

## Problem Description

**Where?** Jinja Regional Referral Hospital (JRRH), Jinja, Uganda

**What?** Pathways to Hope Africa (PTHA) and UShelter1 are tasked with designing:

- a comfortable, safe maternal care shelter for 100-plus mothers
- an attached neonatal intensive care unit (NICU) extension

**Why?** Overcrowding at JRRH facilities means that:

- mothers of premature babies in the NICU must wait outside without shelter for days or even weeks
- insufficient space as rate of preterm babies admitted increases

**Who?** Stakeholders include:

- mothers, their premature babies, and their visitors
- JRRH staff, medical or otherwise
- local, national government officials
- PTHA and its consultants

## Site Observations

### Observations and Interview Findings

- Mothers wait in green spaces abutting maternity ward with little shade, shelter, or basic amenities
- Current NICU is 29.9 sqm (322 sqft) with only 12 incubators
- JRRH earmarked ~1800 sqm land for shelter
- Mothers lack secure sleeping areas, access to support services
- Stress impacts mother's ability to breastfeed
- JRRH medical staff require improved workstations to support kangaroo-NICU care, postpartum care for mothers
- JRRH admin worried about future expansion, utility costs



**Fig. 1:**  
Proposed site for shelter outlined in white



**Fig. 2:**  
Mothers waiting outside



**Fig. 3:**  
JRRH administration and executives (on right)



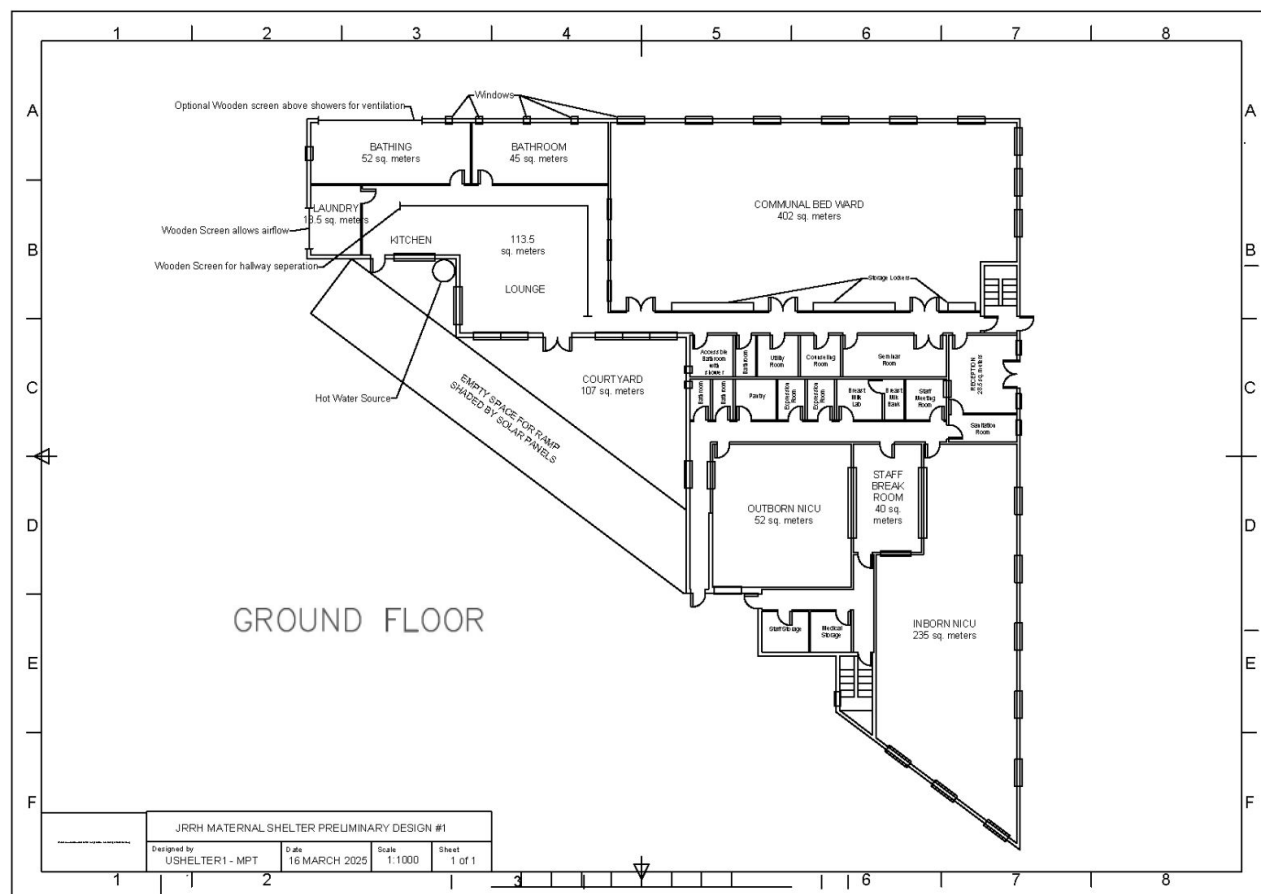
**Fig. 4:**  
Interviewing mothers in kangaroo care



