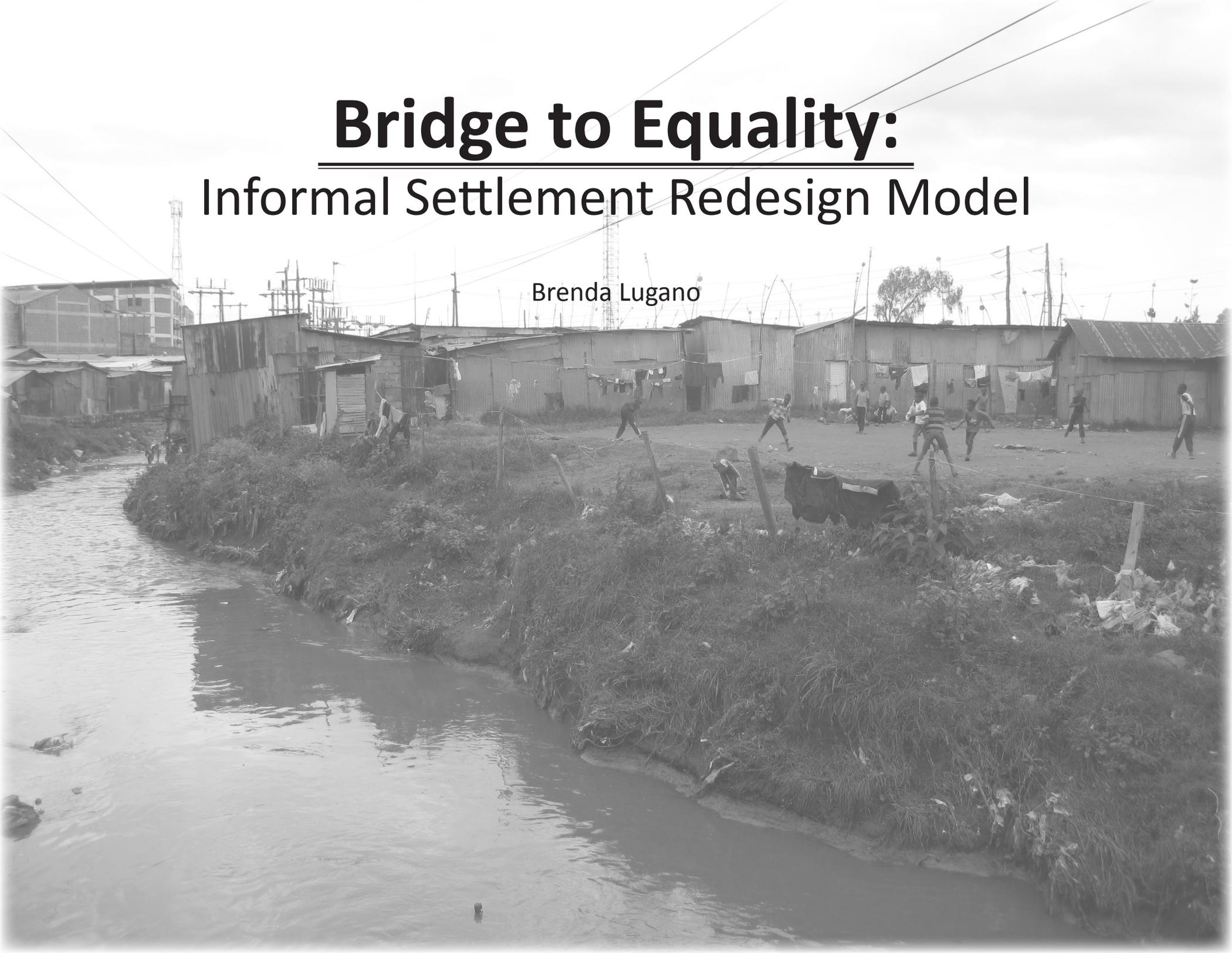
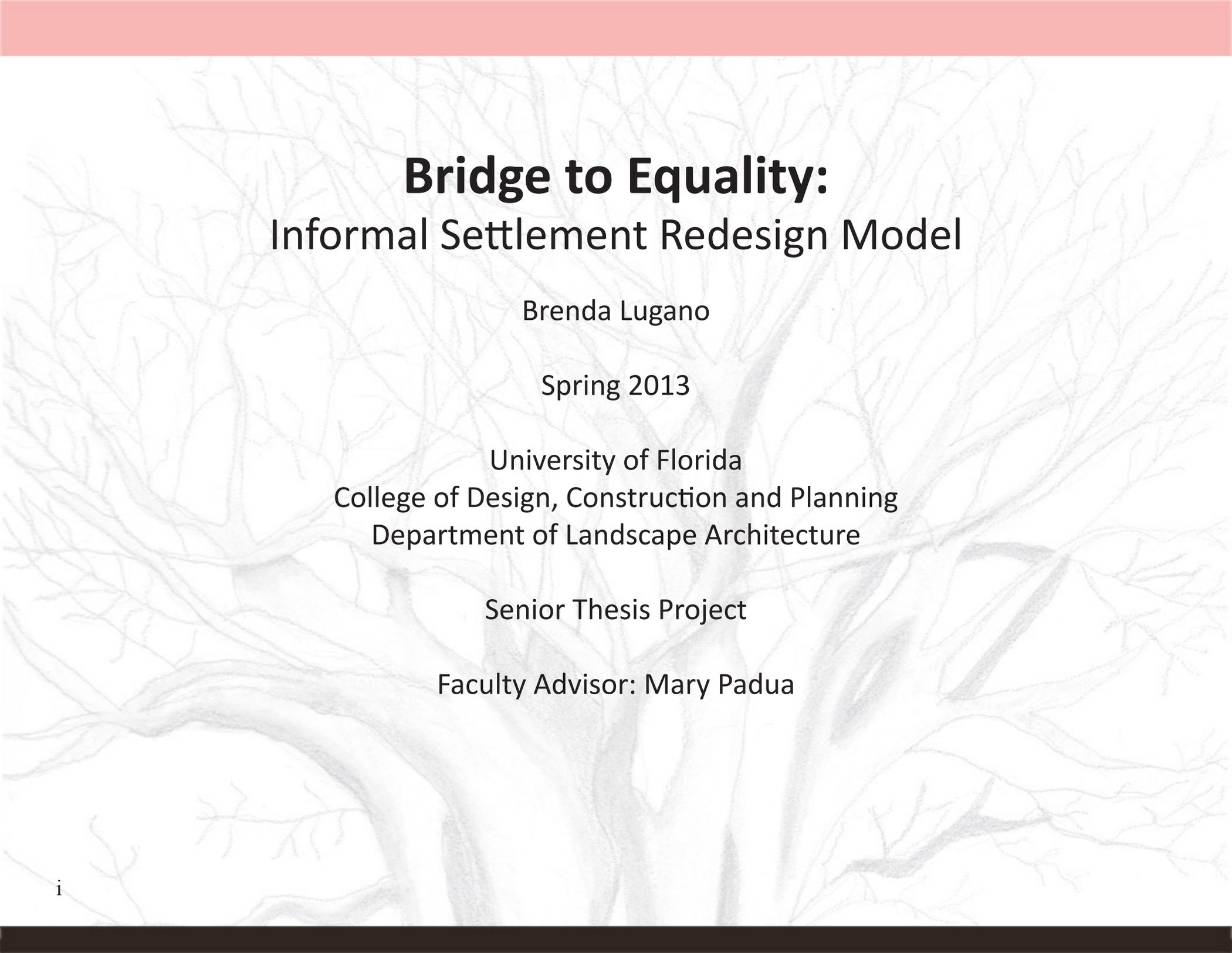


Bridge to Equality: Informal Settlement Redesign Model

Brenda Lugano





Bridge to Equality: Informal Settlement Redesign Model

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Spring 2013

University of Florida
College of Design, Construction and Planning
Department of Landscape Architecture

Senior Thesis Project

Faculty Advisor: Mary Padua

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I would like to thank God for helping me in everything that I do. You have been able to lead me through so much. Thank you for being my healer, provider, comfort, peace and many more. I can truly do all things through you who gives me strength. Thank you so much for the strength and talent that you gave.

