting out, levelling, dewatering (but excluding special type of dewatering viz. well point method), shoring & strutting (wherever required), sheet piling (for excavation below 6m from FGL, if required), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 1Km, spreading/levelling of disposed materials etc all complete for following depths below ground level.  |     |          |           |
| 101.0   | Earth work in excavation in all types of soil including ash which can be excavated by any means including setting out, levelling, dewatering (but excluding special type of dewatering viz. well point method), shoring & strutting (wherever required), sheet piling (for excavation below 6m from FGL, if required), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 1Km, spreading/levelling of disposed materials etc all complete for following depths below ground level.  |     |          |           |
| a   | Depth from ground level but not exceeding 2 m  | CUM | 1,200    | 0.0003306 |
| b   | Depth exceeding 2 m but not exceeding 4 m  | CUM | 600      | 0.0002070 |
| 103.0   | Earth work in excavation in soft rock (rock without any recovery of excavated materials in the form of hard stone/boulder) including weathered rock which can be excavated by means of crow bar, pick axe, pneumatic rock breaker attachment with excavator machine etc but does not require chiselling or blasting including setting out, levelling, dewatering (wherever required), shoring & strutting (wherever required), sheet piling (for excavation below 6m from FGL, if required), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 1 Km, spreading / levelling of disposed materials etc all complete for following depths below ground level. |     |          |           |
| a   | Depth from ground level but not exceeding 2 m  | CUM | 100      | 0.0000317 |
| b   | Depth exceeding 2 m but not exceeding 4 m  | CUM | 50       | 0.0000190 |
| 104.0   | Earth work in excavation upto any depth below ground level in hard rock requiring blasting (but excluding controlled blasting) including wedging, line drilling, pre shearing etc as required for grading, setting out, levelling, dewatering (wherever required), sheet piling (for excavation below 6m from FGL, if required), dressing the sides & bottom, all lifts, necessary licenses/statutory clearances for blasting, supply, storage & handling of blasting materials, stacking/disposal of surplus excavated material within a lead upto 1 Km, spreading / levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.  |     |          |           |
| a   | Depth from ground level but not exceeding 2 m  | CUM | 500      | 0.0003091 |
| b   | Depth exceeding 2 m but not exceeding 4 m  | CUM | 500      | 0.0003705 |
| c   | Depth exceeding 4 m but not exceeding 6 m  | CUM | 50       | 0.0000445 |
| d   | Depth exceeding 6 m but not exceeding 8 m  | CUM | 76       | 0.0000809 |
| e   | Depth exceeding 8 m but not exceeding 10 m   | CUM | 10       | 0.0000122 |
| 105.0   | Earth work in excavation in hard rock requiring controlled blasting including wedging, line drilling, pre shearing etc as required, setting out, levelling, dewatering (wherever required), shoring & strutting (wherever required), sheet piling (for excavation below 6m from FGL, if required), dressing the sides & bottom, all lifts, necessary licenses/statutory clearances for blasting, supply, storage & handling of blasting materials, stacking/disposal of surplus excavated material within a lead upto 1Km, spreading / levelling of disposed materials etc all complete for following depths below ground level.   |     |          |           |
| a   | Depth from ground level but not exceeding 2 m  | CUM | 510      | 0.0003106 |
| b   | Depth exceeding 2 m but not exceeding 4 m  | CUM | 510      | 0.0003731 |
| c   | Depth exceeding 4 m but not exceeding 6 m  | CUM | 110      | 0.0000963 |
| d   | Depth exceeding 6 m but not exceeding 8 m  | CUM | 20       | 0.0000211 |
| e   | Depth exceeding 8 m but not exceeding 10 m   | CUM | 12       | 0.0000147 |
| 106.0   | Earth work in excavation in hard rock requiring chiselling including wedging, line drilling, pre shearing etc as required for grading, setting out, levelling, dewatering (wherever required), sheet piling (for excavation below 6m from FGL, if required), dressing the sides & bottom, all lifts, stacking/disposal of surplus excavated material within a lead upto 1Km, spreading / levelling of disposed materials etc all complete for following depths below ground level.   |     |          |           |
| a   | Depth from ground level but not exceeding 2 m  | CUM | 50       | 0.0002000 |
| b   | Depth exceeding 2 m but not exceeding 4 m  | CUM | 50       | 0.0002401 |

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| Ref.No.   | Description   | UOM | Quantity | Weightage |
| c   | Depth exceeding 4 m but not exceeding 6 m   | CUM | 100      | 0.0005761 |
| d   | Depth exceeding 6 m but not exceeding 8 m   | CUM | 80       | 0.0005529 |
| e   | Depth exceeding 8 m but not exceeding 10 m  | CUM | 15       | 0.0001193 |
| 107.0   | Earthwork in Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250mm thickness using/with selected materials from compulsorily excavated earth available within a lead upto 1 Km and compacted as specified including re-excavation of stacked earth, watering, ramming/compaction by manual/mechanical means, dressing etc all complete for the following.  |     |          |           |
| a   | Each layer compacted so as to achieve at least 90% maximum dry density as per IS- 2720 (Part-VII)   | CUM | 10,050   | 0.0018615 |
| 108.0   | Earthwork in Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250mm thickness using/with selected earth directly from excavation within a lead upto 1Km and compacted as specified including, watering, ramming/compaction by manual/mechanical means, dressing etc all complete for the following:   |     |          |           |
| a   | Each layer compacted so as to achieve at least 90% maximum dry density as per IS- 2720 (Part-VII)   | CUM | 150      | 0.0000083 |
| 109.0   | Extra over ST No. 101 and 103 to 108 for carriage of material/earth for every 500m or part thereof beyond an initial lead of 1km.   |     |          |           |
| a   | Carriage for stacking/ backfilling of serviceable material/ earth   | CUM | 50,000   | 0.0011577 |
| b   | Carriage for disposal of serviceable/unserviceable material/ earth  | CUM | 7,710    | 0.0001785 |
| 110.0   | Earth work in backfilling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness so as to achieve required compaction with approved borrowed earth (borrowed earth to be arranged by the bidder) and compacted as specified including supplying borrowed earth, royalty/seignorage fee (if any), sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, testing, all lead and lifts etc all complete as per specification, drawing and as directed by the engineer for the following: |     |          |           |
| a   | Each layer compacted so as to achieve at least 90% maximum dry density as per IS- 2720 (Part-VII)   | CUM | 10       | 0.0000103 |
| A107  | Earthwork in Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc. to proper grade and level in layers not exceeding 250mm loose thickness using/ with selected materials from stacked earth available within a lead upto 1 Km and compacted as specified including re-excavation of stacked earth, breaking of oversized rocks, sorting & segregation of rock pieces of size less than 150mm through mechanical means, watering, ramming/compaction by manual/mechanical means, dressing etc. all complete for the following.  |     |          |           |
| a   | Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)  | CUM | 10,700   | 0.0035675 |
| A111  | Supplying and filling sand upto any depth under floors, around foundations, plinths, surrounding pipe and in pipe beds etc. in layers not exceeding 300 mm thickness and compacted so as to achieve at least 75% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete.   | CUM | 60       | 0.0003581 |
| B111  | Supplying and filling sand upto any depth under floors, around foundations, plinths etc. in layers not exceeding 200 mm thickness and compacted so as to achieve at least 85% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete. Sand for filling shall be clean and well graded conforming to IS 383 with grading not inferior than Zone III.  | CUM | 60       | 0.0003583 |
| 200.0   | CONCRETE WORK: Providing and placing concrete work including cost of labour, materials (unless otherwise specified in BOQ/contract specification) and equipment for handling, transportation, batching, mixing, placing, vibrating and curing (excluding cost of centering, shuttering and reinforcement) with mechanised equipments like batching plant, transit mixer, concrete pump etc. complete as per drawing, specifications and as per direction of engineer in charge for the following: (Cement supply by BHEL free of cost)  |     |          |           |
| 201.0   | Concrete of grade M7.5 (1 part cement, 4 part sand, 8 parts of 40 mm graded aggregate by volume) as mass filling course, lean concrete, levelling course, mud mat under and around foundations/ floors, at any depth below finished floor level etc.  | CUM | 35       | 0.0003070 |

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| Ref.No.   | Description   | UOM | Quantity | Weightage |
| A203  | Concrete of grade M15 (1 part cement, 2 part sand, 4 parts of 20 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc.  | CUM | 683      | 0.0059918 |
| 204.0   | Concrete of grade M20 (1 part cement, 1.5 part sand, 3 parts of 20 mm graded aggregate by volume) under floors, paving, plinth protection, pipe encasing etc complete.  | CUM | 55       | 0.0004825 |
| 205.0   | Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262- 2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in foundations/substructure, grade slab, paving, drains, under floors etc at all level below finished floor level, any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing for the following.   |     |          |           |
| a   | M 25 Grade  | CUM | 1,400    | 0.0131280 |
| Ad  | M 20 Grade  | CUM | 55       | 0.0005140 |
| A205  | Providing and laying Design Mix cement concrete (M20) conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in grade slab and paving using Vacuum Dewatered Flooring (VDF) method etc at any level below finished floor level, any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing.  | CUM | 1,815    | 0.0169607 |
| 206.0   | Providing and laying Design Mix cement concrete of grade conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in superstructure at all level above finished floor level, any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing for the following.   |     |          |           |
| a   | M 25 Grade  | CUM | 3,597    | 0.0333298 |
| b   | M 30 Grade  | CUM | 10       | 0.0000930 |
| 207.0   | Providing and laying Design Mix cement concrete confirming to IS:456 & IS 10262- 2009 for reinforced concrete works of grade mentioned below in machine foundations for TG, Gas Turbine, ID/FD/PA fans, BFP, Coal mills at all elevations below/above finished floor level except TG deck and top decks supported over vibration isolation system but including TG foundation columns with addition of suitable plasticizer conforming to IS 9103(latest) to achieve a slump more than 125mm in concrete as per manufacturer's recommendation with 20 mm nominal size graded aggregate in concrete all complete as per specification & drawing.   |     |          |           |
| a   | M 30 Grade  | CUM | 135      | 0.0013369 |
| 208.0   | Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 of grades mentioned below for reinforced concrete works using graded aggregate in top decks of all machine foundations supported on vibration isolation system (excluding supply and installation of vibration system) and top deck of TG foundation at all levels including addition of suitable plastisizers conforming to IS9103 to achieve a slump more than 125 mm in concrete as per manufacturers recommendation, preparation of scheme for concreting, getting it approved by engineer, labour, materials, equipment, handling, batching, transporting, mixing, pumping, placing, leveling, vibrating, compacting, curing, testing, cleaning and rendering the exposed surface with cement sand mortar to give a smooth and even surface, maintaining and submitting records of concreting, petrographic examination and potential reactivity of aggregate etc. all complete as per specification, drawing and instructions of engineer, including UPV testing as directed by engineer in charge, rectification of the defects in concreting observed by ultra-sonic pulse velocity (UPV) testing by cement/epoxy grout etc, but excluding formwork, staging, reinforcement, embeddments and temperature control of concrete.<br>Payment terms - a) After casting 75% ; b) After receipt of ultrasonic test report - 25%. |     |          |           |
| b   | M35 Grade   | CUM | 497      | 0.0068859 |
| A209  | Extra over ST. No. 205 to 208 for controlling of temperature of fresh concrete to less than 25 degree centigrade using ice, including all related arrangements for providing, storing and mixing of ice with water, cooling of aggregates etc. All complete as per specification, drawing and instruction of engineer in charge.  | CUM | 497      | 0.0010299 |
| 210.0   | Extra over ST Nos. 205 to 207 for conducting UPV test for concrete at all levels including all equipments, making necessary arrangements, staging, submission of report etc. all complete as directed by engineer in charge and as per specification.   | CUM | 325      | 0.0002957 |

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| Ref.No.   | Description  | UOM  | Quantity | Weightage  |
| 211.0   | Providing and encasing of structural steel member with concrete using nominal aggregate size of 12.5mm down. Encased member shall be wrapped with welded wire mesh/chicken wire mesh with proper lap etc. complete as per specification for the following grades. (Payment of welded wire mesh, chicken wire mesh shall be made separately)  |      |          |            |
| a   | M20  | CUM  | 105      | 0.0009211  |
| 212.0   | Screed concrete conforming to IS 456 with coarse sand and graded hard stone aggregate 12.5mm/6 mm nominal size on the roof at any level or thickness, drains etc complete as per following.  |      |          |            |
| a   | 1:2:4 (1 part cement, 2 part sand, 4 parts of aggregate by volume)   | CUM  | 995      | 0.0087290  |
| 213.0   | Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in precast works like roof slabs/trench covers, fins, lintels, chajjas, beams, columns, wall panels, facias etc.at all levels in all kinds of work including formwork/moulds, curing, rendering the top exposed surface with cement sand mortar (1:3), handling, storing, transpoting, all leads, erection without damage, setting in position with cement sand mortar (1:3), filling the gaps between adjacent pre-cast units with M30 grade concrete or cement sand mortar (1:3) and including making of holes for bolts for fixing, welding etc.complete with graded aggregate (20/12.5/10 mm) and as per specification and drawing for following grades. |      |          |            |
| b   | M 30   | CUM  | 10       | 0.0001516  |
| 214.0   | Providing and laying Design Mix cement concrete as per IS:456, IS 3370 & IS 10262- 2009 for reinforced concrete works using graded aggregate for Concrete in water retaining/conveying structures including addition of suitable plastisizer cum waterproofing cement additives conforming to IS 9103 latest to achieve a slump more than 125 mm in concrete as per manufacturers recommendation and conforming to limits of permeability as per IS 2545 and specification with 20 mm nominal size graded aggregate for following grades. Watertightness is to be ensured including structural grouting if required.   |      |          |            |
| b   | M 30   | CUM  | 5        | 0.0000592  |
| 215.0   | Dismantling concrete work for all types of structures at all levels including stacking of serviceable material to a lead of 500 m and disposal of unserviceable material upto a lead of 2 km, cutting of reinforcement, labour, equipment, safety precautions etc all complete as per drawings, specification and instructions of engineer in charge.  |      |          |            |
| a   | Plain cement concrete of all grades  | CUM  | 15       | 0.0000396  |
| b   | Reinforced cement concrete of all grades   | CUM  | 32       | 0.0001279  |
| A215  | Rebate over ST No. 215b for taking into account the deemed cost of all serviceable material including reinforcement steel which bidder will be getting out of it by taking them outside plant for bidder's purpose instead of stacking to a lead of 500m inside plant.   |      |          |            |
| b   | Reinforced cement concrete of all grades   | CUM  | 15       | -0.0000033 |
| 216.0   | Chipping of concrete in reinforced concrete work, cutting pockets, making openings at all levels and according to shapes, disposal of waste materials upto a lead of 2 km as directed by engineer including equipment, safety precautions, making good the broken surface etc all complete as per specification, drawing, instructions of engineer in charge but excluding cutting of reinforcement .  | CUDM | 905      | 0.0001320  |
| 217.0   | Extra over and above ST No 216 for cutting of reinforcement, all sizes and types including labour, equipment, return of cut reinforcement to store etc all complete as per specification, drawings and instructions of engineer in charge. Measurement shall be on the cross sectional area of reinforcement cut.  | SQCM | 10       | 0.0000001  |
| 218.0   | Cutting Reinforced concrete with mechanised tools like Core drilling machine etc. for cutting pockets, holes, cores in slab, beam, column or foundation as per direction of engineer in charge.  | CUDM | 5        | 0.0000025  |
| 219.0   | Providing and applying curing compound (water based) of approved make where ever required as per manufacturer's specification.   | SQM  | 10       | 0.0000030  |
| 220.0   | Providing & laying Plum cement concrete 1:3:6 with 75% graded metal of maximum size 40 mm and 25% plums of maximum size 150 mm.  | CUM  | 25       | 0.0002176  |
| 222.0   | Cutting of groove of 10mm X 40mm size with groove cutting machine in concrete paving all complete.   | RM   | 55       | 0.0000066  |
| 223.0   | Cutting of existing concrete/ RCC slab (total thickness upto 250mm including floor finish & deck sheet if any) inside control room/ pump house or anywhere inside boundary using power tools of (DD2E of HILTI/ BOSCH make or equivalent) with low noise and dust including cutting reinforcements, removing the rubbish within a lead of 1 km, including making good the broken edges/ surface with cement mortar, painting, finishing to match with existing finishing, scaffolding/ supporting at all level, all complete and as directed by Engineer (measurements shall be taken as per cutting surface area).  | SQM  | 17       | 0.0000964  |