**Fig. 5:**  
Current NICU configuration

## Preliminary Designs

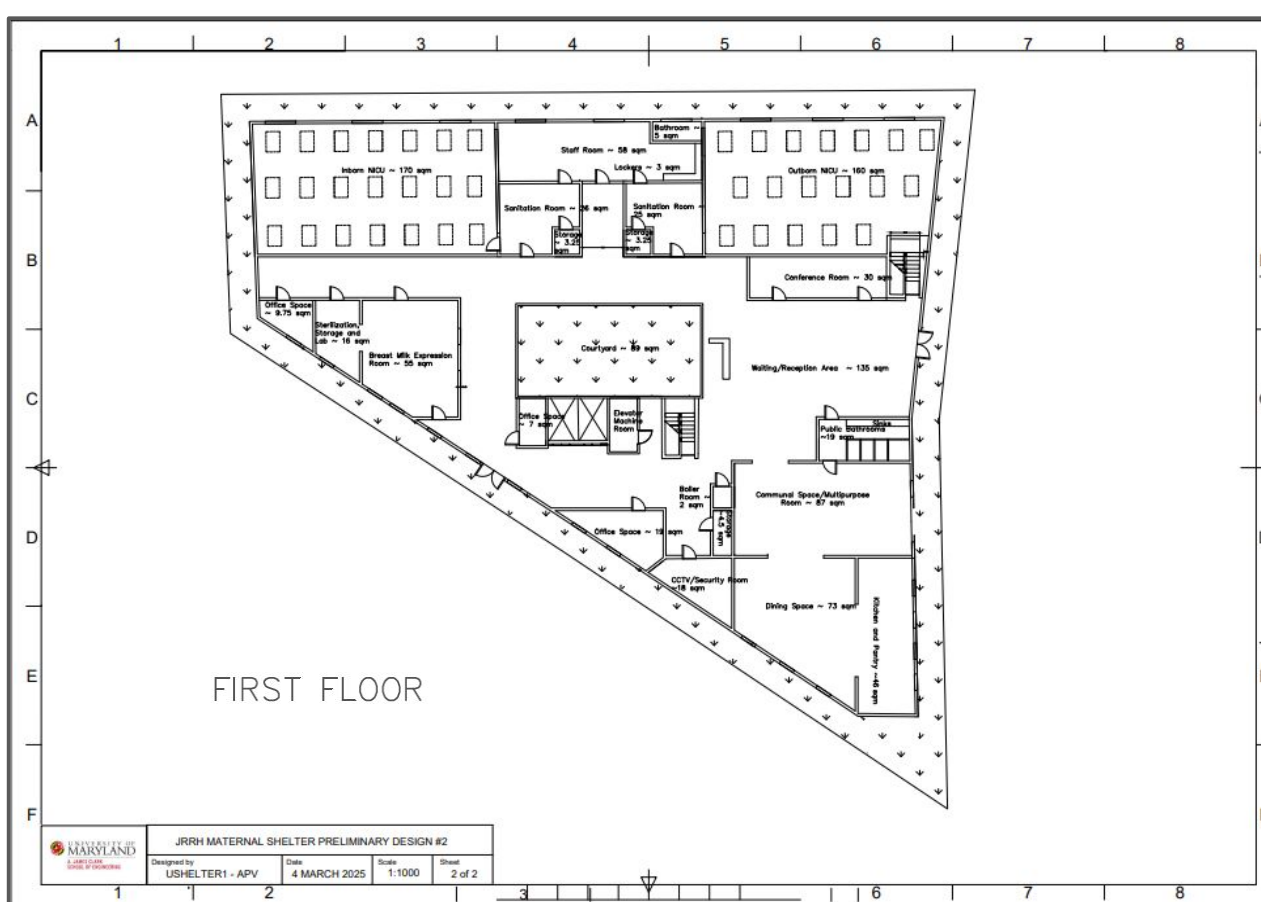
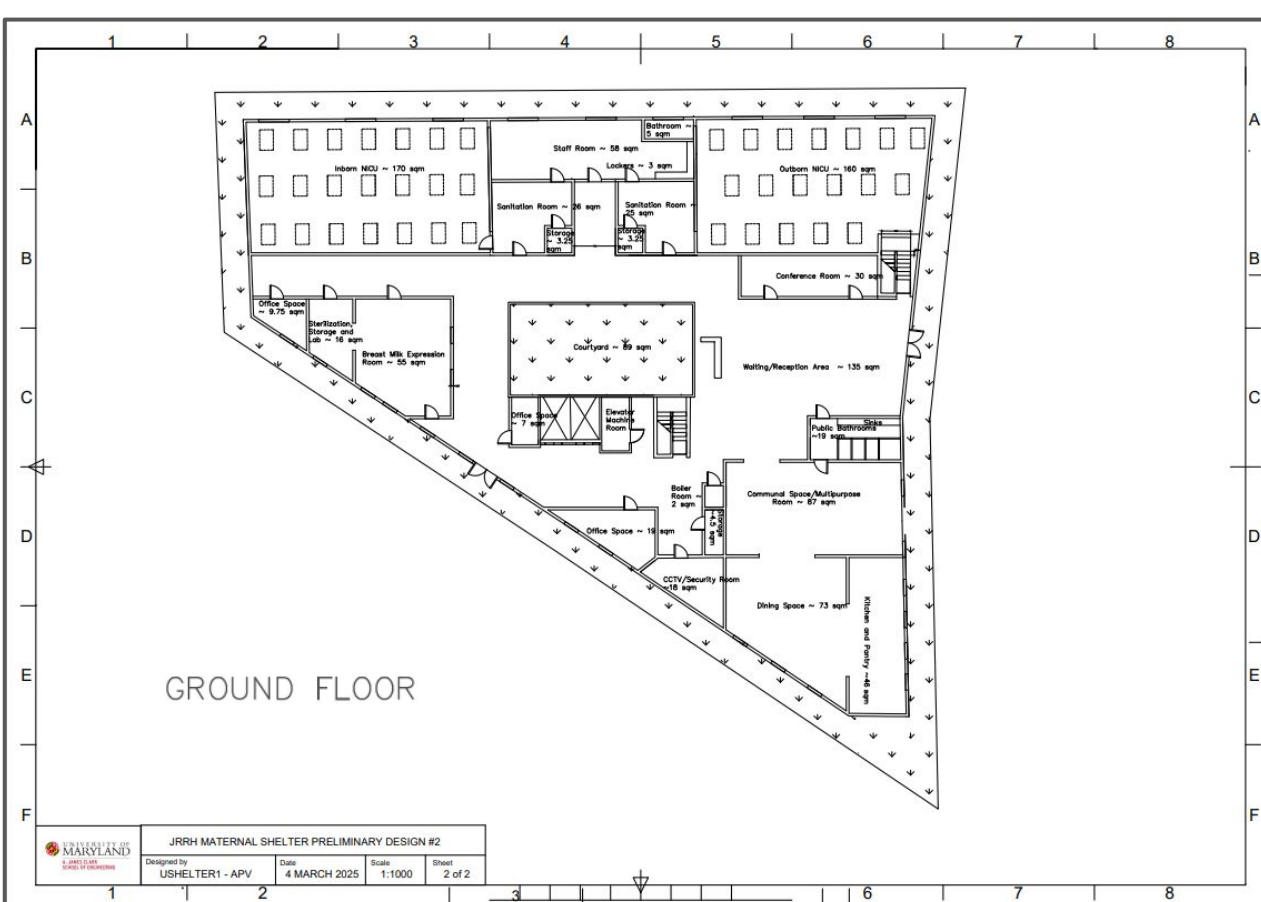
### Option 1



