



- (1) Stone wall =  $21.35 \text{ m}^2$  per 1800 = 251,930 ₦
- (2) Brick wall =  $147.922 \text{ m}^2$  per 7080 = 1,047,288 ₦
- (3) Plastering =  $235.064 \text{ m}^2$  per 2360 = 554,751 ₦
- (4) Ranrete =  $34.52 \text{ m}^2$  per 6800 = 234,736 ₦
- (5) Concrete =  $100.084 \text{ m}^2$  per 9440 = 944,793 ₦
- (6) Painting =  $296.689 \text{ m}^2$  per 590 = 175,046 ₦
- (7) Tiles =  $59.49 \text{ m}^2$  per 5900 = 350,991 ₦
- (8) Roof cover =  $56.16 \text{ m}^2$  per 1180 = 66,269 ₦
- (9) Collecting sand =  $25 \text{ m}^3$  per 590 = 14,750 ₦
- (10) Collecting stone =  $20 \text{ m}^3$  per 2360 = 47,200 ₦
- (11) Excavation = 199 per 4720 = 93,928 ₦
- (12) Bath room and plumbing. = 265,246 ₦

$$\underline{\underline{\text{Total}}} = \underline{\underline{4,046,928 \text{ ₦}}}$$

# MATHEMATICAL CALCULATIONS

(1) Stone wall (foundation)

$$\Rightarrow [(7.6 \times 0.5) \times 2 + (5.1 \times 0.5) \times 4 + (2.1 \times 0.5) + (1 \times 0.5) + (4.1 \times 0.5)] \text{ m}^2$$
$$= \boxed{21.35 \text{ m}^2} \text{ [STONE WALL]}$$

(2) Brick walls  $h = 4.17$ , and  $h = 3.17$  back

$$\ast \text{ Outside walls} = (7.4 \times 4.17) \times 2 + (5.5 \times 3.17) + (5.5 \times 4.17)$$
$$= 102.086 \text{ m}^2$$

$$\ast \text{ Inside} = [(5.5 \times 3.47) \times 2 + (1.2 \times 3.47) + (4.3 \times 3.47) + (2.3 \times 3.47)]$$
$$= \underline{65.236 \text{ m}^2}, \text{ height of used inside was average}$$

$\ast$  Areas of openings

$$- \text{ Doors} = [(0.9 \times 2) \times 5 + (1.6 \times 2)] = 12.2 \text{ m}^2$$

$$- \text{ Windows} = [(1.5 \times 1.2) \times 3 + (0.5 \times 0.6) \times 2 + (1 \times 1.2)] = 7.2 \text{ m}^2$$

$$\text{Total openings} = 19.4 \text{ m}^2$$

$$\text{Total bricks wall} = [(102.086 + 65.236) - 19.4] \text{ m}^2$$
$$= \boxed{147.922 \text{ m}^2}$$

(3) Plasterings, painting and Tilings

$\ast$  Corridor . heights equal to 2.95 to ceilings

$$\ast \text{ plastering: } [(1.4 \times 2.95) \times 2 + (5.5 \times 2.95) \times 2] = \underline{38.94 \text{ m}^2}$$

$$\ast \text{ painting} = \underline{38.94 \text{ m}^2}$$

$$\ast \text{ Tiling} = (5.5 \times 1.1) \text{ m}^2 = \underline{6.05 \text{ m}^2}$$

\* WC, all bathrooms and WC are equal

+ plastering, height to be used is above wall tiles = 1.13

$$[(1.2 \times 1.13) \times 2 + (2.65 \times 1.13) \times 2] = 8.705 \times 2$$

$$\text{plastering of all WC} = \underline{17.402 m^2}$$

\* painting of all WC = 17.402 m<sup>2</sup>

\* Tiles - pavement tiles

$$= (2.65 \times 1.2) \times 2$$

$$= 6.36 m^2$$

- Wall tiles

$$= [(1.2 \times 1.82) \times 2 + (1.82 \times 2.65) \times 2] = 14.014 m^2$$

$$\text{Openings} = (0.9 \times 1.82) m^2 = 1.638$$

$$\text{Wall tile of single WC} = 12.376 m^2$$

$$\text{Tiles of WC} = 24.752 m^2 + 6.36 m^2$$
$$= \underline{31.112 m^2}$$

\* Room 2 \* plastering

$$[(2 \times 2.95) \times 2 + (2.3 \times 2.95) \times 2] = \underline{25.37 m^2}$$

