

**BILL OF QUANTITIES FOR CONSTRUCTION OF HYDRAULIC LABORATORY FOR CENTRE OF EXCELLENCE FOR HYDRAULICS –  
PHASE I**

**A: CIVIL INFRASTRUCTURE WORKS**

SN	Item Descriptions	Unit	Qty	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
1	Clearing grass including removal of rubbish within 50m of site	sq.m	1725.00			
2	Demolishing reinforced concrete, including stacking steel bars and disposal of rubbish within 50m lead (for volleyball floor slab)	cu.m	156.19			
3	Demolishing plain cement concrete 1:3:6 & richer, including disposal of materials within 50m lead (for barbed wire base) and stacking of wire mesh fencing	cu.m	23.80			
4	Dismantling steelwork in built-up sections without dismembering and stacking within 50 m lead	kg	250.00			
5	Earthwork in excavation over areas using Excavator, exceeding 300mm in depth, 1.5m in width as well as 10sq.m in are on plan, including dressing, levelling and disposal of excavated earth, lead up to 50m and lift up to 1.5m	cu.m	1199.42			
6	Transport of loose soil materials in designated locations including loading/unloading, dressing of dump sites and plantation of vegetation after completion of dumping as per the instruction of the site engineer (maximum up to 10 km)	cu.m	1379.41			
7	Providing and laying Hand packed stone filling or soling with stones	cu.m	173.91			
8	Providing and laying in position plain cement concrete excluding the cost of centering and shuttering - All work up to plinth level (1:4:8, 1 cement:4 sand:8 graded crushed stone 50 mm nominal size)	cu.m	98.33			



SN	Item Descriptions	Unit	Qty	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
9	Providing and laying in position plain cement excluding the cost of centering and shuttering- all work up to plinth level-1:1.5:3 (1 cement: 1.5 sand: 3 graded crushed rock 20 mm nominal size)	cu.m	23.36			
10	Providing & laying 1:1.5:3 (1 cement: 1.5 sand: 3 graded crushed rock 20 mm nominal size) in position reinforced cement concrete excluding the cost of centering, shuttering and reinforcement - all work up to plinth level	cu.m	150.89			
11	Providing & laying in position reinforced cement concrete excluding the cost of centering shuttering and reinforcement-all work up to plinth level-1:1:2 (1 cement: 1 sand: 2 graded crushed rock 20 mm nominal size)	cu.m	83.34			
12	Providing & fixing Thermo-Mechanically Treated reinforcement bar (Yield Strength 500 MPa) for R.C.C work including cutting, bending, binding and placing in position complete	kg	23423.00			
13	Providing & fixing centering and shuttering (formwork), including strutting, propping etc. and removal of formwork in Foundation and plinth etc.	sq.m	278.91			
14	Providing & fixing centering and shuttering (formwork), including strutting, propping etc. and removal of formwork in Walls, pilasters, buttresses, string course etc.	sq.m	368.00			
15	Providing and applying finishing coats-High gloss synthetic enamel/for steel & wood work, two coats on new work	sq.m	1212.46			
16	Steel work welded, in built up sections, trusses, frame-works including cutting, hoisting, fixing and appl. priming coat of red for RS joist	kg	22545.84			
17	Steel work welded, in built up sections, trusses, frame-works including cutting, hoisting, fixing and appl. priming coat of red for tees, angles and channels	kg	4183.73			



SN	Item Descriptions	Unit	Qty	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
18	Steel work welded, in built up sections, trusses, frame-works including cutting, hoisting, fixing and appl. priming coat of red lead paint in tubular & square hollow sections	kg	14737.07			
19	Providing & fixing 20mm dia M.S. round hold-down bolts with nuts and washer plates	kg	542.00			
20	Providing & fixing Pre-Painted Galvalume (PPGL) sheeting, including necessary accessories for fixing sheet (excluding the cost of purlins, rafter and trusses) - 25g	sq.m	1672.86			
21	Providing & fixing 320mm height PVC Corrugated Square Gutter, including brackets, bolts, nuts, washers, coupling, dropdowns, elbows & rainwater pipes connections, excluding the cost of pipes	m	53.44			
22	Providing and fixing on wall face single socketed rigid PVC (Working Pressure 4kgf per sq.cm) rain water pipes (110mm dia) including jointing with seal ring leaving 10 mm gap for thermal expansion- complete	m	72.00			
23	Providing and fixing P.V.C plain bend -110mm dia	each	30.00			
24	Providing & laying G.I. pipes including G.I. fittings (excluding trenching, refilling & thrust block) - 150mm	m	50.00			
25	Providing & fixing G.I. pipes including G.I. fittings & clamps & repair walls- 20mm	m	50.00			
26	Providing & fixing Kitchen Sinks including all connections and fittings -Stainless steel, 450 x 400 x 150 mm, single bowl	each	2.00			
27	Providing & fixing c.p. brass bibcock -15mm, standard vertical, c.p knob	each	2.00			
28	Constructing second class brick masonry open surface drain in cement mortar 1:4 including earth work in excavation 100 mm thick concrete bed 1:5:10, 40mm aggregate and 25mm thick cement concrete 1:2:4, 12 mm aggregate for filling haunches including 12mm cement plastering 1:4 with a floating coat of neat cement and	m	197.24			



