

TENDER SPECIFICATION

BHEL PSSR SCT 1375

**CONSTRUCTION OF TWO NOS OF 120MTR RCC
CHIMNEY-CIVIL, STRUCTURAL, ELECTRICALS,
C&I AND ALLIED WORKS**

at

**PHASE III REFINERY PROJECT FOR MRPL-CPP,
MANGALORE, KARNATAKA**

VOLUME - III

RATE SCHEDULE

BOOK NO



BHARAT HEAVY ELECTRICALS LIMITED
(A GOVERNMENT OF INDIA UNDERTAKING)
POWER SECTOR – SOUTHERN REGION
690, ANNA SALAI, NANDANAM, CHENNAI – 600 035

BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)
POWER SECTOR – SOUTHERN REGION,
690, ANNA SALAI, NANDANAM, CHENNAI – 600 035.

TENDER SPECIFICATION No. BHEL PSSR SCT 1375

NAME OF THE WORK

Construction of 2 nos of 120Mtr RCC Chimney-civil, Structural, Electricals, C&I and allied works at Phase III Refinery Project for MRPL-CPP, Mangalore.

Volume III
RATE SCHEDULE

DATE:

Issued to
M/s.

For and on behalf of
BHARAT HEAVY ELECTRICALS LTD

AGM / CONTRACTS

The tender documents are not transferable.

Place: Chennai-600035
Date:

PREAMBLE FOR THE SCHEDULE OF QUANTITIES

PREAMBLE TO THE SCHEDULE OF QTS. (SOQ)

- 1) Details of the items in this Schedule shall be read in conjunction with the corresponding MRPL/EIL specifications and other documents and shall have precedence over any contrary statement mentioned any where in this document.
- 2) The work shall be carried out as per construction drawings (which will be issued progressively during the execution), specifications, the description of the items in this schedule and/or Engineer's instructions. The layout, sizes and details of the building, structures and foundations may vary at a large extent during actual construction.
- 3) Items of work provided in this schedule but not covered in the specifications shall be executed strictly as per instructions of the Engineer.
- 4) Unless specifically mentioned otherwise in the contract, the bidder shall quote his rates for the finished items and shall provide for the complete cost towards fuel, tools, tackle, equipment, constructional plant, temporary works, labour, materials, levies, taxes, transport, layout, repairs, rectification, maintenance till handing over, supervision, shops, establishments, services, temporary roads, revenue expenses, contingencies, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the works according to the contract.
- 5) The rate quoted shall be inclusive of cleaning the site of any vegetations, dressing and leveling etc., required for commencement of site activities. No separate payment will be made towards the same.
- 6) The rate shall also be inclusive of carrying out survey of site to establish levels and coordinates at suitable intervals, from existing grid levels and coordinates furnished by the owner, establish bench marks, setting out the location and levels of the proposed structures, constructions and making references, pillars and other identification marks etc. No separate payment will be made towards the same.
- 7) The quantities of the various items mentioned in the schedule are approximate and may vary up to any extent or be deleted altogether. The quoted rates of each item shall remain firm as long as the variation in the total value of the works executed under this contract, including extra items if any, remain within +/- 30% (thirty percent) of the Bid Price of the probable extent of the work to be executed under any particular item in this schedule, before under taking any preliminary work or purchasing bought out component related to the work. The variation clause will be applicable as stipulated in the General conditions of contract, Volume 1 of this tender.
- 8) Rates shall be quoted both in figures and in words in clear legible writing. No over writing is allowed. All scoring and cancellation should be counter signed by the bidder. In case of illegibility, the interpretation of the engineer shall be final. All entries shall be in English language.

- 9) Engineers decision shall be final and binding on the contractors regarding clarification of items in this schedule with respect to the other section of the contract.
- 10) Unless otherwise specified in the schedule of items Reinforcement steel and earth rod/flat will be issued by BHEL as FREE ISSUE for incorporation in the permanent works as specified elsewhere in this tender document.
- 11) Incase of any discrepancy between item description, relevant drawing and/or specification clarification shall be sought at tender stage itself. Otherwise it shall be assumed that the bidder has quoted for the more stringent requirement.

