

(CIVIL WORKS FOR 1 X 38 MW, APGCL/ LAKWA POWER PLANT, ASSAM)

S. N	CLAUSE REF NO. OF TENDER DOCUMENT NO. PSER:SCT:LKW-C690:06	AMMENDED DESCRIPTION OF CLAUSE (THIS DESCRIPTION SHALL SUPERCEED THE DESCRIPTION AS EXISTING IN ORIGINAL TENDER)																																																												
1	Page no. 25-26 of 33, clause no. 26.4 of vol-ID	<p>The following major T&Ps to be arranged by the contractor within the time as indicated against each T&P:</p> <table> <tr> <th>SL</th><th>Major T&P items</th><th>Mobilizing time from LOI date</th></tr> <tr> <td>1.</td><td>1 No. crawler crane 75 Ton – For Structural erection</td><td>As per site reqmnt</td></tr> <tr> <td>2.</td><td>1 Hydra (8 / 10 T Cap.)</td><td>Within 30 days</td></tr> <tr> <td>3.</td><td>a) Batching Plant (15/12 Cum/Hr)</td><td>to reach site by 20 days & to be commissioned by 10 days thereafter</td></tr> <tr> <td></td><td>b) 2nd Batching Plant (15/12 Cum/Hr)</td><td>Provision to be kept for backup purpose</td></tr> <tr> <td>4.</td><td>Air Compressor(For Stack foundation dismantling work)</td><td>As per site reqmnt</td></tr> <tr> <td>5.</td><td>Concrete cutter/breaker(HILTI/BOSCH make) - 1 no.</td><td>As per site reqmnt</td></tr> <tr> <td>6.</td><td>2 Nos. Self priming Dewatering pump 5 HP</td><td>As per site reqmnt</td></tr> <tr> <td>7.</td><td>Curing / dewatering pump – 1.5 / 2 HP - 1 no.</td><td>As per site reqmnt</td></tr> <tr> <td>8.</td><td>1 no. Hydraulic Excavator /Poclain /JCB</td><td>Within 30 days</td></tr> <tr> <td>9.</td><td>1 No. Power driven earth rammer</td><td>As per site reqmnt</td></tr> <tr> <td>10.</td><td>1 No. Conc-cube testing machine (100 T cap.)-Power driven</td><td>As per site reqmnt</td></tr> <tr> <td>11.</td><td>01 No Total Station</td><td>Within 15 days.</td></tr> <tr> <td>12.</td><td>01 No. Auto level & staff</td><td>Within 15 days.</td></tr> <tr> <td>13.</td><td>45 Nos. Concrete Cube Moulds</td><td>Within 30 days.</td></tr> <tr> <td>14.</td><td>Truck – 1 no.</td><td>At the time of structural erection</td></tr> <tr> <td>15.</td><td>Dozer – 1 no.</td><td>Within 30 days</td></tr> <tr> <td>16.</td><td>Dumper – 2 nos.</td><td>Within 30 days</td></tr> <tr> <td>17.</td><td>1st Pile rig</td><td>Within 15 days</td></tr> <tr> <td>18.</td><td>2nd ,3rd ,4th , 5th pile rigs</td><td>Within 30 days</td></tr> </table>	SL	Major T&P items	Mobilizing time from LOI date	1.	1 No. crawler crane 75 Ton – For Structural erection	As per site reqmnt	2.	1 Hydra (8 / 10 T Cap.)	Within 30 days	3.	a) Batching Plant (15/12 Cum/Hr)	to reach site by 20 days & to be commissioned by 10 days thereafter		b) 2 nd Batching Plant (15/12 Cum/Hr)	Provision to be kept for backup purpose	4.	Air Compressor(For Stack foundation dismantling work)	As per site reqmnt	5.	Concrete cutter/breaker(HILTI/BOSCH make) - 1 no.	As per site reqmnt	6.	2 Nos. Self priming Dewatering pump 5 HP	As per site reqmnt	7.	Curing / dewatering pump – 1.5 / 2 HP - 1 no.	As per site reqmnt	8.	1 no. Hydraulic Excavator /Poclain /JCB	Within 30 days	9.	1 No. Power driven earth rammer	As per site reqmnt	10.	1 No. Conc-cube testing machine (100 T cap.)-Power driven	As per site reqmnt	11.	01 No Total Station	Within 15 days.	12.	01 No. Auto level & staff	Within 15 days.	13.	45 Nos. Concrete Cube Moulds	Within 30 days.	14.	Truck – 1 no.	At the time of structural erection	15.	Dozer – 1 no.	Within 30 days	16.	Dumper – 2 nos.	Within 30 days	17.	1 st Pile rig	Within 15 days	18.	2 nd ,3 rd ,4 th , 5 th pile rigs	Within 30 days
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		<p>NOTE</p> <ol style="list-style-type: none"> 1. T&Ps shown in the above mentioned list are minimum requirement. Further requirement will be reviewed time to time at site and vendors will provide additional T&P/equipments without any financial implication to BHEL. 2. Vendor will give advance intimation & certification regarding capacity etc. prior to dispatch of heavy equipment. 3. CONTRACTOR SHALL PROVIDE OPERATING PERSONNEL FOR HIS T&Ps
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General points

- **Following details are added to 'Notes' of tender dwg. no. 1-38142-04535,R-0, titled 'Typical Details of Aluminium Doors & Partitions :**

To Note No.9

'However, for measurement purpose, only area of partition above floor finish & below false ceiling will only be considered.'

To Note No.10

'Minimum thickness of anodizing shall be 15 Micron.'

- These clarifications (TCN-01) will form a part of the tender document and should be submitted (duly signed) along with bid as specified. Quoted price of bidders will be presumed on the basis of original tender & these clarifications (TCN-01). These clarifications (TCN-01) including all enclosures mentioned below will form a part of the tender document and should be submitted (duly signed) along with bid as specified. **Price shall be quoted in revised BOQ (vol-III), revision-1 only. Revision-01 of Vol-III (BOQ cum rate schedule, civil as well as electrical portion) is enclosed.** This BOQ supersedes earlier BOQ issued along with original tender dated 31/08/2006.

(CIVIL WORKS FOR 1 X 38 MW, APGCL/ LAKWA POWER PLANT, ASSAM)

- Based on clarifications furnished above, all the bidders are requested to submit their offer without any deviation, within stipulated time i.e. by **21-09-2006 (Receipt date)**. No further queries/clarifications from bidders against this tender , shall be entertained.
- **All the clauses of original tender document, which are not mentioned/covered in above clarifications (TCN-01), will remain unchanged. All other queries raised by bidders shall not be taken into consideration.**

ENCLOSURE : 1. [Revision-01 of BOQ cum rate schedule \(Vol-III\) comprising of civil & electrical portion.](#)

2. [REVISED PROCEDURE OF PILING \(PILING --PART III – SPECIFIC REQUIREMENTS\)](#)

**(MANAGER/SCT)
BHEL/PSERHQ/KOLKATA**

TENDER DOCUMENT NO - PSER:SCT:LKW-C690:06

VOLUME - III (Rev-01)

BOQ CUM SCHEDULE OF RATES

**CIVIL, STRUCTURAL, PILING & ARCHITECTURAL WORKS OF 1
X 38 MW STG, 3 NOS. HRSG & BOPs FOR APGCL/LAKWA
WASTE HEAT RECOVERY PROJECT (PH-I), ASSAM**

AT

APGCL/ LAKWA, ASSAM STATE

**BHARAT HEAVY ELECTRICALS LIMITED
(A Govt Of India Undertaking)
POWER SECTOR – EASTERN REGION
PLOT – DJ 9/1, SECTOR II, SALT LAKE
KOLKATA – 700 091**

CIVIL, STRUCTURAL, PILING & ARCHITECTURAL WORKS OF 1 X 38 MW STG, 3 NOS.
HRSG & BOPs FOR APGCL/LAKWA WASTE HEAT RECOVERY PROJECT (PH-I),
ASSAM

TENDER DOCUMENT NO: PSER:SCT:LKW -C690:06

BOQ CUM SCHEDULE OF RATES

VOLUME – III, Rev-01

PREAMBLE

- | | |
|---|--|
| 1 | This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully in rates for various items. Clauses under this preamble shall be read in conjunction with Volume-IB, Volume - ID, Volume – II, TCN-01 and other tender sections as applicable. |
| 2 | The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions. |
| 3 | Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer. |
| 4 | Unless specifically mentioned otherwise in the tender document, the tenderer shall quote for the finished items and shall provide for the complete cost towards power, fuel, tools, tackles, equipment, constructional plants, temporary works, labour, dismantling of all temporary piping, structures, valves, pumps, tanks & other misc. equipment, strengthening of roads/culverts/bridges etc. including arranging all clearances etc. required for carrying out different activities & tests, materials, levies, taxes(except service tax), transport, layout, repairs, rectification, maintenance till handing over, supervisions, colonies, shops, establishments, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the complete tender document and this schedule. |
| 5 | The quantities of the various items mentioned in this schedule of items are approximate, based on very preliminary information and may vary to any extent or be deleted altogether. The quoted rates of each item will remain firm throughout the period of execution including extension, for reasons whatsoever, as long as variation in the total value of work executed under any part of this contract including extra items, if any but excluding any price variation remains, within thirty percent ($\pm 30\%$) of the awarded price as per LOI . |
| 6 | The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing , clearing of old structures and leveling etc. including fixing of grid pillars, benchmarks etc. required for commencement of site activities. No separate payment will be made towards the same. |
| 7 | Rates shall be quoted in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellations should be countersigned and in case of illegibility the interpretation of engineer shall be final. All entries shall be in English language. |
| 8 | All works item wise shall be measured upon completion and paid for at the rates quoted and accepted as per BHEL approved payment schedule/billing break-up. |

9	The tender shall be deemed to have visited site and made himself aware of all the site conditions, studied the specifications and details of work to be done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
10	No splitting of the job is envisaged. Decision of BHEL in this regard shall be final and binding to the bidders.
11	Engineer's decision shall be final and binding on the contractor regarding clarification of items in the schedule with respect to the other sections/volumes of the contract.
12	
	Note : Bidders to note the following for quoting their rates.
	1) Only authorised persons of bidder having power should sign in the price bid. All the pages must be signed.
	2) For bid evaluation purpose (deciding L1), grand total price comprising CIVIL + ELECTRICAL portion of job shall be considered.
	3) Quoted rates shall be inclusive of all taxes, duties etc., except service tax as per tender terms. Service tax(as applicable) shall be payable/reimbursable extra as per tender terms.