$$* \text{Painting} = 25.37 m^2$$

$$* \text{Tiling} = 2 \times 2.3 m^2$$
$$= \underline{4.6 m^2}$$

\* Rooms - plastering

$$[(3 \times 2.95) \times 2 + (4.3 \times 2.95) \times 2] = 43.07 m^2$$

$$- \text{Painting} = \underline{43.07 m^2}$$

$$- \text{Tiling} = (3 \times 4.3) m^2 = \underline{12.9 m^2}$$

\* Rooms: - plastering  

$$[(2.1 \times 2.95) \times 2 + (2.3 \times 2.95) \times 2] m^2$$

$$= 25.96 m^2$$

- Painting =  $25.96 m^2$

- Tiling =  $(2.3 \times 2.1) m^2$   

$$= \underline{4.83 m^2}$$

\* OUTSIDE WALL - plastering  

$$[(5.9 \times 4.17) + (7.4 \times 4.17) \times 2 + (5.9 \times 3.17)]$$

$$= 105.022 m^2$$

\* INSIDE EXTENDED WALL OVER ROOF =  $[(5.5 \times 0.6 + (7.4 \times 1) \times 2]$   

$$= 18.1 m^2$$

- Total outside plastering =  $123.122 m^2$

- Painting =  $123.122 m^2$

plastering include opening = Corridor + WC x 2 + Room 1 + Room 2 +  
 Room 3 + outside wall  

$$= 38.94 + 17.402 + 43.07 + 25.37 + 25.96 + 123.122$$

$$= 273.864 m^2$$

Area of openings =  $(19.4 \times 2) = 38.8 m^2$

- Total plastering =  $(273.864 - 38.8 m^2) = \underline{235.064 m^2}$

- Total tiles =  $6.05 + 6.36 + 24.752 + 12.9 + 4.6 + 4.83$   

$$= \underline{59.49 m^2}$$

Painting = house paint + Verand + extended wall

Verand =  $(4.15 \times 5.9) + (7.4 \times 0.9) + (7.4 \times 0.8) + (7.6 \times 0.85)$   

$$= 43.525 m^2$$

- Total painting =  $(235.064 + 43.525 + 18.1) m^2$   

$$= \underline{296.689 m^2}$$

\* Roof Cover

(1)  $(5.5 \times 7.82) = 43.01 \text{ m}^2$

(2)  $(5.5 \times 2.42) = 13.31 \text{ m}^2$

Total roof cover =  $56.32 \text{ m}^2$

\* Rangate:

=  $[(3 \times 4.3) + (2.3 \times 2.0) + (2.3 \times 2.4) + (2.65 \times 1.2) + (2.65 \times 1.2) + (11 \times 5.5)] \text{ m}^2$   
 =  $34.52 \text{ m}^2$

\* Concrete slab and pavement

-  $(8.4 \times 7.6) \text{ m}^2 = 63.84 \text{ m}^2$

-  $(4.15 \times 7.6) \text{ m}^2 = 31.54 \text{ m}^2$

Concrete pavement =  $95.38 \text{ m}^2$

- Toilet tank (Septic tank concrete cover) and Manhall

\* Manhall =  $(0.5 \times 0.5) + (0.8 \times 0.7) + (0.6 \times 0.6) = 1.17 \text{ m}^2$

\* Septic tank =  $\pi r^2 \times 2 \Rightarrow [(0.75)^2 \pi \times 2] = 3.53 \text{ m}^2$