HIERARCHY

In case of any conflict/deviations amongst various documents, the order of precedence shall be as follows

- Items in Schedule of quantities
- Statutory Regulations
- MRPL/EIL specification
- IS/BS standards

GENERAL:

NOTE: The bidder to note the following before submission of the offer

Technical requirements in Volume- II should be read in conjunction with BOQ in Volume – III and other sections of the tender / contract. In case of any conflict between the contents of BOQ in Volume – III and Technical Requirements in Volume – II, then BOQ will prevail over Technical requirements.



PROJECT: MRPL MANGALORE

BILL OF QUANTITIES

TENDER SPECIFICATION
BHEL PSSR SCT 1375

RATE SCHEDULE
VOLUME III

Construction of 2Nos. 120Mtr RCC Chimney - Civil, Structural, Electricals, C&I and allied works.

Item No.	Description of Work	Unit	Quantity	Rate in Rs. (words & figures)	Amount in Rs.
1	EXCAVATION				
1.1	Earthwork in excavation in all kinds of ordinary and hard soil (including slushy soil) up to a depth of 2.0 m below ground level and stacking within a lead of 100 m, with necessary shoring, strutting, trimming and dressing of sides etc., including bailing / pumping out of surface water/rain water/sub soil water, cutting minor vegetation, if any, complete as per drawings and specification.				
a)	All kinds of soil (Ordinary and hard soil)	Cu.M.	1500		
b)	Same as item 1.1 above, but for soft rock upto 2.0m below GL requiring chieseling	Cu.M.	1200		
c)	Same as item 1.1 above, but for hard rock / sheet rock requiring blasting upto 2.0m below GL	Cu.M.	300		
1.2	Same as Item no-1.1 above but from 2.0 m - 4.0 m depth				
a)	All kinds of soil (Ordinary and hard soil) from 2.0m to 4.0m below GL	Cu.M.	750		
b)	Same as item 1.1 above, but for soft rock from 2.0m to 6.0m below GL requiring chieseling	Cu.M.	3000		
c)	Same as item no:-1.1 above, but for hard rock / sheet rock requiring blasting upto 2.0m to 6.0m below GL	Cu.M.	750		
1.3	Extra over item no:- 1.1 for every additional lead of 100 m or part there of (beyond the initial lead of 100m as per item 1.1) and stacking within the compound wall.	Cu.M.	300		
1.4	Extra over item no:- 1.2 for every additional lift of 1.0 m or part there of (beyond the initial lead of 100m as per item 1.1) and stacking within the compound wall.	Cu.M.	300		

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Item No.	Description of Work	Unit	Quantity	Rate in Rs. (words & figures)	Amount in Rs.
2	BACKFILLING				
2.1	Earth work in back filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc., deposited soil excavated earlier, breaking clods, including re-excavating the laying at all depths and heights in layers not exceeding 20 cm in depth, consolidating each deposited layer by ramming to achieve at least 90 percent laboratory max dry density and watering complete. (measurement will be the theoretical excavation quantity as per item no.1.1 less the quantity displaced.				
a)	With earth obtained from stacks within a lead of 100 m	Cu.M.	5556		
2.2	Supplying approved earth free (cohesive nonswelling / murrum, obtained from borrow pits outside the battery limit(compound wall) within a lead of 4 KM lead) from vegetation's and unuseful materials and filling the same where required within site boundary, under floors, etc., in layers not exceeding 200 mm in thickness, breaking clods, watering and consolidation of each deposited layer by roller / rammer to achieve atleast 90 percent laboratory max. dry density, grading and finishing to final levels and slopes for all lifts and leads involved, complete as directed (Payment to be made for solid measure of the consolidated filling)	Cu.M.	300		
2.3	Disposal of surplus excavated earth and debris including re-excavating the deposited soil earlier, transportation, loading, unloading, laying at all depths and heights, leveling and dressing both the area (viz. From where earth is transported and where it is deposited) to required levels and slopes complete with all lifts as directed (upto 5 KM i.e. beyond compound wall) (beyond an initial lead of 100m as per item 1.1) as directed by the Engineer.	Cu.M.	1944		
a)	Extra over 2.3) for every additional distance of 1.0 KM or part thereof	Cu.M.	200		
2.4	Supplying and filling sand in layers not exceeding 150 mm including compacting by mechanical means etc all complete as per specification and as directed by the Engineer.	Cu.M.	240		