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

<u>SCHEDULE OF QUANTITIES (Civil works)</u>						
CIVIL , STRUCTURAL, ARCHITECTURAL AND PILING WOKK FOR GTG, HRSG, STG ETC.						
PROJECT: 38 MW WASTE HEAT RECOVERY PROJECT ASEB LAKWA,ASSAM						
SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
1.0	EXCAVATION					
1.1a	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 500 M,with necessary shoring, strutting, ramming, trimming and dressing of sides etc., including bailing / pumping out of surface water/rain water/sub soil water, cutting minor vegetation, if any, complete .	CU. M.	32338			
1.1b	Same as Item no-1.1a above but from 2.0 m - 4.0 m depth	CU. M.	4075			
1.1c	Same as Item no-1.1a above but from 4.0 m - 6.0 m depth	CU. M.	2000			
1.1d	Same as Item no-1.1a above but from 6.0 m - 8.0 m depth	CU. M.	2000			
1.2	Extra over item no:- 1.1a for additional lead of 1.0 KM (beyond the initial lead of 500 M as per item 1.1a) and stacking	CU. M.	25000			
2.0	BACKFILLING					
2.1	Earthwork in backfilling & compacting in layers not exceeding 200 mm around foundations, trenches , below grade slabs and all other locations , as per specs, drawings and as directed by the Engineer.					
a)	With earth obtained from stacks within a lead of 500 M	CU. M.	16835			
b)	With selected earth (cohesive non-swelling / murrum) obtained from borrow pits outside the battery limit within a lead of 5.0 Km inclusive of necessary royalty charges.	CU. M.	500			
c)	Extra over 2.1 (c) for every additional lead of 1 Km or part thereof	CU. M.	200			
2.2	Supplying and filling river sand in layers not exceeding 150mm including compacting by mechanical means, flooding with water etc all complete as per specification and as directed by the Engineer.	CU. M.	743			
2.3	a) Removal of surplus earth & debris upto 3 Km lead including transportatin, loading and unloading , dumping, stacking, levelling and dressing etc.complete as per specifications and drawings.	CU. M.	22388			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
2.4	Site grading and levelling with filling excavated earth obtained from foundations in layers not exceeding 250 mm within the project area using mechanical / manual means breaking clods, cutting heaps, compacting using compaction equipment to obtain 95% of proctor density for cohesive soils and 85 % for non-cohesive soils, all complete as drgs and spcns.	CU. M.	1000			
3.0	CONCRETE(ONLY CEMENT WILL BE SUPPLIED BY BHEL FREE OF COST)					
3.1	Supplying, laying in position, compacting and curing as per specification plain cement concrete using slag/ ordinary portland cement of the following mix with 20mm down size aggregates below GL and upto 1.0M above GL , including consolidation of subgrade wherever required.(min cement content as per code)					
a)	1:4:8	CU. M.	802			
b)	1:3:6	CU. M.	685			
3.2	Supplying, laying in position, curing as per specifications controlled concrete (using slag/ordinary portland cement) of the following grades(graded coarse aggregates of 20mm down shall be used wherever applicable)					
a)	for all depths below GL and 1.0 m above GL					
	i) Grade M-20 in foundations, floors,beams, and pavings,trenches,drains etc all.	CU. M.	527			
	ii) Grade M-25 in foundations, slabs, columns, beams, floors, pavement, drains, trenches etc all.	CU. M.	4000			
	iii) Grade M-30 in foundations, slabs, columns, beams, floors, pavements, trenches, drains etc all.	CU. M.	200			
b)	for all elevations greater than 1m above G.L.					
	i) Grade M-20 for floor, beams,columns,walls etc all superstructure concreting	CU. M.	1070			
	ii) Grade M-25 for STG/nachine foundation top deck, columns, beams, slab, chajjas, at all levels including addition of suitable plastisizers conforming to IS 9103 to achieve required strength in concrete as per manufacturers recomondations,, preparation of scheme for concreting, getting it approved by engineer.	CU. M.	570			
3.3	Providing and placing in position RCC of grade M20 using slag/ ordinary portland cement with 12.5mm & down graded chips for encasing of steel structures at all elevations as per drawings, specifications , all complete.	CU.M	50			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
3.4	Providing and placing in position, compating , curing Reinforced concrete for paving of M20 grade (using slag/ ordinary portland cement) including laying in approved size panels, leaving grooves for sealing joints, cost of form work, finishing of top surface as required but excluding cost of reinforcement which will be paid under relevant items, etc.all complete for floors and pavement as per drawing and specifications.	CU.M	300			
3.5a)	Supplying and mixing 'plastocrete-n/super or approved equivalent brand of integral water proofing compound in cement concrete and for cement mortar Noleek-CP/Sika latex or approved equivalent brand . all complete as per drawings and specifications.	Kgs	100			
b)	Providing and Fixing in position 12mm thick 'shalitex' or approved equivalent fibre board in expansion joints etc all complete as per specifications and drawings.	SQ. M.	15			
3.6	Providing and Fixing in position 25mm thick 'shalitex' or approved equivalent fibre board in expansion joints etc all complete as per specifications and drawings.	SQ. M.	88			
3.7	Supplying and laying sealing compound with premium grade Silicon sealant (SILPRUF of GE Silicon or approved equivalent) conforming to IS:1834 as per specification.					
	a) 20mm wide,25mm deep	R.M.	470			
	b) 10mm wide,40mm deep	R.M.	1400			
3.8	Fabricating and placing in position precast reinforced concrete trench covers of grade M25 (using slag/ ordinary portland cement)of varying thickness including fixing of reinforcement, shuttering, lifting lugs etc., all complete including edge angles as per drawing and specifications. Reinforcement will be paid under item 5.1 (b) and edge angles will be paid for under item 6.1(b)	CU. M	175			
3.9	Supplying and installing ribbed PVC water stops 6mm thick and 230mm wide in cement concrete including laps by fixing / valcanizing joints and folds as applicable and approved by the Engineer.	RM	100			
3.10	Grouting under equipment bases as required,curing and finishing the exposed surfaces including all materials, form work etc. as per drawings and directions of the Engineer.					
a)	using non shrink grout like conbextra GP 1 or approved equivalent, including cost of grout mix, form work, finishing , curing etc. , all complete as per drawings and manufacturers' specifications.	CU. M.	50			
b)	Same as item 3.11 (a) but using non shrink grout like conbextra GP 2	CU. M.	16			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
4.0	FORM WORK					
4.1	Supplying, installing, dismantling and removing the following classes 'of formwork as per drawings and specifications at all levels using steel / plywood shuttering.					
a)	Straight	SQ.M.	25079			
b)	Curved in plan	SQ.M.	1210			
4.2(a)	Providing pockets in concrete of sectional area less than 0.1 sq.m in plan by fixing and removing formwork for anchor bolts , pipe sleeves etc. as per drgs including. all materials ,labour etc. complete as per drawings and specifications.					
	a) Up to 300 mm deep	Nos.	336			
	b) 301mm to 600mm deep	Nos.	72			
	c) 601mm to 1000mm deep	Nos.	180			
	d) 1001 mm to 1500 mm deep	Nos.	50			
4.2(b)	Providing pockets in concrete of sectional area less than 0.5 sq.m in plan by fixing and removing formwork for anchor bolts , pipe sleeves etc. as per drgs including. all materials ,labour etc. complete as per drawings and specifications.					
	a) Upto 100 mm deep	Nos.	50			
5.0	REINFORCEMENT(Steel to be supplied by BHEL)					
5.1	Supplying,bending, binding, transporting and placing in position following types of reinforcement of all diameters and at all elevations using approved quality binding wires as per specifications and drawings.					
	a) MS reinforcement conforming to IS:432	M.T.	20			
	b) HYSD reinforcement conforming to IS:1786.	M.T.	1185			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
5.2	Supplying and fixing in position hard drawn welded wire fabric 3mm dia.,50X50mm mesh,2.22Kg/sq.m, as per IS 1566 to steel structures as reinforcement, for encasing, at various elevations , all complete as per drawings and specifications.	Sq. m.	300			
6.0	STRUCTURAL STEEL (structural steel to be supplied by BHEL free of cost)					
6.1	Taking delivery of raw steel material supplied by BHEL and transporting to work site, fabricating using approved quality electrodes of 6013 or low hydrogen 7018 (for plate thickness above 20 mm) including preheating, packing and delivering at the stores or at site of the following categories of steelwork,all necessary bolts, nuts & washers with a primer coat of red oxide zinc phosphate as per IS 12744 of 30 micron DFT after power tool cleaning to SSPC-SP-3 complete as per drawings and specifications.					
a)	Steel work consisting of portal frames, laced & plated columns, beams, roof trusses, purlins, non plated beams, bracings, sag rods, gantry girders, bunkers, silos, hoppers, space frame, shear connector, hangers, struts, monorails, galleries, stiffeners, wall beam, sheeting runners, brackets, slab column, wall cladding structures, bracings, cleats, trestles, base plates, chequered plate flooring, decking & seal plates etc. with anchor cleats / end plates fabricated with standard rolled sections, plates, flats, angles, beams, channels, pipes etc.	M.T.	1300			
b)	Miscellaneous steel work such as cable trench cover frames, fencing poles etc.	M.T.	50			
6.2	Erection of structural steel as described in 6.1(a) including grouting under bases, with necessary erection bolts, nuts & washers, welding electrodes, etc all complete as drawings and specifications.	M.T	1350			
6.3a	Fabricating and fixing in positions MS inserts like rails sections, channels, angles, flats, rounds, plates, pipe sleeves and any other structural shape etc. , necessary templates / stagings, cutting to required lengths, bolting revetting welding etc. as required all complete as per drawings and specifications.(BHEL WILL SUPPLY STEEL MATERIAL FREE OF COST)	M.T.	35			
6.3b	Supplying, fabricating and fixing in positions MS inserts like rails sections, channels, angles, flats, rounds, plates, pipe sleeves and any other structural shape etc. including cost of steel , necessary templates / stagings, cutting to required lengths, bolting revetting welding etc. as required all complete as per drawings and specifications.(CONTRACTOR WILL SUPPLY ALL MATERIALS INCLUDING STEEL MATERIAL)	M.T.	10			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
6.4	Taking delivery of foundation hardware supplied by BHEL and transporting to site, fixing in position foundation hardware such as anchor bolts, nuts, washers, anchor assembly etc. as per drawing including fixing to proper level and alignment using contractor's own templates, protecting till handover of the foundation, all complete as per drawings and specifications.	M.T.	16			
6.5	Supplying and erecting hot dip galvanised GI floor gratings , staircase steps,ladder etc.with minimum coating of <u>710 gms per sq.m.</u> as per IS 2629 and dwgs including cost of materials, consummables, labour, all fasteners, site welding etc complete as per drawing no 1-38142-04539 & specifications.(CONTRACTOR WILL SUPPLY ALL MATERIALS)	M.T	50			
6.6	Supplying, fabricating, fixing in position 40 mm dia MS pipe handrails ,galvanized as per IS 2629,with minimum coating of 710 gms per sq.m., at various elevation as per drawing no 1-38142-04539 & specifications.including cost of materials, consummables, labour etc. all complete. specifications.	R.M.	1600			
6.7	Supplying, fabricating, fixing in position by welding 18 gauge MS sheets to steel columns for encasing at various elevations , all complete as per drawings and specifications.	M.T	5			
6.8	Supplying, installing and fixing in position PVF2 precoated galvalume troughed sheeting of minimum thickness of 0.58 mm TCT with concealed fastening system and any other fixing material and means as required as per manufacturer specifications at all elevations as per drawings and specifications (wall cladding supporting structures will be paid as per relevant items)	SQ.M.	1600			
6.9	Supplying, installing and fixing in position side sheeting of insulated sandwiched metal cladding (profiled). Metal shall be permanently pre coated with fluoro polymer over zinc aluminium high tensile steel profiled sheet of 0.5 mm TCT thick for outer sheet. for inner sheet permanently colour coated (RMP coating) over galvanised steel sheets of minimum 0.6 mm thick and class 180 gsm/sqm. the insulation shall be bonded mineral wool of minimum density 32 kg/cu.m with minimum coefficient of thermal conductivity 0.49 mw/cm deg C(at 50 deg C) confirming to IS 8183 (wall cladding supporting structures will be paid as per relevant items)	SQ.M.	2000			
7.0	MASONRY & ALLIED WORKS					
7.1	Supplying and laying of coarsed rubble stone massonary in cement mortar 1:6 in foundations and basement as per specifications(Using slag/ ordinary portland cement)	CU.M.	5			

