



<b>BILL OF ENGINEERING MEASUREMENT AND EVALUATION (BEME) FOR A SIX (6) BEDROOM RESIDENTIAL DUPLEX</b>					
<b>Ref</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount</b>
	<b>ELEMENT NR 1</b>				
	<b><u>SUBSTRUCTURE (ALL PROVISIONAL)</u></b>				
	<b><u>SITE PREPARATION</u></b>				
A	Excavate earth to reduced level following gradients and Architect's instructions	200.551	M2	700	140,385.7
	<b><u>EXCAVATION AND EARTHWORK</u></b>				
B	Excavate foundation trench 0.675m in width, max. depth not exceeding 2.00 m starting at reduced level	43.266	M3	2,000	86,532
C	Ditto pits for column bases	16.984	M3	2,000	33,968
	<b><u>FILLING</u></b>				
D	Filling to excavation with material arising from excavations deposited and compacted	43.266	M3	1,500	64,899
E	Filling with imported earth to make up levels 300mm deep, underground floor slab deposited and compacted	35.91	M3	1,500	53,865
F	Ditto, 300mm thick hardcore	44.138	M3	1,600	70,620.8
	<b><u>SURFACE TREATMENT</u></b>				
G	Level and compact bottom of excavations	48.073	M2	950	45,669.35
H	Dioldrex 20 <sup>1</sup> anti-termite treatment to bottom and sides of excavation	176.268	M2	1,000	176,268
	<b><u>CONCRETE WORK</u></b>				
	Plain concrete work				
I	50 mm thick plain in-situ concrete 1:10 blinding bed	3.61	M3	31,000	111,910
	Reinforced in-situ concrete (1:2:4 – 18mm aggregate) mix to develop a minimum strength of 20N/mm <sup>2</sup> at 28 days filled into formwork and well packed around reinforcement (both M/S) in:				
J	Foundation in trenches	7.213	M3	33,000	238,029
K	150 mm thick ground floor slab	22.1	M3	33,000	729,300
L	Column bases	16.984	M3	33,000	560,472
M	Columns in foundation	2.29	M3	33,000	75,570
	<b>TO COLLECTION</b>				<b>2,387,488.85</b>



<b><u>REINFORCEMENT</u></b>					
	High tensile steel bar reinforcement to BS 4449 in straight & bent including all hooks, tying wire, distance block or spacer				
N	16mm diameter reinforcement bars in foundation columns	420	kg	380	159,600
O	12mm diameter bar in baskets (column base)	544	kg	380	206,720
P	8mm diameter bar in foundation columns	61	kg	380	23,180
<b><u>FORMWORK</u></b>					
	Sawn formwork to:				
Q	Columns in foundation	61	M2	2,400	146,400
R	Edges of floor bed 150mm high	22.5	M2	2,400	54,000
<b><u>BLOCKWORK</u></b>					
S	225mm hollow sandcrete blockwork in cement mortar (1:3) including filling hollow solid with weak concrete as work progresses	155.51	M2	2,200	342,122
	TO COLLECTION				932,022
<b><u>COLLECTION</u></b>					
	Page 1				2,387,488.85
	Page 2				932,022
	<b>ELEMENT NR 1, SUBSTRUCTURE</b> Carried to summary				<b>3,319,510.85</b>