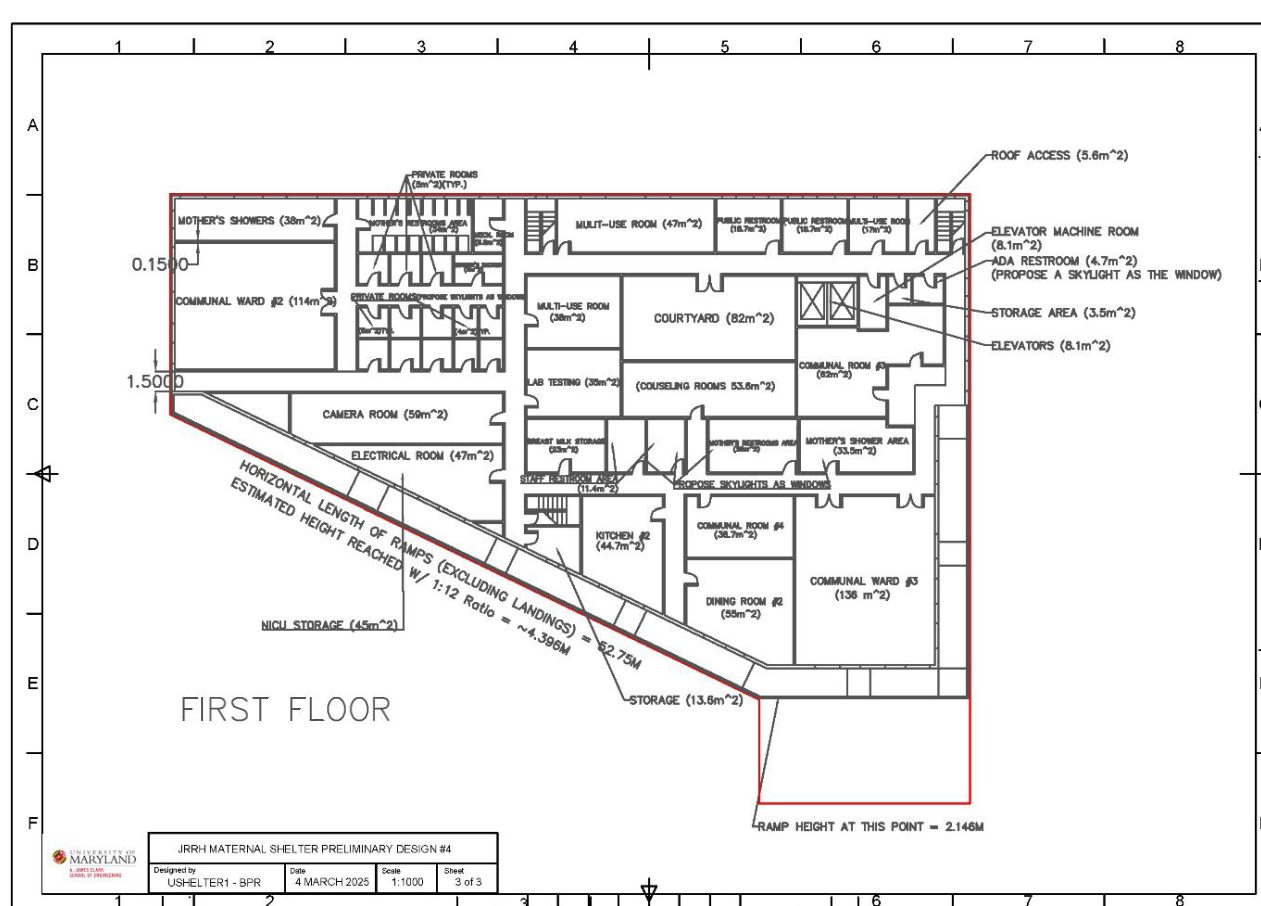