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SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
7.2	Supplying and laying in position minimum 75 kg/cm ² as per IS:1077 brick work in foundation and upto plinth in cement sand mortar (1:6) including mixing mortar, laying bricks, raking of joints, curing etc., all complete as per drawings as specifications. (Using slag/ ordinary portland cement)	CU.M.	95			
7.3a	Similar to 7.2 in super-structure at all elevations	CU.M.	1255			
7.3b	125 mm thick brickwork in superstructure in cement mortar 1:4 (1 cement: 4 course sand) including all materials, labours, scaffoldings and other incidentals etc, complete	SQ. M	200			
7.3c	Single brick-flat soling including ramming and dressing bed to the proper level and filling the joints with powder earth or local sand including all materials, labours etc.	SQ. M	300			
7.3d	Supplying and providing single line brick on edge with bricks for protection along edges of road, lawn etc.	R.M.	15			
7.4	Supplying and laying position minimum 75 kg/cm ² as per IS:1077 brickwork in half brick walls at various elevations in 1:4 cement sand mortar with HB netting at every fourth layer including mixing mortars, raking joints, curing etc all complete as per drawings and specifications. (Using slag/ ordinary portland cement)	CU.M.	30			
7.5	Supplying and laying damp proof course 50mm thick with plain concrete (1:1 ¹ / ₂ : 3) nominal mix by volume with 10mm down size aggregates and minimum 3% admixture of water proofing compound. The percentage of admixture shall be as per manufacturer's specification but not less than 2% by weight of cement. the top surface shall be double chequered and cured by ponding for seven days	SQ. M	235			
7.6(a)	Providing 12mm thick cement-sand (1:6) plastering with smooth cement finish of the brick walls with side of the wall at various elevations including mixing, laying, finishing, curing, rounding corners, cutting grooves, wherever required, etc. with all materials complete as per drawings and specifications. (Using slag/ ordinary portland cement)	SQ. M	10530			
7.6(b)	Providing 15mm thick cement-sand (1:6) plastering on rough side of half brick wall to the interior faces of the brick walls with side of the wall at various elevations including mixing, laying, finishing, curing, rounding corners, cutting grooves, wherever required, etc. with all materials complete as per drawings and specifications. (Using slag/ ordinary portland cement)	SQ. M	1830			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
7.7	Providing 18 mm thick external cement-sand plastering in two layers. bottom layer of 12 mm with 1:5 cement sand mortar with coarse sand and top layer of 6 mm thick with 1:6 cement sand mortar with fine sand including mixing, laying, finishing, curing, rounding corners, cutting grooves, wherever required, etc. with all materials complete as per drawings and specifications. (Using slag/ordinary portland cement)	SQ. M	6600			
7.8	Providing and placing in position 50 mm thk lath plaster in CM 1:4 for fins, drops etc. including providing and fixing 24 G metal lath (wire mesh) but excluding cost of reinforcement and shuttering work.	SQ.M	100			
7.9	Providing minimum 6 mm thick (1:4) cement sand plaster over concrete surfaces of columns, beams, slabs etc. similar to item 7.6(a) above (Using slag/ordinary portland cement)	SQ.M	450			
7.10	Drip course at various elevations to parapet, chajja, windows, door heads etc. with all material complete as per drawings, spcns. and directions of the engineer.	R.M.	500			
7.11	Providing 12mm wide x 12 mm deep rectangular grooves in plaster for architectural purposes, including all materials, etc. all complete. as per drawings.	R.M.	100			
7.12	Extra over plaster for providing neat cement finish	SQ.M.	200			
7.13	Providing 2mm thick plaster of paris punning to newly plastered surfaces at various elevations with all materials etc., complete as per specifications and directions of engineer.	SQ.M.	950			
7.14	Supplying and fixing 24 G meta lath (wire mesh) at junctions of brick work and concrete work before plastering at various elevations locations as shown in drawings and as directed by the Engineer	SQ.M.	200			
7.15	Providing average 50mm thick 1:2:4 cement screed with 6mm down stone chips, to required slope with all materials, hacking the old concrete, finishing, curing etc., as per drgs & specifications.	CU.M	10			
8.0	FLOORING					
8.1	Supplying, laying 50 mm thick acid resistant and alkali resistant floor / DADO with tiles confirming to IS 4457. Over potassium silicate based mortar as per IS4832(Part 1) and alkali resistant paint IS 158 and joint filler as per IS 4832 (Part 2) dadoo upto height 2.2 m height above floor with similar finish shall be provided. the tiles shall be unglazed ceramic vitreous acid resistant tiles.	SQ.M.	300			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
8.2	Supplying and laying Heavy duty impact resistance Ceramic tile flooring of 20mm thick(min. size 300 x 300 mm) including preparation of base ,cleaning the base concrete, laying underbed , finishing , curing etc. at all elevations all complete as per specifications.	SQ.M.	100			
8.3a	Supplying and fixing ceramic tiles of sizes 300X300X8mm for flooring including pereparation of base laying underbed, finishing and rounding corners and junctions, curing etc. complete as per drawings and specifications.	SQ.M.	40			
8.3b	Supplying and fixing ceramic tiles of sizes 300X200X6 for dado up to 2.2 m elevations including pereparation of base laying underbed, finishing and rounding corners and junctions, curing etc. completcas per drawings and specifications.	SQ.M.	60			
8.4	Laying 20 mm thick grey cement skirting including preparation of base , laying underbed, finishing with neat cement, rounding corners and junctions, curing etc., complete as per drawings and specifications.	SQ.M.	50			
8.5	Supplying laying and fixing cast-in situ white cement based terrazzo tile of approved colour as per IS:2114 at staircase steps and landing at vatiuous elevations including preparation of base laying under bed, finishing polishing etc., as per drawings and specifications.(Total thickness of finish shall be of 25mm)	SQ.M.	100			
8.6	Supplying,laying & fixing 600X600X8 mm thick virtified tiles flooring of approved band,make,shade & size laid over concrete bedding in C:M(1:4) under layer of 30mm thk as per spec.	SQ.M.	100			
8.7	Supply and laying of 3mm thick PVC skirting 150 mm high including preparation, fixing tile finishing etc., all complete as per approved manufacturer's specifications.	SQ.M.	50			
8.8	Providing and laying PVC roll approved shade, texture of 2mm thickness in floor, skirting fixed over Heavy duty flooring wherever specified by means of neoprene based rubber adhesive (as per manufacture specification) including cleaning surfaces with approved detergent to remove stains etc. all complete as per specifications.	SQ.M.	50			
8.9	Providing 50mm thick heavy duty cement flooring comprising 38mm cement concrete base laying underbed in panels bound by 4X40mm aluminium strips followed by 12mm thick wearing top layer of cement, metallic hardner and stone aggregate, finishing, curing etc. all complete with dust protective coating as per specifications (Using slag/ ordinary portland cement).	SQ.M.	3000			
8.10	Supplying and laying marble stone flooring min. 40mm thick over all comprising min. 19 mm thick Baroda green marble stone slabs of grade -I quality including preparation of base course laying underbed , finishing, curing etc. all complete as per specifications.	SQ.M.	20			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
8.11	Providing cement concrete flooring comprising of laying a thick slurry (cement @2.75 Kg. Per Sq. Mtr mixed with water) over the 25mm thick base course laying underbed in panels bound by 5X20mm glass strips and finishing, curing etc. all complete as per specifications. (Using slag/ ordinary portland cement)	SQ.M.	50			
8.12	Supplying and laying pigmented epoxy coating including min 3mm thick screed and finishing coat in two coats @ 125gm./ sq.m per coat all as per specifications.	SQ.M.	30			
8.13	Supplying,laying & fixing polished, heavy duty carborundum tiles of 300X300X25 thk manufactured as per IS:1237 using colouring pigment and hard chips like carboradum, quartz etc. shall be laid as per IS:1443 over concrete under bed to result in over all thickness of 50mm all as per spec & drgs.	SQ.M.	750			
8.14	supplying and providing grey coloured granite tiles dado upto 1000 mm from finsih floor over brick wall cement-sand mortar 1:3 including sill of windows and glazed partitions. Sizes of tiles shall be 300x150x8	SQ.M	50			
9.0	FALSE FLOORING					
	Supplying, erecting, fitting & laying false flooring 35 mm thick single layer phenol bonded particle board of fire resistant quality of size 610 x 610 (approx) and top finished with 2mm thick anti-static vinyle tiles and PVC lipping on all sides. False floor shall be mounted on standard steel grid and pedestal system of approved manufacturer and shall be installed as per details and supervision of manufacturer. height of cavity floor shall be 600 approx.All complete as per specifications and drgs	SQ. M.	800			
9.1	40 mm thick cement concrete flooring & skirting(150 mm high) in grey cement . Under layer of 25 mm th cement concrete mix 1:3:6 and top layer of cement concrete proportion 1:1:2 , 15 mm thick by volume , including cement slurry @2.75 kg/sq m. of floor area laid in panels etc complete.	Sqm	210			
9.2	3 mm Neat cement punning in wall, dado,skirting, window sills, floor, drain etc. including all materials, labours etc. complete.	Sqm	10			
9.3	Providing and fixing homogeneous Polyvinyl chloride sheet in flooring and skirting in approved pattern on a smooth and damp proof base using rubber based adhesives of approved quality and manufacturer like dunlop S-758, Fevicol SR 998 or equivalent including application of putty to make the floor smooth to receive the PVC sheet, rolling with light wooden roller weighing about 5 kg . all complete asper manufactureres specification as directed by Engineer in charge , in approved colour and shed. a) 2.0 mm thick.	Sqm	190			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
9.4	Providing and fixing 1st quality white colour ceramic glazed tiles conforming to IS : 13753 of minimum thickness 5 mm of approved make like NICO, ORIENT, SOMANY KAJARIA, or equivalent make in all colours, shades except burgundy, bottle green, black of SIZE as approved by Engineer -in-Charge in skirting, risers of steps and dados over 12 mm thick bed of Cement Mortar 1:3 (1 Cement : 3 Coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including in white cement mixed with pigment of matching shade complete	Sqm	100			
9.5	Providing and laying 1st quality Ceramic glazed floor tiles of any size conforming to IS : 13755 of NITCO, ORIENT, SOMANY KAJARIA, or equivalent make in colours such as White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick Cement Mortar 1:4 (1Cement : 4 Coarse sand) including pointing the joints with white cement and matching pigment etc. complete	Sqm	150			
10.0	FALSE CEILING					
10.1	Supplying and fixing gypsum board false ceiling (snap grid system) suspended from steel members or RCC slab/beam with anchor fasteners by concealed suspending system as per manufacturer detail. Filler panel with gypsum board shall be provided to hide the metal cladding member of control room and its allied areas. suitable MS channel gridway shall be provided over false ceiling for maintenance purpose. the minimum channel section shall be ISMC 75 at a spacing of 1.5m c/c both ways. bonded glass wool insulation minimum 25 mm thick in polyethylene shall be provided over false ceiling for thermal and acoustical insulation the density of glass wool shall be greater than 32kg/cum and shall confirm to IS8183. Maximum value of thermal conductivity shall be 1.0 W/sq.m/deg C	SQ. M.	800			
10.2	Providing and fixing under deck insulation on the ceiling system (at soffit of the slab) consisting of 50 thick resin bonded mineral fibre wool board conforming to IS:8183 ,Group-1 (having adensity of 40 kg/m ³) faced with alluminium foil , as non-combustible as per BS:476, part - 4 including fixing the insulation to soffit / sides of beams by means of approved quality adhesive and providing & fixing 3 mm thick 190 x 25 mm L-shaped M.S. slotted cleats to the soffit of the slab with dash fasteners @ 600 mm c / c, both ways securing the insulation with chicken wire net ting with 24GX 25mm stretched tightly over the insulation and held by 14 SWG G.I. wire tied diagonally through the slots of cleats etc., all complete as per drgs. and spec.	SQ.M.	800			
10.2a	Providing & fixing and fitting hard wood (bola or equivalent) batten / runner (consists of 65x40mm, 50x25mm, 75x50mm etc.) frame work of size 900x900mm /1200x1200mm etc for false ceiling, support to be taken from steel truss with 1.5mm thick GI wire @ 1200 c/c grid pattern, including costing of all labour and materials etc. complete	CU.M.	1.6			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
10.2b	Providing & fixing and fitting 4 mm commercial ply wood on wooden frame work of size 900x900mm /1200x1200mm etc for false ceiling work including one coat of wood primer and two coat of white colour synthetic enamel paint of approved brand etc. all labour and materials, complete.	SQ.M.	250			
11.0	PAINTING					
11.1	Providing minimum two coats of water proof cement paint made from best quality white cement and lime resistant colours with accelerators, water proofing agents and fungicides. Including preparation of surfaces, scaffolding, cost of paint etc., all complete as per drawings and specifications. the paint shall confirm to IS5410	SQ.M.	5430			
11.2	Providing complete protective coating system to structural steel works with two coats of synthetic enamel paints(20 micron DFT each, total 40 micron) over a coat of red oxide zinc phosphate primer(30 micron DFT conforming to IS 12744) and paint conforming to IS 2932 and IS 2933, consumables and scaffoldings complete as per specifications and drawings.	M.T.	1350			
11.3	Masonry surfaces& parapets in ST bldg shal be finshed with minimum 2 coats of exterior grade acrylic emulsion paint APCOLITE APEX of asian paints or equivalent for uniform finish. This includes preparation of surface, cost of paint, scaffolding, etc	SQ.M.	1600			
11.4	Providing & applying to interior surfaces two or three coats of Oil Bound distemper of approved shade & make confirming to IS : 428 to obtain a even finish and uniform color over a coat of primer as per manufacture recommendation including cost of paint, surface preparation, scaffolding etc, all complete as per spec. and drawing.	SQ.M.	1100			
11.5	Providing and applying two coats of acrylic plastic emulsion paint(water based with rutile titanium dioxide and other selected pigments and fungicide) over POP confirming to IS : 5411 part-1 , including cost of paint, surface preparation with 2 mm thick plaster of paris punning, materials, scaffolding etc. all complete as per specification, scraping / removing of old paints, making the surface good with plaster of paris in case of old surface, all complete as per specification and to the satification of engineer / architect incharge. the paint film shall allow the moisture in wall to escape without peeling and blistering	SQ.M.	6100			
11.6	Providing three or more coats of white wash to give a smooth and even shade including cleaning & preperation of surfaces scaffolding etc., complete	SQ.M.	680			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
11.7	Providing minimum two coats of acid/alkali resistant chlorinated rubber based paint over a coat of linsol HB zinc phosphate primer, as per manufactures instructions, to plastered surfaces. including preparation of surfaces, scaffolding etc., all complete as per drawings and specifications	SQ.M.	50			
11.8	Synthetic washable distemper of Asian paints Brand including cost of material, scaffolding, preparation of surface etc	SQ.M	5000			
11.9	Providing two coats of polyurethane painting as per IS:162 over french polishing as per IS:348 over wood work at various elevations , including all materials, surface preparation, finishing, polishing etc. all complete. French polish should not be used on bare wood. it shall be used as finishing on wood after the wood is pretreated with liquid wood filler confirming to IS:345 is applied and rubbed out	SQ.M	100			
11.10	Providing two coats of oil resistant painting as per IS:162 in oil equipment room, oil canal, fuel oil pump house, etc including preparation of surface, scaffolding, paint cost, etc.	SQ.M	100			
11.11	Providing red colour paint (post office red) to indicate emergency areas and to paint emergency signs including paint cost and preparation of surface scaffolding etc	SQ.M	50			
11.12	Providing Fire proof putty in cable penetration cutouts in cut-out/walls of cable spreader rooms as approved by engineer-in-charge	SQ.M	300			
12.0	Water proofing					
12.1	Preparation of grading underbed with 1:2:4 mix using 12mm down graded coarse aggregate at various elevations including mixing, laying, curing etc. in varying thickness with all materials complete as per drawings and specifications.	CU.M.	2			
12.2	Preparation of average 25 mm thick grading underbed with 1:4 cement coarse sand mortar at various elevations including mixing laying, curing etc. with all materials complete as per drawings & specifications.	SQ.M.	100			
12.3	Supplying and laying 8 layers of water proofing treatment with bitumen felts conforming to IS:1364 bitumen felt confirming to IS:1322& bitumen primer to IS:3384 as per manufacturers' specifications including surface preparation as per specification & bonding material shall consist of blown type bitumen conforming to IS:702 or residual bitumen to IS:73 of mixture of two to suit local condition.	SQ.M.	200			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
12.4	Same as above but for flashing at junction of slab and parapet wall including preparation of surfaces, cutting grooves, caulking the end of flashing etc. complete.	SQ.M.	100			
12.5	Light weight Foam concrete 50 mm thk . The insulating properties shall be such that the thermal conductivity shall not exceed 0.125 Kcal. m/sq.m h degree C	SQ.M	2000			
12.6	Pressed precast concrete tiles 20 mm thick on 15 mm thick cement: sand (1:4) mortar--- for walk ways on roof	SQ.M	600			
12.7	Providing and making 150x150mm size fillets in cement concrete 1:2:4 at junctions of roof slab and parapet wall including finishing etc. all complete.	CU.M.	10			
13.0	DOORS, WINDOWS & VENTILATORS					
13.1	Providing and fixing steel windows and ventilators conforming to IS: 1361 or IS 1038 (Latest editions) including glazing clips and special metal sash putty with approved make handles, peg stays, stoppers, hinges, handles all complete as per drawing 1-38142-004533 and specifications. Welds shall be dressed flush on all exposed and contact surfaces. Where composite unit openings are required, the individual units shall be joined together with requisite transoms and mullions. All windows shall be outside glazed, fixed with putty or metal glazing beads. Where aluminium glazing beads are specified, they shall be extruded aluminium channel 9.5mmx9.5mmx1.6mm (Indal Section No. 2209) unless otherwise shown on drawings, including two coats of synthetic enamel paints (20 micron DFT each, total 40 micron) over a coat of red oxide zinc phosphate primer (30 micron DFT) conforming to IS-12744. Aluminium beads shall be given one coat of zinc chromate primer before fixing windows (Glazing will be paid under item 13.11)					
a)	fixed type	SQ.M	60			
b)	openable type	SQ.M	100			
13.2	Providing and fixing of aluminium frame glazed windows and ventilators including frames and shutters, transoms, mullions, fittings and fixtures, aluminium beading, but excluding glazing. Aluminium sections shall be of INDAL 40 series of 15 micron thick anodizing coating. Aluminium alloy shall conform to IS 737 of corrosion grade. Frames mullions, transome etc shall be anodized in a bath of sulphuric acid. The anodized material shall be sealed by immersing in boiling water. All as per drgs no 1-38142-04535 and spec. (Glazing will be paid under item 13.11)					