SN	Item Descriptions	Unit	Qty	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
	disposal of surplus earth etc. complete- 250mm wide x 300mm depth					
29	Constructing second class brick masonry open surface drain in cement mortar 1:4 including earth work in excavation 100 mm thick concrete bed 1:5:10, 40mm aggregate and 25mm thick cement concrete 1:2:4,12 mm aggregate for filling haunches including 12mm cement plastering 1:4 with a floating coat of neat cement and disposal of surplus earth etc. complete including for the additional depth of brick masonry drain - 750mmX750mm	m	119.00			
30	Providing & laying Second-Class Brick work in Foundation & Plinth	cu.m	49.82			
31	Providing, fixing and installation of 2-track, UPVC sliding windows including 5mm clear glass with hardware fittings - EPDM gaskets, U groove roller, Aluminium track, Fastner nut, interlock, touch lock and wool pile, complete. -Plain white window	sq.m	33.75			
32	Providing & fixing in position including applying a priming coat of red lead paint rolling shutters, including all accessories complete but excluding top	sq.m	12.88			
33	Providing & fixing in position including applying a priming coat of red lead paint top cover for rolling shutters	m	5.50			
34	Providing & fixing Pre-laminated Particle Board Lining with necessary nails/screws, beading, etc. complete (excluding cost of frame)- 8 mm	sq.m	168.90			
35	Providing & fixing Class 'B' (conifer) (undressed) in wall-frames etc.	cu.m	0.72			
36	Providing & laying 12mm cement plaster - 12 mm	sq.m	158.70			
37	Providing and applying finishing coats High gloss synthetic enamel/for steel & wood work, two coats on new work including primer	sq.m	317.40			



SN	Item Descriptions	Unit	Qty	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
38	Providing and mixing water-proofing materials in the proportion 12kg/cu.m or as prescribed by the manufacturer	Cum	42.00			
39	Providing & laying cement plaster, finished with floating coat of neat cement. 12mm plaster in C.M 1:3	Sqm	264.00			
40	Providing and laying in position plain cement concrete excluding the cost of centering and shuttering - All work upto plinth level with 1:1.5:3 (1 cement: 1.5 sand: 3 graded crushed rock 20 mm nominal size)	cu.m	0.38			
41	Steel work welded, in built up sections, trusses, frame-works including cutting, hoisting, fixing and appl. priming coat of red lead paint in tubular sections	Kg	1139.17			
42	Steel work welded, in built up sections, trusses, frame-works including cutting, hoisting, fixing and appl. priming coat of red lead paint-In Tees, angles, flats and channels	Kg	1854.48			
43	Providing and fixing MS pipes with flanged end conforming to IS 3589 including all MS fittings (Flange, bends, elbows, nuts, bolts etc.) complete- 300mm NB of 6mm thickness	M	50.00			
44	Providing and fixing of C.I. gate/sluice valve of approved (1.6 PN rating) quality with bolts, nuts, rubber insertions, necessary fittings, etc. complete: 3000mm dia NB	No.	4.00			
45	Providing and laying moisture barrier using plastic sheeting underlay. 200 micro-metre	sq.m	1159.36			
46	Providing & laying Random Rubble Masonry with hard stone in foundation & plinth-In cement mortar 1:4	Cum	19.08			
47	Providing & fixing 600 mm ridges or hips in Pre-Painted Galvalume (PPGL) sheets, including necessary accessories for fixing sheet-25g. (0.50mm)	m	114.60			
48	Providing and laying Plinth Protection and grouted with fine sand mix including well rammed, finishing the top	sq.m	260.16			