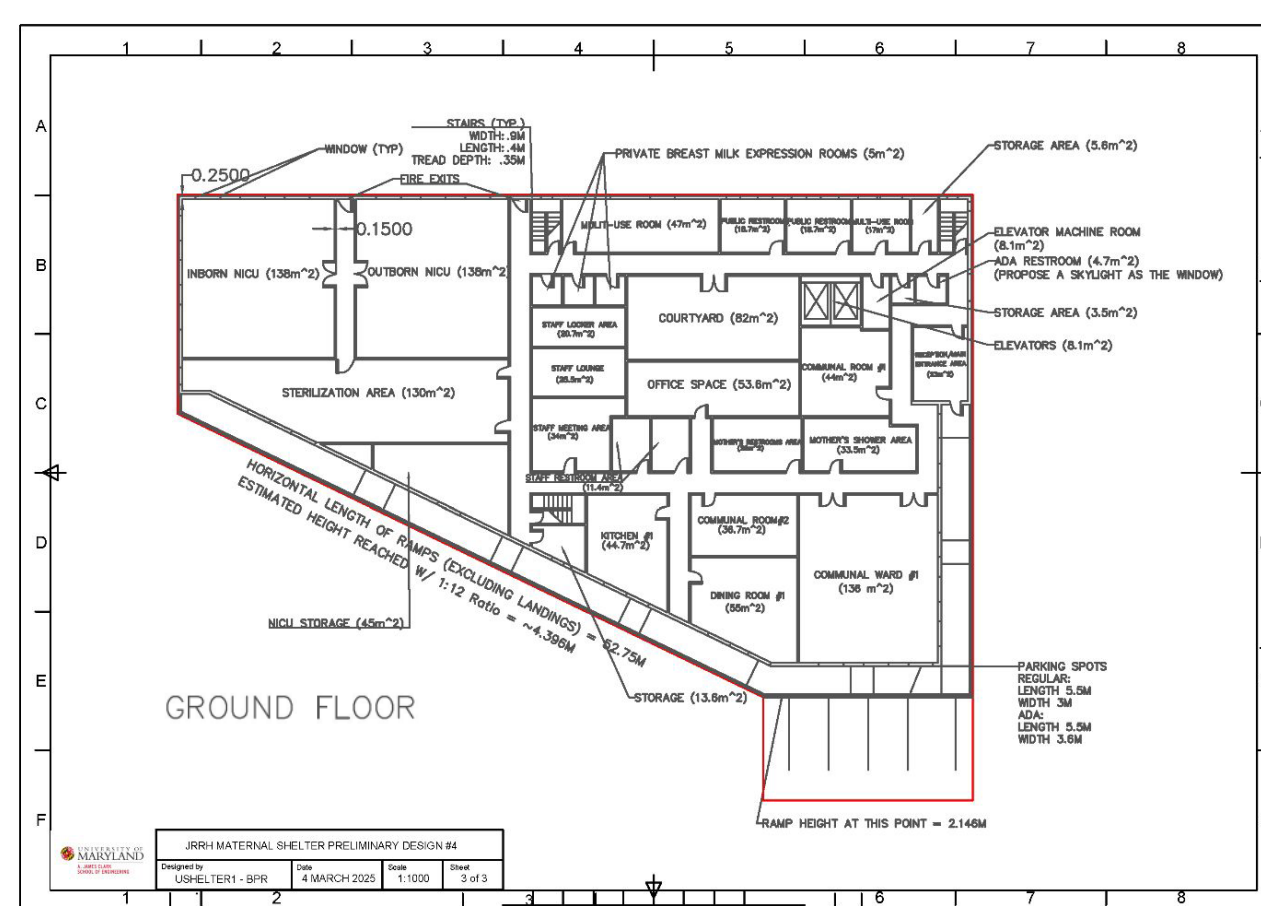
#### Design Procedure