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
a)	fixed type	SQ.M	75			
b)	openable type	SQ.M	125			
c)	fixed type with hermetically sealed double glazing	SQ.M	100			
13.3	Supplying and erecting including assembling fitting and fixing best quality 45mm thk. hollow steel doors double plated with 18 gauge MS sheets, pressed steel frames at various elevations including frames, shutters, fittings and fixtures, CP mortice lock cum handle mastic caulking, grouting the frames, including two coats of synthetic enamel paints(20 micron DFT each, total 40 micron) over a coat of red oxide zinc phosphate primer(30 micron DFT conforming to IS-12744 complete as per drg no 1-38142-04534 and specifications.					
a)	Single shutter	SQ.M.	50			
b)	Double shutter	SQ.M.	50			
13.4	Same as item 13.3, but with 200mm X 300mm vision panels with 6 mm thk. Plate glass etc. complete as per specifications.					
a)	Single shutter	SQ.M.	10			
b)	Double shutter	SQ.M.	5			
13.5	Supplying,erecting, assembling best quality PVC panelled doors of Sintex make or approved equivalent for toilets including all fittings and fixtures etc. all complete as per drawings and specifications.	SQ.M.	25			
13.6	Supplying & erecting including assembling,fitting & fixing steel louvers at various elevations including frames, shutters, fitting and fixtures,mastic caulking,grouting the frame,rawl bolt for fixing etc. as required with all materials etc. complete as per drawing no 1-38142-004533 and specifications including two coats of synthetic enamel paints(20 micron DFT each, total 40 micron) over a coat of red oxide zinc phosphate primer(30 micron DFT) conforming to IS-12744.	SQ.M.	15			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
13.6A	supplying & fixing steel windows/ventilators as per IS:1038 & IS:1361 and drawings including providing & fixing 6mm wired glass panels with glazing clips and special metal sash putty with approved make handels peg stays, stoppers, hinges providing two coats of approved enamel paint over a coat of primer etc. all complete. fixed MS grills shall be provided in all windows in MCC room in ground floor	SQ.M.	25			
13.7	Providing and fixing in position composite, insulated type fire proof doors of approved make having 2Hrs fire rating conforming to IS :3614 Part I with all necessary fittings and fixtures including self closing hinges, locking arrangement and painting with two coats of fire proof paint over approved primer etc. complete (contractor to obtain and furnish T.A.C. approval for supplies made)					
a)	Single leaf	SQ.M.	20			
b)	Double leaf	SQ.M.	20			
13.8	Providing and fixing wooden panelled doors with all fittings and fixtures, approved quality heavy duty hinges, anodised aluminium tower bolts, aldrops, door stops etc. all complete as per drawing no 2-38142-00800 and specifications.	SQ.M.	20			
13.9	Providing and fixing approved quality hydraulic door closer conforming to IS :3564 as directed by the Engineer.	Nos	20			
13.10	Providing and fixing 2mm thk. approved quality rubber sealing strip around doors and windows for making them air tight including cost of rubber strip adhesive, clips etc. all complete as per specifications and drawings.	R.M.	300			
13.11	Supplying fitting and fixing the following glazing specials at various elevations including supplying rubber beading, cost of all materials etc. complete as per specifications to steel/aluminium windows, doors & partitions.					
a)	4mm thick sheet glass	SQ.M	100			
b)	6.0 mm thick toughened clear glass	SQ.M.	100			
c)	6.0 mm thick bronze tinted toughened float glass	SQ.M.	50			
d)	Hermetically sealed double glazed with 6.0 mm thick bronze tinted toughened glass with 12 mm gap in-between	SQ.M.	150			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
e)	6.00 mm thick clear wired glass	SQ.M.	200			
13.12	Supplying, fitting and fixing 12 mm thick twin laminated Gypsum board of "India Gypsum" make at various elevations to aluminium windows, doors & partitions, including supplying rubber gaskets, cost of all materials etc. complete as per drawings and specifications.	SQ.M.	150			
13.13	Supplying and erecting including assembling fitting and fixing Aluminium partition frames with matching doors etc., as per drawing no. 1-38142-04535 and specs. with frames, shutters, double acting heavy duty floor springs, fittings, and fixtures, mortice lock, aluminium beading but excluding glazing etc. complete (Glazing will be paid under item 13.11)	SQ.M.				
	a) single glazed	SQ.M	120			
	b) double glazed	SQ.M	120			
13.14	Supplying and erecting including assembling fitting and fixing Aluminium glazed wall panel frames as per drawing no. 1-38142-04535 and specs. with fittings, and fixtures, aluminium beading but excluding glazing etc. complete (Glazing will be paid under item 13.11)					
	a) single glazed	SQ.M	150			
	b) double glazed with hermetically sealed glass	SQ.M	120			
13.15	Supplying, fitting and fixing anodised aluminium framed doors only as per drg.no. 4-38142-04535 and specs. Same as item no 13.13 but to be fixed masonry openings.	SQ.M.	75			
13.16	Providing and fixing anodised aluminium louvered ventilators all as per drawing no. 4-38144-00018 including glazing with 6 thk. Clear wired glass.	SQ.M.	30			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
13.17A	Supplying, fitting and fixing door frame with MS angle as per drawing and direction of required section. Butt hinges to be supplied as necessary and the holes for counter sunk machine screw and nuts will be such as to fit 8 to 10 mm iron screw. The counter nuts are to be welded after careful checking of the screws. All welding spot should be properly ... or rounded smooth including cost of welding of hinge for hinge cleat including supply of the same and also lugs for hasp bolts, socket bolt etc & necessary MS clamp of 25 mm x 6 mm flat 225 mm long as per direction welded to the frame including supply of fixing clamps with cement concrete 4:2:1 complete. (Mode of measurement shall be calculated based on the standard sectional weight of the angle section as per relevant IS Code and no payment for butt hinges, lugs clamps screw etc as well as welding shall be made.)	MT	1.7			
13.17B	Providing and fixing 40 mm thick solid core flush door shutters (single or double leaf, with or without vision panel with glass) as per drawing with commercial faces and hard board edges. Core of the solid core doors shall be of fibre block board of approved make including Godrej or equivalent make Mortice lock with handle on both sides, approved ISI mark anodised aluminium fittings like door stopper, 200 mm long tower bolts, 16 x 200 mm long aldrops, 125 mm handle on both faces etc complete with shop and final painting / polishing as per specification all complete.	Sqm	650			
13.17C	Providing and fixing steel openable windows / top hung ventilator as per drawings with steel section as per IS: 1038 and IS: 1361 & IS:7452. Glazing shall be 4 mm th clear glass on fixed portion and 4 mm thick clear glass on openable portion including all fittings, beadings, hold fasts, making suitable holes for hold fasts and grouting with cement concrete (1:1.5 : 3), shop and final painting (two coats of synthetic enamel paint over zinc chromate primer conforming to IS-2074) as per specification all complete. The work to be executed as per specification, drawings and direction of BHEL. Cost includes providing of 12mm square bar 120mm c/c welded with the window frame.	Sqm	60			
13.17D	Providing and fixing anodised aluminium fitting (ISI Marked) for doors, windows etc. including all materials, labours etc complete for the following : sliding door bolts anodised (anodic coating not less than grade AC 10 as per IS : 1868) with nuts and screws etc. complete for 300 x 16 mm size.					
i	Sliding door bolts 30 cm x 16 mm size	Each	20			
ii	Tower bolts - 15 cm x 13 mm	Each	20			
iii	Tower bolts - 22.5 cm x 13 mm	Each	12			
iv	Door Handle 15 cm size	Each	20			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
v	Hanging floor door stopper - Single rubber stopper	Each	12			
13.17E	Providing and fixing approved 300 mm long x 16 mm dia oxidised MS Hasp bolt as per direction of BHEL.	Each	10			
13.17F	Providing and fixing oxidised M.S casement stays(straight peg type) with necessary screws etc complete. A) 300mm weighing not less than 200gms.	Each	40			
13.17G	Providing and fixing oxidised M.S handles conforming to IS : 4992 with necessary screws etc. complete. A) 125mm	Each	24			
13.17H	Supplying and fixing MS Window fasteners including fittings and fixtures	Each	30			
13.17J	Supplying, fitting and fixing approved brand hydraulic door closer of Godrej or equivalent make conforming to IS specification with necessary screws and other fittings.	Each	12			
13.17K	Supplying, fitting and fixing anodized Aluminium D type handle 150mm x 16mm with plate & hexagonal or round rod complete with new screws.	Each	12			
14.0	ROLLING SHUTTERS :					
14.1	Supplying, erecting, assembling, fitting and fixing rolling steel shutters of 18 gauge steel sheets with MS rolled channel frame as per IS:6248 and accessories from approved manufacturers including all fixtures, locking arrangements, electrical wiring for motor drive etc. , including two coats of synthetic enamel paints(20 micron DFT each, total 40 micron) over a coat of red oxide zinc phosphate primer(30 micron DFT) conforming to IS-12744 of approved brand and shade all complete as per specifications and drawings. (All the rolling shutters irrespective of their size should have mechanical as well as electrical opening arrangements.)	SQ.M.	200			
15.0	SANITATION / PLUMBING					
15.1	Supplying and erecting HDPE cylindrical and vertical water tank with closed top of SINTEX make or approved equivalent of following capacity.					
	a) 2000 LTR	Nos	2			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
15.2	Supplying, fitting and fixing heavy cast iron " Roof Drain" pipes at various elevations including 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.					
	a) 100 mm dia.	R.M.	30			
	b) 150 mm dia.	R.M.	150			
15.3	Similar to item no:-15.2 above supplying fitting and fixing of PVC drain pipes of approved make at various elevations including shoe bends junctions sockets, adapters, brackets, hanger supports etc., jointing with appropriate adhesives, including all materials complete as per drawings and specifications.					
	a) 100 mm dia pipes	R.M.	10			
	b) 150 mm dia pipes	R.M.	44			
15.4	Supplying, fitting and fixing Roof drain heads with high domed gratings as per drg. No. 4-38144-00012 at various elevations, including connecting to roof drain pipes, caulking with lead supports / fixing with adhesive for PVC pipes, hangers etc, prime coat of painting with anti - corrosive paint with all materials as per drawings and specifications.					
a)	Heavy duty C.I. Heads					
	i) 100 mm pipe	Nos.	10			
	ii) 150 mm pipe	Nos.	20			
b)	PVC roof drain heads					
	i) 100 mm pipe	Nos.	5			
	ii) 150 mm pipe	Nos.	5			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
15.5	Supplying, fitting fixing the following best quality sanitary fixtures of " Hindustan Sanitaryware" or approved equivalent make at various elevations including all necessary accessories, cutting and making good of concrete / brickwork for concealing all connecting pipes and bends with all materials etc all complete as per specifications and drawings.					
a)	European type type water closet conforming to IS:2556 with white glazed stone ware basin with plastic seats & cover and low level PVC cistern of 15 litre discharge capacity including valveless fittings, flush bends, supply connections, syphon , integral 'S' or 'P' trap etc. all complete.	NOS	2			
b)	Indian pattern water closet(Orissa pan size 580 mm conforming to IS:2556) with white glazed stone ware and integral 'footrest; 15 litre capacity highlevel PVC flushing cistern including valveless fittings, with all necessary fixtures, integral with 'S' or 'P' trap etc. all complete as per drgs. and specifications .	Nos.	2			
c)	610 x 410 x 380 mm flat back urinals with a pair of 250 X 125 mm white ceramic foot rest with concealed hangers and brackets, CP brass spreader for concealed piping work, CP brass waste fittings, 30 mm dia heavy duty bottle trap etc all complete as per drgs and specifications.	Nos.	4			
d)	Automatic high level PVC cistern with mosquito proof lid, interior painted with 2 coats of anti corrosive paint complete with loose key CP brass bibcock					
ii)	Cistern capacity 10 ltrs	Nos.	10			
iii)	Cistern capacity 15 ltrs	Nos.	10			
iv)	White poreclain division plate of size 840 X 300 mm with CP brass screws	Nos.	10			
e)	550 x 400 mm wall hung white glazed stone ware flat back wash basin with provision for tap holes in three locations with supporting brackets,C.P brass 30mm dia waste fittings,heavy duty CP bottle trap,one no. 15mm dia long nose C.P brass pillar cock,one nosupply connection with 300.mm long,15 mm dia P.V.Cpipe with brass nuts at both ends and C.P brass stop cock etc,complete as per drgs and specifications .	Nos.	10			
f)	150 x 150 mm recessed white glazed porcelain soap tray.	Nos.	3			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
g)	Chromium plated shower set with 100/150 mm dia brass shower rose with rim arm, wall flange, hot/ cold water mixing valves including handle and concealed supply pipe including 600mm long C.P grab bar, bibcock etc, as per specifications all complete.	Nos.	1			
h)	600 x 450 x 6 mm thk bevelled edge mirror of superier glass with necessary fixtures as per specifications.	Nos.	3			
i)	35 litre capacity hot water geyser of approved make.	Nos.	1			
j)	600mmX120mmX4mm thick clear glass shelves with chromium plated brackets, guard rails etc, all complete	Nos.	5			
k)	600 mm long, 20 mm dia and 1.25 mm thick chromium plated brass towel rail with brackets fittings, etc, complete.	Nos.	2			
l)	All Chromium plated standard liquid soap dispenser of approved make with all fittings etc, complete.	Nos.	4			
m)	12 mm dia CP brass abluion tap with all fittings complete.	Nos.	10			
15.6	Supplying, fitting and fixing 100 mm dia inlet and 80/100 mm dia outlet SS floor drain with trap and with screwed or hinged CP brass gratings.	Nos.	5			
15.7	Providing 300 x 300 x 675 mm chamber in 1:4 brickwork 115 mm thick with plain concrete 1:2:4 foundation cement mortar including supplying and fixing 100 mm. dia square mouth gully trap, gratings, CI frame and cover, all complete as per specifications.	Nos.	5			
15.8	Supplying, laying, fitting, fixing and jointing concealed GI pipes conforming to IS:1239 for water lines at various elevations pipes underground with all fittings bends, teas, reducers etc. including excavation, backfilling, supports, caulking, chases, grooves, hangers, supports, straps etc. painting as specified all complete as per specification and drawings.					
a)	12 mm dia	R.M.	20			
b)	19mm dia	R.M.	20			
c)	25 mm dia	R.M.	20			
d)	32 mm dia	R.M.	20			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
e)	50 mm dia	R.M.	20			
15.9	Supplying, laying, fitting, fixing and jointing extra heavy cast iron soil and drain pipes underground with all fittings bends, tees, reducers etc. including excavation, backfilling, supports, caulking, chases, grooves, hangers, supports, straps etc. pain- ting as specified all complete as per specification and drawings.					
a)	100 mm	R.M.	45			
b)	150 mm	R.M.	40			
15.10	Same as 15.9 but over ground, including vent pipes and cowls.					
	a) 100 mm	R.M.	35			
	b) 150 mm	R.M.	20			
15.11	Supplying fitting and fixing CI heavy duty man hole cover of 50 cm dia of approved brand as per specification	Nos.	5			
15.12	Supplying, fitting fixing the following best quality sanitary fixtures of " Hindustan Sanitaryware" or approved equivalent make at various elevations including all necessary accessories, cutting and making good of concrete / brickwork for concealing all connecting pipes and bends with all materials etc all complete as per specifications and direction of BHEL					
a)	European type water closet conforming to IS:2556 with white glazed stone ware basin with plastic seats & cover and low level PVC cistern of 10 litre discharge capacity including valveless fittings, flush bends, supply connections, syphon , integral 'S' or 'P' trap etc. all complete.	Each	2			
c)	Flat back urinal basin of size 635x395x420 mm with concealed hangers and brackets, CP brass spreader for concealed piping work, CP brass waste fittings, 30 mm dia heavy duty bottle trap etc all complete FOR RANGE OF TWO NO. URINAL BASIN WITH 5 LTR. FLUSHING CISTERN, as per specifications and direction of BHEL	Each	3			
d)	550 x 400 mm wall hung white glazed stone ware flat back wash basin with provision for tap holes in three locations with supporting brackets,C.P brass 30mm dia waste fittings,heavy duty CP bottle trap,one no. 15mm dia long nose C.P brass pillar cock,one nosupply connection with 300.mm long,15 mm dia P.V.Cpipe with brass nuts at both ends and C.P brass stop cock etc,complete as per specifications and direction of BHEL.	Each	3			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
e)	Automatic high level PVC cistern with mosquito proof lid, interior painted with 2 coats of anti corrosive paint complete with loose key CP brass bibcock	Each	3			
f)	150 x 150 mm recessed white glazed porcelain soap tray.	Each	1			
g)	600 x 450 x 6 mm thk bevelled edge mirror of superier glass with necessary fixtures as per specifications.	Each	2			
h)	All Chromium plated standard liquid soap dispenser of approved make with all fittings etc, complete.	Each	3			
i)	12 mm dia CP brass tap with all fittings complete.	Each	3			
15.13	Providing 300 x 300 x 675 mm chamber in 1:4 brickwork 115 mm thick with plain concrete 1:2:4 foundation cement mortar including supplying and fixing 100 mm. dia square mouth gully trap, gratings, CI frame and cover, all complete as per specifications.	Each	2			
15.14	DELETED					
15.15	DELETED					
15.16	Supplying fitting and fixing of 450 mm dia CI heavy duty man hole cover and frame of 38 kg weight complete.	Each	1			
15.17	Supplying, fitting and fixing closet seat 40 mm thick with lid for EW closet seat, black in colour with CP hinges rubber buffer and brass screws.	Each	2			
15.18	Providing and fixing 100 mm cast Iron grating for gully, floor or Nahani trap etc.	Each	4			
15.19	Providing and fixing 100 mm CP grating for gully, floor or Nahani trap etc.	Each	2			
15.20	Providing and fixing C.P Brass toilet paper holder	Each	2			
15.21	Deleted					
15.22	Providing and fixing soil, waste and vent pipes all complete as per specification and direction of BHEL: 100 mm dia cast iron pipes	RM	50			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
15.23	Supplying, fitting and fixing 15 mm dia CP brass bibcock/stop cock /pillar cocks of approved make (Essco Deluxe or equivalent) tested to 21 Kg./Sq.cm all complete	Each	22			
15.24	Supplying, fitting and fixing approved brand CP towel rail 25 mm dia (600 mm long on 75 mm X 75 mm X 75 mm) CP teak block complete in all respect as per direction of Engineer In-charge	Each	3			
15.25	Supplying, fitting and fixing best quality approved brand mirror silvered over glass 5.5 mm thk 600 mm x 450 mm size tilting type with cp brackets as per direction of engineer in charge	Each	4			
15.26	Supplying, fitting and fixing 61 cm X 12.5 cm best quality glass shelves with aluminium plate guard rail with bracket	Each	4			
15.27	Providing and fixing G.I. Pipes complete with G.I. or brass fittings & fixings, valves, unions, nipples, tees, elbows, sockets, etc all complete wherever required as per direction of Engineer In Charge.					
A	Exposed on masonry / concrete wall and on laying,making good the surface so as to match the surface on which it is laid,					
i)	15 mm dia. Nominal bore	RM	15			
ii)	20 mm dia. Nominal bore	RM	20			
iii)	25 mm dia. Nominal bore	RM	20			
v)	40 mm dia. Nominal bore	RM	20			
B	Concealed in Masonry / Concrete walls including making grooves in walls wherever necessary, and on laying,making good the surface (including making good the ceramic tiles, if any) so as to match the surface on which it is laid,					
i)	15 mm dia. Nominal bore	RM	15			
ii)	20 mm dia. Nominal bore	RM	20			
iii)	25 mm dia. Nominal bore	RM	20			
C	Underground G.I. Pipes complete including excavation, backfilling in trenches etc all complete as per direction of engineer in charge.					