Ref	Description	Quantity	Unit	Rate	Amount
	<b><u>ELEMENT NR 2</u></b>				
	<b><u>FRAMES</u></b>				
	<b><u>CONCRETE WORK</u></b>				
	Reinforced insitu (1:2:4 – 20mm aggregates) mix to develop a minimum work cube strength of 20N/mm <sup>2</sup> at 28days filled into formwork and well packed around reinforcement				
A	Isolated and attached columns	9.2	M3	33,000	303,600
B	Suspended slabs, 150mm thick, including associated and attached beams	22.07	M3	33,000	728,310
C	Roof beams	5.87	M3	33,000	193,710
D	Staircases and the associated landings	2.2	M3	33,000	72,600
	<b><u>Reinforcement</u></b>				
	High tensile steel bar reinforcement to BS 4449 in straight and bent including all hooks, tying wire, distance blocker or spacer				
E	12mm diameter reinforcement bars in beams	36.55	Kg	380	13,889
F	16mm diameter reinforcement bars in beams	944	Kg	380	358,720
G	16mm diameter bars in columns	1315	Kg	380	499,700
H	12mm diameter bars in roof beams	410	Kg	380	155,800
I	Ditto, but in staircase	90	Kg	380	34,200
J	Ditto, but in suspended slab	1291	Kg	380	490,580
K	10mm bars in staircase	55	Kg	380	20,900
L	Ditto, but in suspended slab	170	Kg	380	64,600
M	8mm diameter in floor beams links/stirrups	260	Kg	380	98,800
N	Ditto, but in columns	318	Kg	380	120,840
O	Ditto, but in roof beams	195	Kg	380	74,100
	<b><u>FORMWORK</u></b>				
	Sawn formwork to:				
P	Vertical sides of columns	228	M2	2,400	691,200
Q	Sides and soffits of beams	135	M2	2,400	324,000
R	Ditto, but in roof beams	85	M2	2,400	204,000
S	Soffit of suspended floor slab	117.65	M2	2,400	282,360
T	Edge of suspended floor slab	15.35	M2	2,400	36,816
U	Sloping soffit of staircase and soffit of landing	8.5	M2	2,400	20,400
V	Sides of risers	1.7	M2	2,400	4,080
	<b>ELEMENT NR 2, FRAME</b>				
	Carried to summary				<b>4,793,205</b>



Ref	Description	Quantity	Unit	Rate	Amount
	<b>ELEMENT NR 3</b>				
	<b><u>EXTERNAL AND INTERNAL WALLS</u></b>				
	<b><u>CONCRETE WORK</u></b>				
	Reinforced in-situ concrete (1:2:4 – 18mm aggregate) well vibrated to attain develop minimum work strength of 20N/mm <sup>2</sup> at 28 days				
A	Lintel	5.4	M3	33,000	178,200
	<b><u>REINFORCEMENT</u></b>				
	<b><u>High yield tensile steel reinforcement bar</u></b>				
B	12mm diameter reinforcement bar	376.1	Kg	380	142,918
C	8mm diameter in lintels links/stirrups	184.9	Kg	380	70,262
	<b><u>FORMWORK</u></b>				
	<b><u>Sawn formwork to:</u></b>				
D	Sides and soffits of lintels	79.42	M2	2,400	190,608
	<b><u>Block work</u></b>				
E	225mm partition hollow sandcrete block walls bond, bedded, jointed and pointed in cement mortar (1:4)	991.48	M2	500	495,740
F	150mm partition hollow sandcrete block walls bond, bedded, jointed and pointed in cement mortar (1:4)	166.5	M2	500	83,250
	<b><u>ELEMENT NR 3, EXTERNAL AND INTERNAL WALLS</u></b> Carried to summary				<b>1,160,978</b>



Ref	Description	Quantity	Unit	Rate	Amount
	<b><u>ELEMENT NR 4</u></b>				
	<b>ROOFING AND CEILING</b>				
	<b>Roof covering</b>				
	Supply and fix aluminum roof covering from approved manufacturer in approved colour with deep trough '5' corrugations with one corrugation side laps (measured net and no allowance made for laps), fixed in accordance with the manufacturer's instructions				
A	0.55mm thick roof covering	231.18	M2	1,000	231,180
B	Ditto ridge capping, 450mm girth	45	M	1,500	67,500
C	Ditto as ceiling externally	34	M2	1,000	34,000
D	Ditto roof gutter	5.4	M	600	3,240
E	Edge trimming	57	M	600	34,200
	<b><u>Trusses</u></b>				
	<b><u>Sawn treated mahogany or equal &amp; approved hardwood in</u></b>				
F	75 x 100mm Wall plates	89.175	M	1,500	133,762.5
G	50 x 100mm Tie beams	171.6	M	1,000	171,600
H	50 x 100mm Struts & king posts	343.2	M	950	326,040
I	50 x 100mm Rafters	208	M	1,200	249,600
J	50 x 75mm Purlins	430.8	M	1,100	473,880
K	50 x 50mm Noggins at 600mm centers	676.1	M	800	540,880
L	25 x 300mm Fascia board	56.67	M	2,000	113,340
M	PVC stripped ceiling as manufactured by INNOSON or other equal and approved manufacturers; fixed to noggins on accordance with manufacturer's written instructions	127.87	M2	1,050	134,263.5
	<b>ELEMENT NR 4, ROOFING AND CEILING</b> Carried to summary				<b>2,513,486</b>