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| Ref.No.   | Description   | UOM  | Quantity | Weightage |
| 300.0   | FORMWORK: Providing, fixing and removing formwork at all elevations for all structures, as per specifications and including all labour, material, scaffoldings and centering etc. complete as per drawing, specifications and as per direction of engineer in charge for the following:   |      |          |           |
| 301.0   | Fairface form work with good quality water proof ply wood of minimum 12mm thickness and smooth surface below finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.including chamfering of edges as per drawing, specification and instruction of engineer in charge..  | SQM  | 1,205    | 0.0016684 |
| 302.0   | Fairface form work with good quality water proof ply wood of minimum 12mm thickness and smooth surface above finished ground floor level for columns, beams, suspended floors, roofs, lintels, cantilevers, staircases, landings, balconies, etc. including chamfering of edges as per drawing.for all heights as per specification, drawing and instruction of engineer in charge.   | SQM  | 24,082   | 0.0396997 |
| A303  | Fairface formwork with good quality water proof ply wood of required thickness and smooth surface for MDBFP and TDBFP decks supported on vibration isolation system resting on steel framing at approx. 14.5 M including preparation of scheme, designing, submission and approval of staging drawing with necessary removable steel framing for supporting the formwork, sufficient props, braces and ties etc. all complete.  | SQM  | 1,496    | 0.0138342 |
| 304.0   | Providing, fixing and removing formwork in block-outs/pockets and openings (below 0.1 sqm plan area) at all elevations including cutting, formation of all shapes and all other operations required for making the required shape and size all complete as per specification, drawing and instruction of engineer in charge.  |      |          |           |
| a   | Upto 150 mm depth   | EACH | 15       | 0.0000082 |
| b   | Pockets of depths more than 150mm and upto 300 mm depth   | EACH | 55       | 0.0000511 |
| c   | Pockets of depths more than 300mm and upto 600 mm depth   | EACH | 55       | 0.0000917 |
| d   | Pockets of depths more than 600mm and upto 1000 mm depth  | EACH | 25       | 0.0000655 |
| e   | Pockets of depths more than 1000mm and upto 1500 mm depth   | EACH | 5        | 0.0000188 |
| 305.0   | Extra over item no. 301 and 302 for curved form work for foundations, footings, beams, walls, trenches, domes, arches etc as per specification.   |      |          |           |
| a   | Extra for Curve Shuttering for Item No. 301   | SQM  | 15       | 0.0000044 |
| b   | Extra for Curve Shuttering for Item No. 302   | SQM  | 15       | 0.0000050 |
| 400.0   | REINFORCEMENT WORK: Reinforcement work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling etc at all level as per specification, drawings and as directed by engineer - in - charge.  |      |          |           |
| 401.0   | Providing, straightening, cutting, bending, placing in position at all level, binding of mild steel reinforcements conforming to grade 1 of IS:432 part 1 in concrete including cost of reinforcement steel, binding wire, labour, scaffolding, transportation to & from stores etc. all complete as per specifications & drawings.   | MT   | 5        | 0.0006751 |
| S402  | Supply including delivery at site, steel reinforcements of TMT steel of grade Fe-500, Fe-500D or 500EQR as applicable conforming to IS:1786 complete all as per specifications, drawings and as directed by Engineer.<br>Note - This item shall be operated if required, at the discretion of BHEL.   | MT   | 50       | 0.0063428 |
| 403.0   | Transportation, straightening, cutting, bending, placing in position at all level, binding in position of steel reinforcements of TMT steel of grade Fe-500D or 500EQR confirming to IS:1786 including cost of binding wire, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer.(BHEL to supply steel free of cost)  | MT   | 322      | 0.0111704 |
| 405.0   | Providing & fixing of Rebar in existing concrete surface by inserting reinforcement bar with Epoxy based suitable bonding compound of Hilti or equivalent make (HIT-RE-500 of Hilti or equivalent make) for interconnection of new R.C. structure with existing R.C. structure. Depth of drilled hole should be suitable to develop maximum recommended strength as per approved manufacturer's recommendation. This item includes supply of all materials including bonding chemicals, T&P required to execute the work, cost of all labour, transportation of chemical, staging to reach work place etc. all complete as directed by Engineer - in - Charge. Random Pull out non-destructive test as directed by engineer shall be conducted to ensure strength of bond and same is included in this item. Reinforcement bar shall be paid separately under item no. 402, 403, 404 as applicable. |      |          |           |
| a   | 12mm Reinforcement bar  | EACH | 6        | 0.0000060 |
| b   | 16mm Reinforcement bar  | EACH | 6        | 0.0000092 |
| c   | 20mm Reinforcement bar  | EACH | 6        | 0.0000131 |

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| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |      |          |           |
| Ref.No.   | Description  | UOM  | Quantity | Weightage |
| A406  | Providing and fixing parallel threaded reinforcement couplers for mechanical splices of rebars (TMT/ CRS TMT) for concrete reinforcement including supply of couplers as per IS: 16172 made out of EN8D grade high strength alloy material , threading on rebars to be coupled with coupler, enlargement at connection by forging, protecting the prepared reinforcement bars, fitting & fixing of couplers under specialized supervision, quality tests & checks (for couplers and coupled joints) etc. all complete as per direction of Engineer in charge. The couplers shall match to the properties of rebars of grade equal to Fe 550 D of IS 1786. The cost shall include for all works and tests including mobilisation, demobilisation, loading/unloading of required plant/ machinery at site for threading & forging works, tools & tackles, labour & supervision, consumables and all incidental expenses for satisfactory execution of the work . ( No deduction for labour and binding wire saved for not providing lap length shall be made). |      |          |           |
| a   | Coupler of class H for 16 mm diameter reinforcement bar.   | EACH | 7        | 0.0000014 |
| b   | Coupler of class H for 20 mm diameter reinforcement bar.   | EACH | 7        | 0.0000014 |
| c   | Coupler of class H for 25 mm diameter reinforcement bar.   | EACH | 7        | 0.0000020 |
| d   | Coupler of class H for 28 mm diameter reinforcement bar.   | EACH | 7        | 0.0000024 |
| e   | Coupler of class H for 32 mm diameter reinforcement bar.   | EACH | 7        | 0.0000032 |
| A407  | Welding of lap joints of steel reinforcements of TMT steel of grade Fe-500D or 500EQR confirming to IS:1786 (Latest) including cost of welding electrodes, labour, tools and plants etc. complete as permitted and directed by Engineer. Measurement shall be done for the number of joints welded comprising of weld deposition of 2.5d length each on both side of lap joint (i.e total 5d length of weld deposition). Here, d is the diameter of reinforcement bar.   |      |          |           |
| a   | For d=16 mm  | Each | 7        | 0.0000003 |
| b   | For d=20 mm  | Each | 7        | 0.0000004 |
| c   | For d=25 mm  | Each | 7        | 0.0000005 |
| d   | For d=28 mm  | Each | 7        | 0.0000005 |
| e   | For d=32 mm  | Each | 7        | 0.0000006 |
| 500.0   | Roof Treatment works: Roof treatment works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, curing, sampling, testing etc at all level as per specification, drawings and as directed by engineer - in - charge. Cement will be supplied by BHEL free of cost.  |      |          |           |
| 502.0   | Providing and laying underbed grading plaster with cement mortar 1:4 (1 cement : 4 sand) and average thickness of 15 mm including preparation of surface, batching, mixing, leveling etc. all complete.  | SQM  | 19,541   | 0.0050221 |
| 504.0   | Providing and laying rigid insulation (expanded polystyrene blocks) as per relevant IS Code in suitable panels over roofs followed by a layer of 15 mm thick cement sand plaster 1:4 (1 cement: 4 coarse sand) and providing of expansion joint at intervals and filling with sealant in both directions as per the recommendation of manufacturer. The insulating properties shall be such that the thermal conductivity shall not exceed 0.026 Kcal m/m deg C. The block shall be strong enough to withstand without deformation the workload and standard loads expected on the roof. Cost shall include making of fillets, cleaning & preparation of surface, expansion joints at suitable intervals etc all complete for following.   |      |          |           |
| b   | 50 mm thickness of rigid insulation (expanded polystyrene blocks)  | SQM  | 19,373   | 0.0126940 |
| A506  | Providing and applying PU based water proofing treatment with elastomeric, seamless waterproof membrane applied in 2 coats to a DFT of 1.2 mm thick having a elongation capacity of over 600% and average tensile strength of 1 MPa, tear resistance as per GBT 19250-2003 >20N/m. The material shall comply with ASTM C 836 National Std. of Canada 37.58 M86 by CGSB. Item includes surface preparation, polymerised mortar base preparation etc. all complete as per specifications and directions of engineer in charge.   | SQM  | 19,579   | 0.0310978 |
| B506  | Providing and applying a separation layer of non-woven polypropylene geo-textile membrane of 120 gsm for water proofing as per technical specification.  | SQM  | 18,052   | 0.0020898 |
| C506  | Providing and applying 4 mm thick APP modified Bituminous Polyester membrane for waterproofing manufactured from a rich mixture of bitumen and selected polymers blended together to obtain excellent heat resistant flexibility, UV resistance etc. Modified bitumen then coated onto a dimensionally stable carrier to obtain excellent tensile strength, tear and puncture resistance etc complete as per technical specification.  | SQM  | 100      | 0.0001165 |
| 509.0   | Providing and laying wearing course consisting of 25mm thick plain cement concrete of grade M20 (1:1.5:3) with graded aggregate of 12.5mm size cast in panels of maximum size 1.5mx1.5m and reinforced with 0.56 mm dia. galvanised chicken wire mesh and sealing of joints (in grooves of 6mm X 6mm) using silicon /elastomeric compound etc all complete.  | SQM  | 2,754    | 0.0027227 |

| Part C : Bill of Quantities   |  |     |          |           |
|---|--|-----|----------|-----------|
| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |     |          |           |
| Ref.No.   | Description  | UOM | Quantity | Weightage |
| A510  | Providing and laying chequered precast concrete tiles of 22 mm thickness and size 600x600mm conforming to IS 13801 with 15 mm thick 1:4 cement mortar over the top most layer of roofing treatment with fine joints including sealing of joints (silicon/elastomeric sealant) etc all complete. (Water proofing paid elsewhere)        | SQM | 305      | 0.0002888 |
| B510  | Providing and laying chequered precast concrete tiles of 22 mm thickness and size 300x300mm conforming to IS 13801 with 15 mm thick 1:4 cement mortar over the top most layer of roofing treatment with fine joints including sealing of joints (silicon/elastomeric sealant) etc all complete. (Water proofing paid elsewhere)        | SQM | 305      | 0.0002888 |
| C510  | Providing and laying pressed precast concrete tiles of 20 mm thickness and size 300x300/600x600 mm conforming to IS 13801 with 15 mm thick 1:4 cement mortar over the top most layer of roofing treatment with fine joints including sealing of joints (silicon/elastomeric sealant) etc all complete. (Water proofing paid elsewhere) | SQM | 10,552   | 0.0090641 |
| 511.0   | Providing and applying two coats of bitumen grade 85/25 as per IS 702 ( @ 1.7kg/sqm)with 1% antistripping compound conforming to IS 6241 in foundation, wall, column etc on concrete surfaces exposed to soil / ash including surface preparation etc. all complete.   | SQM | 105      | 0.0000326 |
| 513.0   | Providing and mixing water proofing compound conforming to IS:2645 in concrete or cement mortar all complete.  | KG  | 105      | 0.0000204 |
| 517.0   | Providing and laying foam concrete blocks in the toilets/sunken slab etc. complete as directed by engineer in charge.  | CUM | 10       | 0.0000558 |
| 600.0   | JOINTS AND FILLERS: Joints & fillers including all labour, material, equipment, transportation, handling etc at all level as per specification, drawings and as directed by engineer - in - charge.  |     |          |           |
| 601.0   | Supplying & installation of bitumen impregnated fibre board confirming to IS 1838 as joint filler at joints in concrete including nailing, coating of both faces with coal tar pitch/bitumen etc. all complete.  |     |          |           |
| a   | 12 mm wide joints.   | SQM | 15       | 0.0000168 |
| b   | 20 mm wide joints.   | SQM | 15       | 0.0000258 |
| c   | 25 mm wide joints  | SQM | 315      | 0.0006593 |
| d   | 50 mm wide joints  | SQM | 345      | 0.0013683 |
| 602.0   | Supplying and installation of Dura board HD100 or its equivalent as approved by the Engineer, as filler material in joints including nailing, installation as per manufacturer's recommendation etc. all complete.   |     |          |           |
| a   | 12 mm wide joints.   | SQM | 15       | 0.0000204 |
| b   | 20 mm wide joints.   | SQM | 15       | 0.0000318 |
| c   | 25 mm wide joints  | SQM | 8        | 0.0000207 |
| d   | 50 mm wide joints  | SQM | 20       | 0.0000993 |
| 603.0   | Providing and applying polysulphide based sealant conforming to IS:12118 in joints in concrete including cleaning of joints, raking out groove, application of primer, scaffolding etc. all complete for following size grooves:   |     |          |           |
| a   | 25mmX25mm  | RM  | 55       | 0.0000514 |
| b   | 50mmX25mm  | RM  | 205      | 0.0003541 |
| 604.0   | Supplying and filling in position hot applied bitumen sealing compound (Grade A) confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc. all complete.  |     |          |           |
| a   | 10mm X 40mm  | RM  | 155      | 0.0000172 |
| b   | 12mm X 25mm  | RM  | 155      | 0.0000154 |
| c   | 20mmX25mm  | RM  | 105      | 0.0000129 |
| 605.0   | Supplying and installation of commercial quality of expanded polystyrene products from reliable manufacturers as approved by the Engineer, as filler material in joints including nailing, installation as per manufacturer's recommendation etc. all complete.  |     |          |           |
| a   | 12 mm wide joints.   | SQM | 105      | 0.0000092 |
| b   | 20 mm wide joints.   | SQM | 35       | 0.0000049 |
| c   | 25 mm wide joints  | SQM | 30       | 0.0000052 |
| d   | 50 mm wide joints  | SQM | 15       | 0.0000051 |
| 610.0   | Providing and fixing PVC water stops in joints conforming to IS 12200 & IS 15058 all complete for the following: (Bulb or Kicker type)   |     |          |           |
| b   | 230 mm wide and 8 mm thick   | RM  | 15       | 0.0000076 |
| d   | 230 mm wide and 6 mm thick   | RM  | 235      | 0.0001850 |
| 612.0   | Providing and applying approved fire retardant sealant in joints/openings including cleaning of joints/openings, raking out groove, application of primer, scaffolding etc. all complete.  |     |          |           |
| a   | 25mmX25mm  | RM  | 105      | 0.0001743 |
| b   | 50mmX25mm  | RM  | 65       | 0.0002066 |

