



KIBERA PUBLIC SCHOOL

EMPOWERING KENYA THROUGH LOCAL MATERIALS AND LABOR

THANK YOU!

CLASSMATES, PROFESSORS, FAMILY AND GOD

OVERVIEW

01 INTRO

02 BACKGROUND

03 METHODOLOGY

04 FINAL DESIGN

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DECEMBER 2021 - MARCH 2022



OBSERVATIONS OF KENYAN SCHOOLS

- LACK OF VERNACULAR ARCHITECTURE
- POOR VENTILATION
- POOR LIGHTING
- ISSUES WITH SAFETY
- EMPHASIS ON SPORTS



PROBLEM STATEMENT

- In Kibera, Africa's largest urban slum, there are over **100,000 orphans**. Additionally, **43%** of girls and **29%** of boys do not attend school. This is due to the cost of private schools, the lack of public schools, and lack of government funding.

THESIS QUESTIONS

- Who is responsible for helping those living in Kenyan slums?
- What can be done to help individuals get out of poverty?
- Why is there such a large number of students not attending school?
- How can local materials be utilized in advancing design in slums?

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COLONIZATION

- BRITISH COLONIZATION
 - LARGE-SCALE MOVEMENT
 - LATE 19TH CENTURY UNTIL FIRST WORLD WAR
 - MAU MAU UPRISING
 - INDEPENDENCE
 - TRANSFORMATION OF URBANIZATION (PAGE 17)

- (Payne, 1977)

URBANIZATION

- UNDERSTANDING THE GRASSROOTS DYNAMICS OF SLUMS IN NAIROBI: THE DILEMMA OF KIBERA INFORMAL SETTLEMENTS
 - URBAN PLANNING
 - LACK OF BASIC INFRASTRUCTURE
 - FAILED RESPONSE FROM THE GOVERNMENT
 - FAST GROWTH
 - UNEQUAL SOCIO-ECONOMIC DEVELOPMENT
- (Mutisya & Yarime, 2011)

“The experience of slum-dwellers starkly illustrates that people living in poverty not only face deprivation but are also trapped in poverty because they are excluded from the rest of the society, denied a say, and threatened with violence and insecurity.”

KIBERA SLUM

- UNDERSTANDING THE GRASSROOTS DYNAMICS OF SLUMS IN NAIROBI: THE DILEMMA OF KIBERA INFORMAL SETTLEMENTS
 - ORIGIN
 - CONTIUNED GROWTH
 - GOVERNMENT OWNED
 - 14 VILLAGES
 - HOST OF CHALLENGES
- (Mutisya & Yarime, 2011)

KIBERA SLUM

- UNDERSTANDING THE GRASSROOTS DYNAMICS OF SLUMS IN NAIROBI: THE DILEMMA OF KIBERA INFORMAL SETTLEMENTS
 - CONTAMINATED
 - POLLUTED
 - LACK OF SCHOOLS INFRASTRUCTURE
- (Mutisya & Yarime, 2011)

KENYAN EDUCATION

- EDUCATIONAL SPACE IN A SCHOOL IN KENYA
 - OVERCROWDING IN SCHOOLS
 - POOR LIGHTING
 - POOR SAFETY – HIGH RISK OF SPREADING DISEASES
 - LACK OF REFERENCE TO THE KENYAN CULTURE
 - LOCAL COMMUNITY IS NOT MAKING AESTHETICS AND ORDER IMPORTANT

- (Huk, 2022)

KENYAN EDUCATION

- TOWARD COMMUNITY-BASED ARCHITECTURAL PROGRAMMING AND DEVELOPMENT OF INCLUSIVE LEARNING ENVIRONMENTS
 - RAPID URBANIZATION
 - EXTREME POVERTY
 - NEED FOR BETTER SCHOOL ENVIRONMENTS
 - LACK OF COMMUNITY INCLUSIVITY
- (Dierkx, 2003)

POORLY DESIGNED SCHOOL

- THE CASE OF MUKURU-KAYABA PRIMARY SCHOOL
 - ENVIRONMENTALLY UNSAFE
 - POORLY DESIGNED
 - OVERCROWDED
 - UNCOMFORTABLE

- (Dierkx, 2003)

“The school is not secure because of the nearby factories, bars, and many destructive things... it is not well ventilated and built. It is unsafe for the children because there are roads near and cars will easily knock down the children... the school does not have clean toilets. So, it makes the school have a bad aroma... it does not have trees, so it is very ugly and unwelcoming (Julia Muthoni, 13 years, Nairobi South Primary).”

“School buildings should be safe and attractive in overall design and functional in layout; they should lend themselves to effective teaching, and to use for extra-curricular activities and, especially in rural areas, as a community centre; they should be constructed in accordance with sanitary standards and with a view to durability, adaptability and easy economic maintenance.”

“Most schools in Kenya and elsewhere in Africa do not meet these standards. rather than fostering independence and a love of learning, schools hinder children’s progress and potential.”

COMMUNITY INVOLVEMENT

- DESIGN FOR GOOD
 - THE DIGNIFYING POWER OF DESIGN
 - “HUMAN-CENTERED DESIGN”
 - SURVEYING THE COMMUNITY
 - LIVING ON-SITE
 - INVOLVEMENT OF THE COMMUNITY

- (Cary, 2017)

DESIGN OBJECTIVES:

- COMFORTABILITY
- AFFORDABILITY
- SUSTAINABILITY
- COMMUNITY INVOLVEMENT

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CASE STUDIES

- UMUBANO PRIMARY SCHOOL
- MATERNITY WAITING VILLAGE
- GANDO PRIMARY SCHOOL

THE UMUBANO PRIMARY SCHOOL



(Sánchez, *Umubano Primary School* / Mass Design Group 2013)



(Sánchez, Umubano Primary School / Mass Design Group 2013)



(Sánchez, Umubano Primary School / Mass Design Group 2013)

MATERNITY WAITING VILLAGE



(Silva, Maternity Waiting Village / Mass Design Group 2020)



(Silva, Maternity Waiting Village / Mass Design Group 2020)



(Silva, Maternity Waiting Village / Mass Design Group 2020)

GANDO PRIMARY SCHOOL EXTENSION



(Cardenas, *Gando Primary School Extension* / Kéré Architecture 2016)



(Cardenas, Gando Primary School Extension / Kéré Architecture 2016)



(Cardenas, Gando Primary School Extension / Kéré Architecture 2016)

“ IF WE LEARN TO BUILD
WITH LOCAL MATERIALS,
WE HAVE A FUTURE.”