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Thank you family and friends for all your love and prayers.

Thank you studio friends for all the fun times. I'm really going to miss you all a lot.

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INTRODUCTION

PROJECY SUMMARY:

The Mukuru Kayaba slum is one of the larger informal settlements in Nairobi, Kenya. In choosing a small section of typical character, efforts were made to design the parcel as a model that can be mimicked and replicated in other settlements as well. Central to the design were improvements on the school grounds, designing the vacant lot and designing a better connection between the two.

PROJECT NARRATIVE:

Today slums in Nairobi, Kenya make up over 50% of the population, yet occupy only 5% of the total residential land and just 1% of the total land area in Nairobi. Slums, otherwise known as informal settlements, lack spaces for social connectivity. As a native of Nairobi, I wanted to address this design challenge to better the living standards of the region. Mukuru Kayaba slum is part of a larger informal settlement in Nairobi, Kenya. I focused my design on an area surrounding the Ngong River that includes a large school and a vacant lot.

My overall goal is to unify the school, road, and the open site to meet the needs of the community, especially the children. It was important in the school design to create more space for the children to congregate, eat, and play. Areas that were closed to student access were opened up, creating a plaza, seating area, and playground. The open play area was maintained on the site and community spaces were incorporated into the design. A deck, community garden and stores that could serve other purposes were designed for the older residents to enjoy. Keeping in mind the needs of children, I also designed a playground and maintained a large portion of the site to remain as an open play area. A pavilion was added to serve as an outdoor classroom for the teachers and school children who attend Mukuru Primary School, but will also serve as a meeting place for the residents.

HISTORY:

The urban center of Nairobi was established in the last hundred years as seats of the British colonial government. The result was segregated residential layouts where the CBD (Central Business District) was surrounded by white residential areas, which were closed off to native residents. As a result, smaller areas were established to accommodate natives, as well as designated areas for Asian immigrants. At the time, restrictions on native travel to the city helped to maintain adequate transit connections between population and amenities.

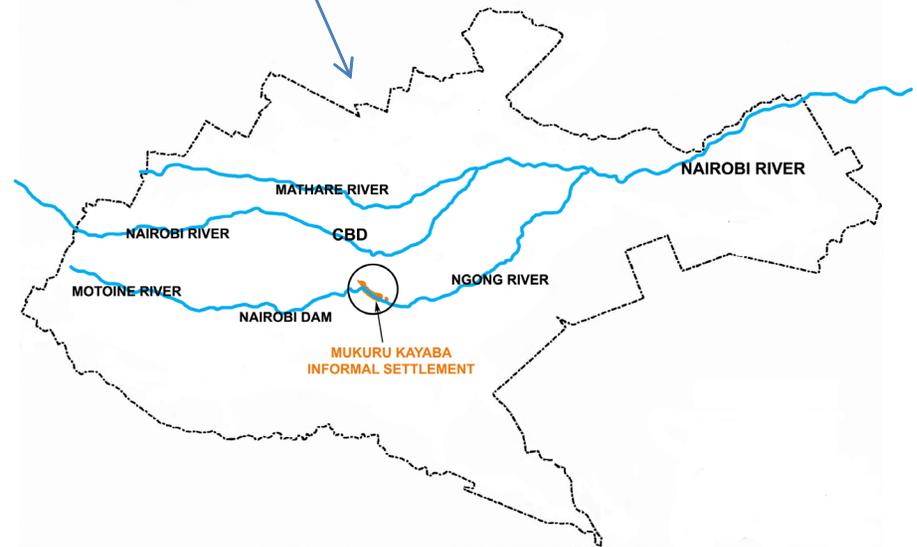
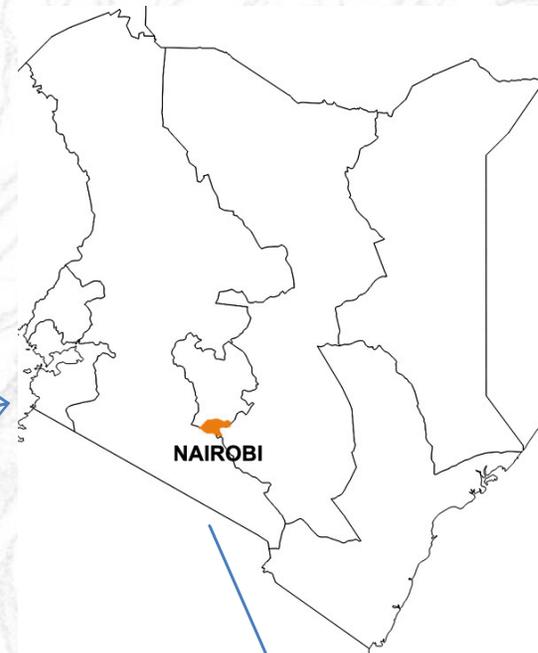
This colonial model served as the mold for future growth in urban centers, as the British government designated land use and planning standards. Unfortunately, these laws could not support the rapid urbanization that followed Kenyan independence in 1963. With the shift of management from the colonial administration to a national government, restrictions on movement into the city were lifted. This has resulted in an acceleration of rural-to-urban migration and further economic segregation.



www.grida.no

This economic disparity was furthered by the Nairobi government's inability to offer adequate housing options to landless citizens entering the city. This led to numerous squatter settlements, where natives settled on land that they did not own. Today Nairobi slums make up over 50% of the population, yet occupy only 5% of the total residential land and just 1% of total land area.

LOCATION:

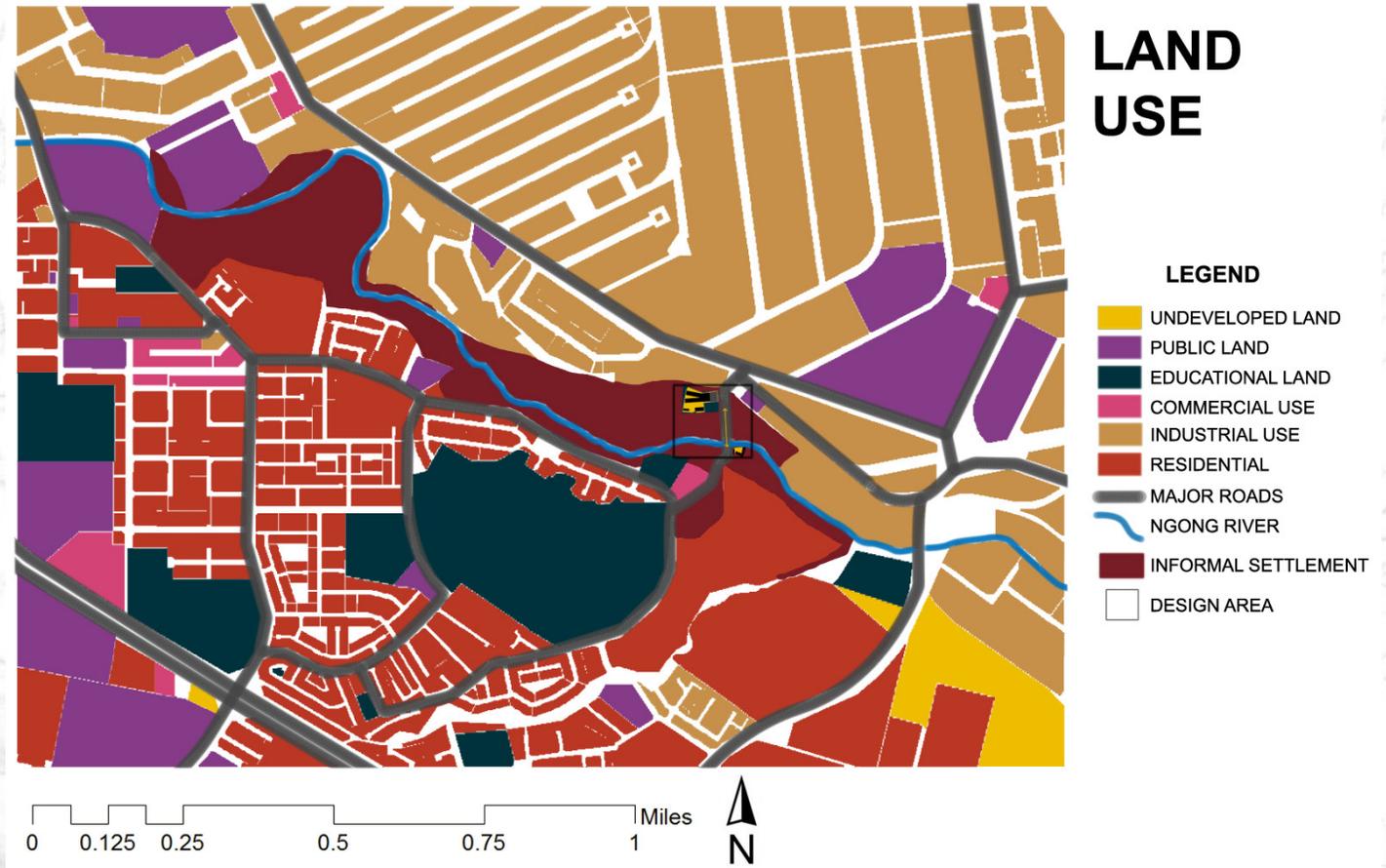


The Nairobi River and its tributaries extend throughout the Nairobi Province, Kenya's Capital. It is the main river of the Nairobi River Basin, which has several parallel streams that flow eastward. All the streams meet the Athi River and eventually flow into the Indian Ocean. These rivers are mostly narrow and highly polluted. My focus is the Mukuru Kayaba slums, an informal settlement haphazardly and illegally built along the Ngong River. My site is approximately 48,802 sq ft.

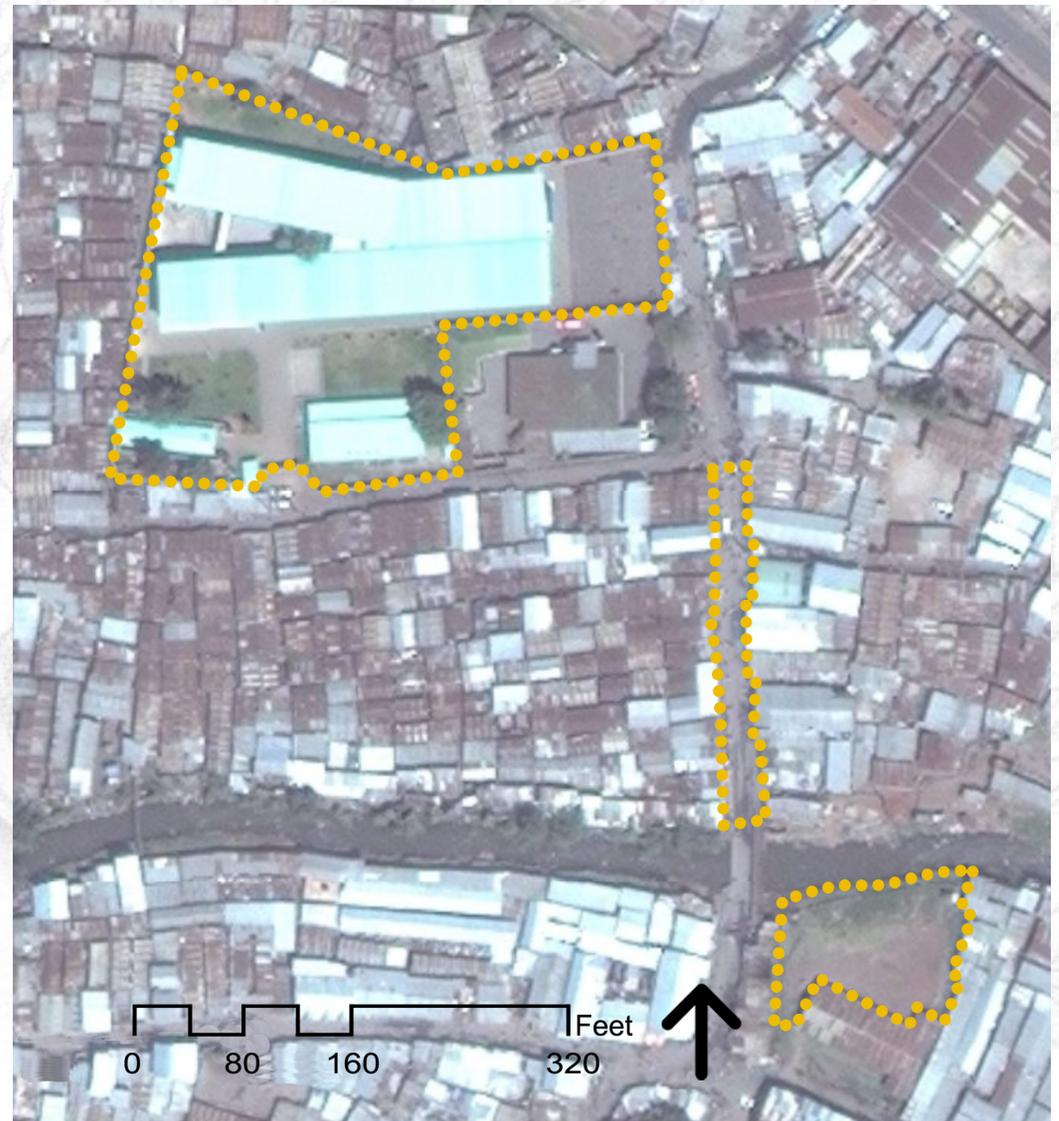
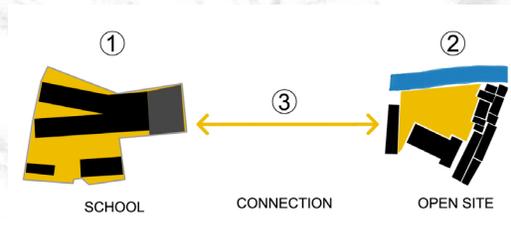
CONTEXT:

The reason why people chose this specific area to settle in is because most of them work in the factories, which border the settlement to the north. They make very low wages, which do not provide them enough money to pay for transportation. Living near the industrial area allows them the convenience of walking to work.

Nairobi River and its tributaries are currently suffering from runoff from agriculture, the industrial area and the informal settlements. The informal settlement is unplanned and sporadic. Dense housing exists with many paths that weave through them. There is a safety issue in the area due to the fact that there is a lot of desperation.