| Part C : Bill of Quantities   |   |      |          |           |
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| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |   |      |          |           |
| Ref.No.   | Description   | UOM  | Quantity | Weightage |
| 613.0   | Providing and fixing G.I strips minimum 1.5mm thk and 150mm wide including fixing accessories etc. all complete.  | Kg   | 5        | 0.0000012 |
| 614.0   | Providing and fixing aluminium strips minimum 18 SWG thk and 300mm wide over expansion joints with minimum lap of 50mm length including brass / aluminium screws, rawl plugs etc. all complete.   | Kg   | 255      | 0.0001352 |
| 615.0   | Providing and fixing 300 mm wide Stainless steel strips over expansion joints with minimum lap of 50mm length including stainless steel screws, rawl plugs etc. all complete.   | Kg   | 15       | 0.0000124 |
| 700.0   | MS EMBEDMENTS: Embedments including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling etc. at all level as per specification, drawings and as directed by engineer - in - charge.  |      |          |           |
| 701.0   | Supply, fabricating and fixing of mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc. including welding, bolting, cutting, drilling, scaffolding, setting etc. all complete.  | MT   | 21       | 0.0035882 |
| 702.0   | Supply, Fabrication, transportation, delivery at site and erection, installation and alignment of mild steel foundation bolt assembly conforming to IS:2062 and grade 1 of IS:432 in concrete along with nuts, lock nuts (as per IS:1363, 1364 and IS:3138), washers, anchor plates, stiffener plates, protective tape, pipe sleeves, templates etc. including welding, cutting, grinding, threading, drilling etc. all complete. | MT   | 5        | 0.0010871 |
| 703.0   | Same as above items 701 with BHEL supplied material (scrap) free of cost including Fabrication,loading, transportation, unloading and Erection etc. all complete from BHEL store to plant site.   |      |          |           |
| a   | Mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc.   | MT   | 10       | 0.0005659 |
| A703  | Fixing of embedments, inserts, pipe sleeves, angle pieces, anchor bolts of various diameters, plates of dimensions as required etc. including scaffolding, setting in position, transportation from BHEL site stores to work spot etc. all complete.  | MT   | 8        | 0.0004197 |
| 704.0   | Supplying, fabricating, erecting and installing following items in concrete/brickwall for all kind of works, including setting material in concrete, layout, scaffolding, cutting, forming, grinding, drilling, bolting, welding, jointing, testing etc. all complete.  |      |          |           |
| a   | MS pipes of all diameters   | Kg   | 10       | 0.0000020 |
| b   | PVC pipes / conduits of all diameters   | Kg   | 184      | 0.0001534 |
| c   | UPVC pipes / conduits of all diameters  | Kg   | 40       | 0.0000354 |
| Ad  | Providing and fixing carbon steel galvanized (minimum coating 5 micron) anchor fastener (Hilti HRD) of double threaded 6.8 grade (yield strength 480 N/mm <sup>2</sup> ) or equivalent of safe tensile capacity as specified below for brick work with two part expansion polyamide A6 grade sleeve.  |      |          |           |
| i   | 8mm Dia   | EACH | 7        | 0.0000020 |
| ii  | 10mm Dia  | EACH | 7        | 0.0000025 |
| iii   | 14mm Dia  | EACH | 7        | 0.0000046 |
| Ae  | Mechanical expansion fasteners, cold formed stud type having 3 way expansion sleeve of SS 316 grade approved for use in cracked concrete and seismic design with ETA C1/C2 approval or equivalent of safe tensile capacity as specified below for concrete work.  |      |          |           |
| i   | HST3 M8   | EACH | 7        | 0.0000025 |
| ii  | HST3 M10  | EACH | 7        | 0.0000034 |
| iii   | HST3 M12  | EACH | 7        | 0.0000044 |
| iv  | HST3 M16  | EACH | 7        | 0.0000088 |
| v   | HST3 M20  | EACH | 7        | 0.0000140 |
| Af  | Adhesive type Chemical anchor fastener consisting of slow curing epoxy chemical adhesive and threaded rod of carbon steel (minimum grade of 5.8) including nut and washer usable in diamond core drilled holes and in wet/ water submerged holes dispensed through mechanical dispenser HIT RE 500 V3 or equivalent of safe tensile capacity as specified below for concrete work.  |      |          |           |
| i   | HIT-V M8  | EACH | 7        | 0.0000061 |
| ii  | HIT-V M10   | EACH | 7        | 0.0000078 |
| iii   | HIT-V M12   | EACH | 7        | 0.0000104 |
| iv  | HIT-V M16   | EACH | 7        | 0.0000210 |
| v   | HIT-V M20   | EACH | 7        | 0.0000316 |
| vi  | HIT-V M24   | EACH | 7        | 0.0000693 |

| Part C : Bill of Quantities   |  |      |          |           |
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| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |      |          |           |
| Ref.No.   | Description  | UOM  | Quantity | Weightage |
| Ag  | Designing, supplying and fixing rebars in already cast concrete, including drilling, cleaning hole with air blow-out & wire-brush and injecting ETA certified epoxy based chemical HIT RE 500 V3 or equivalent for rebar fixing in dry, water saturated condition/submerged holes conditions for 8mm-32mm dia. with the help of dispenser into a hole diameter and depth as per manufacture specification. Chemical should be made of two components consisting of resin and hardener in the ratio 5:1 in a foil pack of 330/500ml.  |      |          |           |
| i   | 8mm Dia  | EACH | 7        | 0.0000051 |
| ii  | 10mm Dia   | EACH | 7        | 0.0000082 |
| iii   | 12mm Dia   | EACH | 7        | 0.0000109 |
| iv  | 16mm Dia   | EACH | 7        | 0.0000201 |
| v   | 20mm Dia   | EACH | 7        | 0.0000315 |
| vi  | 25mm Dia   | EACH | 7        | 0.0000472 |
| 705.0   | Placing, locking and releasing of Vibration Isolation spring modules over the foundation at all elevations including providing all assistance under the supervision of the supplier, transportation from BHEL store, necessary staging, platforms, leveling, alignment etc. all complete.  | EACH | 84       | 0.0002892 |
| 706.0   | Supply and installation of approved 25mm thick vibration damping resilient pads on/around foundation of vibrating equipment and at other locations all complete.   | SQM  | 7        | 0.0000268 |
| 707.0   | Providing, laying and fixing rails(52kg/rm) and guide rails in concrete for transformer, rail track including cutting of rails, joining of rails, anchoring lugs etc all complete.   | MT   | 2        | 0.0003530 |
| 800.0   | GROUTING: Grouting including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, roughening surface, cleaning, ramming, curing etc. at all level , drawings and as directed by engineer - in - charge.   |      |          |           |
| 801.0   | Providing & grouting with cement slurry mix of approved ratio using pressure pump for water retaining concrete structures as per approved procedure including cost of nipples/ nozzles, cement, admixture, curing, pressure pumps, slurry agitator etc. all complete. Cost shall include fixing of nipples at maximum 500 mm centre to centre spacing, cutting of nipples after completing of grouting, making good of the nipple hole with appropriate non-shrink cement paste, water tightness test etc. all complete wherever specified in the drawing. Cement will be supplied by BHEL free of cost. | SQM  | 12       | 0.0000195 |
| 803.0   | Providing & grouting of pocket holes, pipe sleeves and under base plate of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with mix 1:1:2 (1 cement : 1 coarse sand : 2 aggregate of 6 mm down graded stonechips ) using non shrink admixture as per specification, drawing and direction of engineer-in-charge. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor). Cement will be supplied by BHEL free of cost.                                       | CUM  | 13       | 0.0005952 |
| 804.0   | Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with Conbextra GP-1 or equivalent as per specification, drawing and direction of engineer-in-charge. (Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).   | CUM  | 45       | 0.0050851 |
| 805.0   | Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing, etc. all complete with Conbextra GP-2 or equivalent as per specification, drawing and direction of engineer-in-charge.(Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).   | CUM  | 6        | 0.0007330 |
| 806.0   | Providing Chemical (epoxy) injection grouting with pressure pump for water retaining concrete structures conforming to IS:6494, including fixing nozzles, cost of approved chemical, admixture, curing etc. all complete . Payment shall be made as per the consumption of chemical grout.   | Kg   | 7        | 0.0000357 |
| 900.0   | DOORS & WINDOWS: Doors, windows, ventilators, louvers, roof ventilators, rolling shutters, partitions including all labour, material (unless otherwise specified in BOQ/contract specification), equipments, transportation, handling, preparation of working drawings etc. at all level as per specification, drawings and as directed by engineer - in - charge.   |      |          |           |
| 901.0   | Providing and fixing wooden frame conforming to IS 4021 made of best quality seasoned CP teakwood free from large or loose knots, cracks or other defects including sand paper smoothening, hold fasts, beading, primer and finish painting / polishing etc. all complete with proper wood joinery, accurately set to required lines or levels and rigidly secured in place. (Finish painting / polishing paid separately)   | CUM  | 3        | 0.0009848 |

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| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |   |     |          |           |
| Ref.No.   | Description   | UOM | Quantity | Weightage |
| A901  | Providing and fixing wooden frame conforming to IS 4021 made of best quality seasoned hardwood free from large or loose knots, cracks or other defects including sand paper smoothening, hold fasts, beading, primer and finish painting / polishing etc. all complete with proper wood joinery, accurately set to required lines or levels and rigidly secured in place. (Finish painting / polishing paid separately)   | CUM | 5        | 0.0012295 |
| A902  | Providing and fixing teakwood frame panel door with PVC lamination on both sides shutter as per IS 1003 with 35 mm x 150 mm vertical rail & 35mm x 125 mm horizontal rail and 12 mm thick interlocked panels of teakwood with proper wood joinery including beading, preparation of working drawings, godrej or equivalent make mortice lock with handels on both sides, approved ISI mark anodised fittings like door stopper, 300mm long tower bolts, 16x300mm long aldrops, 125mm long handles on both sides etc. butt hinges, sliding bolt, knobs, (all fitting shall be anodised aluminium color dyed), screws, primer and finish painting / polishing etc. all complete. (Finish painting / polishing paid separately)  | SQM | 38       | 0.0003274 |
| A903  | Providing, fitting and fixing solid core wooden flush door shutter with PVC lamination on both sides as per IS 2202 part II, 35mm thick homogenous particle board bonded with BWP type phenolformaldehyde synthetic resin, particle board core conforming to IS 3087 type I, 35x12 mm thick teakwood beading all around including preparation of working drawings. godrej or equivalent make mortice lock with handels on both sides, approved ISI mark anodised fittings like door stopper, 300mm long tower bolts, 16x300mm long aldrops, 125mm long handles on both sides etc. butt hinges, sliding bolt, knobs, (all fittings shall be anodised aluminium color dyed), finish synthetic paint over primer, screws etc. all complete as per drawing, specification and instruction of engineer in charge. with commercial faces and teak wood edges. (Finish painting paid separately) | SQM | 22       | 0.0001159 |
| A904  | Providing and fixing single or double leaf steel door shutters. Door leaf should be 46 mm thick fully flush double skin door with or without vision lite. Door leaf shall be manufactured from 0.8mm (22 gauge) minimum thick galvanised steel sheet rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centres including void filled with mineral wool (density as per specification), all fittings, Godrej or equivalent make mortice lock with handle on both sides, aldrops, tower bolt, shop and final painting etc all complete.   | SQM | 292      | 0.0041958 |
| A905  | Providing and fixing sliding door shutters ( single or double) with 18 gauge M.S. sheets shutter presenting a flush surface on the outside and inside stiffened with semitubular edge and central stiffening rail which shall convey the lock including fixtures, handle on both sides, guide channels & sliding arrangement, shop and final painting etc all complete.   | SQM | 8        | 0.0001192 |
| A907  | Providing and fixing fire proof steel doors (single or double shutter) with panic devices and vision panel shall be 46mm thk flush design comprising of two outer sheets of 1.2 mm (18 gauge) minimum thick galvanised steel sheet rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centers including all fittings, shop & finish painting with approved post office/signal red color fire resistant paint and mineral wool insulation (64 kg/cum density), vision lite etc. complete and shall be fire proof as per IS:3614, TAC requirements and as per specification. Minimum ratings shall be 2 Hrs.   | SQM | 365      | 0.0072450 |
| 908.0   | Providing and fixing steel windows/ventilator with steel sections as per IS:1038, IS:1361 & IS:7452 latest revision including all fittings, metal beadings, hold fasts, shop and final painting, glazing etc. all complete. (Glazing shall be paid separately)  |     |          |           |
| a   | Openable type   | SQM | 350      | 0.0014206 |
| b   | fixed type  | SQM | 400      | 0.0010678 |
| A908  | Providing and fixing M.S. grills in windows/ventilator as per approved design for security purpose made of M.S. Flats / M.S. square bar of approved design shall be provided to suit security requirements.   | Kg  | 142      | 0.0000256 |
| B908  | Providing and fixing anodised aluminium Grills in windows/ventilator of approved design.  | Kg  | 92       | 0.0000895 |
| C908  | Extra over Item 908 for providing pre-coated (polyester painted) steel windows/ventilators  | SQM | 32       | 0.0000052 |