- Francis Kéré



SITE LOCATION



KENYA, AFRICA



(Free styles for google maps)



(Free styles for google maps)

NAIROBI, KENYA



(Free styles for google maps)



(Google Earth)

KIBERA SLUM, NAIROBI

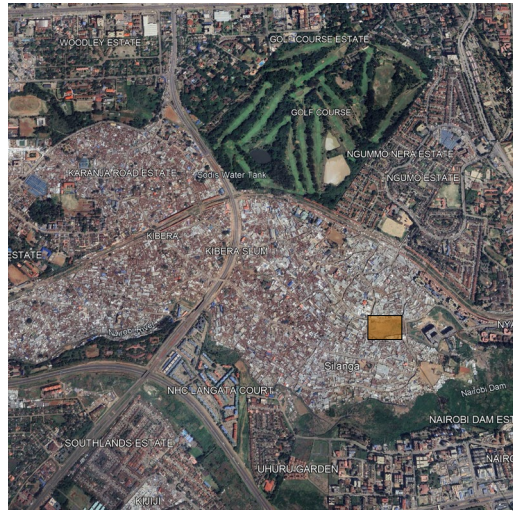


(Google Earth)



(Google Earth)

SOWETO EAST DISTRICT, KIBERA SLUM



(Google Earth)



(Google Earth)

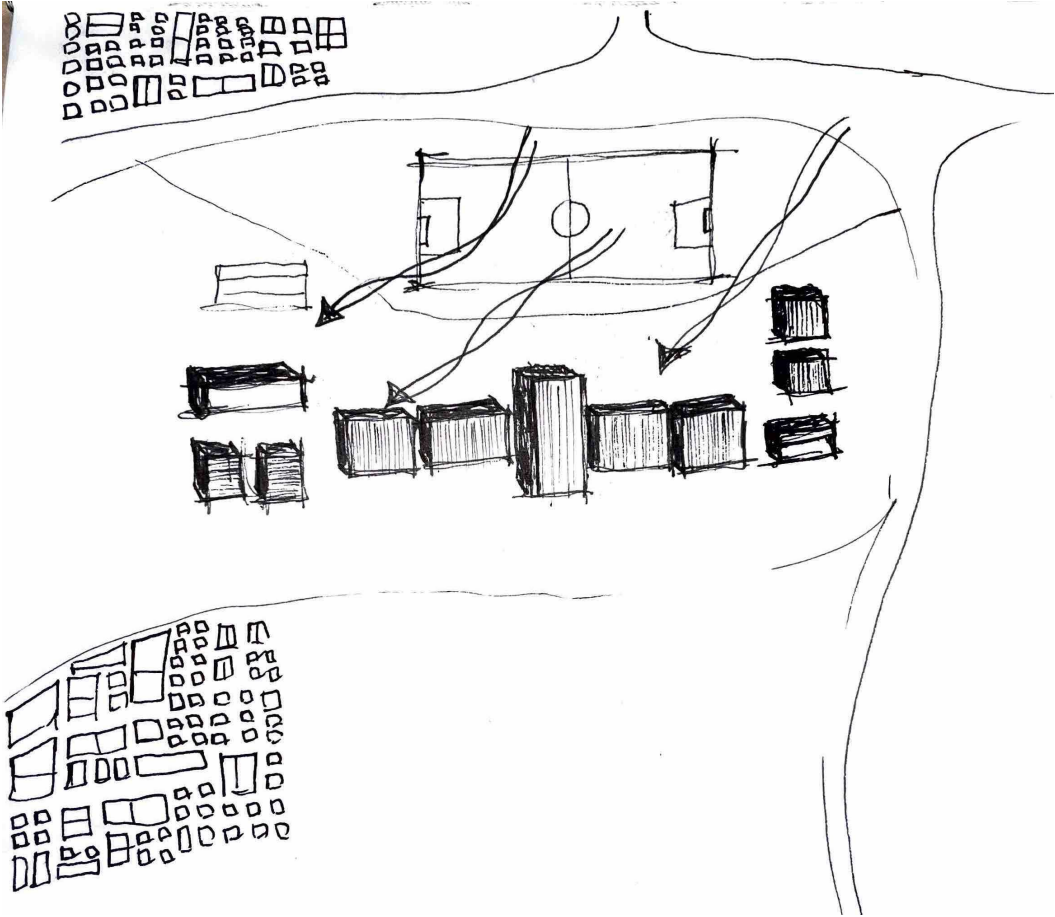
SITE ANALYSIS + CONSIDERATIONS

EXISTING CONDITIONS



(Google Earth)

WIND STUDY



DESIGN OBJECTIVES:

- COMFORTABILITY
- AFFORDABILITY
- SUSTAINABILITY
- COMMUNITY INVOLVEMENT

NOTE



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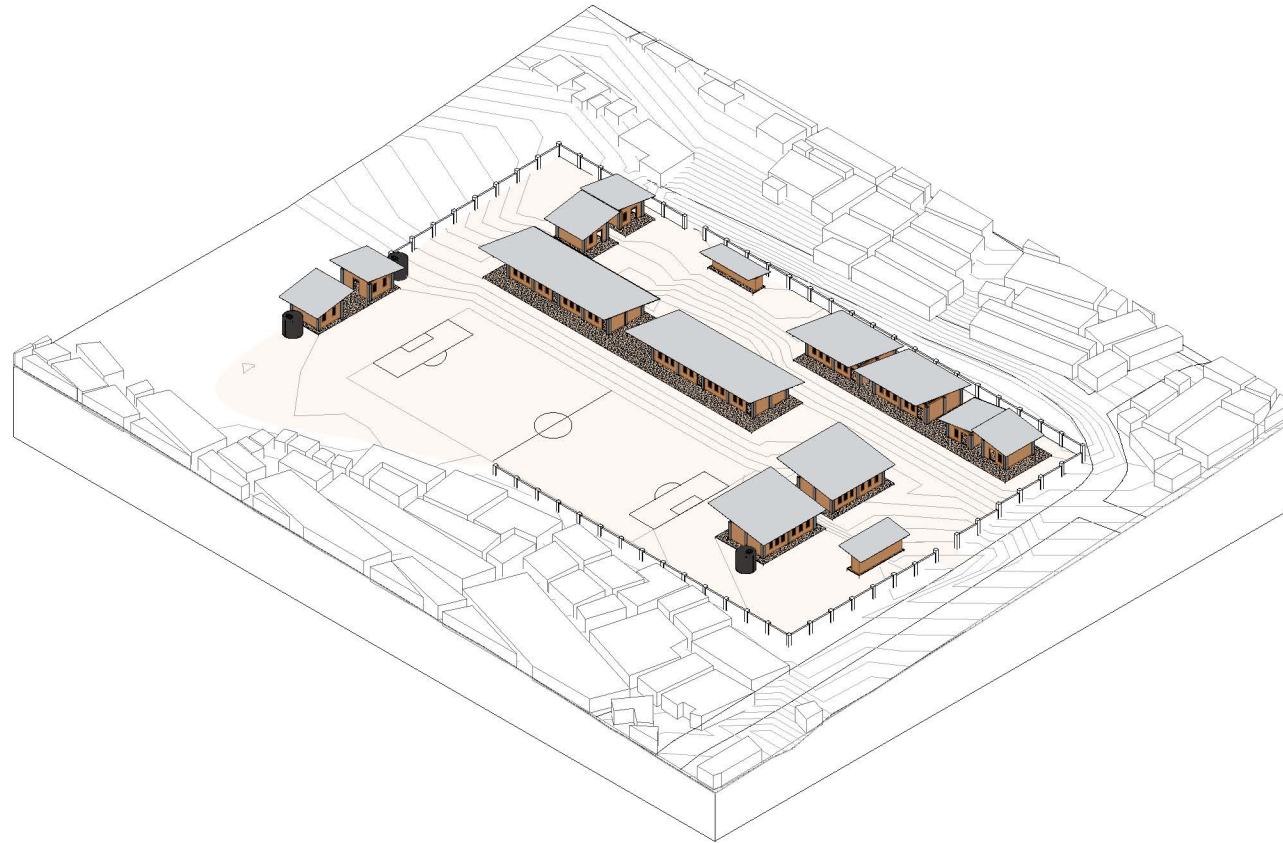
03 METHODOLOGY