- I. Site data collection
- II. Data analysis (core values, code compliance, etc.)
- III. Feedback-informed preliminary design generation
- IV. Optioneering—preferred design selection by JRRH
- V. Concept design generation

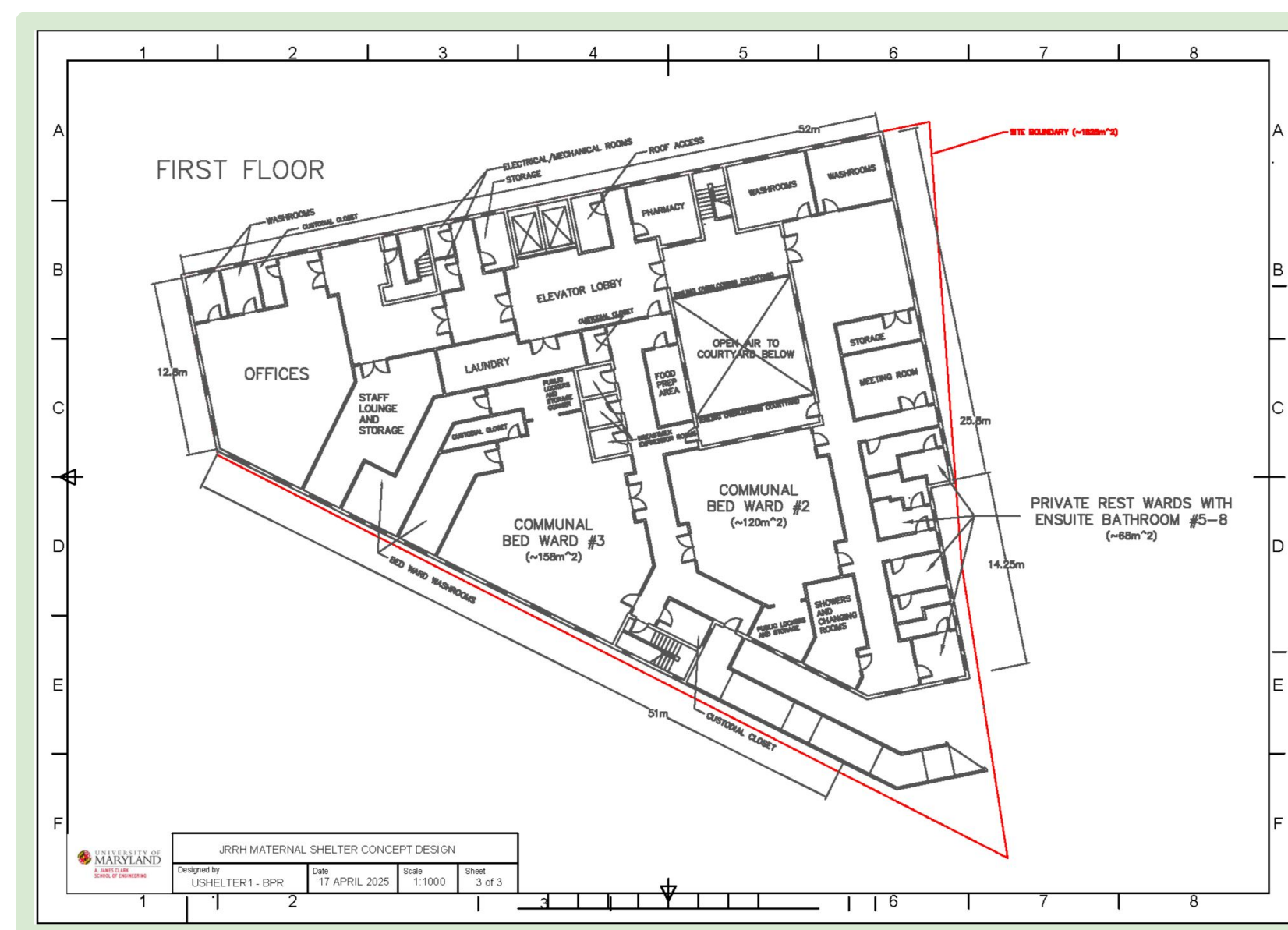
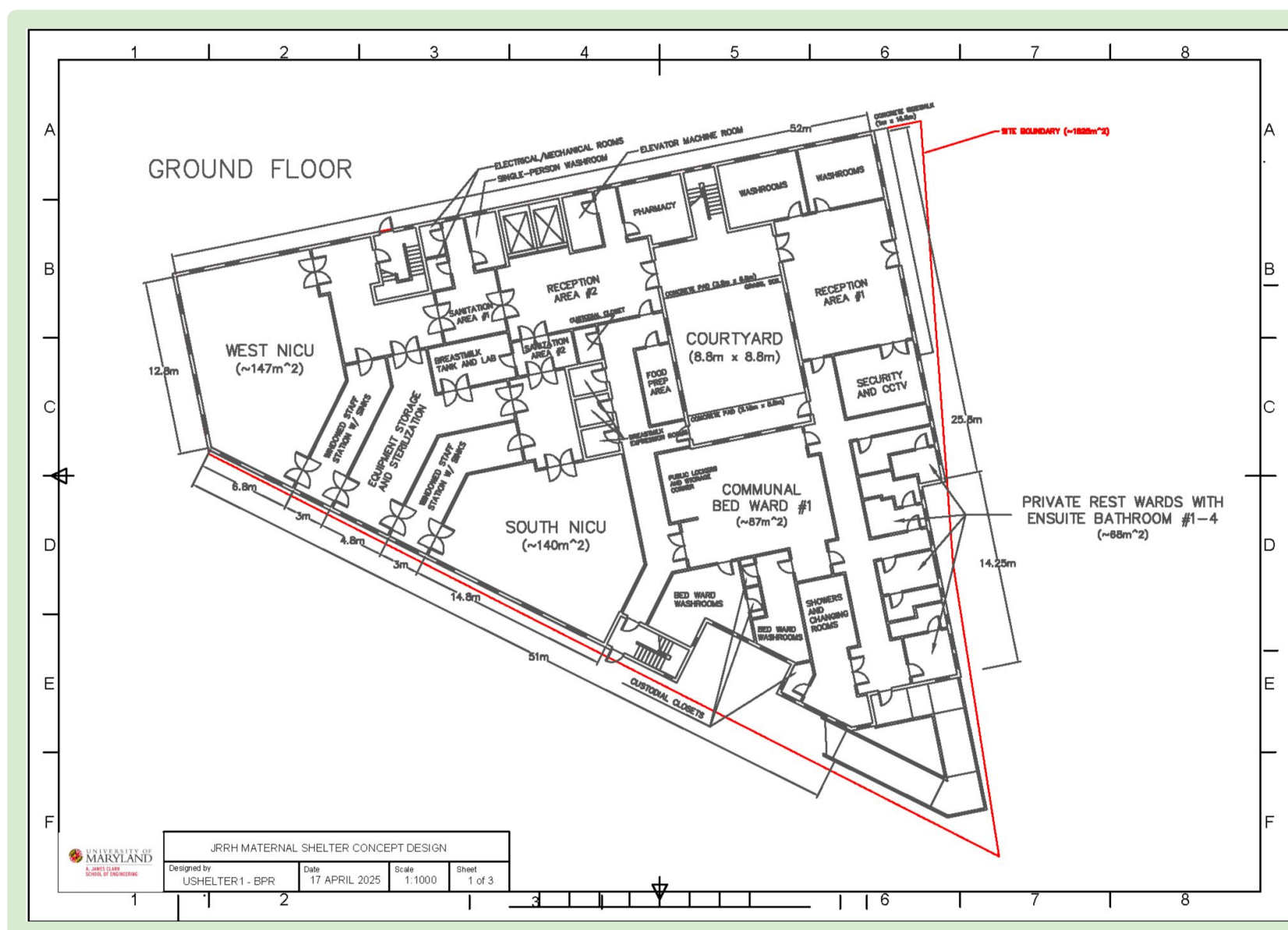
### Option 2