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| Ref.No.   | Description   | UOM  | Quantity | Weightage |
| A909  | Providing and fixing anodised aluminium work of Jindal, Hindalco or other equivalent approved make for door/window frames, door/window shutters, ventilators, partitions, railing etc. with extruded standard tubular and other sections including all fittings & fixtures and accessories of approved make conforming to IS733 and IS1285, anodised and electro color dyed to required shade according to IS 1868 (minimum anodic coating of grade AC15), fixed with rawl plugs, expansion fasteners, SS screws or with fixing clips, including necessary filling of gaps at junctions, at top, bottom and sides with required PVC/neoprene felt for bi-mettalic protection etc.including preperation of working drawings, aluminium cleat angle, aluminium snap-on-beading for glazing/panelling, stair case tread nosing, with all fittings and fixtures (like tower bolts, handles, door stopper with rubber shoes, 'L' drops, stays, floor springs, hydraulic door closures etc. as applicable), CP brass/stainless steel screws, providing and fixing hinges/pivots, and making provision for fixing of fitting wherever required including cost of PVC/neoprene gasket, all complete as per drawing, specification and instructions of engineer in charge (Glazing and panelling shall be paid seperately).Weight of aluminium section only shall be measured. | Kg   | 19,104   | 0.0206122 |
| A910  | Providing and fixing of aluminium composite panel(ACP) of following thickness with PVDF or polyester coating for interior partition, encasing of columns & bracings, exterior facade works of approved shade', color and inclusive of sub-base frame work (if necessary), sealant etc all complete as per specification.  |      |          |           |
| a   | 3mm thick with minimum 0.2mm topping of precoated aluminium foil on both side.  | SQM  | 1,715    | 0.0123095 |
| 911.0   | Providing and fixing of door closers as per specification,of approved make & quality all complete of following type:  |      |          |           |
| a   | Over head hydraulic door closures as per IS 3564  | EACH | 27       | 0.0000951 |
| A912  | Providing and fixing pressed steel door frames. Door frame shall be Single rebate profile of size 100 x 57 mm made out of 1.20 mm thick galvanised steel sheet (18 gauge) reinforced, drilled and tapped for hinges and locks bolts strikes, hold fasts adjustable floor anchors, floor tiles/weather bars, paintings etc all complete as per specifications.   | Kg   | 1,174    | 0.0003941 |
| B912  | Providing and fixing pressed steel door frames for fire proof doors. Door frame shall be double rebate profile of size 143 x 57 mm made out of 1.60 mm (16 gauge) minimum thick galvanized steel sheet reinforced, drilled and tapped for hinges and locks bolts strikes, hold fasts adjustable floor anchors, floor tiles/weather bars, paintings etc all complete as per specifications.  | Kg   | 1,540    | 0.0005028 |
| 913.0   | Providing and fixing in position rolling shutter of hot rolled double dipped galvanised steel lath section of 18 SWG tested mild steel strips at 75mm rolling centres interlocked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation including wire springs, top cover, primer & shop coats of approved enamel paint etc, all complete as per IS 6248 and specification of approved make of following types: The bottom lath shall be coupled to a lock plate fabricated from 3mm thick galvanised steel plate and securely rivetted with stiffening angles. (partly coiled and lath/full lath).  |      |          |           |
| a   | Hand Operated   | SQM  | 31       | 0.0001649 |
| b   | Mechanically Operated   | SQM  | 114      | 0.0007670 |
| c   | Electrically operated including motors & other accessories  | SQM  | 240      | 0.0017376 |
| A914  | Providing and fixing Solid core PVC doors (25 thk double skin) with PVC frame of sintex or equivalent make including all fitting & fixtures as per specification, drawing and instructions of engineer in charge.   | SQM  | 71       | 0.0004422 |
| 915.0   | Providing, fixing and fitting of glazing of first grade class in steel/aluminium/wooden frames, where ever required, cleaning after fixing including hardware, gaskets, clips, beadings etc. all complete.  |      |          |           |
| b   | 4 mm thick clear float glass  | SQM  | 625      | 0.0020245 |
| d   | 6 mm thick wired glass  | SQM  | 1,155    | 0.0043937 |
| f   | 4 mm thick ground glass   | SQM  | 35       | 0.0001133 |
| g   | 6 mm thick tinted heat reflecting type float glass  | SQM  | 60       | 0.0002591 |
| h   | 6 mm thick clear toughened safety glass   | SQM  | 1,051    | 0.0042682 |
| A915m   | 6 mm thick clear float glass  | SQM  | 455      | 0.0016729 |
| A915n   | One outer 6mm thick tinted heat-reflecting type float glass and one inner 6mm thick toughened float glass hermetically sealed and seperated by 12 mm thick gap for thermal insulation (only single elevation area to be measured).  | SQM  | 339      | 0.0028900 |
| 916.0   | Supplying and fixing weather stripping of approved make and quality to doors as per instructions of engineer in charge and specification complete.  | RM   | 25       | 0.0000119 |
| 917.0   | Providing and fixing 12 mm thick BWP particle board, decorative veneer (prelaminated) on both sides, as panels in aluminium framed door shutter, fixed with necessary snap-on-beading etc. all complete (excluding aluminium works).  | SQM  | 15       | 0.0000627 |

| Part C : Bill of Quantities   |  |      |          |           |
|---|--|------|----------|-----------|
| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |      |          |           |
| Ref.No.   | Description  | UOM  | Quantity | Weightage |
| 920.0   | Roof skylight structure for atrium with 6mm thick Polycarbonate sheet multi (twin) wall fire retardant and ultra violet resistant with sealed open edges for sky light for approved shape like dome, pyramidal etc. Joints are properly sealed with sealant, screws with pvc cap, self tapping screws, epdm rubber gasket.etc all complete as per detailed drawing and specification.  | SQM  | 10       | 0.0000719 |
| A920  | Providing & fixing of 4mm thick Compact Polycarbonate sheet, transparent or smoke tinted, of Lexan Polycarbonate or similar approved including proper sealing with sealant, screws with pvc cap, self tapping screws, epdm rubber gasket.etc all complete as per detailed drawing and specification.   | SQM  | 15       | 0.0001078 |
| A921  | Supplying, installing and commissioning of self sliding mechanism for aluminum door (double shutter) & air curtain including photo operated sensors, fittings, motors, mechanical systems, electrical systems,warranty all inclusive in working condition as per specifications and drawings (aluminum door shutter and its glazing to be paid under separate items)   | EACH | 13       | 0.0029838 |
| A922  | Providing and fixing Semi Unitised STRUCTURAL GLAZING to fixed panels with no aluminium section exposed to outside and only glass panels with silicon joint visible from outside. The system specially designed with extruded aluminium sections of 6063 T5 or T6 alloy conforming to ASTM B 221 and shall be anodized in approved colour with a anodic coating of minimum 20 microns. The mullion shall be fixed to beams / columns adequately designed. The member and bracket shall be fixed with appropriate bolts and expansion fasteners, so as to withstand the dead load of the structural glazing as well as stresses due to wind pressure. The Structural glazing system shall be designed as per BIS code for required wind pressure IS: 875 part III with as per the prevailing site conditions and building profiles and use of aluminium section alloy as per IS : 8147. System design to strictly consider for thermal movements, air infiltration, water penetration, seismic movement and structural movement. Silicon sealant structural grade and weathering grade shall be GE/Dow corning/Sikka or Equivalent. (Glazing panels are separately payable) | kg   | 15       | 0.0000146 |
| B922  | Providing and fixing Vision glass for structural glazing panels 24mm thick insulated double glazing having 6mm thick low E glass blue tinted toughened glass on outer side and 6mm thick clear toughened float low E glass on inner side with 12mm air gap & hermetically sealed as per specification. The structural glazing panels shall be factory glazed with structural silicon as per standard practice and under the strict supervision of the engineering staff (on site glazing is not permitted, except for replacement of damaged/broken glasses). The contractor shall obtain structural stability report of the structural glazing system from a consultant to be get approved by the engineer-in- charge.  | SQM  | 15       | 0.0001279 |
| C922  | Providing and fixing Spandrel Glazing for structural glazing panels of 6mm Thick Toughened glass of Saint Gobain ET 450 or equivalent with Properties ( VLT 42%, Ext Ref 11% , Int Ref 11%, Solar Factor 0.39, U value 5.0 W/Sq. mtr-K ). Providing and fixing glass with insulation in Spandrel area with 1mm thick GI sheet fabricated in tray form duly filled with 50mm thick glass wool of density 48 kgs/cum of approved make with one side laminated with aluminium foil and other side laminated with black tissue with facing glazing of approved make and colour all (insulation shall paid extra under item no.1506).   | SQM  | 15       | 0.0001240 |
| D922  | Providing and fixing G. I. flashing at soffit level / sill level made out of 1.5mm Thick G.I. Sheet with powder coated bent to required profile and shape to seal the soffit area.   | SQM  | 15       | 0.0000573 |
| A923  | Providing and fixing 12 mm thick bison Cementitious board Partition wall with GI Framework and 12 mm thick bison board cladding on either side of GI section (50x38mm) in horizontal & vertical framework 600 mm c/c spacing as required for suitable rigidity & fixed from floor to ceiling of above false ceiling partition walls as reqd.   | SQM  | 1,425    | 0.0085816 |
| 1000.0  | BRICKWORK: Brickwork masonry including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding etc. at all levels as per specification, drawings and as directed by engineer - in - charge. (Cement supply by BHEL free of cost)   |      |          |           |
| 1001.0  | Providing brick work in cement mortar 1:6 (1 part cement : 6 parts coarse sand) in walls, chambers etc. in thickness varying from 230mm to 460mm at all depths, places and positions below plinth including raking out joints, curing, scaffolding etc. complete excluding plastering and painting.  |      |          |           |
| a   | Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)  | CUM  | 7        | 0.0001095 |
| 1002.0  | Providing brick work in cement mortar 1:6 (1 cement : 6 coarse sand) in walls, chambers etc. in thickness 230mm at all heights, places and position above plinth including raking out joints, curing, scaffolding etc complete excluding plastering and painting.  |      |          |           |



| Part C : Bill of Quantities   |  |     |          |           |
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| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |     |          |           |
| Ref.No.   | Description  | UOM | Quantity | Weightage |
| a   | Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm <sup>2</sup> (including cost of cement for brick making)   | CUM | 6,091    | 0.1137669 |
| 1003.0  | Providing brick work in cement mortar 1:4 (1 cement 4 coarse sand) in partition walls, chambers etc. in thickness 115mm at all heights, places and position above or below plinth/graded level including providing two nos. 6 mm diameter MS bars at every third layer, raking out joints, curing, scaffolding etc complete excluding plastering and painting as per specification.  |     |          |           |
| a   | Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm <sup>2</sup> (including cost of cement for brick making) 29  | SQM | 1,205    | 0.0027537 |
| 1005.0  | Breaking of existing brick work at all levels including plastering, removing the rubbish up to a distance of 500 m including transportation, loading, unloading etc. all complete as directed by the engineer.   | CUM | 35       | 0.0001344 |
| 1006.0  | Providing and encasing of structural steel member with masonry work around flanges, webs etc. and filling the gap between steel and masonry by minimum 12mm thick mortar of 1:6. Encased member shall be wrapped with chicken wire mesh with 50mm lap etc. complete as per specification. (Chicken wire mesh to paid separately)   |     |          |           |
| a   | Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm <sup>2</sup> (including cost of cement for brick making)   | CUM | 235      | 0.0038104 |
| 1008.0  | Making openings in existing brick wall or partition wall including making good the broken edges/surface with cement mortar 1:6 etc. complete.  | CUM | 10       | 0.0000454 |
| 1009.0  | Supply and placing in position mild steel wire fabric of square mesh 25 mm size and wire diameter of 2 mm for encasing of steel sections in concrete including cutting, bending, fixing etc. complete.   | SQM | 305      | 0.0000982 |
| 1010.0  | Filling existing brick wall/ partition wall opening at all level including making good the broken edges/surface with cement mortar 1:6, painting, finishing to match with existing finishing, scaffolding/supporting at all level, removal of debris upto a lead of 1 km including loading, unloading, transportation etc. all complete.   | SQM | 65       | 0.0001379 |
| 1011.0  | Providing and filling brick bats in soak pits all complete.  | CUM | 127      | 0.0003564 |
| 1100.0  | DAMP PROOF COURSE: Damp proof course including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, shuttering, centering, curing etc at all level as per specification, drawings and as directed by engineer - in - charge. (Cement supply by BHEL free of cost)   |     |          |           |
| 1101.0  | Providing Damp Proof Course of following thickness with 1:1.5:3 concrete (10mm and down graded aggregate) with 2% of approved admixture of water proofing compound all complete. Two layers of hot bitumen coating 85/25 grade as per IS:702 @ 1.7Kg./sqm shall be applied one before & one after the DPC.   |     |          |           |
| a   | 40mm thick   | SQM | 103      | 0.0000661 |
| 1200.0  | PLASTERING: Cement mortar plaster including making grooves wherever required including all labour, material (unless otherwise specified in BOQ/contract specification), scaffolding, curing etc at all level as per specification, drawings and as directed by engineer - in - charge. (Cement supply by BHEL free of cost)  |     |          |           |
| A1201   | Providing 20mm thick plaster in two layers outside the building/rough surface of internal wall in cement mortar 1:4 on walls, finished to a smooth finish including providing 3mmx3mm size grooves at junctions of two dissimilar materials all complete.The two layer include 1:4 cement sand mortar 12mm thick first layer and 1:3 cement sand mortar with 8mm.  | SQM | 16,651   | 0.0185053 |
| A1202   | Providing 12mm thick plaster inside the building/boundary wall in cement mortar 1:4 on walls finished to a smooth finish as per specification all complete.  | SQM | 39,445   | 0.0176264 |
| 1204.0  | Providing 6mm thick plaster on ceiling in cement mortar 1:4 finished to a smooth all complete.   | SQM | 2,805    | 0.0011885 |
| A1204   | Providing 6mm thick plaster on ceiling in cement mortar 1:3 finished to a smooth all complete.   | SQM | 305      | 0.0001292 |
| 1205.0  | Providing 12mm thick plaster in walls, drains/culverts with a paste of neat cement @ 1kg/sqm and rubbed smooth with trowel etc. all complete.  | SQM | 65       | 0.0000256 |
| 1207.0  | Forming groove of uniform size from 12X12 mm upto 25X15 mm in plastered surface as per approved pattern, using wooden battens nailed to the under layer, including removal of wooden battens, repair of the edges of plaster panel and finishing the groove etc. complete as per specification, drawing and the instructions of engineer in charge.  | RM  | 1,075    | 0.0000896 |
| 1208.0  | Providing and laying encasement to box type steel beams at all levels with lath plaster 50 mm nominal thickness with cement plaster (1:4) over chicken wire mesh including all labour, materials, equipment, handling, transporting, mixing, placing, leveling, curing and cleaning, finishing the exposed surfaces etc including centering and shuttering all complete as per specification, drawing and instructions of enginner in charge (chicken wire mesh to be paid separately) | SQM | 55       | 0.0000740 |