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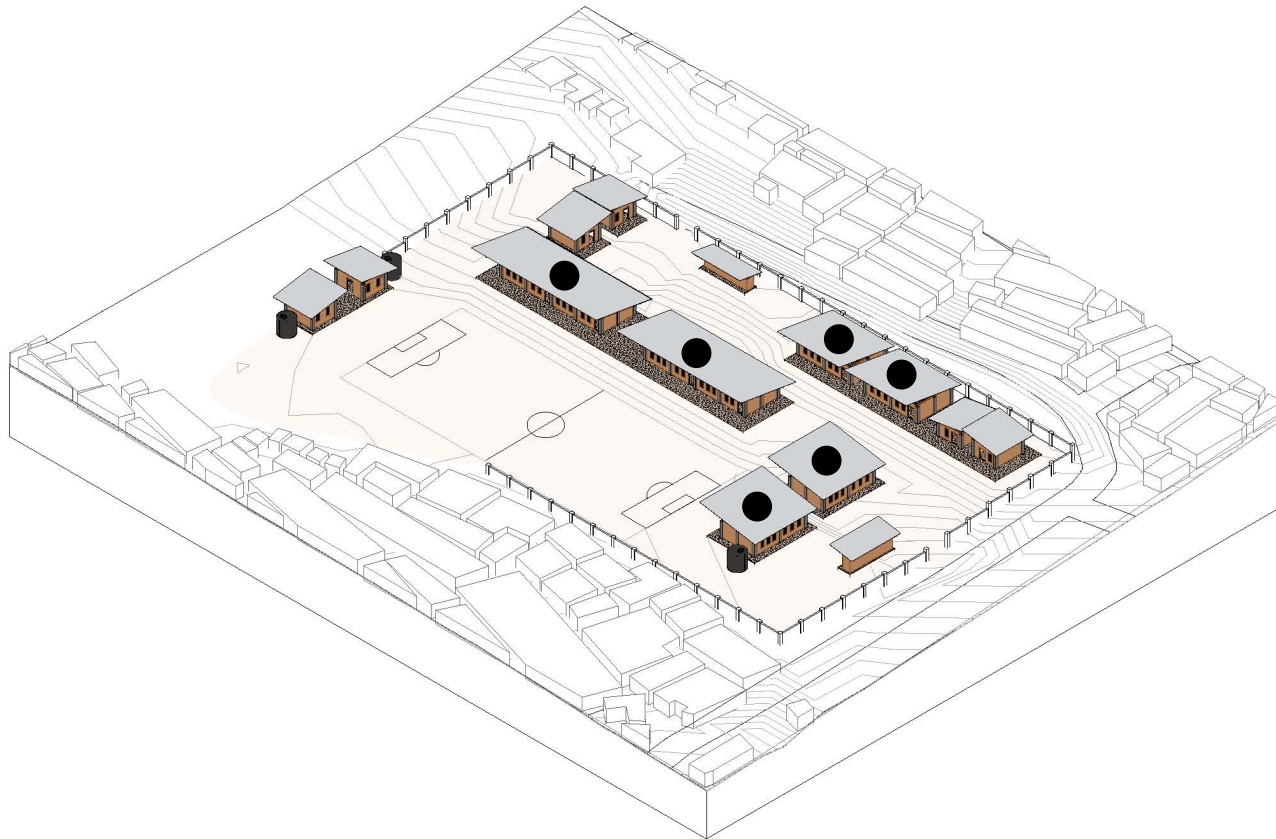
KIBERA PUBLIC SCHOOL