Ref	Description	Quantity	Unit	Rate	Amount
	<b><u>ELEMENT NR 5</u></b>				
	<b><u>DOORS, WINDOWS, BALUSTRADING AND FITTED FURNITURE</u></b>				
	<b><u>DOORS</u></b>				
A	Supply and fix polished mansonia hard wood panel swing doors complete with sub-frames, linings, architraves and all necessary ironmongery to suit opening size 900 x 2100mm high overall	21	Nr	30,000	630,000
B	Ditto but 750 x 2100mm high	10	Nr	21,000	210,000
	<b><u>WINDOWS</u></b>				
	<u>Supply and fix the following approved powder coated aluminuim framed casement windows glazed with 5mm thick tinted glass with insect screen complete with subframes, ironmongery and all necessary accessories including cutting and pinning lugs to concrete and block work</u>				
C	Casement window size 1200 x 1200mm high	2	Nr	15,000	30,000
	Ditto but size 1000 x 1200mm –do-	21	Nr	15,000	315,000
	Ditto but size 600 x 1800mm –do-	1	Nr	13,500	13,500
D	Ditto but size 900 x 900mm –do-	4	Nr	12,000	48,000
E	Ditto but size 450 x 450mm –do-	9	Nr	9,000	81,000
	<b><u>Burglary proof</u></b>				
	<u>Fabricate and install burglary proof consisting of 50 x 25mm frame with 16mm diameter H.T. steel bars welded horizontally at 150mm centers and braced at the middle with 50 x 2mm thick flat bar to suit opening:</u>				
F	Casement window size 1200 x 1200mm high	2	Nr	18,000	36,000
	Ditto but size 1000 x 1200 mm –do-	21	Nr	16,000	336,000
	Ditto but size 600 x 1800mm –do-	1	Nr	15,000	15,000
G	Ditto but size 900 x 900mm –do-	4	Nr	13,000	52,000
H	Ditto but size 450 x 450mm –do-	9	Nr	10,000	90,000
	<b><u>HANDRAILING</u></b>				
	Fabricate and fix approved balustrades and hand railings to the verandas and stair cases				
I	Raking to staircase; size 1800 x 1100mm high	2	Nr	12,000	24,000



J	Horizontal to landing; 900 x 1100mm high	1	Nr	9,000	9,000
K	Ditto to balconies; 900 x 1200mm high	4	Nr	9,000	36,000
L	Ditto to verandas; 3000 x 600mm high	4	Nr	15,000	60,000
	<b>ELEMENT NR 5</b> DOORS, WINDOWS, BALUSTRADING AND FITTED FURNITURE Carried to summary				<b>1,985,500</b>

Ref	Description	Quantity	Unit	Rate	Amount
	<b><u>ELEMENT NR 6</u></b>				
	<b>PLUMBING AND ELECTRICAL SERVICES</b>				
	<u>Supply and fix the following sanitary fittings including assembling and jointing component part in white lead putty</u>				
A	Low level WC twyford type or other equal and approved quality; complete	11	Nr	8,000	88,000
B	White glazed ceramic wash hand basin; size 560 x 405 ditto	12	Nr	7,000	84,000
C	Floor drains	7	Nr	1,100	7,700
D	Include provisional sum for all pipe works associated with plumbing installations on completion, all executed complete to the satisfaction of the Architect or Client				200,000
	<b>ELECTRICAL INSTALLATIONS</b>				
E	Include provisional sum for all electrical installation works, executed and complete to the satisfaction of the supervising engineer/client				500,000
	<b>ELEMENT NR 6</b> <b>PLUMBING AND ELECTRICAL SERVICES</b> Carried to summary				<b>879,700</b>