| Part C : Bill of Quantities   |  |     |          |           |
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| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |     |          |           |
| Ref.No.   | Description  | UOM | Quantity | Weightage |
| A1210   | Providing drip coarse on plastered surface at all elevations for all type of work such as chajjas, parapet, projections etc. including scaffolding, finishing etc. complete with all labour, tools and plants as per specification, drawing and instructions of engineer in charge.  | RM  | 1,031    | 0.0003103 |
| 1300.0  | FINISHES TO CONCRETE / PLASTERED SURFACES: Finishes, painting to concrete, plastered surfaces including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, surface preparation, scaffolding etc. at all level as per specification, drawings and as directed by engineer - in - charge.   |     |          |           |
| A1304   | Two or more coats of acrylic distemper of approved brand and manufacture to give an even shade including a priming coat with distemper primer and 3 mm thick white cement putty punning on walls and ceiling (Birla White/ JK White or Similar approved) including preparation of surface, staging, etc. to achieve a smooth even surface all complete as per specification and as directed by Engineer  | SQM | 43,199   | 0.0186038 |
| 1305.0  | Providing and applying two or more coats of acrylic emulsion paint as per IS 5411 of approved brand, shade and manufacture to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturer's guideline. (Cost of primer is included in this item and wall putty is payable under separate item).   | SQM | 21,729   | 0.0066912 |
| A1307   | Providing and applying ready made Acid/Alkali resistant Epoxy Paint over areas other than steel structure with suitable pigments of approved shade as per manufacturer's specification and direction of Engineer.  | SQM | 5,956    | 0.0044956 |
| A1311   | Two or more coats of synthetic enamel paint of approved make made from synthetic resins and drying oil with rutile titanium dioxide and other selected pigments to give smooth, hard, durable & glossy finish to all interior and exterior surfaces including base preparation, primer etc. complete as per manufacturer's specifications.   | SQM | 8,177    | 0.0013442 |
| A1313   | Providing and applying resin bonded granular textured finish (Vineratex), for external applications of approved natural color/shade applied on cured and dried plaster surface with a dry film thickness of minimum 2 mm. The final finish shall have UV resistance, fungus, bacterial resistance properties all complete with grooves filled with poly sulfide sealant of matching color and shade as per specification/drawing/approval of engineer in charge.   | SQM | 953      | 0.0008892 |
| A1314   | Providing and applying textured finish (sandtex matt), for external applications of approved natural color/shade applied on cured and dried plaster surface. Cost shall include surface preparation and primer application. The final finish shall have UV resistance, fungus, bacterial resistance properties all complete with grooves filled with poly sulfide sealant of matching color and shade as per specification/drawing/approval of engineer in charge.   | SQM | 255      | 0.0003176 |
| A1317   | Providing and applying 3 mm thick white cement putty punning on walls and ceiling (Birla White/ JK White or Similar approved) including preparation of surface, staging, etc. to achieve a smooth even surface all complete as per specification and as directed by Engineer.  | SQM | 32,029   | 0.0074158 |
| A1319   | Providing and applying two or more coats of waterproof external quality acrylic based emulsion paint of approved brand and manufacturer as per approved shade, over one or more coat of primer after necessary cleaning/ washing, preparing the surface using coir brush/ wire brush, sand paper, including filling of cracks with putty wherever required etc. all complete to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturer's guidelines. The final finished coating shall be fungus resistant, UV resistant, water repellant and extremely durable with color fastness as per specification. | SQM | 9,901    | 0.0031635 |
| 1400.0  | FLOORING AND SKIRTING: Flooring and skirting at all level including base layer, labour, material (unless otherwise specified in BOQ/contract specification), equipments, transportation, handling, curing, polishing etc. at all level as per specification, drawings and as directed by engineer - in - charge. (Cement supply by BHEL free of cost)  |     |          |           |
| A1401   | Providing and laying 50 mm thick heavy duty cement concrete in flooring with metallic hardener pigmented topping 12mm thick uniform graded treated iron particles in flooring. Under layer of 38mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5mm well graded) and top layer of 12mm thick metallic concrete of mix 1:2 (1 cement hardner mix with approved quality metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, glass strips etc. all complete. (Quoted item rate shall be inclusive of providing glass joint strips)                                     | SQM | 38,930   | 0.0493045 |

| Part C : Bill of Quantities   |  |     |          |           |
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| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |     |          |           |
| Ref.No.   | Description  | UOM | Quantity | Weightage |
| B1401   | Providing and laying 40 mm thick heavy duty patent stone cement concrete in flooring with metallic hardener pigmented topping 12mm thick uniform graded treated iron paricles in flooring. Under layer of 28mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5mm well graded) and top layer of 12mm thick metallic concrete of mix 1:2 (1 cement hardner mix with approved quality metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, glass strips etc. all complete for following (Quoted item rate shall be inclusive of providing glass joint strips): as per spec.  | SQM | 105      | 0.0001267 |
| 1402.0  | Providing and laying 25 mm thick heavy duty cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates ) flooring with metallic hardener pigmented topping of 10 mm thick uniform graded treated iron particles in skirting and dado. Under layer of 15mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5 mm well graded) and top layer of 10mm thick metallic concrete of mix 1:2 (1 cement hardner mix with approved quality metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete as per specification. (Quoted item rate shall be inclusive of providing glass joint strips). | SQM | 844      | 0.0009224 |
| 1406.0  | Providing and laying polished Kota stone 18mm to 20mm thk in flooring. Under bed shall average 30mm thk of 1 cement : 2 sand : 4 stone aggregates by volume and brought to proper level. The kota stone slabs/tiles laid over under bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry @4.4kg/sqm spread over the surface with fine joint finished including pigments, curing, grinding, granite polishing etc. all complete.  | SQM | 105      | 0.0004109 |
| 1409.0  | Providing polished Kota stone 14mm to 16mm thk in skirting projecting 6mm from adjacent plaster minimum 12 mm thick cement mortar bedding of 1:3 (1 cement : 3 sand) with thick cement slurry @4.4kg/sqm spread over the surface with fine joint finished including cutting brickwall upto the required depth, edging, finishing etc. all complete.  | SQM | 105      | 0.0003491 |
| 1412.0  | Providing and laying 18-20mm thick polished Granite stone of approved color and texture in flooring. Under bed shall average 30 mm thick of 1 cement : 2 sand : 4 stone aggregate by volume and brought to proper level. The granite stone slabs/tiles laid over under bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry @3.3kg/sqm spread over the surface with fine joint finished including pigments, curing, grinding, granite polishing etc. all complete.   | SQM | 9,197    | 0.0626688 |
| 1415.0  | Providing and laying polished Granite stone 14-16mm thk in skirting and dado with 6mm thick projection from adjacent plaster including mortar ,cement slurry ,pigments, curing, grinding,moulding, granite polishing etc. all complete.  | SQM | 205      | 0.0011885 |
| 1416.0  | Providing and laying vitrified ceramic tiles of polished variety of size 600x600 from reputed / approved manufacturer, complete including underbed of cement mortar 1:3 minimum 20mm thick underbed for flooring and 12mm thick underbed for dado/skirting with neat cement slurry @3.3Kg/sqm etc. all complete for following  |     |          |           |
| c   | 7mm thick tiles In skirting and dado upto specific height  | SQM | 260      | 0.0008350 |
| d   | 10mm thick tiles In skirting and dado upto specific height   | SQM | 65       | 0.0002134 |
| A1417   | Providing and laying vitrified ceramic tiles of matt finish of minimum size 400x400mm from reputed / approved manufacturer including underbed of cement mortar 1:3 with neat cement slurry etc. all complete for following.  |     |          |           |
| a   | 7mm thick tiles In flooring  | SQM | 15       | 0.0000494 |
| b   | 10mm thick tiles In flooring   | SQM | 405      | 0.0013934 |
| A1418   | Providing and laying non-skid, full body vitrified, 10 mm thick non-porous, homogenous, abrasion resistant, floor tiles of 1st quality dual charged similar to MARBONITE, FERRASTONE of BOSS Profile Ltd, RESTILE, ENDURA of H & R Jonson (India) Pvt. Ltd of size minimum 600 mm x 600 mm of approved colour in flooring and shall be laid over minimum 30mm thick underbed of 1 part cement and 3 parts coarse sand by weight mixed with sufficient water, complete as per specification.  |     |          |           |
| b   | 600X600 mm   | SQM | 3,532    | 0.0125038 |
| B1418   | Providing and laying non-skid, full body vitrified, 10 mm thick non-porous, homogenous, abrasion resistant, floor tiles of 1st quality dual charged similar to MARBONITE, FERRASTONE of BOSS Profile Ltd, RESTILE, ENDURA of H & R Jonson (India) Pvt. Ltd of approved colour in skirting and shall be laid over cement mortar of 1 part cement and 3 parts coarse sand by weight mixed with sufficient water, complete as per specification.  | SQM | 43       | 0.0001529 |

| Part C : Bill of Quantities   |   |     |          |           |
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| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |   |     |          |           |
| Ref.No.   | Description   | UOM | Quantity | Weightage |
| C1418   | Providing and laying vitrified tiles of 1st quality, full body vitrified, 10 mm thick nonporous, homogenous, abrasion resistant cover base of matching colour, internal and external corner strip similar to MARBONITE, FERRASTONE of BOSS Profile Ltd, RESTILE, ENDURA of H & R Jonson (India) Pvt. Ltd of approved size & colour in flooring and shall be laid over minimum 30mm thick underbed of 1 part cement and 3 parts coarse sand by weight mixed with sufficient water, complete as per specification.  |     |          |           |
| a   | 400X400 mm  | SQM | 45       | 0.0001526 |
| b   | 600X600 mm  | SQM | 323      | 0.0011435 |
| D1418   | Providing and laying vitrified tiles of 1st quality, full body vitrified, 10 mm thick nonporous, homogenous, abrasion resistant cover base of matching colour, internal and external corner strip similar to MARBONITE, FERRASTONE of BOSS Profile Ltd, RESTILE, ENDURA of H & R Jonson (India) Pvt. Ltd of approved size & colour in skirting and shall be laid over cement mortar of 1 part cement and 3 parts coarse sand by weight mixed with sufficient water, complete as per specification.  | SQM | 1,085    | 0.0038612 |
| 1419.0  | Providing and laying granite stone slab of 20mm thickness single piece for wash basin / sink slab /facia of black or approved colour including 20mm underbed of cement mortar 1:3 with cutting,making corners,moulding and opening etc. all complete.   | SQM | 60       | 0.0005669 |
| 1423.0  | Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles conforming to IS:4457 in flooring/Dado beded and jointed with epoxy mortar all complete for following thicknesses. The tiles should be abrasion resistant & durable.  |     |          |           |
| a   | 20mm thick  | SQM | 3,192    | 0.0115071 |
| A1425   | Providing and laying polished Marble slabs (Aranga white and Abu green marble or Baroda green & Jaisalmer yellow combination or equivalent approved shade/color /design) 18 mm thk in staircase landing/skirting and corridors over minimum 20 mm thick underbed of 1 cement : 2 sand : 4 stone aggregates by volume mixed with sufficient water to form a stiff workable mass. The marble slabs shall be laid over under-bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including moulded marbel nosing, pigments, curing, grinding, making corners, granite polishing etc. complete as per spec. | SQM | 255      | 0.0015977 |
| 1426.0  | Providing and laying marble skirting /dado (Aranga white or approved shade/color /design) equivalent of minimum 20mm thickness projecting 6mm from adjacent plaster all complete including underbed 20mm cement mortar 1:3, with thick cement slurry 3.3kg/sqm spread over the surface scaffolding etc. all complete.   | SQM | 35       | 0.0001722 |
| 1427.0  | Providing and fixing glazed ceramic tiles of approved color and design of size 200x300mm / 300x300mm in dado of approved size, projecting 6mm uniformly from adjacent plaster or wall finish. The mix for 20mm thick underbed plaster shall consist of 1part cement and 3 parts sand by weight. fairly moist but firm, tiles shall be pressed over under bed by applying cement slurry @ 3.3kg/sqm including pigments, curing etc all complete for following thicknesses:   |     |          |           |
| a   | 5mm thick   | SQM | 805      | 0.0017837 |
| b   | 7mm thick   | SQM | 115      | 0.0002396 |
| A1428   | Providing and laying flexible electric insulated PVC synthetic sheet as per IS 15652- 2006 of Suntex Insulatic Pvt. Ltd. Or similar all complete as per specification.  | SQM | 2,638    | 0.0060590 |
| 1430.0  | Providing and fixing dividing strips in joints of cast in situ floorings at various elevations, finishing, all labour, material etc. complete as per drawing, specification and instructions of engineer in charge.   |     |          |           |
| a   | Glass strips 40 mm wide and minimum 6 mm thick.   | RM  | 35       | 0.0000036 |
| b   | Aluminium strips 40 mm wide and minimum 3 mm thick  | RM  | 15       | 0.0000033 |
| A1430   | Providing and fixing dividing strips in joints of cast in situ floorings at various elevations, finishing, all labour, material etc. complete as per drawing, specification and instructions of engineer in charge.   |     |          |           |
| a   | Glass strips 40 mm wide and minimum 4 mm thick.   | RM  | 15       | 0.0000016 |
| b   | PVC strips 40 mm wide and minimum 2 mm thick  | RM  | 15       | 0.0000021 |
| c   | Aluminium strips 40 mm wide and minimum 2 mm thick  | RM  | 15       | 0.0000033 |
| A1432   | Providing and laying self levelling epoxy flooring cosisting of first coat of solvent free resin based dispersion primer @ 200gm/sqm , first layer of epoxy floorin @4.4kg/sqm of 2mm thckness,second layer of primer@100gm/sqm,final decorative epoxy topping @3.6 Kg/Sqm of approx 2mm thickness complete as per specification. including all material, labour, etc all complete.   | SQM | 752      | 0.0014765 |
| 1500.0  | ROOFING / SIDE CLADDING: Roofing / side cladding work including all labour, material ( unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding, laps, hooks, washers, corner pieces etc. at all level as per specification, drawings and as directed by engineer - in - charge.   |     |          |           |