=  $1.17 \text{ m}^2 + 3.53 \text{ m}^2$

=  $4.704 \text{ m}^2$

\* Total Concrete pavement and Concrete cover

=  $95.38 \text{ m}^2 + 4.704 \text{ m}^2$

=  $100.084 \text{ m}^2$

\* Collecting sand =  $25 \text{ m}^3$

\* Collecting stones =  $20 \text{ m}^3$

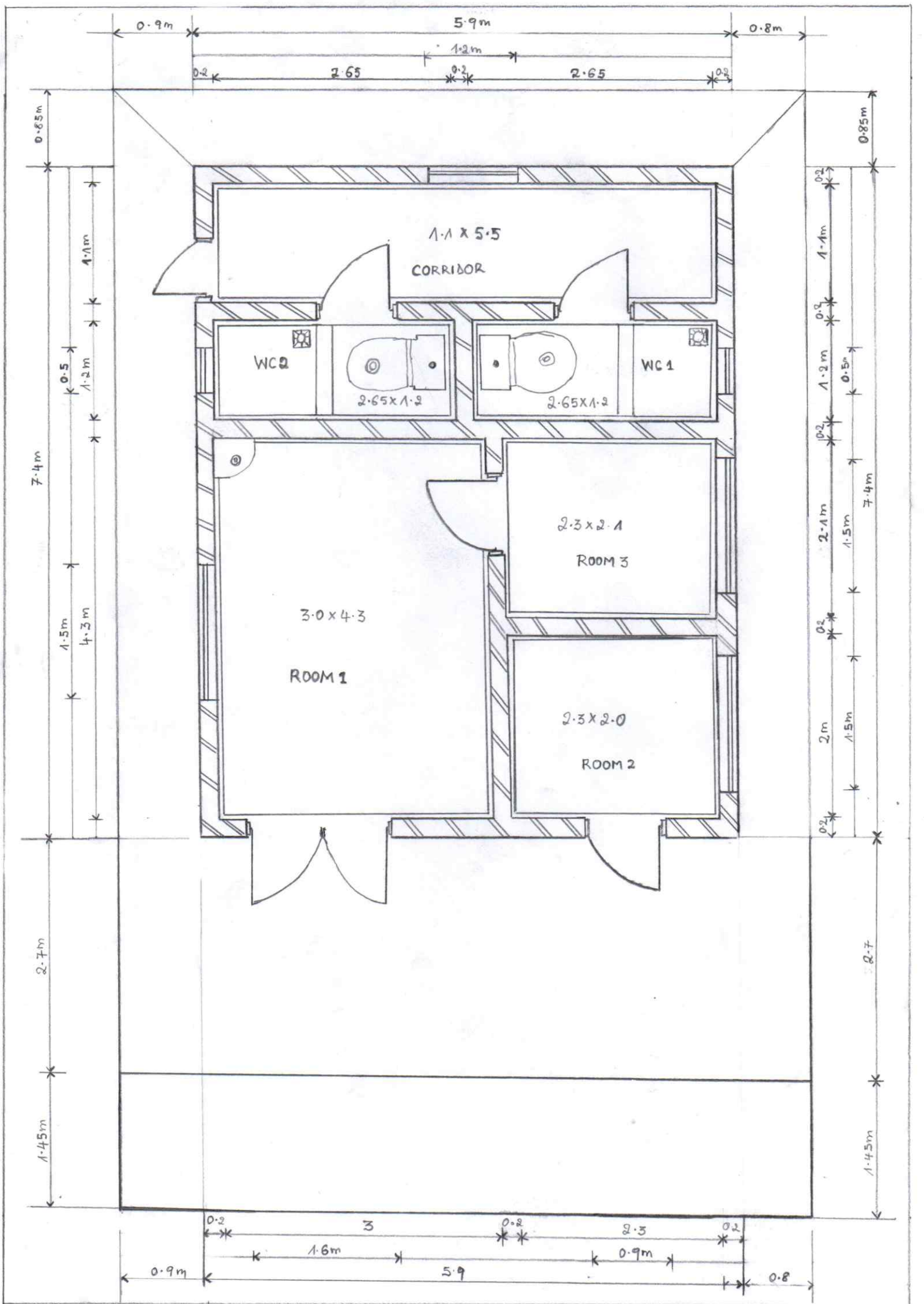
\* Excavation: height<sub>1</sub> = 10m and h<sub>2</sub> = 5m, radius = 0.65m of septic tank.