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Item No.	Description of Work	Unit	Quantity	Rate in Rs. (words & figures)	Amount in Rs.
3	CONCRETE				
3.1	Supplying , laying in position , curing as per specifications plain cement concrete in foundations , footings, bases of columns, under floors - mass concrete , encasing of pipes etc, below G.L. and upto 1 mtr above G.L. including consolidation of subgrade wherever required excluding the cost of centering and shuttering				
a)	1:5:10 (1 cement : 5 coarse sand : 10 graded hard stone aggregate 40 mm nominal size)	Cu.M.	85		
b)	1: 4 : 8 (1 cement : 4 coarse sand : 8 graded hard stone aggregate 40 mm nominal size)	Cu.M.	10		
3.2	Supplying , laying in position , curing as per specifications controlled concrete (using 43 grade ordinary portland cement) of the following grades (graded coarse aggregates of 40mm down, 20mm down 12mm down shall be used wherever applicable, excluding cost of centering and shuttering				
a)	For all depths below GL and upto 1.2 m above GL				
i)	Grade M 20	Cu.M.	50		
(ii)	Grade M 30	Cu.M.	1860		
(iii)	Grade M 15	Cu.M.	50		
(b)	for all heights above 1.2m				
i)	Grade M 30 for shell including making recesses for plat form support	Cu.M.	3000		
ii)	Grade M 30 for roof platforms corbel and landings	Cu.M.	42		
3.3	Providing and fixing in position 25mm thick 'shalitex' or approved equivalent fibre board in expansion joints etc all complete as per specifications.	Sq.M.	14		

Signature of Bidder

Item No.	Description of Work	Unit	Quantity	Rate in Rs. (words & figures)	Amount in Rs.
3.4	Supplying and laying approved quality polysulphide joint sealing compound conforming to IS : 1835 for joints in concrete etc complete				
a)	20mm wide , 25mm deep	Rmt.	96		
b)	10mm wide , 40mm deep	Rmt.	10		
3.5	Grouting under column & equipment bases as required , curing and finishing the exposed surfaces including all materials as per specifications and directions of the Engineer				
	With non-shrink grout like conbextra GP2 or equivalent, including cost of grout mix etc., all complete as per drawings and specifications	Cu.M.	1		
4	FORM WORK				
4.1	Supplying , installing , dismantling and removing the following classes of form work as per drawings and specifications at all levels using steel plywood shuttering				
(a)	Straight above & below GL at all levels including platform	Sq.M.	600		
(b)	Curved in plan for raft and shell below GL and above GL upto 10.0 meter.	Sq.M.	240		
4.2	Supplying, installing , dismantling and removing slip form work for shell for all elevations above GL as per drawings and specifications at all levels, using steel / plywood / wood shuttering.	Sq.M.	18120		
4.3	Halting the slipform at each corbel level & Construction of corbels by Supplying, laying in position, compacting, curing as per specifications Controlled concrete (using ordinary portland cement 43 grade conforming to IS:8112 of the following grades (graded coarse aggregates of 40mm down, 20mm down, 12mm down shall be used wherever applicable). Reinforcement item to be paid as per item 5.1a and 5.1b. Concrete paid under item 3.0.	Nos.	14		
5	REINFORCEMENT: (BHEL will supply Reinforcement Steel as a free issue. However transporting from BHEL stores (located at Flare area of the Project which is 8km approx.) is in agency's scope.				
5.1	Bending , binding, transporting and placing in position of HYSD reinforcement confirming to IS 1786 of all diameters and at all locations	MT.	900		
5.2	Bending , binding , transporting and placing in position of MS reinforcement confirming to IS : 432 of all diameters and at all locations	MT.	2		