| Part C : Bill of Quantities   |   |         |          |           |
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| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |   |         |          |           |
| Ref.No.   | Description   | UOM     | Quantity | Weightage |
| 1502.0  | Designing, providing, erection and fixing permanently color coated galvanised MS troughed metal sheet decking plate of approved colour and conforming to class3 of IS 14246 over roof purlins for cast-in-situ roof slab as per relevant IS code and specification. Bare metal thickness of deck plate shall be minimum 0.8mm with minimum trough depth of 44 mm having minimum yield strength of 250 MPa and shall serve as permanent shuttering to the roof slab 100mm thick measured over crest of metal decking & shall have adequate strength to support weight of green concrete and imposed loads of min 150 kg/sqm during construction between purlins as per manufacturer's recommendations/ calculations/ test certificates for approval including fixing of plates to purlins, side lapping, end lapping etc. all complete for below mentioned spans. The sheet shall be permanently coated with silicon modified polyester paint of minimum 20 micron DFT on exposed surface (facing operating floor) and minimum 7 micron on other face over epoxy primer applied over hot dipped galvanising @ 275 gm/sqm including fixing of sheet to purlin with self drilling white zinc plated heat treated carbon steel screws of minimum 5.6 mm dia @ 260mm c/c in the trough and stitch screws between two adjacent sheets and sealing with epoxy sealant. Measurement of profile sheeting shall be of the plan area of roof covered by MS trough metal decking. |         |          |           |
| a   | Span Upto 1800mm  | SQM     | 3,110    | 0.0101530 |
| 1503.0  | Providing and fixing shear connectors of mild steel studs having 16mm dia and minimum 75 mm projected length above purlin passing through metal decking as per relevant IS codes and specification.   | QUINTAL | 12       | 0.0005636 |
| 1505.0  | Designing, providing, Erection and fixing profiled External Cladding sheet manufactured out of 0.55 mm TCT(Total Coated Thickness) of permanently colour coated zincalume steel (150gsm. zinc-aluminium alloy coating total of both sides as per AS 1397:1993) having 300MPa yield strength. The colour coating shall comprise of 20 microns finish coat over a 5 micron primer coat on the exposed side and a back coat of 5 micron over a primer coat of 5 micron on reverse side. The sheet shall have 500 mm cover width, 47mm height crests at 250mm centres with special male/female side laps and anti-siphoning features to prevent leakage. The sheet shall be fixed with the help of concealed compatible interlocking clips and wafer head zinc coated self drilling fasteners/screws 4.2 X 25mm long on to the sub-girts. The clips shall be concealed and no fasteners are to penetrate the external sheeting, all complete as per specification.  |         |          |           |
| a   | final painting with Silicon Modified Polyester(SMP)   | SQM     | 31,354   | 0.0700544 |
| 1509.0  | Designing, providing, erection and fixing profiled Internal Cladding sheet manufactured out of 0.6 mm TCT(Total Coated Thickness) of permanently colour coated zincalume steel (150/180 gsm. zinc-aluminium alloy coating mass total of both sides as per AS 1397:1993). The colour coating shall comprise of 20 microns finish coat over a 5 micron primer coat on the exposed side and a back coat of 5 micron over a primer coat of 5 micron on reverse side. The sheet shall have 980 mm cover width, 28mm height crests at 195mm centres with special male/female side laps and anti-siphoning features to prevent leakage. The sheet shall be fixed to the structure by means of self drilling fasteners no. 12-24 X 25mm conforms to AS :3566 Class-3 long at valley. Sub- girts of size 50mm X 50mm X 50mm manufactured out of 16G GI (1.6mm GI) 'Z' shape would be fixed the inner sheeting on face side at runner locations all complete as per specification.  |         |          |           |
| a)  | For final painting with Silicon Modified Polyester(SMP)   |         |          |           |
| ii)   | For zincalume sheet 180gsm. And having 240MPa yield strength.   | SQM     | 15,563   | 0.0437809 |
| 1511.0  | Providing and fixing insulation of resin bonded mineral wool of 50 mm nominal thickness conforming to IS 8183 having a density of 32 kg/cum glass wool or 48 kg/cum for rock wool, for cladding/under deck insulation including application of glue and tying with lacing wire, for glass/rock wool as per manufacturer's recommendations.  |         |          |           |
| a   | For insulation in Sandwich Cladding   | SQM     | 13,413   | 0.0168943 |
| b   | For underdeck insulation below RCC slabs  | SQM     | 4,318    | 0.0054987 |
| A1511   | Providing and installing under deck insulation using Closed Cell Elastomeric Nitrile Rubber (minimum 25mm thick) of density 40 to 60 kg/cum fixed at various elevations with rawl plugs including clips etc as per specification.   | SQM     | 2,160    | 0.0068966 |
| A1518   | Providing and installing fire resistant under deck insulation using Lloyd Foam or equivalent 50 mm thick polyurethane Foam of density 36 kg/cubic meter including minimum 0.05 mm thick aluminium foil on exposed surface followed by 0.56 mm dia and 24 Gx 25 mm mesh GI wire netting, fixed at various elevations with glue/rawl plugs including clips.   | SQM     | 20       | 0.0000255 |

| Part C : Bill of Quantities   |  |     |          |           |
|---|--|-----|----------|-----------|
| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |     |          |           |
| Ref.No.   | Description  | UOM | Quantity | Weightage |
| 1600.0  | FALSE CEILING: False ceiling including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, suspension system etc at all level as per specification, drawings and as directed by engineer - in - charge.  |     |          |           |
| A1601   | Providing and fixing Moisture and fire resistant glass fibre reinforced gypsum plaster board (GRG) ceiling (having gypsum core mixed with glass fibre) system consisting of metal supporting grid system forming panels of specified size, suspended from RCC slab/structural steel or catwalkway grid above with 4 mm (minimum) galvanised wires (rods) with special height adjustment clips, including preparation of working drawing, providing openings for AC ducts, return air grills, light fixtures etc (but excluding the cost of catwalkway grid) all complete as per drawings, specification and instructions of the engineer.  |     |          |           |
| a   | 12.5 mm thick GRG board with galvanised light gauge steel load bearing supporting GI frame and finished flat (seamless).   | SQM | 234      | 0.0004063 |
| b   | 12.5 mm thick GRG board in profile (dome ,curved profiled etc.) with galvanised light gauge steel load bearing supporting GI frame and finished smooth (seamless).   | SQM | 60       | 0.0001564 |
| A1603   | Providing and fixing permanently colour coated aluminium false ceiling of approved colour and Luxalon 84 C or approved equivalent with corrosion resistant aluminium alloy panels of minimum thickness 0.5mm including 25mm thick mineral wool insulation(density 48 kg/cum) conforming to IS:8183 bound in polythene bags on top of panels. Additional hangers and height adjustment clips shall be provided for return air grills, light fixtures, A.C. ducts etc all complete. Suitable M.S. channel grid with minimum MC 75 shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. (Materials for structural platform grid made up of MS Channels/ Beams / Angles shall be supplied by BHEL and shall be paid under ST No 2301)  | SQM | 3,841    | 0.0158566 |
| A1604   | Providing, fixing and laying acoustic permanently colour coated plain/perforated aluminium false ceiling of approved colour with stove enamel finish of approved make of either lineal panel system or aluminium tile/plank system with corrosion resistance aluminium alloys panels of minimum thickness 0.5mm including 25mm thick mineral wool insulation (as per IS:8183) bound in polythene bags on top of panels. Additional hangers and height adjustment clips shall be provided for return air grills, light fixtures. A.C. ducts etc. suitable M.S. channel (minimum MC 75) grid 1200 c/c maximum shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc.The work to be complete as per specifications, drawings and direction of engineer.(Materials for structural platform grid for movement made up of MS Channels/ Beams / Angles shall be supplied by BHEL and shall be paid under ST No A2301) | SQM | 1,146    | 0.0131502 |
| A1608   | Providing and Fixing CALCIUM Silicate Board/Tiles in false ceiling of HILUX or AEROLITE or equivalent consisting of metal supporting grid system forming panels of specified size, suspended from RCC slab/structural steel with 4 mm (minimum) galvanised wires (rods) with special height adjustment clips, including preparation of working drawing, providing openings for AC ducts, return air grills, light fixtures etc all complete as per drawings, specification and instructions of the engineer.   | SQM | 800      | 0.0043751 |
| B1608   | Providing and fixing 25 mm thick resin bonded mineral wool insulation (as per IS:8183) bound in polythene bags on top of false ceiling panels. The work to be complete as per specifications, drawings and direction of engineer.  | SQM | 2,596    | 0.0016589 |
| 1700.0  | RAIN WATER DOWN TAKE PIPES: Rain water down take pipes at all level including all labour, material (unless otherwise specified in BOQ/contract specification), transportation, 2 coats of approved paint over one primary coat, fixtures, accessories etc as per specification, drawings and as directed by engineer - in - charge.  |     |          |           |
| 1707.0  | Providing and fixing GI down take pipes conforming to IS:1239 /IS:3589 of medium duty all complete for following diameters.  |     |          |           |
| b   | 150 mm Dia   | RM  | 5,765    | 0.0242532 |
| A1709   | Providing and fixing HDPE down take pipes of pressure rating PN 4 conforming to IS:4984 as per specification of following diameters.   |     |          |           |
| a   | 110 mm Dia   | RM  | 15       | 0.0000152 |
| b   | 160 mm Dia   | RM  | 245      | 0.0003784 |
| 1800.0  | MISCELLANEOUS: Miscellaneous works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level unless otherwise specified as per specification, drawings and as directed by engineer - in - charge. Cement will be supplied by BHEL free of cost.   |     |          |           |

| Part C : Bill of Quantities   |   |      |          |           |
|---|---|------|----------|-----------|
| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |   |      |          |           |
| Ref.No.   | Description   | UOM  | Quantity | Weightage |
| 1801.0  | Providing and Filling in trenches, plinths, area paving and other underground structures with graded stone aggregate of size range 63 mm to 45 mm in layers not exceeding 230 mm in thickness including breaking of stone boulders to required sizes, filling the interstices with selected sand and compacting to 85 % of original volume of stone stack for all lifts etc. all complete. Payment shall be made for the measurement of the volume of the compacted fill. | CUM  | 1,100    | 0.0049893 |
| 1802.0  | Supply and laying approved quality Stone aggregate 40mm size in transformer yards.  | CUM  | 2,105    | 0.0134371 |
| 1804.0  | Providing and fixing weep holes in Retaining wall, drains, etc consisting of 100 mm dia HDPE pipe sleeves with single side covering for the pipe mouth with galvanised welded wire fabric of 20 mm sq. opening all complete.  | EACH | 15       | 0.0000056 |
| 1807.0  | Anti termite chemical treatment of soil with Chlorpyrifos/Lindane E.C. 20% with 1% concentration conforming to IS:8944 and as per IS 6313 all complete. (Plinth area of building at ground floor only shall be measured for payment).   | SQM  | 15       | 0.0000049 |
| A1808   | Laying of Earthing Mat (Main Grounding Conductor), transportation from yard stores, loading, unloading, cutting to length, welding, protective painting of joints etc. all complete. (Excavation & Back filling shall be paid separately under respective item of earth work. Earthing mats/rods shall be supplied by BHEL free of cost)  | MT   | 27       | 0.0006468 |
| A1809   | Construction of Treated Earthing pit as per drawing with charcoal & salt, GI pipes, earth electrodes, GI wire, GI strips, brick chamber with covers including associated earthwork etc. all complete.(Material for GI pipes, earth electrodes, GI wire, GI strips shall be supplied by BHEL free of cost).  | EACH | 50       | 0.0025917 |
| 1810.0  | Construction of below ground earthing system test links as per drawing/ sketches including concreting, reinforcement, formwork, providing & fixing GI strip etc as per drawing & specification (excavation & backfilling only will be paid under applicable BOQ items.  | NO.  | 8        | 0.0001433 |
| 1811.0  | Construction of below ground earthing system earth electrodes as per drawing and specification. ( Excavation and backfilling only will be paid under applicable BOQ items)  | EACH | 18       | 0.0000842 |
| 1812.0  | Construction of below ground earthing system - Earth connection and riser pig tails as per drawing and specification. ( Excavation and backfilling only will be paid under applicable BOQ items& steel shall be supplied by BHEL free of cost.)   | EACH | 25       | 0.0001005 |
| A1813   | Construction of Electronic Test Pit with charcoal & salt, GI pipes, GI earth electrodes, GI wire, GI strips, brick chamber with covers including associated earthwork etc. all complete.(Material for GI pipes, GI earth electrodes, GI wire, GI strips shall be supplied by BHEL free of cost)   | EACH | 8        | 0.0004151 |
| A1814   | Construction of Untreated Test Pit for Interconnection as per drawing/ sketches including brickwork, plaster, concreting, reinforcement, formwork, providing & fixing GI strips/pipes, GI wires, covers etc as per drawing & specification including associated earthwork.  | EACH | 8        | 0.0003186 |
| 1815.0  | Providing and fixing GI rungs in concrete/brick walls having zinc coating of minimum 900 g/sqm etc. all complete.   | Kg   | 25       | 0.0000042 |
| 1818.0  | Fire proofing of steel structures with VERMICULITE cementitious coating including supply of all materials for vermiculite materials, reinforcement mesh (3mm thick wire, 50x50 size mesh) , nuts, tie wires, weldings, surface preparation, curing, staging, compatible paintings etc. all complete.  | CUM  | 7        | 0.0014201 |
| 1822.0  | Providing & filling Bentonite Powder (Sodium base) mixed with water in electronic earthing pit as per drawing & direction below ground level including all materials, transportation, labour, incidental etc all complete as per specification.   | CUM  | 7        | 0.0001310 |
| 1824.0  | Disposal of scrap steel, scrap wood, broken packing crates, cable scrap, debris and other civil waste, electrical waste materials etc. from project site to a designated place within 5 KM range, with all manpower T & P etc. including loading and unloading as and when directed by BHEL.  |      |          |           |
| a   | Steel scrap / metal scrap   | MT   | 6        | 0.0000079 |
| b   | Debris & Other waste materials.   | CUM  | 9        | 0.0000023 |
| 1827.0  | Anti weed chemical treatment of soil with suitable chemical pertaining to the types of weeds found in the vicinity including providing anti-weed/ soil sterilization test certificate, performance guarantee of three years etc. all complete.  | SQM  | 7        | 0.0000001 |
| 1831.0  | Providing random rubble (RR) stone masonry in foundation, super structure, boundary wall, retaining wall and embankment with cement mortar 1:6 at all elevations including all labour, material, equipment, handling, scaffolding etc. all complete. Cement will be supplied by BHEL free of cost.  | CUM  | 15       | 0.0001475 |
| 1832.0  | Providing and fixing sliding layer of bitumen paper or craft paper over the screed layer for water retaining structures to destroy the bond between the screed and the base slab concrete of the water retaining structure etc all complete.  | SQM  | 10       | 0.0000004 |