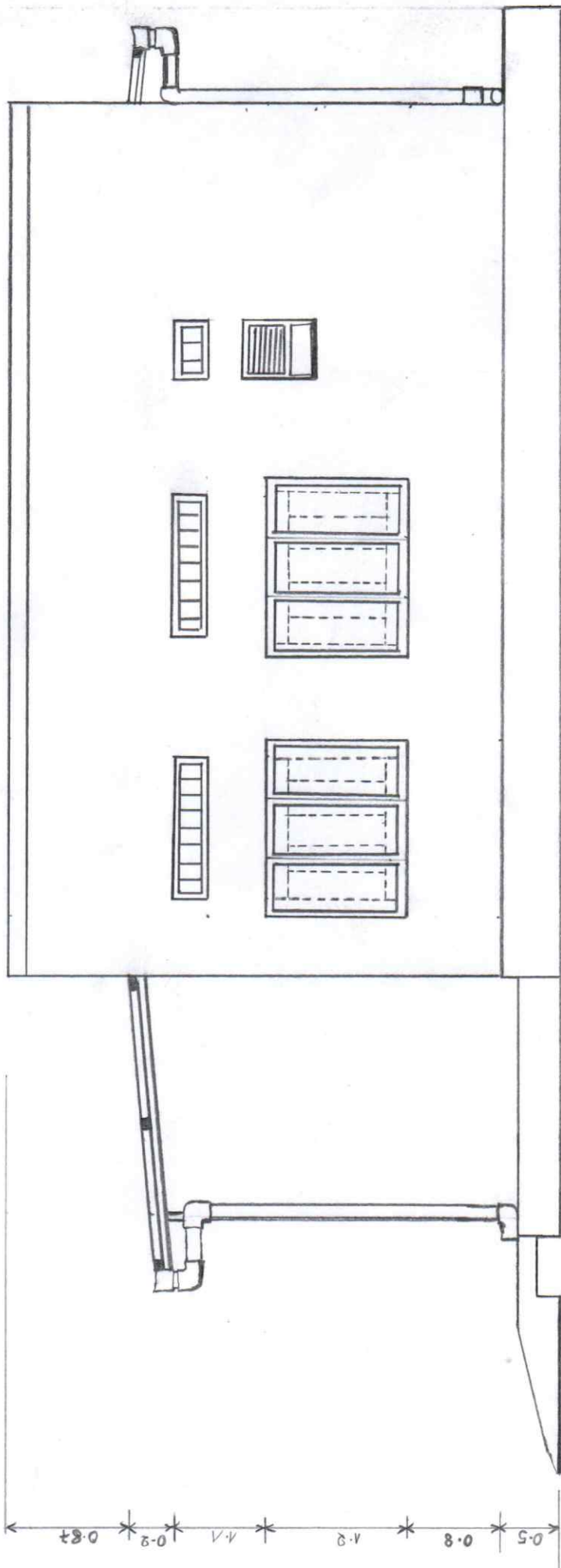
$V = \pi r^2 h = [(0.65)^2 \pi \times 10 + (0.65)^2 \pi \times 5] \text{ m}^3$

