ESTIMATE OF FOREST BARRIER

1. C/C length of walls in quarter  = 29.75 x 3 + 24.25 x 2 + 12.0 x 4  
   + 12.75 x 3 + 5 x 4 running feet 
   = 244 running feet 
   = 73.20 running meter 

2. No. of columns in quarter = 18
3. Size of each column = 9 inches x 9 inches
4. Plinth = 0.5 meter above ground level
5. Beam at plinth level = 9 inches x 6 inches
6. Beam on door/windows = 9 inches x 6 inches
7. Beam at roof level = 9 inches x 6 inches
8. Thickness of slab = 4 inches

Estimate of different works

1. Excavation:
   (i) For columns = 18 x 1.0 x 1.0 x 1.2 meter 
      = 21.600 cubic meter 
   (ii) For walls = [73.2 - 18 x 0.5] x 0.3 x 0.5 
      = 9.63 cubic meter 
   (iii) Total excavation = 31.23 cubic meter

2. Filling foundation with 1:3:6 (M-10) cement concrete:
   (i) For columns = 18 x 1.0 x 1.0 x 0.1 
      = 1.8 cubic meter 
   (ii) For walls = 73.2 x 0.3 x 0.1 
      = 2.196 cubic meter 
   (iii) For flooring in rooms = 90.00 x 0.1 
      = 9.000 cubic meter 
   (iv) Total CC = 12.996 cubic meter
3. R.C.C. work in 1:1.5:3 (M-20) in columns, beams, chajjas & slab:

(i) Columns footing \(= 18 \times (1 \times 1 + 0.22 \times 0.22) / 2 \times 0.3\) = 2.830 cubic meter

(ii) Columns up to plinth level \(= 18 \times 1.2 \times 0.22 \times 0.22\) = 1.045 cubic meter

(iii) Column up to roof level \(= 18 \times 0.22 \times 0.22 \times 3.1\) = 2.700 cubic meter

(iv) Beam at plinth level \(= 73.2 \times 0.22 \times 0.15\) = 2.415 cubic meter

(v) Beam at door level \(= 73.2 \times 0.22 \times 0.15\) = 2.415 cubic meter

(vi) Beam at roof level \(= 73.2 \times 0.22 \times 0.15\) = 2.415 cubic meter

(vii) Chajjas \(= 9 \times 0.6 \times 1.5 \times 0.1\) = 0.810 cubic meter

(viii) Slab \(= 90.00 \times 0.1\) = 9.000 cubic meter

(ix) Total RCC \(= 23.630\) cubic meter

4. Steel required in RCC = 1.25% of volume of RCC = 2318 kg

5. Masonary in foundation/plinth \(= 73.2 \times 0.22 \times 0.9\) = 14.493 cubic meter

6. Masonary in superstructure:

(i) In main building \(= 73.2 \times 0.22 \times 2.85\) = 45.896 cubic meter

(ii) In bath/toilet \(= 4.0 \times 0.22 \times 1.5 \times 3.1\) = 4.092 cubic meter

(iii) Deduction for doors/windows \(= (4 \times 1.07 \times 2.1 + 4 \times 0.90 \times 2.1 + 9 \times 1.2 \times 1.5 + 4 \times 0.45 \times 0.60) \times 0.22\) = 7.442 cubic meter

(iv) Total Masonary \(= 42.546\) cubic meter
7. Plaster in 1:6 cement mortar
   (i) In main building = 2 x 73.2 x 3.0 = 439.200 square meter
   (ii) In bath/toilet = 4 x 2 x 3.1 x 1.5 = 37.2 square meter
   (iii) In roof = 90.00 square meter
   (v) Deduction for doors/windows = 2 x (4 x 1.07 x 2.1 + 4 x 0.9 x 2.1 +
         4 x 1.2 x 1.5 + 4 x 0.45 x 0.60 ) = 67.652 square meter
   (vi) Total plaster = 498.748 square meter

8. Centering and shuttering:
   (i) For Columns in main building = 18 x 4 x 0.22 x 4.6 = 72.864 square meter
   (ii) For beam at plinth level = 73.2 x 0.3 = 21.96 square meter
   (iii) For beam at door level = 73.2 x 0.3 = 21.96 square meter
   (iv) For beam at slab level = 73.2 x 0.3 = 21.96 square meter
   (v) For chajjas = 9 x 0.6 x 1.5 = 8.10 square meter
   (iv) For slab = 90.00 square meter

Total shuttering = 236.844 square meter
9. Filling foundation with moorum
   = 90 x 0.5
   = 45.00 cubic meter.

Wood required for frames
   = 0.0635 x 0.127 x (4 x 1.07 x 2.1 +
   4 x 0.90 x 2.1
   9 x 1.2 x 1.5 +  4 x 0.45 x 0.60 )
   = 0.272 cubic meter

Frame work for doors/window
   = (4 x 1.07 x 2.1 +
   4 x 0.90 x 2.1
   9 x 1.2 x 1.5 +  4 x 0.45 x 0.60 )
   = 33.828 square meter

10. Flooring
    = 90.00 square meter