ISOMETRIC SITE PLAN

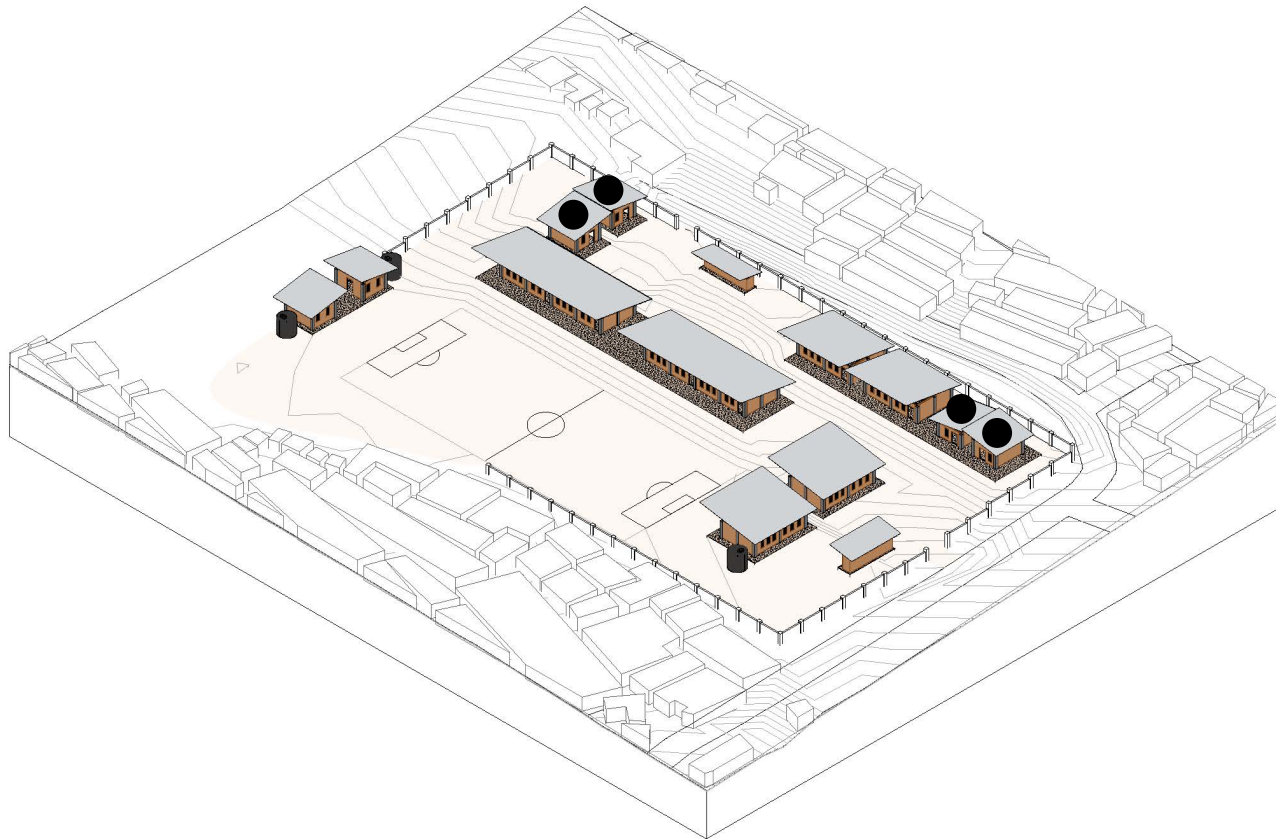


ISOMETRIC SITE PLAN



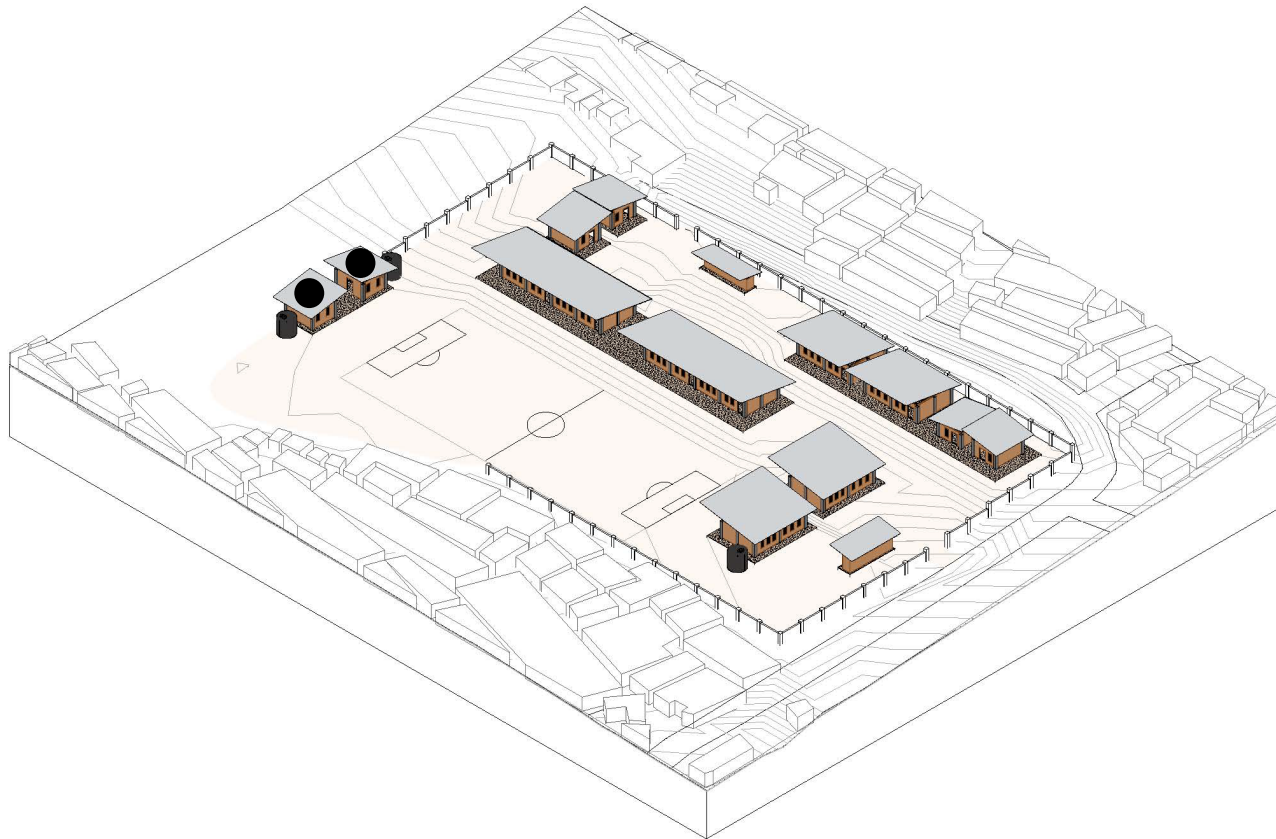
CLASSROOMS
TEACHER OFFICES
KITCHEN
SOCCER FIELD
BATHROOMS