Signature of Bidder

Item No.	Description of Work	Unit	Quantity	Rate in Rs. (words & figures)	Amount in Rs.
6	STRUCTURAL STEEL: (BHEL will supply rolled sections like joists, channels, angles, plates, MS/GI pipes, SS plate conforming to AISI316L only as a free issue. Balance other materials like Gratings, HT/HSFG bolts, Cladding sheets, Nuts, MS/SS specials, Washers, Shims, etc. required for incorporation in the permanent works are in the agency scope). However transporting from BHEL stores (located at Flare area of the Project which is 8km approx.) is in bidders scope.				
6.1	Fabrication and Erection of structural steel work for internal support/portal frames /restraint/ access plat forms / landings at different levels and steel staircase / ladder up to top level including cost of steel, necessary staging, fixing to proper level etc. including supply and fixing with anchor fastener wherever required complete. Structural Steel BHEL Free supply.	MT.	432		
6.2	Fabrication and erection of structural steel work for rectangular / transition flue duct, ash hopper etc. made of plates with stiffeners and supporting structure at base.ie below 15m excluding cost of steel, necessary staging, fixing to proper level etc. complete as per drawings and specification.Structural Steel BHEL Free supply.	MT.	14		
6.3	Fabrication and erection of mild steel flue conforming to IS : 2062 Grade A for chimney including one inner coat of primer, excluding cost of steel, fixing etc. all complete as per drawings and specification. Structural Steel BHEL Free supply.	MT.	330		
6.4	Supply , Fabrication and erection of stainless steel flue conforming to AISI type 316L for top 6m of chimney including cost of steel , fastners, fixing etc all complete as per specification.	MT.	20		
6.5	Supplying & fabrication of structural steel work hot dip galvanised for strakes including cost of steel , fixing to chimney shell at top with anchor fasteners etc. all complete as per drawings and specifications.	MT.	1		
6.6	Fabrication & Erecting Chequered plates for platforms and staircase steps all complete as per drawings and specifications. Structural Steel BHEL Free supply.	MT.	52		
6.7	Supplying and Erecting anti skid G.I. Floor gratings, Hand Welded type - 2 (hot dip galvanised) and staircase steps all as per EIL drawing No. 7-68-0561/R3 including all fasteners etc. complete	MT.	12		

Signature of Bidder

Item No.	Description of Work	Unit	Quantity	Rate in Rs. (words & figures)	Amount in Rs.
6.8	Fabricating and fixing G.I. hand rail including surface preparation and painting with synthetic enamel paint over red oxide primer complete as per EIL specifications 7-68-0501, rev 05. Structural Steel BHEL Free supply.	Rmt.	540		
6.9	Supplying , fabrication and fixing in concrete MS plates, pipes sleeves, anchor bolts etc. with necessary lugs welded including one coat of anti corrosive primer on exposed surfaces at all levels	MT.	6		
6.10	Supplying , fabricating and installing at the top of chimney shell, grey cast iron caps of all material including asbestos mill boards, bronze belts and nuts, brass washers, non-shrink grout, acid resistant mortar, insulation over the A/R mortar etc. including the cost of all painting etc. complete as per drawings and specifications	MT.	4		
7	FLOORING				
7.1	Supplying laying and fixing 25mm thk. Acid resistant tiles over acid resistant mortar of average thickness 50 mm at various elevations including preparation of base, laying underbed, finishing, polishing etc., as per drawings and specifications.	Sq.M.	330		
7.2	Supplying and laying 50mm thick heavy duty cement flooring comprising 35mm cement concrete base laid over sub base in panels (max. 1 sq m in area) bound by 3X40mm PVC strips followed by 15mm thick wearing top layer of cement, metallic hardner and stone aggregate, finishing, curing etc. all complete as per specifications. (Using OPC/PPC/PSC/SRC cement)	Sq.M.	252		
8	PAINTING				
8.1	Providing one coat of approved sodium silicate solution of brushable consistency to give a smooth and even shade on the inner surface of RCC shell including cleaning and preparation of surface, scaffolding etc. all complete at all heights. Surface preparation as per clause 5.1.5 of EIL specifications 6782-0642-PT-C07, rev 03 and clause 4.1 of EIL specifications 6-68-0053 rev01.	Sq.M.	8640		
8.2	Providing complete protective coating system to outer surface of RCC shell (measured in SQM) with 2 coats of high build epoxy finish coating cured with polyamide hardner @ 100µ DFT/coat to obtain 2x100=200µ DFT shall be applied after making surface preparation as per clause 5.1.5 of EIL specifications 6782-0642-PT-C07, rev 03 and clause 4.1 of EIL specifications 6-68-0053 rev01. Top 20 meters of the chimney shell shall be painted with two different colours in alternate bands of 5m width each to serve as aviation warning signal.	Sq.M.	9000		