| Part C : Bill of Quantities   |   |      |          |            |
|---|---|------|----------|------------|
| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |   |      |          |            |
| Ref.No.   | Description   | UOM  | Quantity | Weightage  |
| A1837   | Supply & fixing 18G chicken wire mesh on brick/ stone masonry and RCC joints and fixed with GI type nails etc. complete   | SQM  | 115      | 0.0000194  |
| A1838   | Supply, fabrication and fixing of 20 mm square MS bar balustrades with suitable MS flats & anodized aluminium handrails including transporation, loading/unloading, painting etc. all complete. Measurement shall be running metre of handrail in staircase.  | RM   | 7        | 0.0000553  |
| B1838   | Supply, fabrication and fixing of 20 mm square MS bar balustrades with suitable MS flats & CP Teakwood handrails including transporation, loading/unloading, painting etc. all complete. Measurement shall be running metre of handrail in staircase.   | RM   | 7        | 0.0000970  |
| A1839   | Providing Chemical injection grouting with pressure pump for water retaining concrete structures conforming to IS:6494, including fixing nozzles, cost of approved cement, admixture, curing etc. all complete . Payment shall be made as per the consumption of chemical grout.  | Kg   | 15       | 0.0000612  |
| A1840   | Dismantling old existing reinforced/non-reinforced brickwork/ blockwork/ stone masonry work in mud/lime/ cement mortar at any level including clearing/cleaning, stacking the serviceable materials at plant site and disposal of unserviceable materials within a lead upto1km all complete.   | CUM  | 15       | 0.0000459  |
| A1841   | Rebate over ST No. A1840 for taking into account the deemed cost of all serviceable material which bidder will be getting out of it by taking them outside plant for bidder's purpose instead of stacking at plant site.  | CUM  | 15       | -0.0000034 |
| A1843   | Providing & fixing 150 long MS lug made from 25mmX3mm flat on the structural member for anchoring in brick wall.  | Each | 25       | 0.0000005  |
| A1844   | Providing and applying two finish coats of high built epoxy finish of 90 microns each over two primer coats of Zinc silicate 50 microns each on exterior steel work.  | MT   | 7        | 0.0000909  |
| A1847   | Providing Rock anchor for required design load including Drilling of drill holes in rock, fixing of the reinforcement (BHEL will provide reinforcement free of cost) in the hole and packing it with Hilti epoxy chemical or Fosroc lockfix or equivalent epoxy grout. The reinforcement bar has to be placed centrally in the hole so that the grout fill the gap uniformly around the reinforcement bar. All other efforts including vertical / horizontal/ inclined drilling and expenses required for completing the task shall be included in the rates. Item rate is inclusive of designing and testing of rock anchors of required sample (min 3 nos each dia of bar) to arrive the required design load at various locations directed by BHEL Engineer Incharge.  |      |          |            |
| a.  | For the design load of 3MT  |      |          |            |
| i   | 16mm dia bar with 28dia drill hole  | Each | 9        | 0.0000145  |
| ii  | 20mm dia bar with 32dia drill hole  | Each | 9        | 0.0000211  |
| iii   | 25mm dia bar with 40dia drill hole  | Each | 7        | 0.0000243  |
| b.  | For the design load of 5MT  |      |          |            |
| i   | 16mm dia bar with 28dia drill hole  | Each | 9        | 0.0000175  |
| ii  | 20mm dia bar with 32dia drill hole  | Each | 9        | 0.0000238  |
| iii   | 25mm dia bar with 40dia drill hole  | Each | 7        | 0.0000282  |
| c.  | For the design load of 10MT   |      |          |            |
| i   | 20mm dia bar with 32dia drill hole  | Each | 9        | 0.0000300  |
| ii  | 25mm dia bar with 40dia drill hole  | Each | 9        | 0.0000462  |
| iii   | 28mm dia bar with 40dia drill hole  | Each | 7        | 0.0000456  |
| 2000.0  | FENCING AND GATES: Fencing and gates including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc at all level as per specification, drawings and as directed by engineer - in - charge.  |      |          |            |
| A2003   | Supplying and erecting in position 2.4 m high PVC coated galvanised chain linked fencing of minimum 4 mm (including PVC coating ) of mesh size 75mm x 75mm. The diameter of the hot dip galvanised steel wire for chain link fencing excluding PVC coating shall not be less than 2.5 mm. Concertina of height of 600 mm at top of chain link fencing shall be provided with all accessories. Concertina shall be from tensile serrated galvanised wire (HTSW) made with wire diameter of 2.5 mm which will be stretched to 6m and attached on two strands of galvanised HTSSW (high tensile spring steel wire) of 2.5mm dia by means of clips at 1m interval. These two HTSSW strands will be attached to the fence posts/ angles with 12 mm security fasteners. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25X6 mm GI flat stretcher bar at end posts etc. all complete. (Structural post shall be separately under ST No. 2007) | RM   | 657      | 0.0026392  |
| 2007.0  | Supply and fixing of hot dip galvanised mild steel posts for fencing. Rate of zinc coating shall not be less than 710 g/m2 on steel posts.  | MT   | 12       | 0.0022554  |
| 2009.0  | Supply, fabrication and installing in position and testing galvanised MS Gates out of channels, joists, angles, flats, plates, pipes, welded steel wire mesh & sheets including stiffeners, bracings, fabricated hinges, MS Aldrops with locking arrangement, tempered steel pivot, guide track of MS Tee, bronze aluminium ball bearing arrangements, castor wheels, paintings etc. all complete.  | MT   | 9        | 0.0018361  |



| Part C : Bill of Quantities   |  |      |          |           |
|---|--|------|----------|-----------|
| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |      |          |           |
| Ref.No.   | Description  | UOM  | Quantity | Weightage |
| 2100.0  | WATER SUPPLY: Water supply work including men, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level as per specification, drawings and as directed by engineer - in - charge. Cement will be supplied by BHEL free of cost.  |      |          |           |
| 2101.0  | Providing and fixing in position tested heavy duty type chromium plated (CP) brass long neck bib cocks including sockets, union, nuts etc all complete - 15mm nominal bore.  | EACH | 41       | 0.0000726 |
| 2102.0  | Providing and fixing in position heavy duty brass stop cock of approved quality including all specials etc all complete - 15mm nominal bore.   | EACH | 115      | 0.0000652 |
| 2103.0  | Providing and fixing in position heavy duty brass full way valve with wheel of approved quality including all specials etc all complete for following sizes:   |      |          |           |
| a   | 25mm nominal bore.   | EACH | 15       | 0.0000141 |
| b   | 50mm nominal bore.   | EACH | 12       | 0.0000201 |
| Ac  | 63mm nominal bore.   | EACH | 8        | 0.0000151 |
| A2104   | Providing and fixing Galvanised MS pipes class B medium class conforming to IS:1239 pipes shall be concealed and painted with anticorrosive paint, complete for internal works with MS sockets, unions, elbows, tees, nipples etc and clamps including cutting and making good the walls etc all complete for following sizes:   |      |          |           |
| a   | 15 mm nominal bore.  | RM   | 509      | 0.0004726 |
| b   | 20 mm nominal bore.  | RM   | 509      | 0.0005233 |
| c   | 25 mm nominal bore.  | RM   | 257      | 0.0003118 |
| d   | 32 mm nominal bore.  | RM   | 173      | 0.0003188 |
| 2105.0  | Providing and fixing GI pipes class B complete for external work with GI sockets, unions, elbows, tees, nipples etc including trenching & refilling, anti-corrosive paint etc all complete for following sizes:  |      |          |           |
| a   | 15 mm nominal bore.  | RM   | 131      | 0.0000922 |
| b   | 20 mm nominal bore.  | RM   | 291      | 0.0002351 |
| c   | 25 mm nominal bore.  | RM   | 411      | 0.0004082 |
| d   | 50 mm nominal bore.  | RM   | 173      | 0.0002804 |
| Ae  | 32 mm nominal bore.  | RM   | 257      | 0.0003362 |
| Af  | 63 mm nominal bore.  | RM   | 131      | 0.0002405 |
| A2106   | Providing and fixing 450X 750 mm high square edge 6 mm thick float glass mirror of adequate width to match toilet lay-out and interior decor and as per spec.  | EACH | 46       | 0.0001164 |
| B2106   | Providing and fixing large size mirror of 6 mm thick float glass with wooden/ aluminum bead to match toilet lay-out and interior decor and as per spec.  | SQM  | 10       | 0.0000753 |
| 2107.0  | Providing and fixing 610mmx127mmx6mm thk clear glass with C.P Guard rails and mounted on C.P. brackets etc all complete.   | EACH | 49       | 0.0000830 |
| 2108.0  | Providing and fixing 25 mm diameter stainless steel towel rails (600mm X 25mm) with C.P. mounting brackets all complete.   | EACH | 20       | 0.0000318 |
| 2109.0  | Providing and fixing 20mm dia chromium plated M.S. pipes wall mounted towel rod with C.P. Brackets etc all complete.   | EACH | 20       | 0.0000267 |
| 2110.0  | Providing and fixing C.P. Soap holder mounted with C.P. screws etc all complete.   | EACH | 48       | 0.0000537 |
| A2111   | Providing and fixing stainless steel liquid soap dispenser. Dispenser shall be round and easily revolving with removable threaded nozzle and mounted on C.P. brackets etc all complete.  | EACH | 48       | 0.0000735 |
| A2112   | Providing and fixing wall mounted stainless steel paper holder with suitable cover cum cutter fitted with screws etc. all complete.  | EACH | 48       | 0.0000425 |
| 2113.0  | Providing and fixing chromium plated brass shower rose 100mm dia with 15 or 20 mm inlet dia all complete.  | EACH | 10       | 0.0000012 |
| 2114.0  | Providing & fixing in position P.V.C. water tank of Syntex or approved equivalent including making all necessary inlet & outlet pipes, fixture, ball cocks, valves etc all complete for following capacities. GI pipes shall be paid separately under ST No. 2105.   |      |          |           |
| a   | 500 litres capacity  | EACH | 13       | 0.0000903 |
| b   | 1000 litres capacity   | EACH | 11       | 0.0001521 |
| c   | 2000 litres capacity   | EACH | 9        | 0.0002494 |
| d   | 5000 litres capacity   | EACH | 5        | 0.0003465 |
| A2115   | Providing and fixing SS grab bars, barrier-free access and appropriate fittings and fixtures for toilets for handicapped etc. all complete.  | EACH | 6        | 0.0000480 |
| 2200.0  | SANITARY: Sanitary work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level as per specification, drawings and as directed by engineer - in - charge. Cement will be supplied by BHEL free of cost.   |      |          |           |
| 2201.0  | Supply and fixing glazed vitreous china Wash Basin of approved make conforming to IS:2556 part 4 of oval shape with R.S. or C.I. brackets painted white, 15mm chromium plated brass hot & cold faucets with nylon washers, chromium plated brass chain with rubber plug, 32mm chromium plated brass bottle trap and waste of standard pattern, 32mm dia chromium plated brass trap unions, plastic connection pipe with chromium plated nuts, fittings, cutting and making good the walls where required etc all complete. |      |          |           |

| Part C : Bill of Quantities   |   |      |          |           |
|---|---|------|----------|-----------|
| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |   |      |          |           |
| Ref.No.   | Description   | UOM  | Quantity | Weightage |
| a   | White   | EACH | 83       | 0.0006469 |
| b   | Colored   | EACH | 13       | 0.0001078 |
| 2202.0  | Providing and fixing approved vitreous china laboratory sink of size 600x400x200mm conforming to IS:2556 (part-5) with R.S. or C.I. brackets, chromium plated brass chain with rubber plug 40mm, 40mm CP brass waste and 40mm CP brass trap with necessary union complete including painting the fittings, cutting and making good the wall where required etc. all complete. | EACH | 13       | 0.0000811 |
| 2203.0  | Providing and fixing stainless steel kitchen sink of size 610x510x200mm conforming to IS: 13983 including all fittings etc. all complete.   | EACH | 11       | 0.0001178 |
| A2203   | Providing and fixing approved stainless steel sink with integrated drainboard as per IS:13983 of size 915x460x178mm with CI brackets, stainless steel chain with rubber plug 40mm, cp brass waste trap with necessary union complete including painting the fittings, cutting and making good the wall where required etc. all complete as per spec.                          | EACH | 9        | 0.0001440 |
| 2204.0  | Providing and fixing colour glazed vitreous china European type water closet conforming to IS:2556 with siphon, open front solid plastic seat and plastic cover, low level 12.5 litre PVC flushing cistern (same colour as WC) with valveless fittings, necessary C.P connections etc all complete.   |      |          |           |
| a   | Floor mounted   | EACH | 75       | 0.0008627 |
| b   | Wall mounted  | EACH | 9        | 0.0001948 |
| 2205.0  | Providing and fixing colour glazed vitreous indian type Orissa pattern (580x440mm) water closet conforming to IS:2556 part 3 with all fittings including foot rests, low level 12.5 litre PVC flushing cistern with valveless fittings, necessary C.P connections etc all complete.   | EACH | 10       | 0.0001047 |
| 2206.0  | Providing and fixing white flat back glazed vitreous china urinals of size 440x265x355 mm with photo voltaic control flushing system as per IS:2556 (part 6, section 1) with flush pipes, lead pipes, gratings, traps and necessary C.P. fittings etc. all complete.  | EACH | 69       | 0.0009951 |
| A2207   | Supply, laying and jointing UPVC pipes of Type B as per IS:13592 including bends, branches and all other necessary fittings, M.S. holder bats/ clamps, cutting and making good the walls and floors, jointing, testing etc all complete for following.  |      |          |           |
| a   | 75mm dia pipes  | RM   | 89       | 0.0000890 |
| b   | 110mm dia pipes   | RM   | 199      | 0.0002428 |
| c   | 160mm dia pipes   | RM   | 199      | 0.0002755 |
| A2208   | Providing, laying light duty non pressure NP3 class RCC pipes with collars or male and female jointed with stiff mixture of cement mortar 1:2 including testing of joints etc all complete for following.   |      |          |           |
| a   | 200mm dia   | RM   | 530      | 0.0006430 |
| b   | 300mm dia   | RM   | 946      | 0.0014938 |
| c   | 450mm dia   | RM   | 45       | 0.0001209 |
| d   | 600mm dia   | RM   | 40       | 0.0001546 |
| e   | 900mm dia   | RM   | 40       | 0.0002831 |
| A2209   | Providing, laying light duty non pressure NP2 class RCC pipes with collars or male and female jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete for following.   |      |          |           |
| a   | 150mm dia   | RM   | 25       | 0.0000215 |
| b   | 250mm dia   | RM   | 215      | 0.0002783 |
| c   | 300mm dia   | RM   | 20       | 0.0000274 |
| d   | 500mm dia   | RM   | 20       | 0.0000593 |
| A2210   | Providing, laying light duty non pressure NP4 class RCC pipes with collars or male and female jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete for following:   |      |          |           |
| a   | 450mm dia   | RM   | 30       | 0.0000897 |
| b   | 600mm dia   | RM   | 30       | 0.0001441 |
| c   | 900mm dia   | RM   | 30       | 0.0002725 |
| 2211.0  | Providing and fixing C.I Manhole heavy duty cover of size 600mmx450mm including frame from reputed manufacture etc. all complete.   | EACH | 25       | 0.0001577 |
| 2212.0  | Providing and fixing circular heavy duty C.I. manhole cover of 600 mm dia with frame etc. all complete.   | EACH | 25       | 0.0001386 |
| 2213.0  | Providing and fixing square mouth S.W Gully trap grade 'A' complete with CI grating, brick masonry chamber (Clay Brickwork in 1:6 mortar, 12mm plaster in 1:6 mortar & 1:2:4 Cement Concrete) and water tight CI cover with 300x300mm (inside). The weight of cover to be not less than 4.53 Kg and frame to be not less than 2.72 Kg etc all complete for following sizes:   |      |          |           |
| a   | 100x100mm P or S Type.  | EACH | 27       | 0.0000833 |
| c   | 150x150mm P or S Type.  | EACH | 27       | 0.0000934 |