Ref	Description	Quantity	Unit	Rate	Amount
	<b><u>ELEMENT NR 7</u></b>				
	FINISHES				
	Single coating plain in-situ cement mortar (1:4)				
A	12mm thick ditto walls	962.01	M2	900	865,809
B	12mm thick backing to walls	750.85	M2	750	563,137.5
C	Ditto isolated columns	57.6	M2	1,100	63,360
D	12mm thick rendering on slab soffits	117.65	M2	750	88,237.5
E	12mm thick dressing to edges, soffits of beams	196.7	M2	750	147,525
F	12mm thick backing to skirting, risers of steps and staircase not exceeding 250mm	8.74	M2	750	6,555
G	200 x 300 x 8mm thick ceramic wall tiles (toilet and kitchen area measured 2.1m high)	174.51	M2	3,100	540,981
H	300 x 300 x 6mm thick approved unglazed vitrified tiles on floors	117.65	M2	3,100	364,715
	<b><u>ELEMENT NR 7</u></b> FINISHES Carried to summary				<b>2,640,320</b>

Ref	Description	Quantity	Unit	Rate	Amount
	<b><u>ELEMENT NR 8</u></b>				
	PAINTING				
	Prepare and apply three coats of 'Dulux' or any other equal and approved high quality emulsion paint on the following surfaces (internally and externally)				
A	Rendered walls	1712.86	M2	800	1,370,288
B	Rendered soffits	117.65	M2	800	94,120
	Prepare and apply one coat of approved good quality brown oxide primer and two finishing coats of gloss paint on the following surfaces of steel work				
C	Burglar proof grills (measured flat)	34.223	M2	900	30,800.7
D	Hand railings (measured flat)	9.27	M2	900	8,343





	<b>ELEMENT NR 8</b> PAINTING Carried to summary				<b>1,503,551.7</b>
<b>Ref</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount</b>
	<b>ELEMENT NR 9</b>				
	ANCILLARY EXTERNAL WORKS (ALL PROVISIONAL)				
	Fully construct the following SEWAGE TREATMENT FACILITIES to the satisfaction of the Client, Architect or supervising Officer				
	Septic tanks; size 3.90 x 1.30 x 2.70m deep	1	Nr	40,000	40,000
	Soak away pits; 2.70 x 2.70 x 2.50m deep	1	Nr	35,000	35,000
	Inspection chambers; size 600 x 600 x 750mm deep	11	Nr	1,000	11,000
	Include the following provisional/contingency sums for the following works, executed complete to the satisfaction of the Architect or supervising Officer				
	All PIPE WORKS and excavations associated with sewage treatment facilities				500,000
	<b>ELEMENT NR 9</b> ANCILLARY EXTERNAL WORKS (ALL PROVISIONAL) Carried to summary				<b>586,000</b>



### SUMMARY OF THE BILL

<b>SUMMARY OF THE BILL</b>			
1	SUBSTRUCTURE	1	<b>3,319,510.85</b>
2	FRAME	2	<b>4,793,205.00</b>
3	EXTERNAL AND INTERNAL WALLS	3	<b>1,160,978.00</b>
4	ROOFING AND CEILING	4	<b>2,513,486.00</b>
5	DOORS, WINDOWS, BALUSTRADING AND FITTED FURNITURE	5	<b>1,985,500.00</b>
6	PLUMBING AND ELECTRICAL SERVICES	6	<b>879,700.00</b>
7	FINISHES	7	<b>2,640,320.00</b>
8	PAINTING	8	<b>1,503,551.70</b>
9	ANCILLARY EXTERNAL WORKS (ALL PROVISIONAL)	9	<b>586,000.00</b>
	<b>GRAND TOTAL</b>		<b><u>₦19,382,251.55</u></b>