ISOMETRIC SITE PLAN



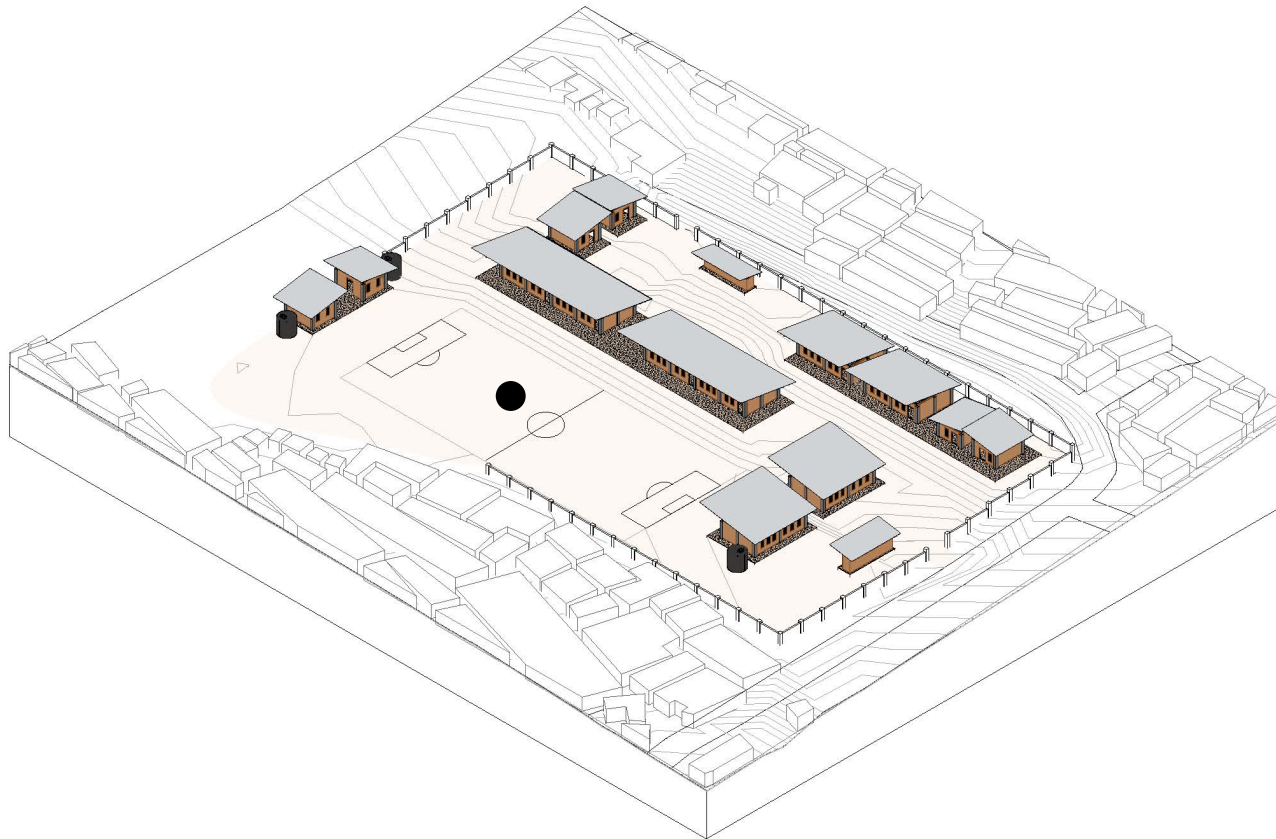
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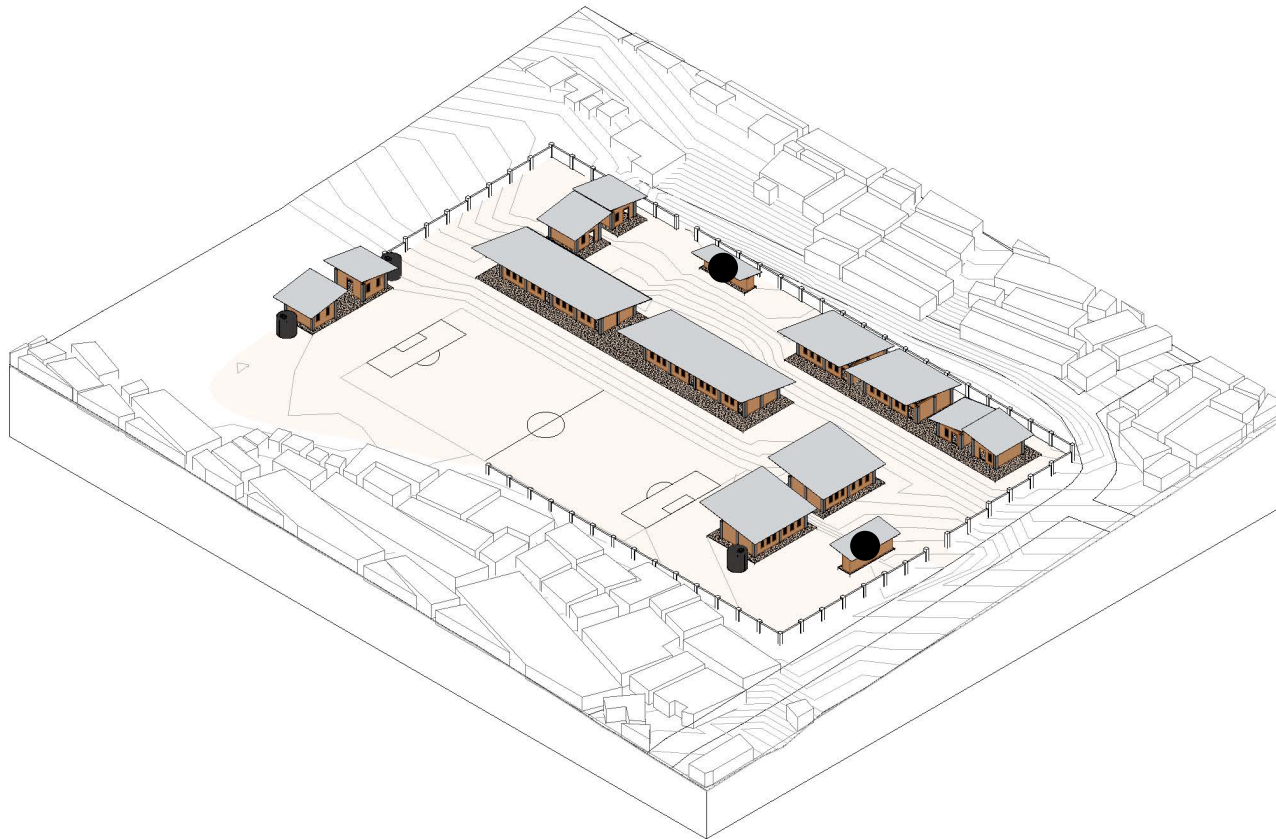
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ISOMETRIC SITE PLAN



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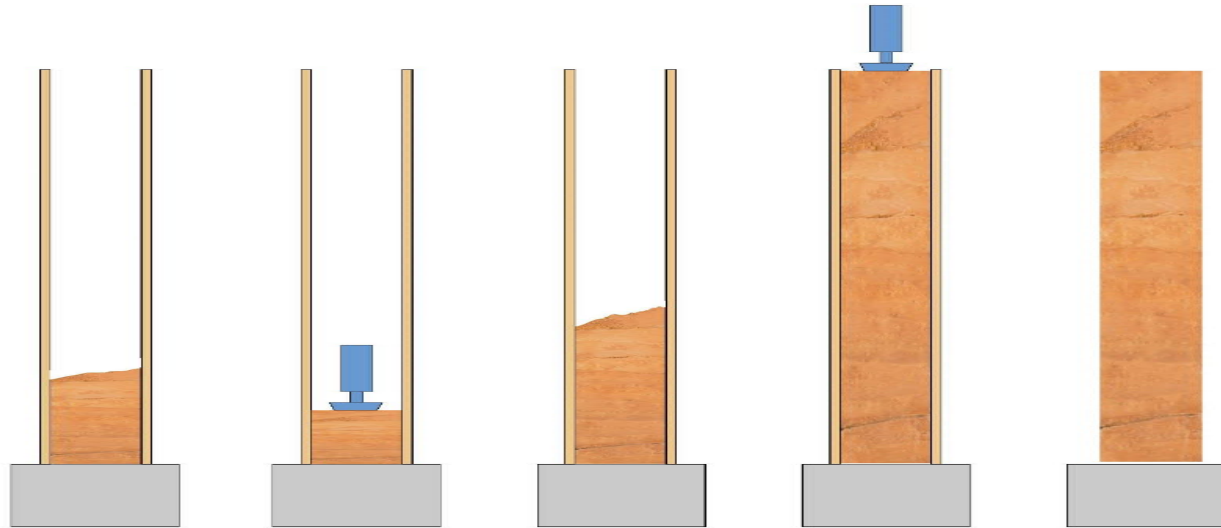