Signature of Bidder

Item No.	Description of Work	Unit	Quantity	Rate in Rs. (words & figures)	Amount in Rs.
8.3	Providing complete protective coating system to Flues (measured in SQM) with 3 coats of heat resistant silicone Aluminum paint @ 20µ DFT/coat over one coat of two component inorganic zinc silicate coating primer @ 65µ DFT/coat shall be applied after making surface preparation by means of shot blasting complete as per Table-8.0 of EIL specification no.6782-0642-PT-C07, rev 03.	Sq.M.	4560		
8.4	Providing complete protective coating system to structural steel work, chequered plates, cage ladders etc. (measured in MT) with finish coat of 2 coats of Chlorinated rubber finish paint @ 40µ DFT/Coat over 2 coats of high build chlorinated rubber zinc phosphate primer @ 40µ DFT/Coat including surface preparation by means of sand blasting complete as per Table-8.0 of EIL specification no.6782-0642-PT-C07, rev 03.	MT.	446		
9	DOORS, WINDOW & VENTILATORS, ROLING SHUTTERS				
9.1	Supplying and erecting including assembling, fitting and fixing best quality 40m thick pressed steel frames with flush shutter at various elevations including frames, shutters , fittings and fixtures, CP mortice lock cum handle, mastic caulking, grouting the frames etc. complete. EIL spec. 7-75-0070, rev03.	Sq.M.	14		
9.2	Supplying, erecting, assembling, fitting and fixing rolling steel shutters constructed with interlocking lath sections formed out of cold rolled 0.9mm thick, 80mm wide steel strips for shutter width upto 3.5M, or 1.25mm thick, 80mm wide steel strips for shutter width beyond 3.5M, jointless MS channel section of 3.15mm thickness for guide, MS girder and bottom rail, shutter suspension stud with pully & cage, top rolling springs, locking arrangement etc, as per IS:6248 from approved manufacturers ,including shop coat of approved red oxide zinc chromate primer and two coats of synthetic enamel paint of approved brand and shade after erection with all fittings and fixtures etc all complete as per specifications and drawings.				
a)	Manually operated	Sq.M.	4		
b)	Mechanically operated, complete with all accessories for mechanical operation as per approved manufacturers design and drawings.	Sq.M.	60		
c)	Electrically operated, complete with all accessories, electrical motor, cabling, etc, as per approved manufacturers design and drawings.	Sq.M.	4		

Signature of Bidder

Item No.	Description of Work	Unit	Quantity	Rate in Rs. (words & figures)	Amount in Rs.
10	MISCELLANEOUS ITEMS				
10.1	Supplying, transporting to site and fixing of preformed mineral wool insulation sheets of minimum thickness of 50 mm (25 mm in two layers) (Density 80kg/m ³) conforming to IS:8183 on the external surface of the flue including all operations such as lapping staggering, securing by means of studs (10.1a and 10.1b), wrapping with 20 gauge wire mesh of 25 mm hexagonal pattern conforming to IS:3150, speed washers and binding with 16 gauge GI wire (over lapping for insulation over stiffeners and joint flanges will not be paid extra) all complete as per specification / drawings	Sq.M.	4800		
a	10 SWG x 70 long Galvanised MS pins with washer	Nos.	15600		
b	8 SWG x 200 long Galvanised MS pins with washer	Nos.	6240		
10.2	Same as 10.1, but for providing 6 layers (Density 250kg/m ³) of (25 mm thick each) insulation instead of two layers for the portion of the flue extending beyond the roof level all as per specification/drawings.	Sq.M.	330		
10.3	Same as 10.1 but for providing each additional layer of 25 mm	Sq.M.	180		
10.4	Supplying, transporting to site, fabricating and erecting in position as per the manufacturer's requirement non-metallic expansion compensators (3000 mm ID and 550mm long flange to flange) including testing for impermeability and resistance to flue gas, with instructions for storage, fitting instructions, spare accessories, tools for installation etc. complete as per the specifications and manufacturer's recommendations. Expansion joint material shall be as per specification and shall be of High neck centre break design with Bolster and extended sleeve and bolster filled with glass fabric stuffed with glass felt B86of type KE FLUAFLEX 25X (Pre-assembled on steel parts)supplied by KELD ELLENTOFT or approved equivalent.	Nos.	5		
10.5	'Supplying and erecting and fixing on flues manholes 800 mm square made with twin 8 mm thick MS Plates with a gap of 75 mm and stiffener plates with necessary hinges, handles, lugs for fixing removable insulation etc. all complete as per drawings and specifications	Nos.	10		