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
i)	25 mm dia. Nominal bore	RM	100			
ii)	40 mm dia. Nominal bore	RM	100			
iii)	50 mm dia. Nominal bore	RM	50			
15.28	Providing and fixing full way gun metal Peets Valve of approved standard pattern best Indian make with fitting as per direction of BHEL with all labour, materials etc complete.					
i)	20 mm dia. Nominal bore	Each	10			
ii)	25 mm dia. Nominal bore	Each	5			
iii)	40 mm dia. Nominal bore	Each	5			
15.29	Providing & fixing PVC water tank 1000 litre capacity (Syntex or equivalent) in position at all heights including making all necessary inlet & outlet pipes, fixture, ball cocks, valves etc. all complete as per specification and direction of BHEL	Each	3			
15.30	Supplying, fitting, fixing, drain funnels of following diameters below GL					
a)	150mmdia as per drg. No. 4-38142-00055	Each	3			
b)	250mm dia as per drg. No. 4-38144-00053	Each	3			
15.31	Transportation, fabrication , erection / installing in position structural steel members like columns, truss, purlins, rafters etc including MS Gates for fencing , made out of steel beams, channels, angles, flats, plates, sheets etc. including stiffener, bracings, etc. all complete with Two coats of Primer and Two coats of Synthetic Enamel of approved make and shade (ICI, Berger, Asian or equivalent) as per drawings and specifications. (BHEL will issue mtrl free of cost from APGCL store)	MT	10			
15.32	Supplying, fabricating and fixing in positions Embedments/MS inserts like foundation bolts, anchor bolts, channels, angles, flats, rounds, plates, pipe sleeves and any other structural shape etc. including cost of steel , necessary templates / stagings, cutting to required lengths, bolting retvetting welding etc. as required all complete as per drawings and specifications. (Contractor to supply all steel materials)	MT	0.6			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
15.33	Providing 0.63 mm thk corrugated G. I sheet roofing fixed with J or L hooks, bolts and nuts 8 mm dia with bitumen and GI limpet washers excluding cost of purlins rafters etc. as per direction of Engineer in charge. Thickness of sheets shall be 0.5 mm thick.	Sqm	370			
15.34	Extra for providing and fixing corrugated G I Sheets vertically or to a pitch exceeding 60 degrees as per direction of BHEL. Thickness of sheets shall be 0.5 mmthick.	Sqm	15			
16	ROADS/PAVING					
16.1	Consolidating subbase before providing stone soling/WBM with road roller including water if required to obtain 95% proctor density including making good undulation etc.complete.	SQ.M.	12000			
16.2	Supplying,laying and rolling stone solling of consolidated thickness 250mm in 2layers including spreding binding material(sand / morrum) watering and rolling with road roller etc. all complete.	SQ.M.	13188			
16.3	Supplying and laying WBM in 150 mm consolidated thickness in two layers with dry and wet rolling etc complete as per drgs and specifications.	SQ.M.	10000			
16.4	Providing and laying 75 mm compacted thickness of premixed bituminous carpet (hot process) finish over WBM surface including provision of a tack coat and a seal coat,using bitumen conforming to IS : 73 , preparation of surfaces, rolling etc.complete as per specs.	SQ.M.	10000			
16.5	Supplying & laying 250 Micron thk LDPE sheet under paving as per specification	SQ.M.	50			
16.6	Supplying,laying and setting precast concrete edging blocks 300 x 150 mm (at base) and a min.length of 450 mm (except at curves) in M 20 grade concrete including cutting of trench and packing exterior face of blocks with stone chips and murrum including pointing the joints with CM 1:4 etc. complete	R.M.	2000			
16.7	Supplying, Spreading & filling murrum 150 mm thick and consolidation and preparation of sub base including watering and rolling & compaction with power roller 10-12 T capacity to the required density (95% of proctor density) & upto satisfaction of BHEL	CU.M.	100			
17.0	MISCELLANEOUS ITEMS					
17.1	Supplying and spreading 60mm size stone chips / gravels in transformer yards	CUM	100			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
17.2	Supply, fabricating and fixing in position transformer gate / fencing as per drg. no:4-38144-00034_including painting with aluminium paint two coats over suitable primer etc.complete., excavation,concreting and post etc to be measured separately.	SQ.M.	50			
17.3	Providing & laying bitumen sand carpet 50mm thk in two layers of 30mm & 20mm of tank pads including finishing to correct slopes, light rolling etc. complete, and directions of the engineer.	SQ.M.	200			
17.4	Supplying and fixing teak wood handrail including polishing/painting as required as per dwg. No. 1-38144-00025 & specifications.	R.M.	100			
17.5	Aluminium angle nosing(min of 50X25X3)	R.M.	150			
17.6	Conducting Ultrasonic test to Machine foundations to check soundness of concrete.	NOS.	10			
17.7	Supply and fixing anchor fasteners of FISCHER make or equivalent of following diameters					
a)	10 mm, 3.6 Ton pullout	NOS.	10			
b)	12 mm, 6 Ton pullout	NOS.	15			
c)	16 mm, 9 Ton pullout	NOS.	15			
17.8	Providing brick pitching to earthen embankments in CM 1:6 as per dwgs. & specs.	SQ.M	1000			
17.9	Providing Turfing to earthen embankments using cow grass(Pasupalam Conjugatum)	SQ.M	1000			
17.10	Providing Anti termite treatment with chlorypyrphis emulsifiable concentrate 20% with 1% concentration as per specifications & dwgs.	SQ.M	1000			
17.11	Supplying & fixing Seismic arrestors for STG foundation as per drawing no 1-38144-00036	Nos.	12			
17.12	Cutting and drilling holes for pockets in concrete using diamond cutter upto 200mm Dia. & 300 Deep	Cu M	2			
17.13	Supplying and fixing lock fix (FOSROC make) for extending new reinforcement from existing structures	Nos.	10			
17.14	Supply and fixing anchor fasteners of following diameters					