| Part C : Bill of Quantities   |  |      |          |           |
|---|--|------|----------|-----------|
| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |      |          |           |
| Ref.No.   | Description  | UOM  | Quantity | Weightage |
| 2214.0  | Providing and fixing C.I. floor traps size 100 mm Inlet and 100 mm Outlet Sand Cast Iron S&S as per IS: 1729 with C.P jalli all complete.  | EACH | 49       | 0.0001375 |
| 2215.0  | Providing and fixing 100mm heavy duty UPVC floor traps with 100 mm inlet and 100 mm outlet & C.P jalli all complete.   | EACH | 27       | 0.0000737 |
| 2216.0  | Providing and installing approved brand single tap water cooler of 80 L cooling capacity all complete.   | EACH | 16       | 0.0011302 |
| 2217.0  | Providing and installing approved brand single tap water cooler of 150 L cooling capacity all complete.  | EACH | 7        | 0.0006160 |
| 2218.0  | Providing and fixing white vitreous urinal partitions of size 675x325x85mm all complete.   | EACH | 69       | 0.0002144 |
| 2219.0  | Providing and fixing eye and face drinking water fountain (combined unit with receptacle conforming to IS: 10592) all complete as per specification.   | EACH | 7        | 0.0003706 |
| A2221   | Providing and fixing Cast Iron Pressure Pipes of Class LA as per IS:1536 for external work with all gaskets, jointing, hydro testing etc. complete including trenching & refilling, anti-corrosive paint etc all complete for following sizes:   |      |          |           |
| a   | 200 mm nominal bore.   | RM   | 68       | 0.0007696 |
| b   | 300 mm nominal bore.   | RM   | 24       | 0.0004091 |
| A2222   | Supply, laying and jointing HDPE pipes of pressure rating PN 2.5 conforming to IS:4984 in concrete/ brickwork including bends, branches and all other necessary fittings, M.S holder bats/clamps, cutting and making good the walls and floors, jointing, testing etc all complete as per specifications for following.  |      |          |           |
| a   | Upto 75mm dia pipes  | RM   | 24       | 0.0000068 |
| b   | 100mm dia pipes  | RM   | 24       | 0.0000139 |
| c   | 150mm dia pipes  | RM   | 32       | 0.0000379 |
| d   | 200mm dia pipes  | RM   | 40       | 0.0000728 |
| 2300.0  | STRUCTURAL WORKS: Structural steel works including all labour, material (unless otherwise specified in BOQ/contract specification), equipments unless otherwise specified, transportation, handling etc. at all level as per specification, drawings and as directed by engineer - in - charge.  |      |          |           |
| A2301   | Fabrication, erection and alignment of structural steel with mild steel rolled section / built up section / combination of both conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails etc, connection design & preparation offabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 20 degree C for welding over 20 mm and upto 40 mm & 66 degree C for welding over 40 mm and upto 63 mm & 110 degree C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. Including appointment of a separate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL. (Rate shall be exclusive of surface preparation) (Structural steel for the above shall be supplied by BHEL free of cost as per the terms and conditions specified elsewhere in the contract) |      |          |           |
| a   | For Built up sections composed of Structural plates only (Grade E250) including stifeners e.g. plated columns, girders, etc. (other than coal bunker)  | MT   | 18       | 0.0011094 |
| b   | For built up section composed of rolled sections (Grade E250) or rolled sections (Grade E250) and plates (Grade E250) including stiffeners (other than coal bunker)  | MT   | 5        | 0.0003082 |
| d   | For all other items (Grade E250) not covered above e.g. rolled sections, pipes, chequered plate etc  | MT   | 3        | 0.0001849 |

| Part C : Bill of Quantities   |  |     |          |           |
|---|--|-----|----------|-----------|
| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |     |          |           |
| Ref.No.   | Description  | UOM | Quantity | Weightage |
| S2301   | Supply including delivery at site, structural steel with mild steel rolled sections, conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, etc. complete all as per specifications, drawings and as directed by Engineer.<br><br>Note - This item shall be operated if required, at the discretion of BHEL.   | MT  | 20       | 0.0030388 |
| A2302   | Extra over ST No. A2301 for surface preparation by blast cleaning of steel structures as per IS:1477 (Part 1 and 2) and applying epoxy resin based zinc rich primer as per IS:14589 in 2 coats, one at shop and second coat after erection, including touch-up painting etc all complete.  | MT  | 5        | 0.0000724 |
| B2302   | Extra over ST No A2301 for blast cleaning of steel structures to near white metal surface(Sa 2 1/2) and applying coating of inorganic zinc silicate primer in one coat @ 65-75 micron DFT /coat at shop immediately after blast cleaning, including touch-up painting etc all complete.  | MT  | 3        | 0.0000421 |
| A2305   | Providing and applying two coats of epoxy paint with minimum 25 micron total dry film thickness (DFT) per coat of approved make and shade to achieve an even shade over steel sections already having primer coats and keeping overall DFT with primer not less than 115 microns including protection and cleaning, scaffolding etc. all complete.   | MT  | 11       | 0.0001429 |
| B2305   | Providing and applying two coats of synthetic enamel paint with minimum 50 micron total dry film thickness (DFT) of approved make and shade to achieve an even shade over steel sections already having primer coats and keeping overall DFT with primer not less than 115 microns including protection and cleaning, scaffolding etc. all complete.   | MT  | 5        | 0.0000329 |
| 2306.0  | Providing, laying and clamping of crane rails over the crane girder at all elevations as per IS 3443 including all fixtures, clamps, testings etc. all complete as per drawing and specification.  | MT  | 2        | 0.0004308 |
| 2307.0  | Supplying, fabrication, erection and alignment of factory made electroforged galvanised grating units with mild steel having minimum galvanisation conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete.  |     |          |           |
| a   | Minimum galvanisation of 610 g/sqm 57  | MT  | 119      | 0.0241330 |
| A2308   | Supplying, fabrication, erection and alignment of factory made welded grating units with mild steel conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection), fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete.  | MT  | 5        | 0.0007786 |
| A2309   | Extra over above ST NO. A2301/A2308 for finishing the grating units with hot dipped galvanisation @ 610 gm/sqm over blast cleaned steel surfaces instead of painting with two coats of red oxide zinc-chromate primer all complete.  | MT  | 3        | 0.0001081 |
| 2311.0  | Providing and fixing in position of permanent mild steel bolts (class 4.6 as per IS : 1367 and grade C as per IS: 1363) and nuts, washers etc. up to and inclusive of 39 mm diameter and upto 300mm long for structural steel work etc all complete.   | KG  | 21       | 0.0000034 |
| 2312.0  | Providing and fixing in positing of high strength structural bolts (of property class 8.8 and product grade C as per IS: 1367) and conforming to IS: 3757 and high strength structural hardened and tempered nuts (of property class 8 as per IS:1367) conforming to IS:6623 with hardened and tempered washers as per IS:6649 etc. up to and inclusive of 39 mm diameter and upto 300 mm long for structural steel work etc all complete.   | KG  | 61       | 0.0000107 |
| 2313.0  | Dismantling of steel structure, lowering of material and carriage of the dismantled material up to field fabrication shop / projects storage including temporary dismantling, cutting, re-welding, supporting, and restoring to correct position all temporarily dismantled members, re-alignment of all adjacent connected members to their correct positions ( weight of such adjacent members and temporarily dismantled members not payable), scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.   | MT  | 3        | 0.0000647 |
| 2314.0  | Addition to, alterations in and/or modification of Erection Marks including cutting of parts, gauging of welds, cutting, grinding, fabrication, welding, drilling holes, straightening, removal of bends, raising to the required level, painting, transportation, return of unutilised steel pieces to the project store, temporarily dismantling, cutting, re- welding, supporting and restoring to correct position of all the temporarily dismantled members, realignment of adjacent connected members (weight of such temporarily dismantled and adjacent members not payable) etc all complete for the following: |     |          |           |
| a   | In erected position  | MT  | 3        | 0.0001656 |
| b   | In fabrication yard  | MT  | 3        | 0.0001368 |

| Part C : Bill of Quantities   |  |     |          |           |
|---|--|-----|----------|-----------|
| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |     |          |           |
| Ref.No.   | Description  | UOM | Quantity | Weightage |
| 2315.0  | Re-erection of dismantled fabricated structural steel members including carriage of modified Erection Marks from the field fabrication shop to erection site, lifting to required position, aligning in position, tack welding, final welding and touch up painting including temporary dismantling and re-erection of temporarily dismantled members, cutting, rewelding, supporting and restoring to the correct position of all temporarily dismantled members, re-alignment of adjacent connected members (weight of such temporarily dismantled members and adjacent members not payable), scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.   | MT  | 2        | 0.0000701 |
| 2320.0  | Supply, fabrication and fixing of stainless steel pipe hand railing conforming to SS 409 of 32 mm/40 mm dia including transportation, loading/unloading etc. all complete..  | MT  | 8        | 0.0056893 |
| A2322   | Supply, fabrication and fixing of GI pipe hand railing (1000 mm high) of 32 mm/40 mm dia (Medium/ Heavy Grade) including transportation, loading/unloading, painting etc. all complete..   | MT  | 3        | 0.0007194 |
| 2323.0  | Conducting radiography test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.  | RM  | 3        | 0.0000272 |
| 2324.0  | Conducting ultrasonic test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.   | RM  | 3        | 0.0000057 |
| 2325.0  | Conducting ultrasonic test on steel plates as per ASTM-A435 or equivalent wherever specified including equipments, measuring devices, gauges, test report etc. all complete.   | SQM | 3        | 0.0000026 |
| 2326.0  | Conducting magnetic particle test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.  | RM  | 3        | 0.0000048 |
| 2327.0  | Conducting dye penetration test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges etc. all complete (over and above the work already specified in the specifications.)  | RM  | 3        | 0.0000042 |
| 2600.0  | LEVELING & GRADING: Levelling & grading works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. as per specification, drawings and as directed by engineer - in - charge. Cement will be supplied by BHEL free of cost.  |     |          |           |
| A2602   | Earth work in stripping of top soil upto a maximum depth of 0.15m below ground level so as to exclude all debris, grass, vegetation, bushes, trees having girth upto 300 mm including roots and organic materials etc for leveling and grading including dressing to specified levels & grades and compacting the graded/stripped surface by manual/mechanical means, disposal of stripped materials within a lead upto 1km etc all complete as per specification, drawing and as directed by the engineer-in-charge.  | SQM | 200      | 0.0000060 |
| A2608   | Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 250mm loose thickness so as to achieve at least 95% maximum dry density (modified proctor) as per IS-2720 (Part-VIII) with selected approved soil/soft rock directly from excavation within a lead upto 1km and compacted as specified including dewatering if required, sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, testing etc all complete as per specification, drawing and as directed by the engineer.  | CUM | 200      | 0.0000130 |
| C2609   | Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 250mm loose thickness so as to achieve at least 95% maximum dry density (modified proctor) as per IS-2720 (Part-VIII) with selected approved soil/soft rock from compulsorily excavated earth available within a lead upto 1km and compacted as specified including re-excavation of stacked earth, all lifts, sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, testing etc all complete as per specification, drawing and as directed by the engineer.  | CUM | 200      | 0.0000412 |
| A2609   | Earthwork in filling upto any depth below ground level for grading to proper grade and level in layers of thickness and procedure as decided at site by Engineer-in-charge but not exceeding 500mm loose thickness of each layer so as to achieve required compaction with available hard rock boulders and fine material (i.e soil, soft rock or mix of both) from available stacked excavated material within a lead upto 2Km and compacted as specified including re-excavation of stacked material, watering, ramming/compaction by manual/mechanical means, dressing etc all complete in following manner.<br>Filling with hard rock boulder pieces having size less than 150mm and interstices filled with available stacked soil, soft rock (or both soil & soft rock mix) as fine material and shall be compacted to minimum of 85% of original stack of material after filling the interstices. The item includes for breaking of oversized rock into pieces less than 150mm size by manual or mechanical means including manual picking. ( Compacted filled volume shall be measured for payment.) | CUM | 200      | 0.0000741 |

| Part C : Bill of Quantities   |  |     |          |           |
|---|--|-----|----------|-----------|
| Tender Specification BHEL PSSR SCT 2121 for Balance superstructure civil & architectural works of Main Plant area of Unit 4&5 at 5 X 800 MW Yadadri TPS |  |     |          |           |
| Ref.No.   | Description  | UOM | Quantity | Weightage |
| B2609   | Earthwork in filling upto any depth below ground level for grading to proper grade and level in layers of thickness and procedure as decided at site by Engineer-in-charge but not exceeding 500mm loose thickness of each layer with available excavated hard rock boulders within a lead upto 2Km, interstices filled with borrowed earth and compacted as specified below including re-excavation of hard rock boulders if required, watering, ramming/compaction by manual/mechanical means, dressing etc all complete in following manner.<br>Filling with hard rock boulder pieces having size less than 150mm and interstices filled with approved borrowed earth (soil, sand, moorum, soft/ weathered rock,stone dust etc.) as fine materials (borrowed earth to be arranged by the bidder for all lead & lifts) for filling and shall be compacted to minimum of 85% of original stack of material after filling the interstices. The item includes for breaking of oversized rock into pieces less than 150mm size by manual or mechanical means including manual picking. Required borrowed earth for filling interstices are to be arranged by the bidder and the cost of the same including royalty/seignorage fee etc (if any) is included in this item rate. (Compacted backfilled volume shall be measured for payment). | CUM | 200      | 0.0001213 |
| A2611   | Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 250 mm loose thickness so as to achieve at least 95% maximum dry density (modified proctor) as per IS-2720 (Part-VIII) with approved borrowed earth (includes soil, rock boulder of specified size and mixture of both) (borrowed earth to be arranged by the bidder) and compacted as specified including supplying borrowed earth, royalty/seignorage fee (if any), sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, tesing, all lead and lifts etc all complete as per specification, drawing and as directed by the engineer.  | CUM | 100      | 0.0001035 |
| B2611   | Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 250mm loose thickness so as to achieve required compaction with approved excavated material from the area within plant boundary and compacted as specified, dewatering if required, sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, testing etc all complete as per specification, drawing and as directed by the engineer. Item includes excavation work in soil and soft rock (i.e., excluding hard rock) for making available approved excavated material (required for filling) from area identified within plant boundary as per direction of engineer - in - charge for all lead and lifts. Compacted backfilled volume shall be measured for payment.  |     |          |           |
| a   | Each layer compacted so as to achieve at least 95% maximum dry density (modified proctor) as per IS-2720 (Part-VIII)   | CUM | 200      | 0.0000597 |
| 2612.0  | Providing and laying 225mm thick stone pitching including caulking with 1 cement: 4 sand mortar on the slopes of earth fill/cut with approved quality of rock fragments including materials, testing, necessary excavations if any, compaction etc all complete as per specification, drawing and as directed by the engineer.   | CUM | 105      | 0.0006462 |
| 2614.0  | Concrete of grade M10 (1 part cement, 3 part sand, 6 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc.   | CUM | 10       | 0.0000877 |
| 2615.0  | Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262- 2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size at all level below / above finished floor level, any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing for the following.  |     |          |           |
| a   | M25 Grade  | CUM | 10       | 0.0000938 |
| 2616.0  | Fairface form work with good quality water proof ply wood of required thickness and smooth surface above finished ground floor level for columns, beams, suspended floors, roofs, lintels, cantilevers, staircases, landings, balconies, domes, arches, circular overhead tanks etc. for all heights.  | SQM | 10       | 0.0000138 |
| 2617.0  | Transportation, straightening, cutting, bending, placing in position at all levels, binding in position of steel reinforcements of TMT steel of grade Fe-500D or 500EQR confirming to IS:1786 including cost of binding wire, labour etc all complete per specification, drawing and as directed by engineer-in-charge.  | MT  | 10       | 0.0003469 |

TOTAL WEIGHTAGE

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