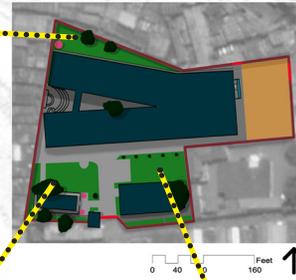
3 parts are incorporated into my design. There is the school, open area and the road that connects the two. The reason for this was the fact that the school grounds did not have enough space for the children to move around, so I wanted the kids to have another space to recreate. The open space (as I call it) is a site that is located about 500 feet from the school.



Existing Conditions



Mukuru Kayaba School is about 12,000 sq feet and caters to about 1,500 children. The school was constructed by the German Government in collaboration with the Ministry of Education of Kenya. It was occupied for the first time at the beginning of 2010. The grades of student range from grades K to 8. It serves the residents of the informal settlement.

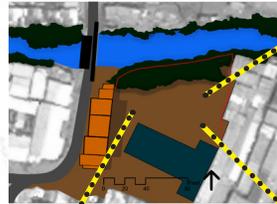


These pictures show the existing conditions of the school. There are three areas that are closed off from the students. One is at the back of the school with abandoned equipment, and the other two are at the front of the school.



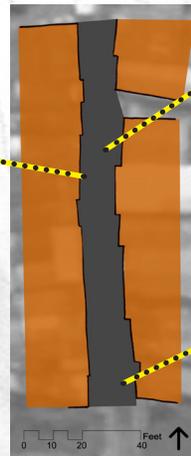
The open area is a site that is located about 500 feet from the school. It is 9600 square feet. It's current use is a play area for the kids. There is a problem with erosion at the edge of the site as it slopes down into the river. The low fence that surrounds the site is in bad condition, and is currently being used as clothesline.

These photos show the site seen from the pedestrian bridge crossing the river.



The existing road that connects the school and the open area is made of compacted gravel and soil. It varies in width from 15 feet to 22 feet. It does not have a separate pedestrian walkway.

These pictures show the road lined with formal and informal stores. The store merchandise and furniture make the road even narrower.





RESEARCH

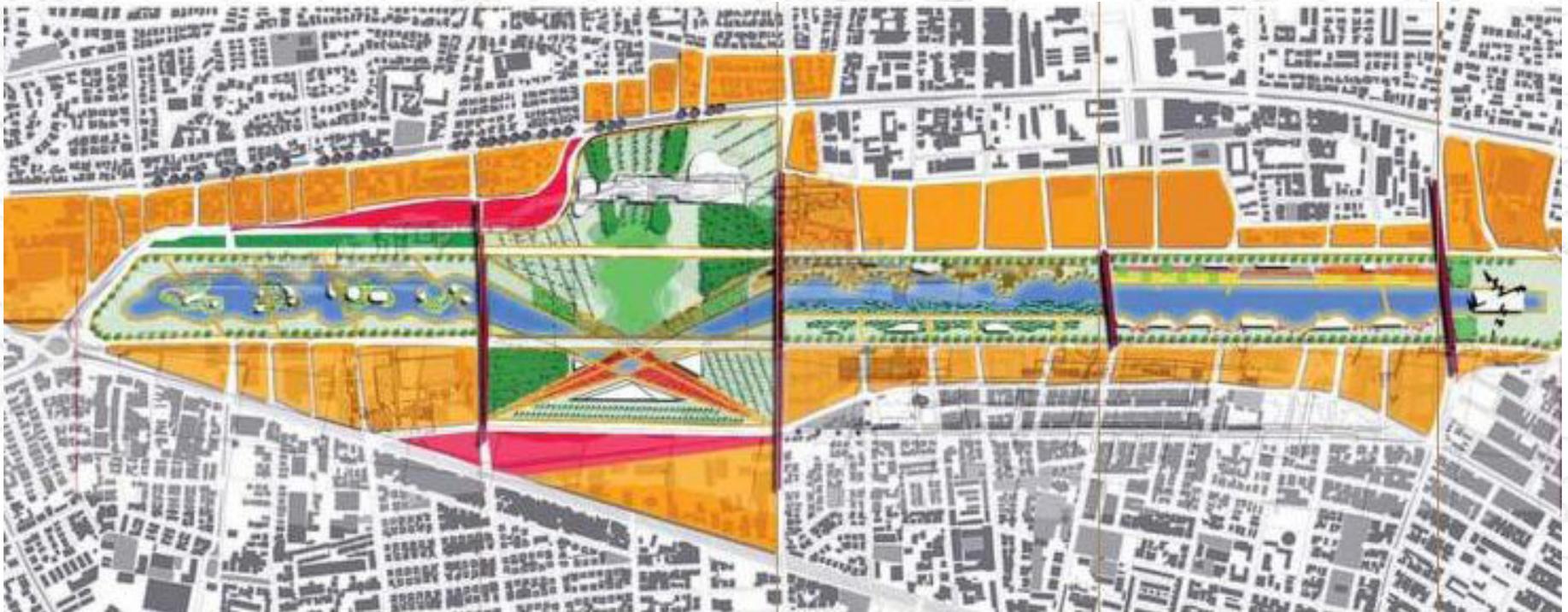
PARQUE DEL SOL

Location: Quito Ecuador

Size: 311.35

Scope: Park Design

Parque Del Sol Project is a large redesign project designed by Sebastian Pazmino. The plan aimed to redesign an old airport atip into a large park. In the design he aimed to enhance user comfort, education, enjoyment and social interaction. The most interesting aspect about the final design of the park was the inspiration from the local culture. Colors and patterns that were incorporated in the design came from patterns and colors in material. Local poverty also inspired the design of the park.



SUNRISE PARK

Location: West Hillsborough, CA

Size: Less than an acre

Scope: Park Design

Owned and maintained by the town, Murray Street Park is a small community park. The design incorporates a pavillion, a childrens playground, a vegetable garden, seating and an open play area. The park provides plenty of activities for children and adults alike to enjoy.



YASAKUNI DOORI STREET

Location: Jimbocho, Tokyo

Scope: Street Design

Yasakuni Doori street is a design like a “woornerf street,” where the design is focused more on the people as opposed to vehicles. The narrow street design allows for pedestrians to move freely on the road, while the vehicular traffic has to move slowly to avoid accidents. This design allows for pedestrians to socialize and sit outside the store fronts. Bollards are included in the design to prevent cars from driving on the sidewalk.





DESIGN DEVELOPMENT

GOALS AND OBJECTIVES:

OVERALL GOAL:

To unify the school, road, and the open site to meet the needs of the community, especially the children.

To improve the environment of the school property

- Improve the site grounds
 - Create multipurpose areas
 - Design a playground for younger students
- Incorporate different LID tools that are appropriate for the area
- Design more recreation areas where possible
- Incorporate student work, student creativity and local art to bring color to grounds