SN	Item Descriptions	Unit	Qty	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
	smooth- With 50mm thick cement concrete 1:3:6, 20mm aggregates, laid over 75mm thick layer of compacted gravel (40mm)					
49	Providing & fixing Eaves board (225x25mm) with moulding fitted and fixed with necessary screws-Class 'B' (conifer)	m	92.00			
50	Providing & laying MS pipes (heavy section) including all the required fittings with a maximum diameter of 300 NB as per the instruction of the site engineer. The MS pipes to be provided in line with the departmentally supplied pumps and to connect the pumps to the sump well and pumps to the main 300mm NB MS pipe)	m	4.00			
51	Providing and fixing factory-made uPVC glazed door (minimum of 5mm thick glass with 28mm shutter) comprising of uPVC multichambered frame, sash and mullion (where ever required) extruded profiles duly reinforced with galvanized mild steel section (shape & size according to uPVC profile), uPVC extruded glazing beads of appropriate dimension, EPDM gasket, zinc alloy (white powder coated) 3D hinges and one handle on each side of panels along with zinc plated mild steel locking system, G.I fasteners for fixing frame to the finished wall and necessary stainless steel screws, etc. After fixing the frame the gap between the frame and the adjacent finished wall shall be filled with weatherproof silicon sealant all complete as per the approved drawing & direction of Engineer-in-Charge.	sq.m	7.35			
<b>Sub-Total A</b>						



## B. COMPOUND FENCING

SN	Item Description	Unit	Qty	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
1	Excavation in foundation trenches or drains, width <1.5m, area <10 sq.m in plan, depth >300mm including dressing & ramming; <i>disposal of surplus soil as instructed by the engineer in-charge - All kinds of soil</i>	Cum.	37.50			
2	Providing and laying Hand packed stone filling or soling with selected hard stones	cum	11.25			
3	Providing & laying in position plain cement concrete 1:4:8, 20mm aggregates, excluding the cost of centering and shuttering in foundation & plinth etc.	cum	7.50			
4	Providing & laying in position plain cement concrete 1:1.5:3, 20mm aggregates, excluding the cost of centering and shuttering - at all levels	cum	2.81			
5	Providing and laying Random Rubble Masonry with hard stone in cm 1:4 for all heights	cum	36.56			
6	Steelwork in single section including cutting, hoisting, fixing and applying priming coat of red lead paint-In Tees, angles and channels	kg	246.38			
7	Steel work in single section including cutting, hoisting, fixing and applying priming coat of red lead paint-in Flats	kg	117.60			
8	Providing & fixing G.I chain-link mesh including fixing of post or struts, G.I staples (excluding the cost of posts/struts, earthwork, concrete etc.) 4mm (8 SWG) x 50mm	sqm	90.00			
9	Providing & fixing centering and shuttering (formwork), including strutting, propping etc and removal of formwork for all heights	sqm.	50.00			



SN	Item Description	Unit	Qty	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
10	Fixing 3.4m high (minimum) G.I barbed Wire Netting Fencing framed in ISA angles (50x50mm) with MS plates as per the drawing and instruction of the engineer embedded in cement concrete and corner post shall be strutted on both sides and end post one side only posts complete (cost of struts if required, earthwork and concrete to be paid for separately). Note: existing fencing to be re-used	m	120.00			
<b>Sub-Total B</b>						

### C. ENTRANCE GATE

SN	Item Description	Unit	Qty	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
1	Excavation in foundation trenches or drains, width <1.5m, area <10 sq.m in plan, depth >300mm including dressing & ramming; <i>disposal of surplus soil as instructed by the engineer in-charge - All kinds of soil</i>	cum	6.22			
2	Providing & laying in position plain cement concrete 1:3:6, 20mm aggregates, excluding the cost of centering and shuttering in foundation & plinth etc.	cum	0.35			
3	Providing and laying Hand packed stone filling or soling with selected hard stones	cum	0.48			
4	Providing & laying in position reinforced cement concrete 1:1.5:3 (1 cement: 1.5 sand: 3 graded crushed rock 20 mm nominal size) work in plinth and skirting courses, fillets, columns, pillars, posts and struts upto floor five level excluding the cost of centering, shuttering and reinforcement.	cum	1.51			
5	Filling of trenches, sides of foundations etc. in layers <200mm using selected excavated earth, ramming etc. within lead 50 m & lift 1.5m	Cum	4.52			