### Option 3



### Option 4 Selected



## Final Rendering

### Ground Floor



### First Floor



## Design Analysis

### Key Components

- Communal Rest Wards: 370 sqm (max 100 people)
- Private Rest Wards: 82 sqm (8 to 20 people)
- NICUs: 288 sqm (~960% of current)

**Total Shelter Area: 2888 sqm (max 120 people sheltered)**

Material Type	Est. Unit Price (UGX)*	Unit	Cost in UGX	Cost in USD
Foundation	58,000	square meter	8,443,814.00	2,279.83
Facade (Exterior Walls)	580,000	cubic meter	50,332,980.00	13,589.90
Roofing	580,000	cubic meter	938,208,000.00	255,755.50
Windows	694,450	square meter	113,090,312.27	30,534.38
Interior Walls	580,000	cubic meter	295,904,835.00	79,894.31
Flooring	580,000	cubic meter	1,206,400,000.00	325,728.00
<b>TOTAL:</b>			<b>2,612,379,941.27</b>	<b>\$707,781.92</b>

\*UGX per unit estimates courtesy of Pathways to Hope Africa

### References

National Building Review Board. (2019) *The National Building (Building Standards) Code, 2019* (S.I. No. 51 of 2019). Retrieved from <https://nbb.go.ug/resources/building-codes/>  
Pathways to Hope Africa. (2024). *Technical Site Visit Report*.

Design	Space of Core Features			Variety of Features			Community		Security		Rough Cost Estimates							Constructability		Maintenance		Energy Usage		Total
	Area (sq. m.)	Score	Weight	Count	Score	Weight	Score	Weight	Score	Weight	Area (sq. m.)	Basic Lighting	Site Area (sq.m.)	Basic Construction	Cost	Score	Weight	Score	Weight	Score	Weight	Score	Weight	
#1 - MT	689	2	1	26	3	1	1	1	1	1	1,454.13	\$78.26	1,811.42	\$793,528.65	\$793,606.91	4	1	4	1	4	1	3	1	22
#2 - AV	768	4	1	25	2	1	2	1	2	1	2,971.94	\$159.95	1,863.15	\$1,174,926.87	\$1,175,086.82	3	1	3	1	3	1	2	1	21
#3 - SA	662	1	1	31	4	1	2	1	1	1	3,092.34	\$166.43	1,934.82	\$1,221,599.88	\$1,221,766.31	1	1	2	1	2	1	1	1	14
#4 - BPR	734	3	1	20	1	1	1	1	2	1	3,061.80	\$164.78	1,825.84	\$1,187,696.52	\$1,187,861.30	2	1	1	1	1	1	1	1	12