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
a)	10 mm	Nos.	10			
b)	12 mm	Nos.	15			
c)	16mm	Nos.	15			
18.0	FENCING					
18.1	Supplying and fixing PVC coated galvanised chain link fencing of minimum 8 gauge, of mesh size 75 mm, conforming to I S : 2721, both ends bent type, mesh size 50 mm, dia. of mesh wire 4 mm, with 2 nos line wire 4 mm dia. including tying to RCC / STEEL posts neatly with GI wires including cost of all materials etc. complete. the chain link will be stretched and attached by 'C' clips at 0.5 m interval to strands of high tensile steel wire of 12 gauge	SQ.M.	350			
18.2	Supplying and fixing galvanised barbed wire fencing (with PVC coating) of approved quality, including tying to RCC / STEEL posts neatly with GI wires including cost of all materials etc. complete.	R.M.	1500			
18.3	Supplying and fixing precast concrete poles for fencing all as per drawing and spec.	CUM.	20			
18.4	Supplying and fixing GI angle poles for fencing all as per drawing and spec.	MT	3			
18.5	Providing antitermite treatment as per specifications and directed by the engineer.	SQ.M.	1000			
19.0	DISMANTLING OF STRUCTURE					
19.1	Dismantling and removal before modification of the following items in the existing structures with all labour, tools, transport etc. all complete including delivering as directed by Engineer.					
	a) Concrete (plain/reinforced)- 100 CU.M approx, for each Bypass Stack foundation	L.S.	3			
	b) Concrete (rein forced), other than bypass stack foundation	CU.M.	100			
	c) Brickwork at all elevation including foundation	CU.M.	20			
	e) 50 Tk.premix carpet	SQ.M.	100			
	f) Pipe hand rail	R.M.	50			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
	g) GI sheetings, other than Bypass stack foundation	SQ.M.	80			
	h) Bypass stack,Insulation,Structural steel, GI sheeting, structures, columns, platforms etc.(3 M.T. Approx for each stack)	L.S.	3			
	i) WBM/soling for roads or paving	SQ.M.	100			
20	GROUNDING					
20.1	Drawing from B H E L stores fabricating, erecting, testing ground conductors including cost of excavation, backfilling, welding, construction of masonry chambers with M S covers (for pipe electrodes), filling with sand, charcoal and salt (for test pit electrodes), labour, material etc. complete All ground conductors will be issued by BHEL free of cost					
a)	Earthing strip 75 X 10 mm	R.M.	1500			
b)	Earth risers of 75X10 mm GI strip	R.M.	500			
c)	Test Pit Electrode as per drg. no.:GT57191	Nos.	5			
d)	Pipe Electrode as per drg. no.GT57191 sheet 2.(Ref. specs.)	R.M.	40			
21	PILING					
21.1	DELETED					
21.2	Construction of 500/400 mm nominal dia. 18-23 m long Bored cast in situ piles using cement concrete (cement not less than 410 kg/cum.) of grade M25 as per specifications including cost of plant and equipment, labour, materials (except reinforcement which will be paid under item no.- 5.1) etc. complete. refer pile specification document no PEDC/STDSPEC/040 attached with this document					
a)	500 mm dia piles	RM.	12000			
b)	400 mm dia piles	RM.	5000			