SN	Item Description	Unit	Qty	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
6	Providing & fixing cold twisted deformed bar (Fe-500) from approved list of suppliers, including straightening, cutting, bending, tying, lap/butt welding, placing, binding with GI binding wire 18 SWG complete as per drawings, specifications and directions of Engineer at all heights	Kg	160.28			
7	Providing & fixing centering and shuttering (formwork), including strutting, propping etc. and removal of formwork ... <i>Foundation and plinth etc.</i>	sqm	2.96			
8	Providing & Fixing, Centering and shuttering (formwork), including strutting, propping etc. and removal of formwork ... <i>Columns, pillars, post, struts etc</i>	sqm	10.08			
9	Providing & laying 15mm cement plaster 1:5 - External plaster	sqm.	10.08			
10	Steel work for gate in single section including cutting, hoisting, fixing and applying priming coat of red lead paint-In Tees, angles and channels including hinges complete as per drawing	kg	1588.35			
11	P&F 40x3mm M.S. hold fast 400mm long, fixing to frame with 10mm bolts & nuts, plugs, concrete blocks 300x100x150mm with 1:3:6, 20mm aggregate	Each	9.00			
12	Providing & applying two coats of synthetic enamel paint of approved colour and texture by the client on eve board & pelmets	sqm.	18.74			
13	Providing & applying two coats of Acrylic washable distemper including primer on external plaster walls of approved brand as per manufacturers specifications & instruction of site engineer	sqm.	10.08			
14	Providing and fixing roller wheel & track	LS	1.00			
<b>Sub-Total C</b>						



#### D. ELECTRICAL WORKS

SN	Item Description	Unit	Qty.	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
<b>A</b>	<b>WIRING</b>					
1	Wiring for light, fans, call bell and 2 pin light socket outlet with 1.5 sq.mm 1.1kV grade, PVC insulated copper conductor cable in surface MS conduit including connections, painting, testing and commissioning etc. as required					
a	Short Point	Each	7			
b	Medium Point	Each	14			
c	Long Point	Each	37			
2	Wiring for lighting circuit with 1.1kV grade, PVC insulated copper conductor cable in surface MS conduit including connections, painting, testing and commissioning etc. as required-2x2.5 sq.mm	m	160			
3	Wiring for 5/6 pin, 16 ampere plug point with 4 sq.mm 1.1kV grade, PVC insulated copper conductor cable in surface MS conduit with providing & fixing 5/6 pin, 16 ampere socket outlet and switch including earthing the third pin, connections, painting, testing and commissioning etc. as required					
a	Short Point	Each	3			
b	Medium Point	Each	6			
c	Long Point	Each	7			
4	Wiring for points in excess length above long points with 1.1kV grade, PVC insulated copper conductor cable in surface MS conduit including connections, painting, testing & commissioning etc. as required					
a	2x1.5 sq.mm	M	65			



SN	Item Description	Unit	Qty.	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
b	2x4 sq.mm	M	67			
5	Supplying and fixing of MS conduit on surface including all accessories such as screws, bends, elbows, Tees, corners, etc. complete as required-25mm x 1.6mm	M	436			
6	Supplying & fixing of metal boxes for switch/socket outlet/switch socket combined/gang switches, recessed in walls including painting etc as required-					
a	1 Module	each	2			
b	2 Module	each	1			
c	3 Module	each	1			
d	4 Module	each	2			
e	8 Module (Linear)	Each	3			
f	12 Module	each	2			
7	Supplying & fixing of plates & frame for switch/socket outlet/switch socket combined/gang switches, etc as required					
a	Plate 1-module with frame	each	2			
b	Plate 2-module with frame	each	1			
c	Plate 3-module with frame	each	1			
d	Plate 4-module with frame	each	2			
e	Plate 8-module with frame	Each	3			
f	Plate 12-module with frame	each	2			
8	Supplying and fixing of HDPE pipe on recessed including all accessories such as screws, bends, elbows, Tees, corners, etc. complete as required-20mm	m	30			
9	Supplying & fixing of 6A switch on existing metal box with fibre sheet cover (recessed or surface) including necessary	each	62			