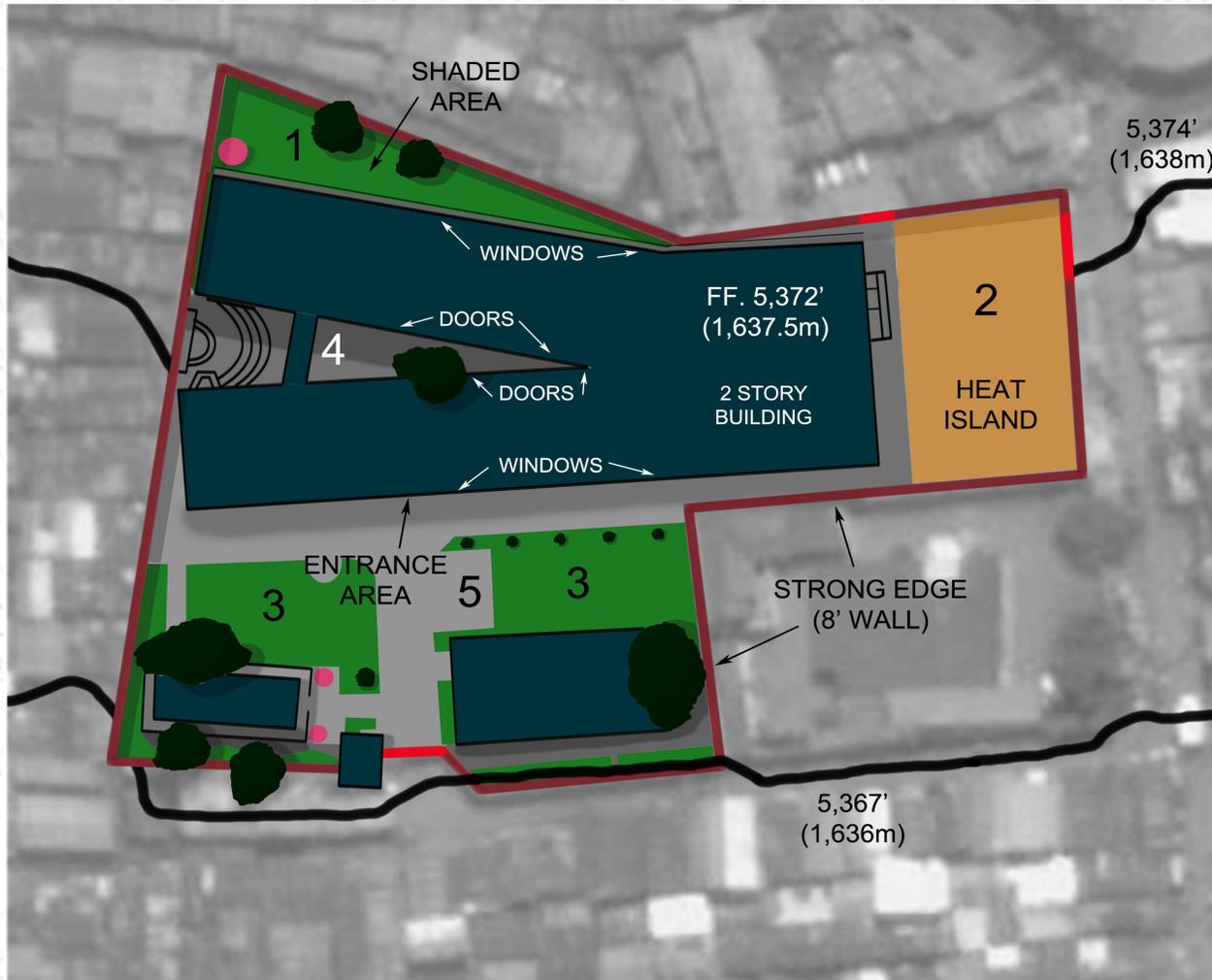
To design existing underutilized open space for use by the school and the community

- Provide play area for children
- Design multipurpose areas for all residents
- Provide outdoor classroom for school students
- Place natural element to deal with erosion
- Incorporate LID tools that are appropriate for the area

To re-design the road connecting the school and open space

- Provide separate pedestrian walkways by narrowing street
- Incorporate parking for incoming traffic

ANALYSIS:



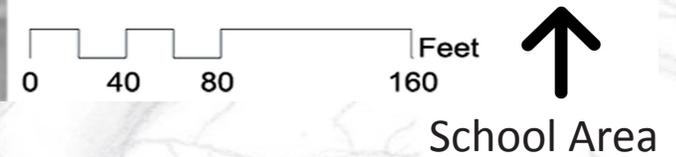
SITE ANALYSIS

OPPORTUNITIES

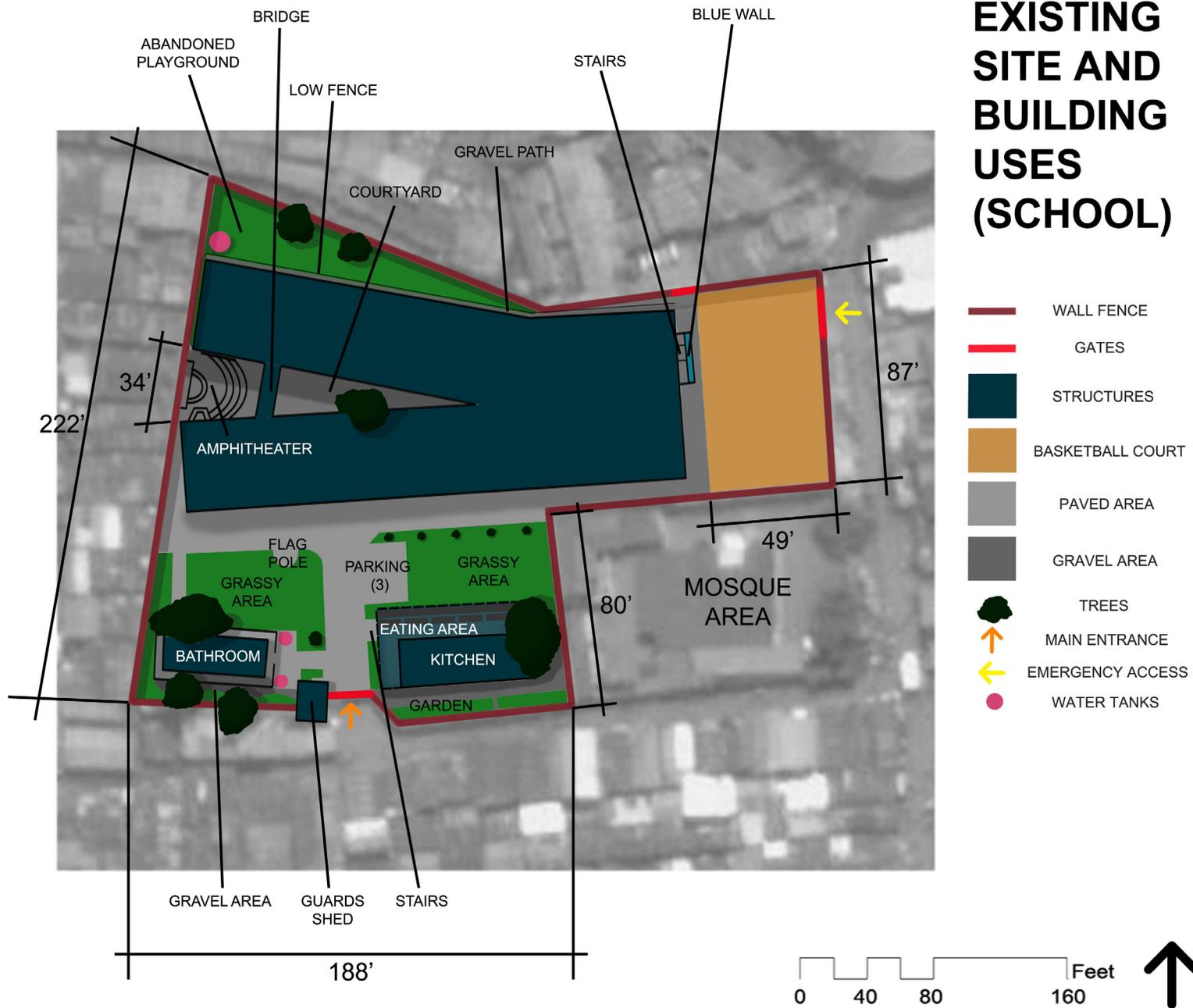
1. OPEN BACK AREA
2. BASKETBALL COURT
3. GRASS AREA
4. COURTYARD

CONSTRAINTS

5. PARKING LOT



EXISTING SITE AND BUILDING USES (SCHOOL)





