ESTIMATE OF FOREST GUARD QUARTER

1. C/C length of walls in quarter = 28.75 x 3 + 21.75 x 3 + 10.75 x 1 running feet
   = 160.75 running feet
   = 49 running meter

2. C/C length of court yard walls = 10.6 x 2 + 21.75 x 1 running feet
   = 42.95 running feet
   = 13.09 running meter

3. No. of columns in quarter = 12
4. No. of columns in courtyard = 3
5. Size of each column = 9 inches x 9 inches
6. Plinth = 0.5 meter above ground level
7. Beam at plinth level = 9 inches x 9 inches
8. Beam on door/windows = 9 inches x 6 inches
9. Beam at roof level = 9 inches x 9 inches
10. Thickness of slab = 4 inches

Estimate of different works

1. Excavation:
   (i) For columns = (12 + 3) x 1.0 x 1.0 x 1.2 meter
       = 18.000 cubic meter
   (ii) For walls = [(49 + 13.09) - 38 x 0.5] x 0.3 x 0.5
       = 6.464 cubic meter
   (iii) Total excavation = 24.464 cubic meter

2. Filling foundation with 1:3:6 (M-10) cement concrete:
   (i) For columns = (12 + 3) x 1.0 x 1.0 x 0.1
       = 1.5 cubic meter
(ii) For walls = (49 + 13.09) x 0.3 x 0.1
    = 1.563 cubic meter

(iii) For flooring in rooms = 8.84 x 6.86 x 0.1
     = 6.06 cubic meter

(iv) Total CC = 9.123 cubic meter

3. R.C.C. work in 1:1.5:3 (M-20) in columns, beams, chajjas & slab:

(i) Columns footing = 15 x (1 x 1 + 0.22 x 0.22)/2 x 0.3
                    = 2.359 cubic meter

(ii) Columns up to plinth level = 15 x 1.2 x 0.22 x 0.22 = 0.871 cubic meter

(iii) Column up to roof level = 12 x 0.22 x 0.22 x 3.1
     = 1.800 cubic meter

(iv) Column in court yard = 3 x 0.22 x 0.22 x 1.8
    = 0.261 cubic meter

(v) Beam at plinth level = (49 + 13.09) x 0.22 x 0.22
   = 3.005 cubic meter

(vi) Beam at door level = 49 x 0.22 x 0.15
    = 1.617 cubic meter

(vii) Beam at roof level = 49 x 0.22 x 0.22
     = 2.372 cubic meter

(viii) Chajjas = 5 x 0.6 x 1.5 x 0.1
              = 0.450 cubic meter

(ix) Slab = (8.84 x 6.86 + 1.5 x 3.3) x 0.1
          = 6.559 cubic meter

(x) Total RCC = 19.294 cubic meter

4. Steel required in RCC = 1.25 % of volume of RCC
                         = 1893 kg

5. Masonary in foundation/plinth = (49 + 13.09) x 0.22 x 0.9
                                 = 12.294 cubic meter
6. **Masonry in superstructure:**
   (i) In main building \( = 49 \times 0.22 \times 2.85 \) = 30.723 cubic meter
   (ii) In bath/toilet \( = 3.0 \times 0.22 \times 2.1 \) = 1.386 cubic meter
   (iii) In courtyard \( = 13.09 \times 0.22 \times 1.8 \) = 5.184 cubic meter
   (iv) Deduction for doors/windows \( = (3 \times 1.07 \times 2.1 + 4 \times 0.838 \times 2.1 + \) 
   \( 3 \times 1.5 \times 1.35 + 2 \times 1.2 \times 1.35 + \) 
   \( 0.9 \times 1.35 + 3 \times 0.6 \times 0.45 ) \times 0.22 \) = 5.526 cubic meter
   (v) Masonary in parapet wall \( = 31.40 \times 0.75 \times 0.22 \) = 5.181 cubic meter
   (vi) Total Masonary \( = 36.948 \) cubic meter

7. **Plaster in 1:6 cement mortar**
   (i) In main building \( = 2 \times 49.0 \times 3.0 \) = 294 square meter
   (ii) Parapet wall \( = 2 \times 31.40 \times 0.75 \) = 47.10 square meter
   (iii) In bath/toilet \( = 2 \times 3.1 \times 2.1 \) = 13.02 square meter
   (iv) In courtyard \( = 2 \times 13.02 \times 1.8 \) = 46.872 square meter
   (v) In roof \( = 8.84 \times 6.86 + 1.5 \times 3.3 \) = 65.59 square meter
   
   (v) Deduction for doors/windows \( = 2 \times (3 \times 1.07 \times 2.1 + 4 \times 0.838 \times 2.1 + \) 
   \( 3 \times 1.5 \times 1.35 + 2 \times 1.2 \times 1.35 + \) 
   \( 0.9 \times 1.35 + 3 \times 0.6 \times 0.45 ) \) = 50.236 square meter
   (vi) Total plaster \( = 416.346 \) square meter
8. **Centering and shuttering:**

   (i) For Columns in main building = \(12 \times 4 \times 0.22 \times 4.6\)
   = 47.52 square meter

   (ii) For columns in courtyard = \(3 \times 4 \times 0.22 \times 3.3\)
   = 8.712 square meter

   (iii) For beam at plinth level = \((49 + 13.09) \times 0.3\)
   = 18.627 square meter

   (iv) For beam at door level = \(13 \times 2 \times 0.15 \times 1.5\)
   = 5.85 square meter

   (vi) For chajjas = \(5 \times 0.6 \times 1.5\)
   = 4.5 square meter

   (vii) For slab = \(8.84 \times 6.86 + 1.5 \times 3.3\)
   = 65.59 square meter

   (viii) Total shuttering = 150.799 square meter

9. **Filling foundation with moorum** = \(8.84 \times 6.86 \times 0.5\)
   = 30.321 cubic meter

10. **Wood required for frames** = \(0.0635 \times 0.127 \times (3 \times 5.334 +\)
      \(4 \times 5.105 + 3 \times 8.534 + 2 \times 5.4 +\)
      \(1 \times 4.5 + 3 \times 2.1)\)
    = 0.674 cubic meter

11. **Frame work for doors/window** = \(3 \times 1.07 \times 2.1 + 4 \times 0.838 \times 2.1 +\)
    \(3 \times 1.5 \times 1.35 + 2 \times 1.2 \times 1.35 +\)
    \(0.9 \times 1.35 + 3 \times 0.6 \times 0.45\)
    = 25.120 square meter

12. **Flooring** = \(8.84 \times 6.86 + 1.5 \times 3.3\)
    = 65.59 square meter