SN	Item Description	Unit	Qty.	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
	cutting, connection testing etc. as required-6A switch SP 1-way					
10	Supplying & fixing of switch/socket on existing metal box with fibre sheet cover (recessed or surface), including necessary cutting, connection testing etc-5/6 pin, 6/16A socket outlet, shuttered	each	14			
11	Supplying & fixing of socket/regulator on existing metal box with fibre sheet cover (recessed or surface) including necessary cutting, connection testing etc. as required-Dimmer/regulator	each	3			
12	Supplying, fixing, testing & commissioning of prewired Flood light LED based luminaires with die cast housing and toughened glass cover for outdoor application IP not less than 45- 100W	each	40			
13	Supplying & fixing of prewired outdoor surface/ceiling mounted round/square LED luminaires of 3000/4000/6000k, complete with all accessories with necessary testing & commissioning- 22W	each	14			
14	Supplying, installation, testing & commissioning of ceiling fan 240 volt A.C 1400 rpm with all accessories such as down rod, sweep 3 Nos., canopy 2 Nos., condenser and fan body etc. complete as required-1200mm sweep	each	3			
15	Supplying, installation, testing & commissioning of exhaust fan 240 volt A.C 900 rpm with all accessories such as frame with arm 3 Nos., sweep 3 Nos., condenser and fan body etc. complete as required- 300mm sweep	each	1			
16	Supply & Installation, testing & commissioning of miniature circuit breaker (MCB) single pole, 230 volt A.C complete					



SN	Item Description	Unit	Qty.	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
	with all accessories suitable to fix on a dinbar bar etc. as required					
a	6A	each	5			
b	10A	each	0			
c	16A	each	13			
17	Supply & Installation, testing & commissioning of miniature circuit breaker (MCB) triple pole & neutral, 415 volt A.C complete with all accessories suitable to fix on a din-bar etc. as required-32A	each	3			
18	Supply & Installation, testing & commissioning of residual current circuit breaker (RCCB) double pole, sensitivity 30mA, 230 volt A.C complete with all accessories suitable to fix on a din-bar etc. as required-25A	each	8			
19	Providing and laying of GEE slab earthing including all accessories, connection and complete as required as per standard earthing drawing- GEE slab 5ft x 1ft x 5cm	each	15			
20	Providing and fixing lightning conductor including holes etc. complete as required-25mm dia 300mm long G.I tube single prong at top with 85mm dia 6mm thick copper base plate	each	1			
21	Providing and fixing metal strip on parapet or surface of wall/roof for lightning conductor as required -25x4mm copper strip	m	50			
22	Supply & fixing of TPN distribution board (DIN type, horizontal/Vertical) with acrylic door,415 volt A.C complete with all accessories without MCB/isolator/RCCB out going or incoming etc. as required-					
a	6 way	each	1			
b	8way	each	1			



SN	Item Description	Unit	Qty.	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
c	12 way	each	2			
23	Supplying, installation, testing & commissioning of pre-fabricated MS busbar chamber with copper busbar complete with all accessories etc. as required-4 strips, 600mm bar, 200A, 415V, 50Hz	each	1			
24	Supplying, installation, testing & commissioning of pre-fabricated Main distribution panel with incomer- 250A, TPN MCCB, 50kA, and outgoing 100A, TPN MCCB, 30kA-one number, TPN 32A, MCB-6 numbers.	each	1			
25	Supplying of 4- Core 1.1KV grade PVC insulated and sheathed Aluminium conductor armoured power cables					
a	25 sq.mm	m	105			
b	95 sq.mm	m	95			
26	Laying of one number PVC insulated and sheathed power cable copper/aluminium, armoured/un-armoured 1.1KV single core to four core direct in the ground including excavation, sand crushing, protective covering with bricks and refilling the trenches etc. as required					
a	Above 6sq.mm to 25sq.mm	m	50			
b	Above 25sq.mm to 70sq.mm	m	80			
27	Laying of one number PVC insulated and sheathed power cable copper/aluminium, armoured/un-armoured 1.1KV single core to four core in the existing RCC/Hume/Stone ware/HDPE/G.I pipes as required-Above 6sq.mm to 25sq.mm	m	40			



SN	Item Description	Unit	Qty	Rate (BTN)		Amount (BTN)
				In Figures	In Words	
28	Providing and making route marker of size 150x100x6mm with necessary nuts & bolts 100mm long x 10mm dia with washer embedded in cement concrete 1:2:4, -With cement concrete 1:2:4, 20mm stone aggregate	each	50			
<b>Sub-Total D</b>						

**NOTE:**

The bidder shall provide the minimum basic PPE as per the Labour and Employment Act - 2007, Regulation on Occupational Health, Safety and Welfare - 2012, and other relevant national documents.