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
21.3	Conducting the following load test by direct loading on piles including finishing pile head, supplying and erection of kentledge, labour, excavation, backfilling, compaction etc. all complete as per specification.					
a)	initial vertical	Nos.	3			
b)	initial lateral	Nos.	3			
c)	initial pullout	Nos.	3			
d)	routine vertical	Nos.	10			
e)	routine lateral	Nos.	10			
f)	routine pullout	Nos.	10			
22	Clearing herbs, shrubs, including uprooting of rank vegetation, grass, bush wood, saplings, and removal of rubbish anywhere upto a distance of 2 Km outside the periphery of the area cleared.	Sqm	1000			
23	Preparation of sub grade by excavating earth to required depth for all types of soil, dressing to camber and consolidating the base with road roller (10 MT capacity) including making good the undulation etc. and disposal of surplus earth within a lead of 200 M all complete as per specification.	Cum	150			
24	GENERAL (Extra/ Misc. items of works for civil)					
24.1	For items not covered under items above, quote % above or % below or at par of the scheduled rates of Assam PWD Schedule 2004-05 , applicable to the area at the time of bidding.					
	a) Rate for complete item					
	b) Rate for supply of material					
	c) Rate for supply of labour					
	d) Rate for Dismantling and removal of the following items in the existing structures with all labour, tools, transport etc. all complete including delivering as directed by Engineer (Refer s.no. 19.0 above, these rates shall be applicable only in case of increase/decrease in quantity as indicated in s.no. 19.0)					

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS OF LAKWA PROJECT

SL NO	DESCRIPTION	UNIT	Quantity	RATE in figures in Rs.	RATE in words in Rupees	AMOUNT in Rs.
	i) Concrete (plain/reinforced)-	CU.M.				
	ii) Brickwork	CU.M.				
	iii) 50 Tk.premix carpet	SQ.M.				
	iv)Pipe hand rail	R.M.				
	v)GI sheetings	SQ.M.				
	vi)Structural steel	M.T.				
	vii)WBM/soling for roads or paving	SQ.M.				
	TOTAL PRICE IN INDIAN RUPEES IN FIGURES AND WORDS FOR CIVIL PORTION OF BOQ (S.no. 1.0 TO 23.0)					

SL. NO	DESCRIPTION	QTY	UNIT			
				RATE (IN RS.)/Figure	RATE (IN RS.)/words	AMOUNT (IN RS.)
1	Supply, termination, testing & commissioning of 4/3.5 core 35 sqmm PVC insulated Armoured Copper Cable of 1.1 KV grade. As per IS-1554.	100	RM			
1.a	Laying below ground in excavated trench average depth 800 mm with 8nos of brick on top of the cable per meter including filling the space between brick & cable and also the trench with shifted soil leveling & restoring the surface duly rammed & compacted.	50	RM			
1.b	Laying above ground on wall/surface with clamps etc., chase cutting on wall/floor, mending good damages, testing & commissioning.	50	RM			
2	Supply & fixing of Iron Clad Main Switches TPN/DP on angle iron frame on wall: 100A TPN	1	no.			
3	Supply and fixing 415V/240V single door MCB Distribution board made of sheet steel (16SWG) duly painted enclosure along with interconnection, earthing attachments, including required hardwares for connection, fitted with DANGER board all complete, ON-OFF Switch - 1 no. MCCB TPN 100 A – 1 no. MCB SP 50A – 3 nos. MCB SP 20A - 9 nos. TB (Each with 5 blocks) - 3 nos High conductivity Cu bar (25mm x 5mm x 100mm) - 1 no. Adequate nos. of holes drilled for connection of incoming & outgoing ckts, Cu bar is fixed on porcelain insulators.	1	no.			
4	Supply & fixing composite flush type 250V, 6 pin 15 A plug-socket-integral fuse unit with 15A piano key type swich on wooden box with bakelite cover and earthing attachment including S & F of matching PVC box. MAKE: - ANCHOR/NORTH-EAST.	15	nos.			

SL. NO	DESCRIPTION	QTY	UNIT			
				RATE (IN RS.)/Figure	RATE (IN RS.)/words	AMOUNT (IN RS.)
5	Supply & fixing composite flush type 250V, 5 pin 5 A plug socket-integral fuse with 5A piano key type switch on wooden box with bakelite cover and earthing attachment including S & F of matching PVC box. MAKE: - ANCHOR/NORTH-EAST	5	nos.			
6	Supply and fixing of PVC 150x100mm Switch board with matching color cover with switch cut out and interconnection.	20	nos.			
7	Supply and fixing of PVC 300x200mm switch board with colour cover and switch cutout and interconnection.	15	nos.			
8	Supply and fixing 5A piano key type switch. ANCHOR/NORTH-EAST	120	nos.			
9	Supply and fixing of 240V, 5A, 5 pin socket. ANCHOR/NORTH-EAST	20	nos.			
10	Supply of mounting rail type fixture made of painted MS Sheet Steel suitable for 2x40/36 W, 230 V wall/ceiling mounted fluorescent lamp (1236/1246 mm) with reflector, complete with starter, power factor improvement (HPF), RF capacitor, Copper wound ballast and lamps, including all fixing/supporting accessories complete. Make: CROMPTON DJB1224LDB or equivalent from BAJAJ/PHILIPS.	40	nos.			
10.a	Fixing from roof truss with suitable clamp arrangement, down rod, ball & socket suspension,& commissioning of mounting rail type fixture made of painted MS Sheet Steel suitable for 2x40/36 W wall/ceiling mounted fluorescent lamp with reflector, complete with starter, power factor improvement (HPF), RF capacitor, Copper wound ballast and lamps.Including all fixing/supporting accessories complete.	40	nos.			