- CLASSROOMS
- TEACHER OFFICES
- KITCHEN
- SOCCER FIELD
- BATHROOMS

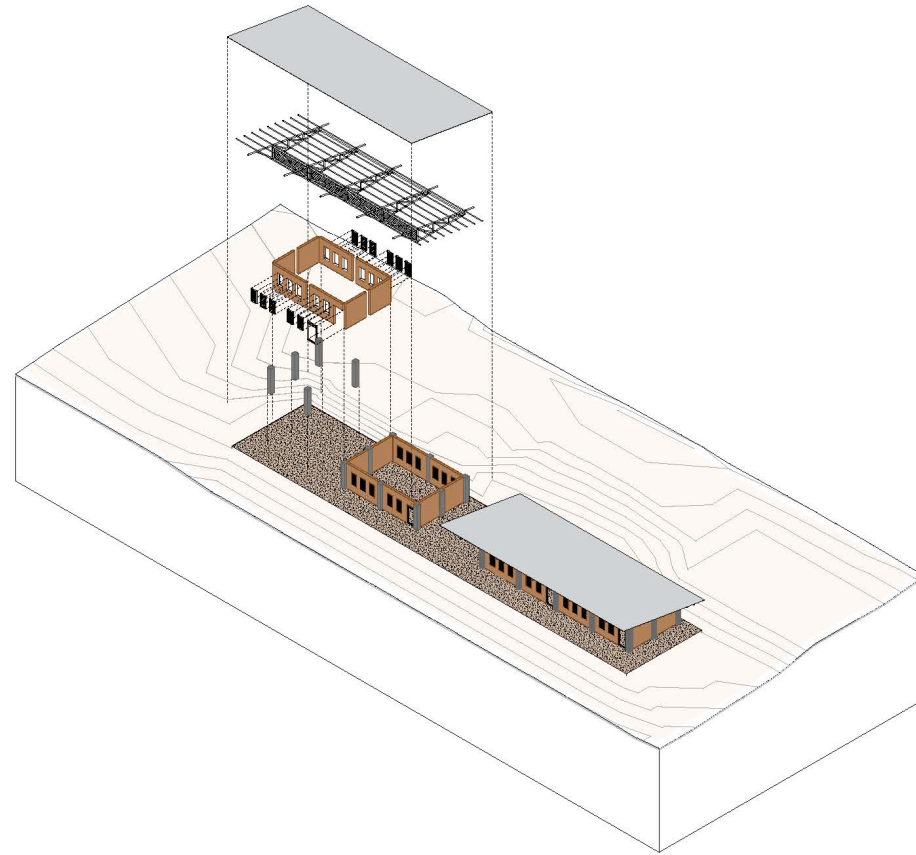
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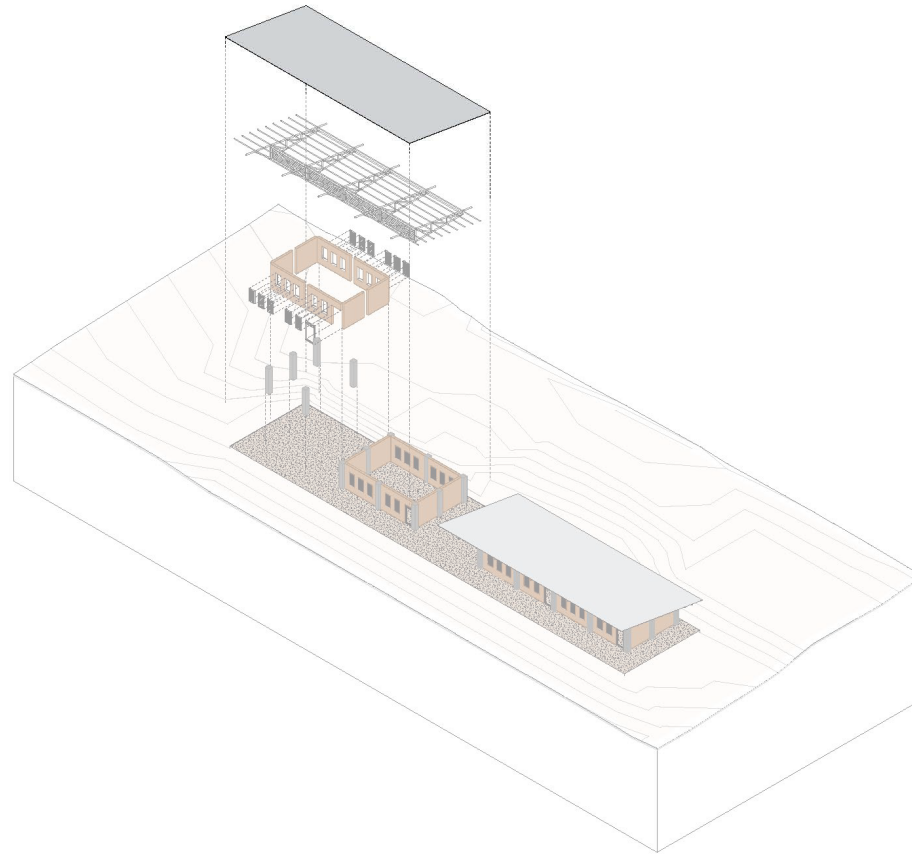
RAMMED EARTH WALL