Signature of Bidder

Item No.	Description of Work	Unit	Quantity	Rate in Rs. (words & figures)	Amount in Rs.
10.6	Supply and erection of roof access cover with frame made of 6 mm thick stainless steel of type 316 L of size approx 1.0mX1.0m with locking lever and counter balance mechanism on both sides all complete as per drawing and specifications.	Nos.	2		
10.7	Supplying, fitting and fixing 150mm dia cast iron "Roof Drain" pipes at various elevations including drain head, shoe bends, junctions, sockets, adapters, brackets, hangers, supports etc jointing, caulking. Prime coat of painting with anticorrosive paint including all materials etc complete as per drawings and specifications.	Rmt.	540		
10.8	Same as item 10.7, but with 150 dia UPVC pipe with all UPVC fittings and fixtures as required	Rmt.	540		
10.9	Supplying, detailing, fabricating, transporting to site and erecting in position the following additional material required for flue support brackets, restraint/ support arrangements at all levels, including supporting ducting at flue inlet wind shield, etc all complete, as per specification/ drawings.				
a	10 thick stainless steel plates, conforming to 304L for wear plates, bearing including CS screws of stainless steel etc.	MT.	2		
b	50 thick load bearing insulation blocks/sheets preset on MS plates as required.	Sq.M.	12		
c	75 thick load bearing insulation blocks/sheets preset on MS plates as required.	Sq.M.	12		
d	Supplying, transporting and providing 25 dia 100 long dowels fabricated from load bearing insulation block materials.	Nos.	240		
e	Supplying, transporting and placing dumped 5 thick polytetra fluoro ethylene film on recessed bearing surfaces with approved adhesive.	Sq.M.	12		
f	Supplying, transporting and placing 3 mm thick preformed lead sheets on bearing surfaces.	Sq.M.	12		

Signature of Bidder

Item No.	Description of Work	Unit	Quantity	Rate in Rs. (words & figures)	Amount in Rs.
10.10	Supplying and fixing 100 NB pipe sleeve 400 long with flange and blank plate, welded to steel flue for gas sampling	Nos.	19		
10.11	Supplying and fixing in position 300 dia. S.S. air outlet pipes including lugs etc. all complete	Nos.	48		
10.12	Supplying and fixing S.S. insert plate in RCC slab at all ht. Including lugs etc. all complete	MT.	2		
10.13	Supplying and erecting in position the following additional materials at all levels etc all complete, as per specification/ drawings.				
a	SS 316 L stud M12x35 with nut	Nos.	240		
b	SS 316 L screw M12x20	Nos.	360		
c	SS 316 csk screw M10x15	Nos.	240		
d	SS 316/304L csk screw M6x20	Nos.	960		
e	M16x50 with helical spring locking	Nos.	2880		
f.	M16x50 with helical spring locking washer with nut and washer (All H.T. grade 8.8)	Nos.	720		
g	MS stud M16x55 with nut	Nos.	120		
h	MS stud M12x325 with 2 nuts	Nos.	48		
10.14	Supplying and erecting in position H.T. Bolt, nut and washer (8.8 grade) at all levels etc all complete, as per specification/ drawings				
a	M20x50	Nos.	480		

Signature of Bidder

Item No.	Description of Work	Unit	Quantity	Rate in Rs. (words & figures)	Amount in Rs.
b	M20x60	Nos.	24		
c	M20x65	Nos.	60		
d	M24x210	Nos.	60		
e	M24x55	Nos.	72		
f	M24x60	Nos.	300		
g	M24x65	Nos.	204		
h	M24x70	Nos.	168		
i	M24x75	Nos.	192		
j	M24x80	Nos.	504		
k	M24x85	Nos.	60		
l	M24x90	Nos.	60		
m	M24x95	Nos.	60		
n	M24x165	Nos.	60		
10.15	Surface grinding of MS plate / SS plate (SS 316/304)	Sq.M.	6		
10.16	Supplying and fixing in position S.S. insert / plug embedded in load bearing insulation block including lugs etc. all complete	Nos.	180		
10.17	Milling on 32mm plate	Sq.M.	6		