SL. NO	DESCRIPTION	QTY	UNIT			
				RATE (IN RS.)/Figure	RATE (IN RS.)/words	AMOUNT (IN RS.)
11	Supply of Fluorescent Tube Streetlight Luminaire fixture suitable for 2x40/36 W, 230 V lamps with control gear tray cum reflector having white stove enamel finish on reflecting surface hinged to the canopy. An acrylic perspex and gasket making the luminaire weather proof . The perspex held in a frame which is locked in position by toggles on both sides. Prewired with copper wound polyester ballast, power factor improvement capacitor, Bi Pin/push fit type lamp holder,mains connector and lamp. Make:CROMPTON SFE14H or equivalent from BAJAJ/PHILIPS	4	nos.			
11.a	Fixing on wall with 40 mm dia swan neck GI pipe with suitable clamps etc. & commissioning of Fluorescent Tube Streetlight Luminaire Including all fixing/supporting accessories complete.	4	nos.			
12	Supply and fixing of GSL Lamp/bulb holder on wall/ceiling complete with all accessories & fittings.	20	nos.			
13	Supply of 48" sweep ceiling fan complete with 100W electronic regulator.	25	nos.			
13.a	Fixing from roof truss with suitable clamp arrangement, commissioning of 48" sweep ceiling fan along with mounting rod and 100W electronic regulator.	25	nos.			
14	Supply of 230 V, 12" exhaust fan alongwith external louvre.	3	nos.			
14.a	Fixing,Wall cutting, finishing, making good of the same, commissioning of 12" exhaust fan alongwith louvre.	3	nos.			
15	Supply & fixing of Ceiling Rose.	70	nos.			
16	Supply, drawing through conduit, termination, testing & commissioning of 1 core 10 sqmm PVC insulated, stranded Copper wire of 1.1 KV grade as control wiring and lighting & power.	150	RM			

SL. NO	DESCRIPTION	QTY	UNIT			
				RATE (IN RS.)/Figure	RATE (IN RS.)/words	AMOUNT (IN RS.)
17	Supply, drawing through conduit, termination, testing & commissioning of 1 core 6 sqmm PVC insulated, stranded Copper wire of 1.1 KV grade as control wiring and lighting & power.	150	RM			
18	Supply, drawing through conduit, termination, testing & commissioning of 1 core 4 sqmm PVC insulated, stranded Copper wire of 1.1 KV grade as control wiring and lighting & power.	150	RM			
19	Supply, drawing through PVC conduit, termination, testing & commissioning of 1 core 2.5 sqmm PVC insulated', stranded Copper wire of 1.1 KV grade as control wiring and lighting & power.	100	RM			
20	Supply and drawing through PVC conduit, termination of 1 core 1 sqmm 1.1 KV PVC insulated copper conductor single core stranded wire.	450	RM			
21	Supply, laying and termination of 1.1 KV PVC insulated flexible wire.	100	RM			
22	Supply and fixing of 1" dia rigid PVC conduit with all bends tees circular box, clamps,saddles etc.along with the accessories in surface/recess in beam/roof slab/wall including chase cutting the wall/roof/above false ceiling and making good the same as required.	550	RM			
23	Supply and fixing of 1/2" dia rigid PVC conduit with all bends tees circular box clamps,saddles etc.along with the accessories in surface/recess in beam/roof slab/wall including chase cutting the wall/above false ceiling and making good the same as required.	450	RM			
24	Supply and fixing of 1" dia flexible PVC conduit with all bends tees circular box clamps,saddles etc.along with the accessories in surface/recess in beam/roof slab/wall including chase cutting the wall/above false ceiling and making good the same as required.	100	RM			
25	Supply and fixing of 1/2" dia flexible PVC conduit with all bends tees circular box clamps,saddles etc.along with the accessories in surface/recess in beam/roof slab/wall including chase cutting the wall/above false ceiling and making good the same as required.	100	RM			

SL. NO	DESCRIPTION	QTY	UNIT			
				RATE (IN RS.)/Figure	RATE (IN RS.)/words	AMOUNT (IN RS.)
26	SETC & Installation of earth electrode 40 mm dia. 3 metre long GI pipe directly driven into earth including earth excavation if required.	2	nos.			
27	Supplying & installation of 16 SWG GI wire for earthing. Including Supply & termination with Lugs as required	100	RM			
28	Supplying & installation of 8 SWG GI wire for earthing. Including Supply & termination with Lugs as required	30	RM			
	TOTAL PRICE IN INDIAN RUPEES IN FIGURES AND WORDS FOR ELECTRICAL PORTION OF BOQ					
	GRAND TOTAL PRICE IN INDIAN RUPEES IN FIGURES AND WORDS FOR COMPLETE WORK (CIVIL + ELECTRICAL)					

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PILING

PART III – SPECIFIC REQUIREMENTS

PART III – SPECIFIC REQUIREMENTS

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**SPECIFIC REQUIREMENTS FOR BORED
CAST-IN-SITU RCC PILES**

1.0 GENERAL REQUIREMENTS

All work shall be carried out in accordance with ASEB specifications. Contractor shall ensure minimum requirements as laid down under.

2.0 PILE TYPE

The piles shall be bored cast-in-situ RCC piles of different lengths as per section 3.0. (Length below cut off level).

3.0 SAFE LOAD CARRYING CAPACITY

3.1 The piles shall be designed for the following minimum safe load capacities.

Pile Type	Dia (mm)	Length (mm)	Pile capacity (Tons)		
			Vertical	Horizontal	Pull out
I	500	22000	90	5.0	20
II	400	23000	60	4.0	10
III	400	20000	50	4.0	15

The above may vary after final soil report.

4.0 Materials

4.1 Materials shall confirm to BHEL specification no PEDC/STD/001 enclosed and forming a part of this bid document.

4.2 Concrete

The concrete shall be of M-25 grade with minimum strength of 25N/mm² at 28 days. The other concrete specification shall be as per relevant clauses of "Standard Specification for Construction & Installation of Bored cast-in-situ piles BHEL Specification No. PEDC/STD/040/Part-VI.

4.3 Cement

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Ordinary Portland cement shall be used for the construction of piles. However, the cement content shall not be less than 410 Kg/Cum. Maximum water/cement ratio of 0.5 has to be adopted. The allowable slump shall be as per IS: 2911 Part/Sec.1/ASEB Spec. The Engineer- in-charge may also allow marginal adjustment ratio to obtain concrete of good workability.

4.4 Reinforcement

This shall be a high strength deformed steel bar confirming to grade Fe 415 of IS: 1786 Clear cover to main reinforcement shall be 50mm.

5.0 INSTALLATION

- 5.1 Installation of piles shall be carried out in accordance with the pile layout drawings which shall be available to the contractor at the time of execution of work.
- 5.2 Cut off level of piles shall correspond to those given in the working drawings. For broad guidance, however, this may be assumed as 1.5m below the NGL.
- 5.3 To ensure dense and sound concrete upto the cutoff level, concreting shall extend upto 1000mm, above the cut off level. However no extra payment will be made for this and quoted rate shall be inclusive of this.
- 5.4 In case the reinforcement cage is made up of more than one segment, the same shall be assembled by welding only before lowering as per IS:456 by providing necessary laps.
- 5.5 The vertical reinforcement shall project 55 times its diameter above the cut off level.

6.0 CONSTRUCTION

6.1 Bored Cast-in-Situ piles

- 6.1.1 The construction of piles shall be in accordance with the provision of BHEL standard specification no PEDC/STD/040.
- 6.1.2 The borehole sides shall be stabilised using direct mud circulation technique. The concreting shall be done by tremie observing all necessary precautions and procedures as per IS:2911 Part-I Section 2 provisions. The final clearing of the bore hole by fresh mud circulation must be accomplished just prior to commencement of concreting by tremie. The quality of drilling mud used shall be checked as per latest IS:2911 Part I Section 2 provisions shall be replaced if it does not confirm to the same.
- 6.1.3 The concreting shall proceed immediately after completion of the drilling and cleaning process of the borehole.
- 6.1.4 The concrete shall be placed by a tremie of suitable diameter. All precautions for obtaining clear and sound pile shaft shall be strictly observed.

6.1.5 For tremie concreted piles, a sample of drilling fluid shall be taken from the base of bore hole by means of an approved sampling device in the first few piles and at suitable intervals of piles there after. Concrete placing shall not if density of fluid exceeds 1250 Kg/m³. The sand content in the fluid shall not exceed seven percent.

7.0 DEFECTIVE PILES

Defective piles shall be removed or left in place and and replaced by additional piles as directed by the Engineer-in-charge at no additional cost.

8.0 PILE TESTING

8.1 Type of loading test

8.1.1 Initial loading test

- a. Prior to commencement of the job piling, initial vertical and lateral tests shall be carried out on separate test piles cast for the purpose. The number of tests in each category shall be as given in schedule of quantities.
- b. The contractor shall be allowed to proceed with the job piling only after successful completion of the various initial piles load tests to the satisfaction of the Engineer-in-charge.

8.1.2 Routine Load Tests

The number of tests in each category shall be as given in schedule of quantities. The piles for the various tests shall be randomly selected by Engineer-in-charge.

8.2 Pile Load Test

8.2.1 For various tests, the test set up shall be as given in “specification for testing of concrete piles (BHEL Standard Specification No.PEDC/STD/040).

8.2.2 All tests shall be done by the cyclic/direct loading test in minimum eight stages as per the relevant clauses of “specification for testing of concrete piles (BHEL Standard Specification No.PEDC/STD/040).

8.2.3 Each stage of loading for various tests should be maintained till the rate of movement of pile is less than 0.02 mm/hr. However, this rate is not permitted to be extrapolated for 24hrs. and settlements shall be observed every hr. during this period.

8.2.4 Maximum test loads for various tests shall be as per IS:2911 (Part-4):

- a. initial vertical pile load tests-load corresponding to total settlement of 10% of pile dia or twice the pile vertical load capacity whichever ever occur earlier.
- b. Initial lateral pile load tests – load corresponding to 12mm total deflection.

c. Initial Pull Out Test

Thrice the estimate safe uplift load respective pile (As per IS:2911 (Part-I) or until the load displacement curve shows clear break(downward trend) which ever occurs earlier.

- d. Routine vertical load test – 1.5 times permissible load or load corresponding to 12mm total settlement
- e. Routine lateral load test – 1.5 times permissible load or load corresponding to total deflection of 12mm.
- f. Routine pull out test. – 1.5 times permissible load or load corresponding to total deflection of 12mm.

9.0 CRITERIA FOR ASSESSMENT OF SAFE LOADS

9.1 *Safe Vertical Load.*

It shall be the least of the following :

- 2/3 of final load at which the total settlement attains a value of 12mm.
- 50% of the total load at which the total settlement equate 10% of the pile diameter.

The criteria for the safe load for initial and routine lateral load tests shall be the same.

9.2 *Safe Lateral Load*

Safe lateral load shall be taken as the least of the following :

- 50% of the final load at which the pile deflection attains a values of 12mm.
- Final load at which the total pile deflection corresponds to 5mm.


The criteria for safe load for both initial & routine lateral load tests shall be the same.

9.3 *Safe Uplift Load*

The safe uplift load on pile shall be taken as least of the following :

- a. Two-third of the load at which the total displacement attains a value of 12mm or the load corresponding to specified permissible uplift.
- b. Half of the load at which the load displacement curve shows a clear break (downward trend).

The criteria for safe load

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<p>A full record of pile load tests results shall be submitted to the Engineer-in-charge immediately on completion of each test. The record shall also include the plots of load-settlement and time settlements (for various stage of loads) charecteristics of pile and also the interpretation of the pile load test curve as per criteria for safe loads as mentioned in this clause. Further it should also include driving record of tested piles. Any special observations shall be duly explained by the contractor.</p>			
<p>10.0 Rate</p> <p>1. Rate to be quoted for piles shall be inclusive of all equipments, Labour and materials (excluding reinforcement) including boring, bentonite slurry, concrete, chipping of excess concrete over cut off length, disposal of surplus earth, used slurry debris beyond 2KM distance, shifting of plant and equipment from one pile to another etc., complete.</p> <p>2. Rate for providing reinforcement to be quoted seperately.</p>			
<p>11.0 MEASUREMENT OF PILES</p> <p>11.1 The piles shall be measured and paid for the actual pile length from pile tip to cut-off level, given in the working drawings or as indicated by the Engineer-in-charge. No extra payment shall be made for empty boring up to 1.50mm below N.G.L. or for concrete cast above cut-off level (Ref. Clause 5.3).</p> <p>11.2 If actual cut-off length as per construction drawing is more than 1.50m from N.G.L, payment for boring beyond 1.50m will be made.</p> <p>11.3 Reinforcement will be measured as per actual and paid for by weight as a separate item.</p>			