AXONOMETRIC STRUCTURAL DIAGRAM

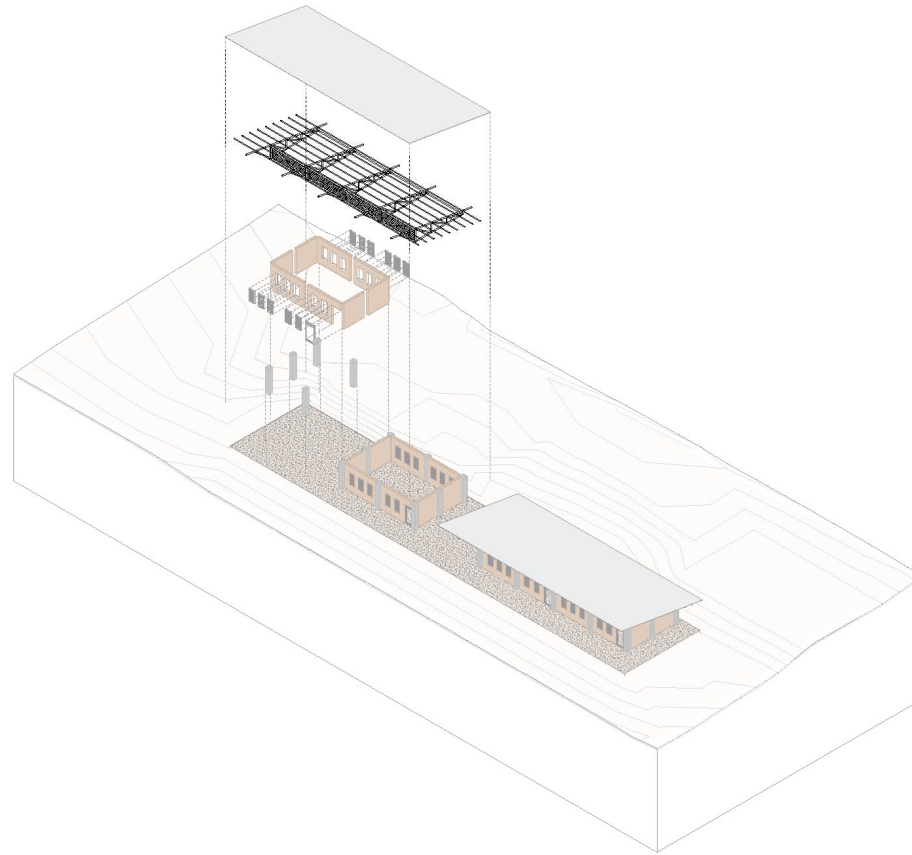


AXONOMETRIC STRUCTURAL DIAGRAM



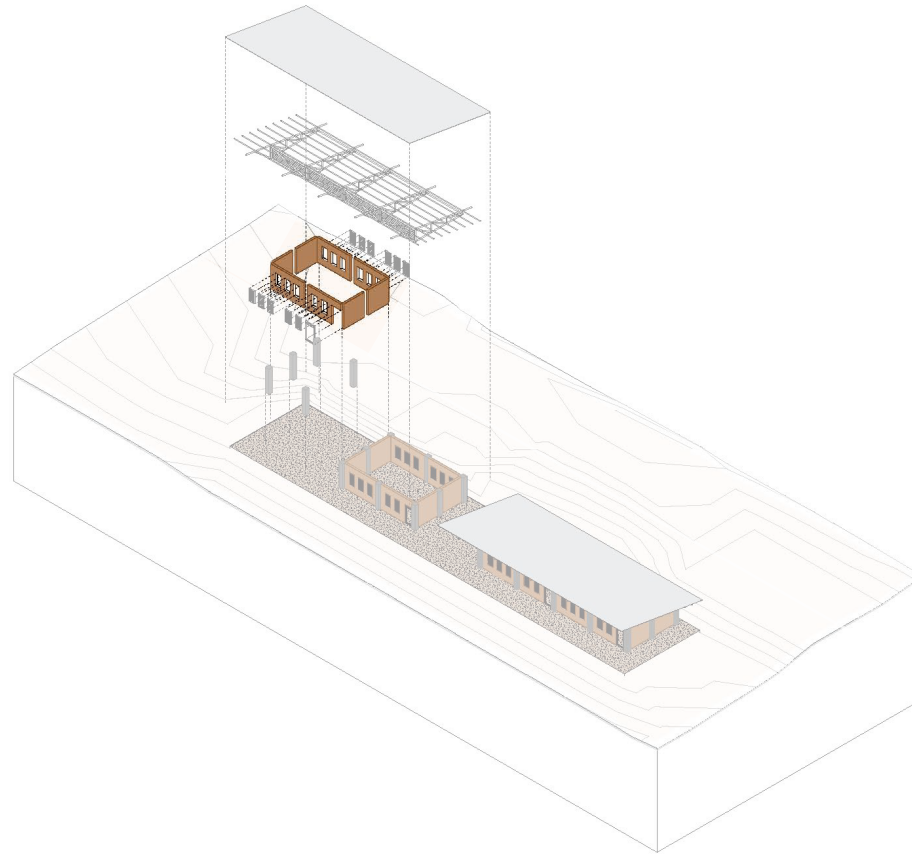
CORRUGATED METAL ROOF
BAMBOO TRUSS
RAMMED EARTH WALL
RECYCLED PLASTIC BRICKS
CONCRETE SLAB