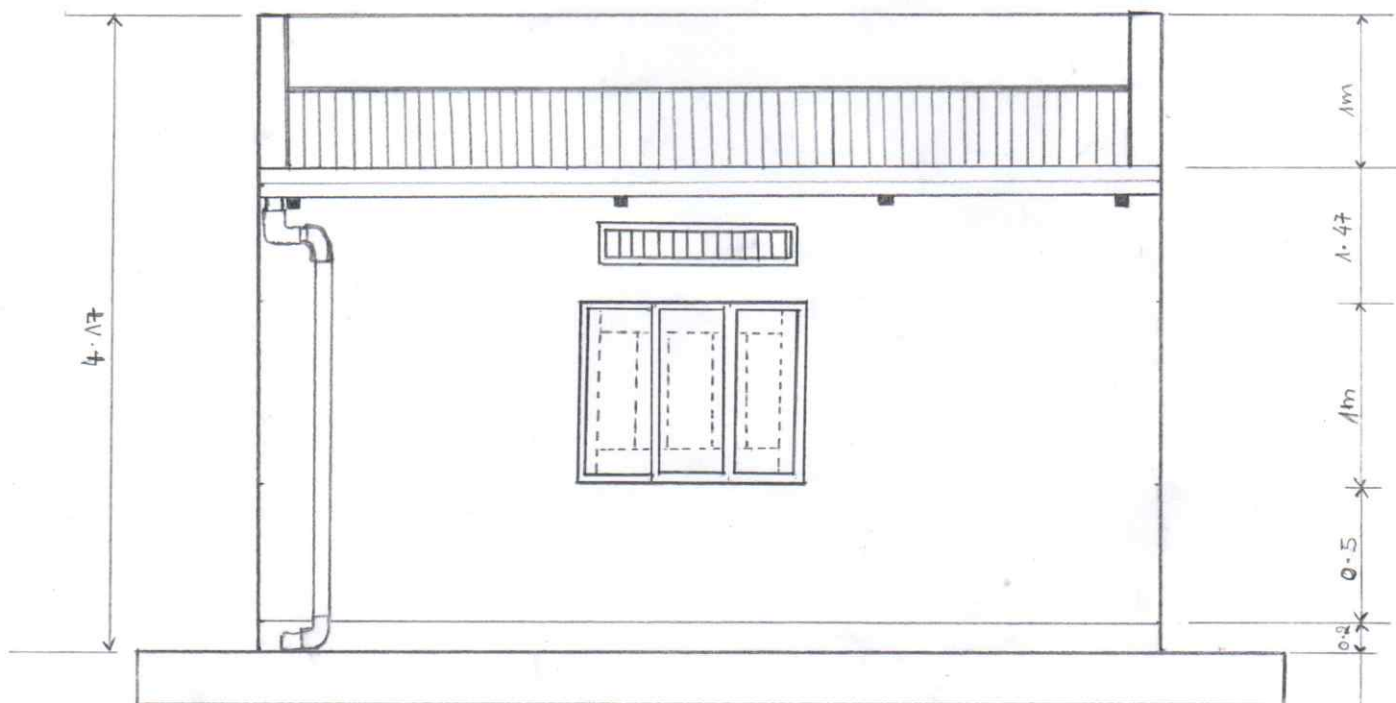
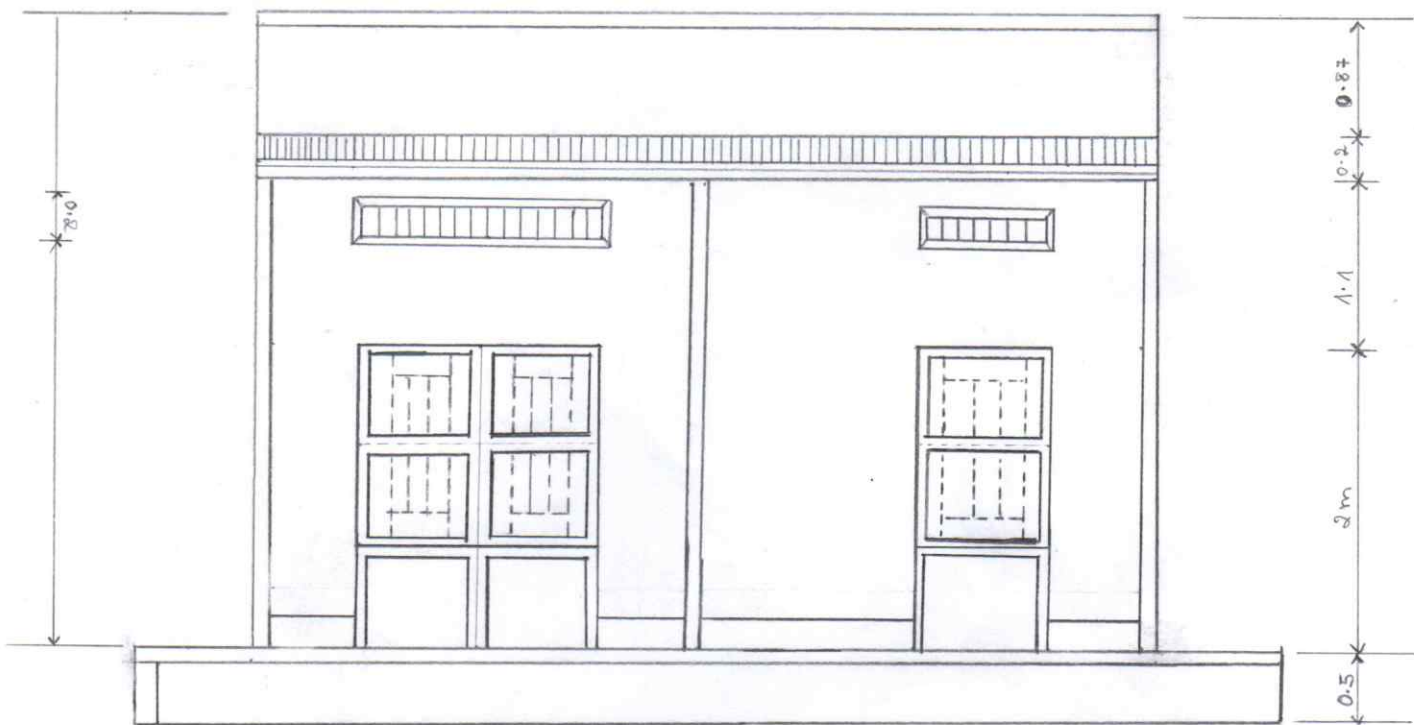
=  $19.9 \text{ m}^3$