Signature of Bidder

Item No.	Description of Work	Unit	Quantity	Rate in Rs. (words & figures)	Amount in Rs.
11	ELECTRICAL WORK				
	Supply, installation, testing and commissioning of the following Items of approved quality as per specification / IS : Codes. Note :All accessories shall be provided by contractor(like junction boxes, clamps etc.) including cables as required for the approval of the Owner / Consultant and other statutory authorities. The contractor shall estimate the requirement and provide for the same in the price for the items for which the quantity is given as 'Lot.'				
11.1	Lightening Protection & Earthing System				
	Work shall be carried out as per EIL spec 7-51-0503 R2 / IS:2309				
a.	70 sq.mm lead coated copper conductor	Rmt.	120		
b.	Vertical air terminal (25 mm dia 2000 mm long copper rods lead coated)	Nos.	5		
c.	Test Link	Nos.	5		
d.	Erection hardware like Saddles with clamp for cleating lightning conductor	Lot	2		
e.	40 x 5 GI flat	Rmt.	1080		
f.	12 SWG GI wire	Rmt.	528		
g	Earth electrode with earth pit complete as per IS : 3043 (Material supply by BHEL-PED)	Nos.	5		
11.2	Lighting system				
a.	Twin Cluster LED type medium intensity (40W min) flashing lamps, maintainence free aviation lights as per aviation regulations and norms suitable for A.C . Mounting of aviation lamps & accessories shall be as per typical installation standard No.7-51-0220 Rev 02. (attached). Supply shall include twin cluster aviation lights/fixtures, G.I Pipe, Reducers, Suitable J.B, U Bolts etc	Set.	22		
b.	Photo electric controller for aviation lighting	Nos.	2		
c.	Flash controller unit & all sub items for aviation lighting	Nos.	2		
d.	Non integral Industrial type, well glass dust tight with 70W HPSV lighting fixtures with external reflector	Nos.	360		
e.	Wall mounting bracket (1.5 m long 40 GI conduit with clamps) for 70 W HPSV light fixtures including fixing works	Lot	2		
f.	Hand rail mounting bracket (2.5 m long 40 GI conduit with clamps) for 70W HPSV lighting fixtures	Lot	2		
g.	240V, 1 phase, 32A weather proof power receptible with interlock switch	Nos.	29		

Signature of Bidder

Item No.	Description of Work	Unit	Quantity	Rate in Rs. (words & figures)	Amount in Rs.
11.3	Junction Boxes & Panels				
a.	4 Pole MCB for aviation lighting in a box	Nos.	2		
b.	Junction boxes for aviation lighting & light fixtures	Nos.	24		
c.	Lighting distribution board with 63A TPN MCB isolator as incomer & adequate no. of outgoing feeders for controlling the lighting fixtures provided with suitable rating outgoing MCBs. Loading of outgoing feeders maximum to 1000W & 25% of outgoing feeders to be left as spares.	Nos.	5		
d.	Power distribution board with 63A TPN MCB isolator as incomer & no. of outgoing feeders of suitable rating MCBs for the control of power receptacles. Loading of outgoing feeders to maximum to 1000W & 25% of outgoing feeders to be left as spares.	Nos.	5		
11.4	Cabling System :				
a.	4C x 2.5sqmm Cu. (1100 V grade HRPVC insulated armored cable)	Rmt.	1200		
b.	4C x 4sqmm Cu. (1100 V grade HRPVC insulated armored cable)	Rmt.	840		
c.	Cable glands & lugs	Lot	2		
				Total	
	<u>Note to Rate schedule:</u>				
i)	The quantities of the various items mentioned in the schedule are approximate and may vary up to any extent or be deleted altogether. The quoted rates of each item shall remain firm as long as the variation in the total value of the works executed under this contract, including extra items if any, remain within +/- 30% (thirty percent) of the Bid Price of the probable extent of the work to be executed under any particular item in this schedule, before under taking any preliminary work or purchasing bought out component related to the work. The variation clause will be applicable as stipulated in the General conditions of contract, Volume 1 of this tender.				
ii)	PAYMENT FOR ADDITIONAL ITEMS				
	For working out the rates for supplemental / additional items, the least of the following will be operated.				
a)	Near similar item (or) derived from LOI items				
b)	Direct from CPWD schedule of rates. The cost index (based on formula) for the project site prevailing during the year of reckoning, shall be calculated and applied over the DSR-2007 item rate.				
c)	Derived from CPWD rates (While deriving the rate from CPWD, the above procedure (as given in (b)) shall be followed).				
	If any item could not be derived from the above, Rate will be worked out based on market rate for such item with 15% plus towards contractor's overhead and profit				
iii)	EIL specifications & drawing nos. indicated in respective items are not exclusive. Bidder is expected to go through complete EIL specifications & drawings and item's descriptions given else where are also to be followed.				

Signature of Bidder