AXONOMETRIC STRUCTURAL DIAGRAM



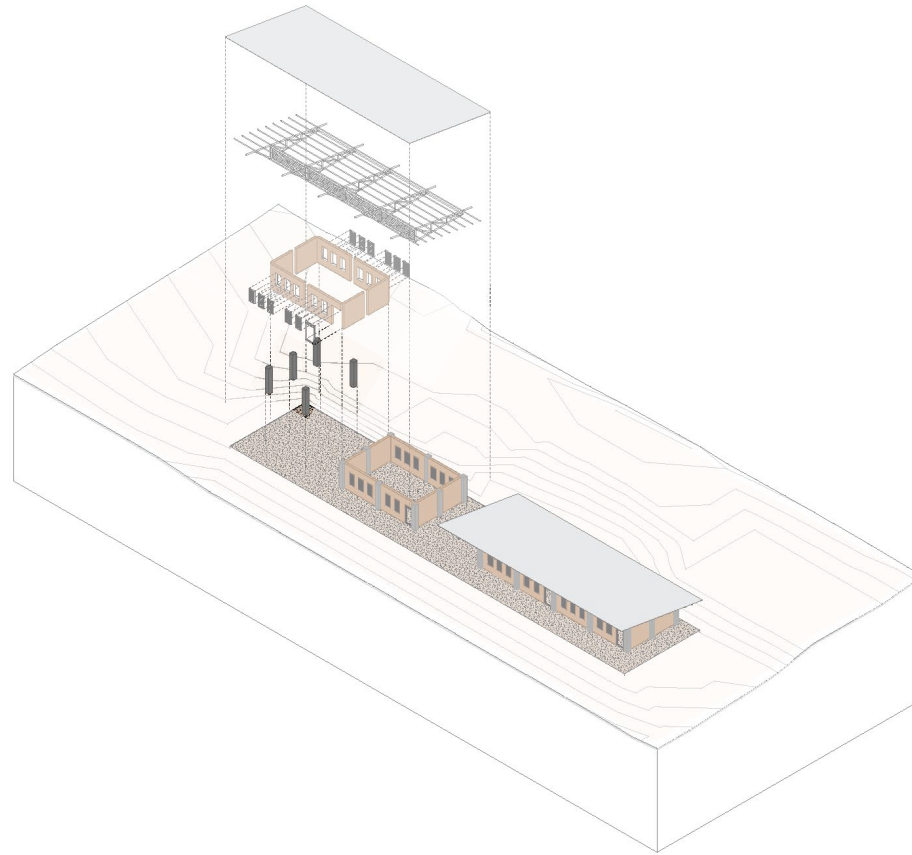
CORRUGATED METAL ROOF
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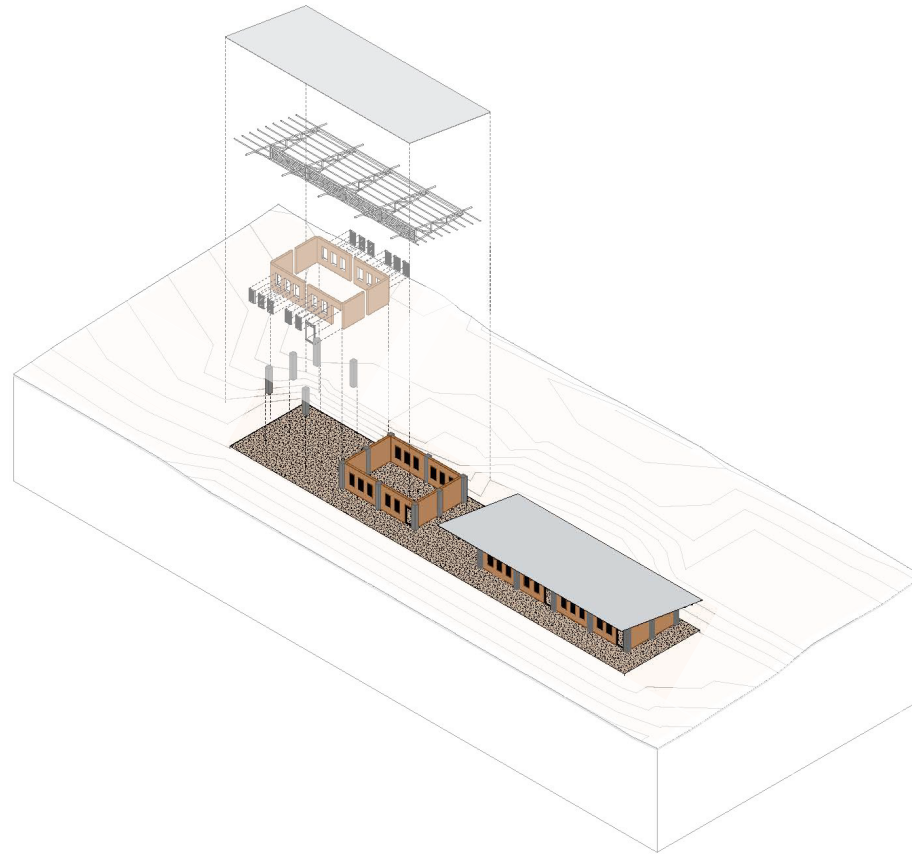
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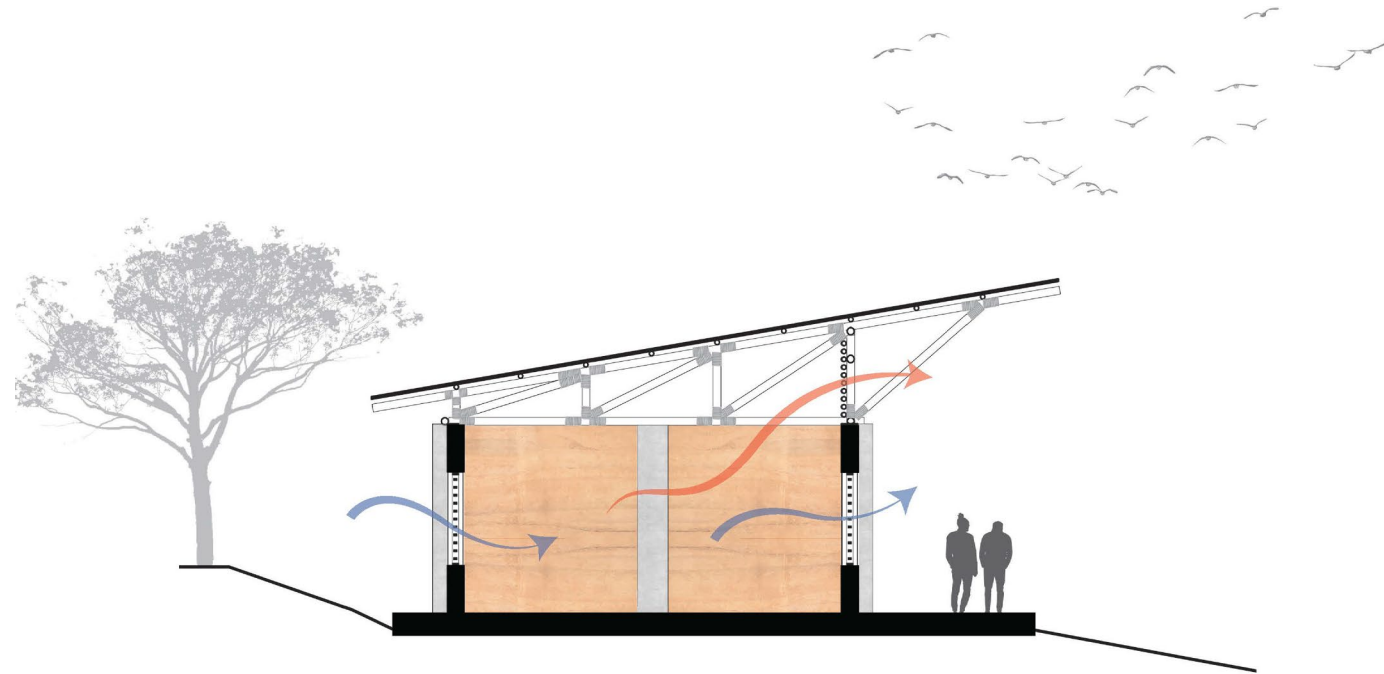
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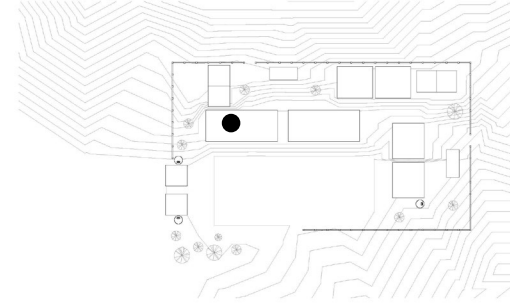


CORRUGATED METAL ROOF
BAMBOO TRUSS
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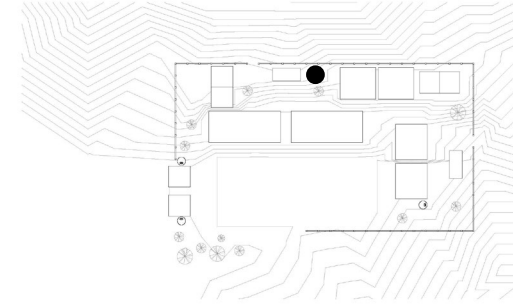
NATURAL VENTILATION



CLASSROOM INTERIOR



COURTYARD SPACE



HA-RAM-BEE

: ALL PULL TOGETHER

FUTURE RESEARCH

- LONGEVITY AND LIMITATIONS OF RAMMED EARTH
- SLUM REDEVELOPMENT
- LIVING ON-SITE
- SURVEYING COMMUNITY MEMBERS

QUESTIONS?



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