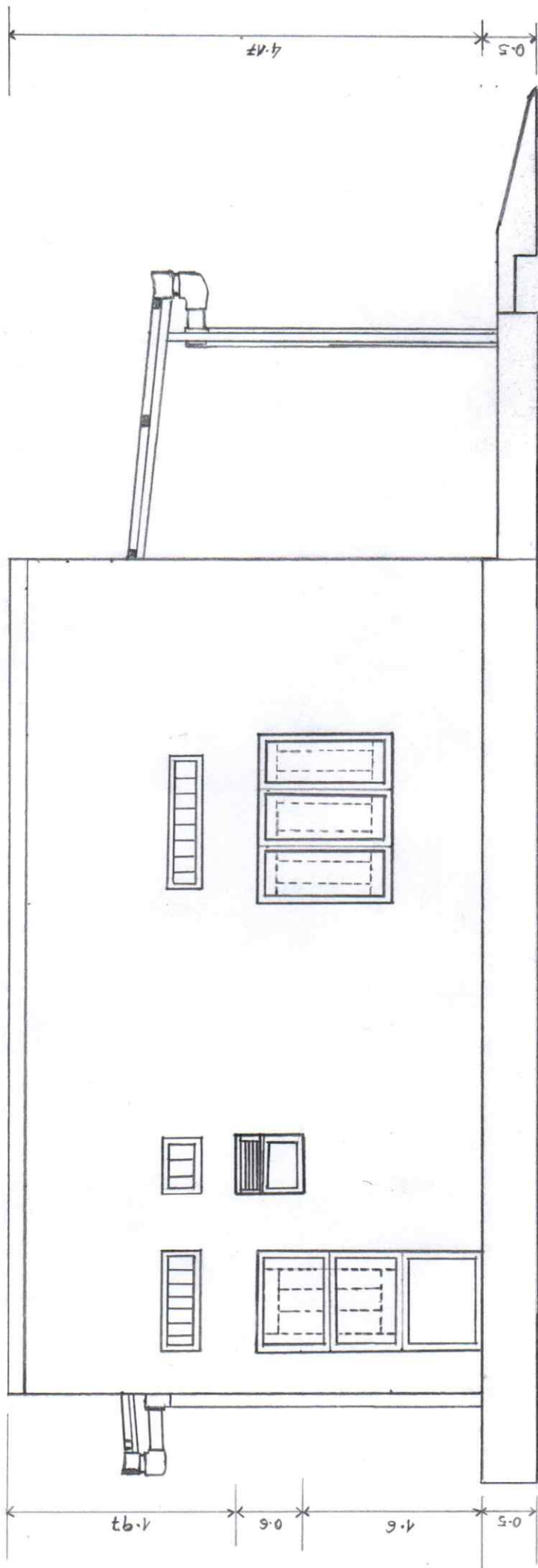
\* Excavation =  $19.9 \text{ m}^3$

\* Bathroom and plumbing =  $265,246 \text{ Trw}$











APPROVAL OF CONSTRUCTION PARAMEDIC HOUSE AT RUTONGO

DATE	NAMES	POSITION	SIGNATURES
11/03/2025	NGARAMBE Pasifique	SURVEYOR	
12/03/2025	JTUS HARRY KADE	MRM MANAGER	
19/3/2025	Ndayambaje Jean Claude	CONSTRUCTION SUPERVISOR	
01/3/2025	Leop NGENZI	ENGINEERING AND PROJECT MANAGER	
19/3/25	Jaco vd Meer	MINE MANAGER	
14/3/2025	Kabalisa Jolly	PROCUREMENT	
	PERMAN M	FINANCIAL MANAGER	