SITE ANALYSIS

OPPORTUNITIES

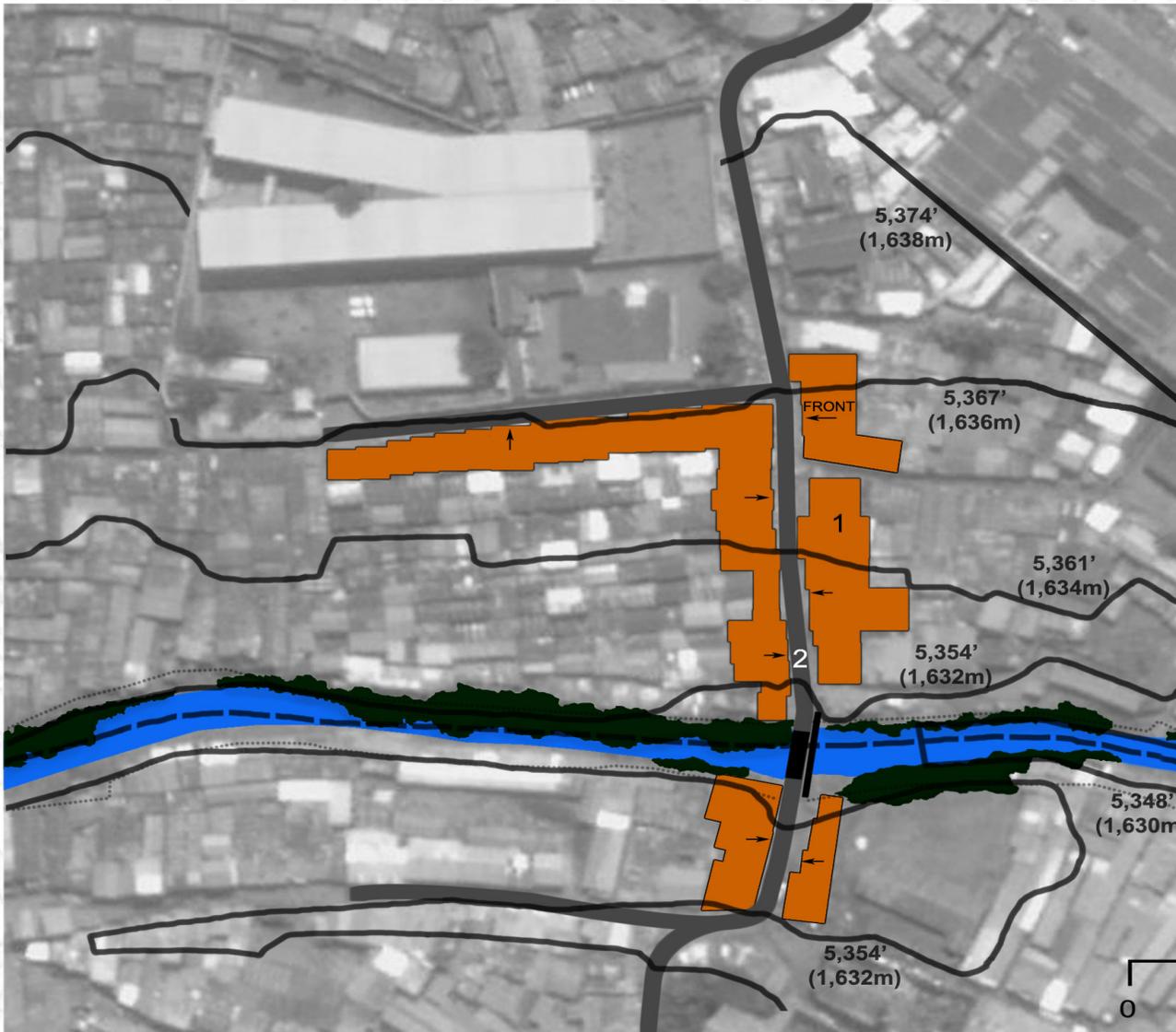
- 1. VACANT CLEARED LOT
- 2. PROXIMITY TO SCHOOL 585 FEET
- 3. VIEW OF THE RIVER
- 4. ACCESS TO OPEN SITE

CONSTRAINTS

- 5. ERODING RIVER EDGE
- 6. ACCESS ISSUE AT END OF BRIDGE

Open Area

SITE ANALYSIS



OPPORTUNITIES

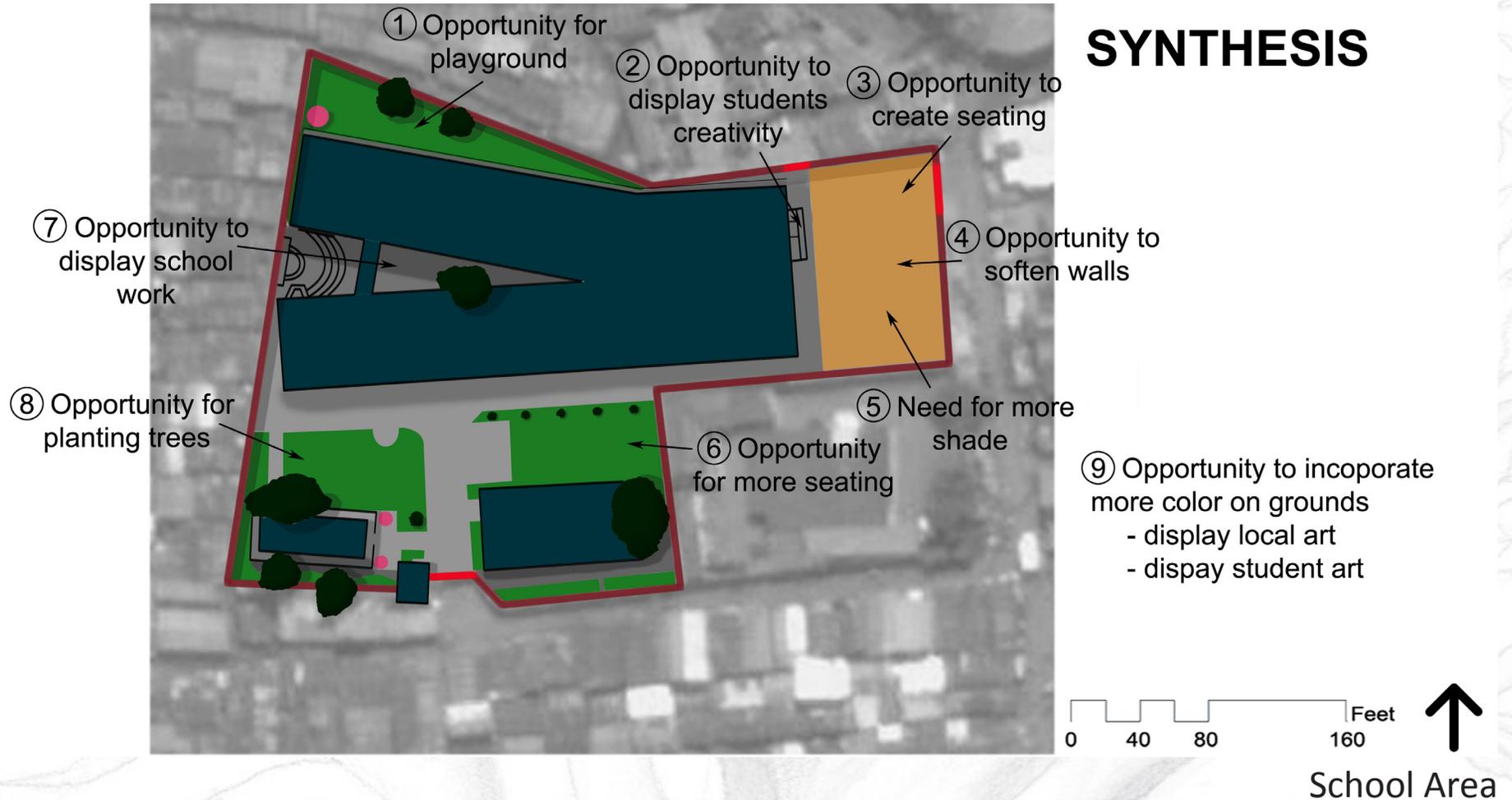
1. RETAIL EDGE

CONSTRAINTS

2. NARROW ROAD
3. NO PEDESTRIAN WALKWAY
4. NO STREET TREES

SYNTHESIS:

SYNTHESIS



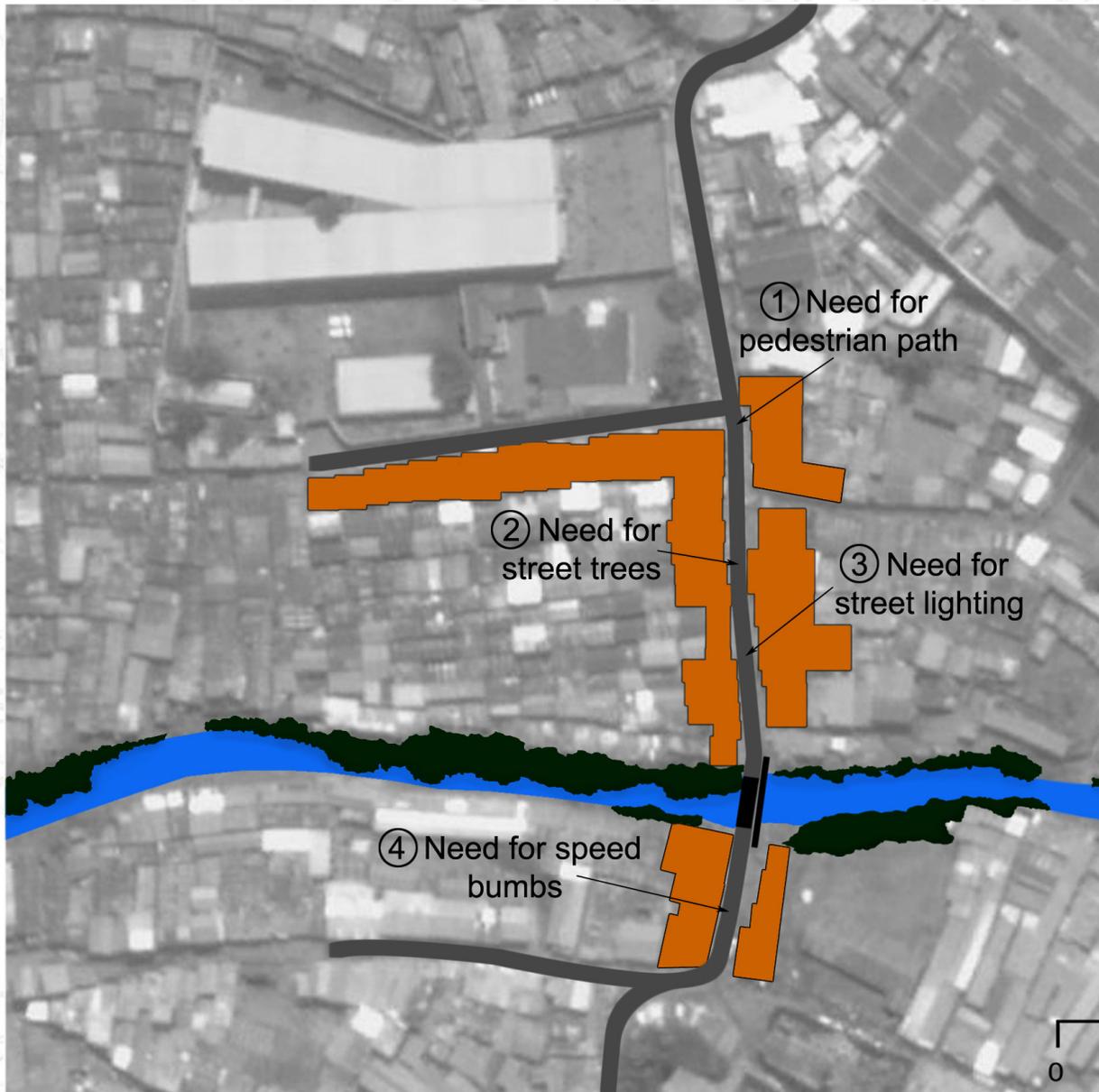


SYNTHESIS

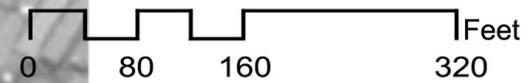
- ⑤ Need to maintain other current uses of space
 - hanging laundry
 - washing clothes
- ⑥ Need to create new play area
 - play area for bigger kids
 - separate playground for smaller kids

Open Area

SYNTHESIS

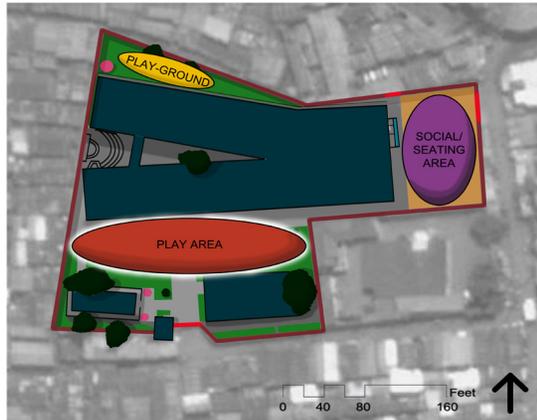


- ⑤ Need for separation of pedestrian and vehicular circulation
-bollards



CONCEPTS:

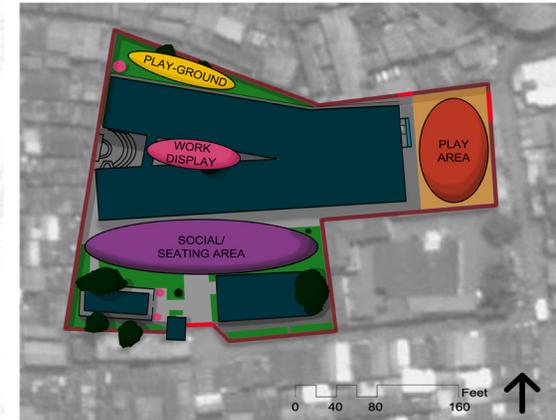
MAXIMIZE PLAY AREA



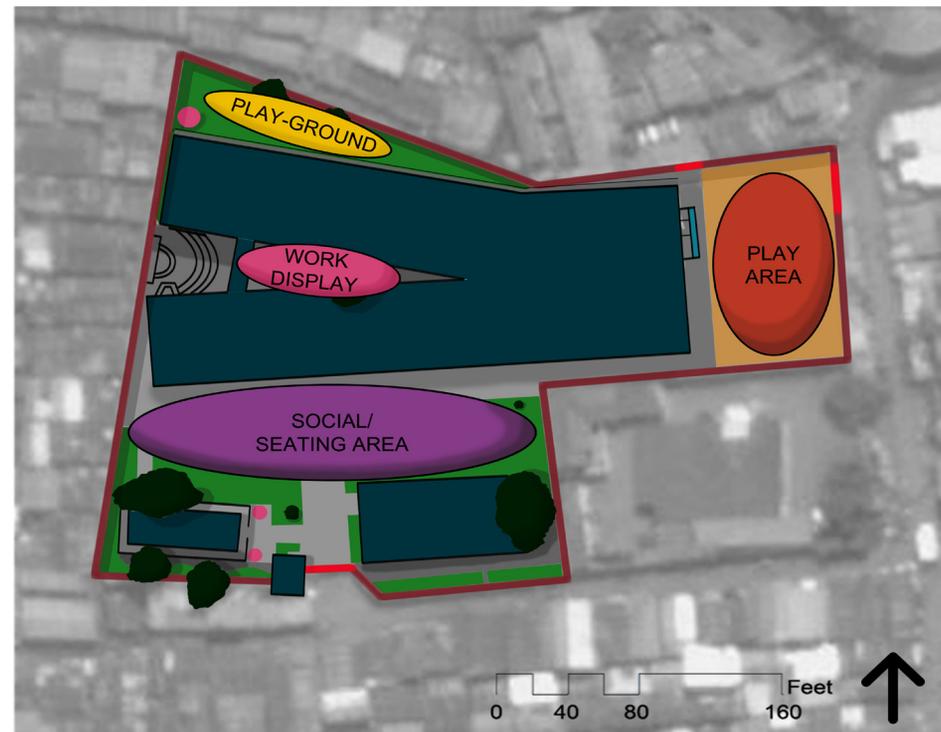
MAXIMIZE ASSEMBLY AREA



PLAY AREA = SOCIAL AREA

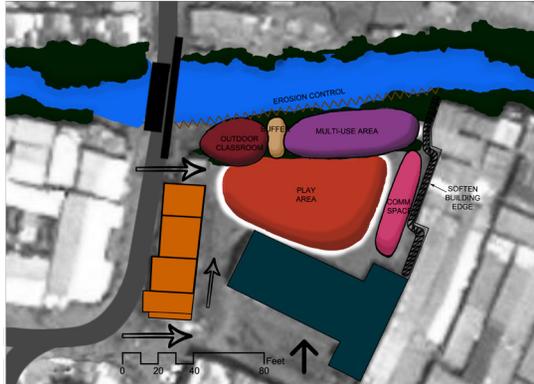


PLAY AREA = SOCIAL AREA

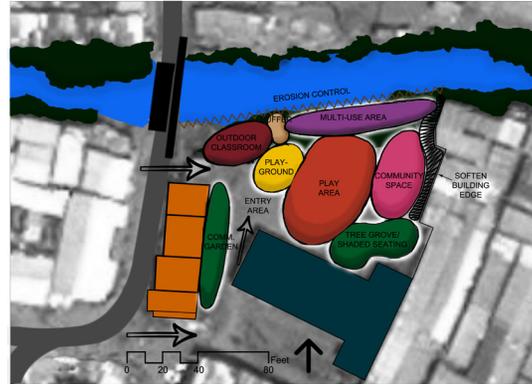


Due to inadequate assembly, seating, and eating space at the school, the concepts deal with the different possible arrangements to create those spaces. The final concept maintains the basketball court as it is but proposes a new playground at the back, a social/seating area and an area for work to be displayed.

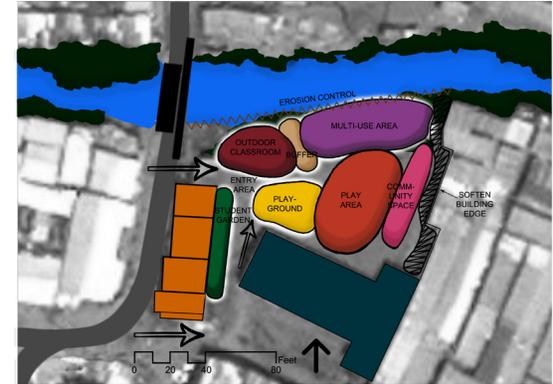
MAXIMIZING PLAY AREA



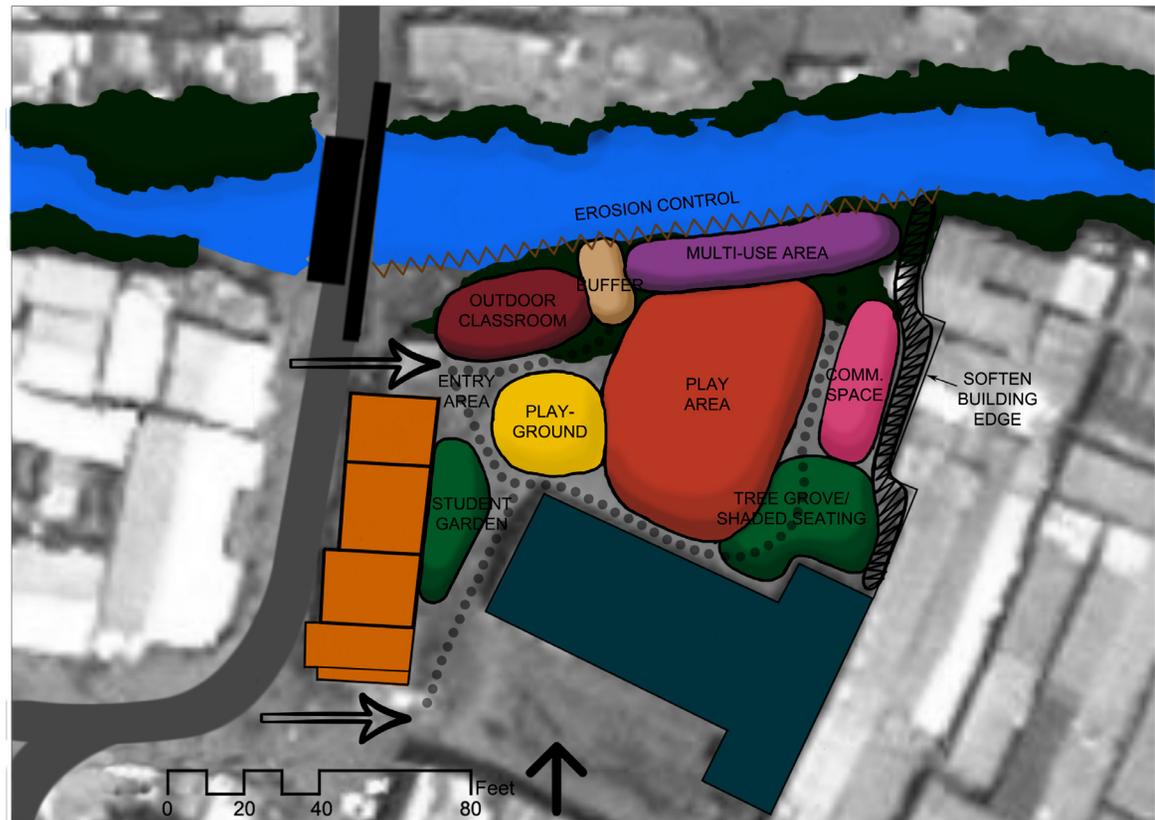
MAXIMIZING COMMUNITY USES



MAXIMIZING SCHOOL AREAS

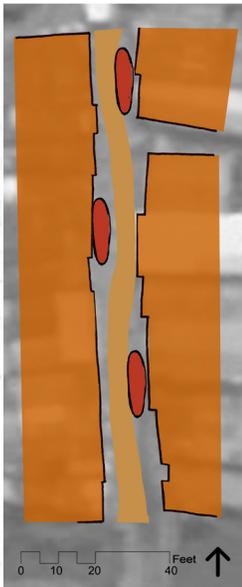


FINAL CONCEPT: COMMUNITY = SCHOOL AREAS

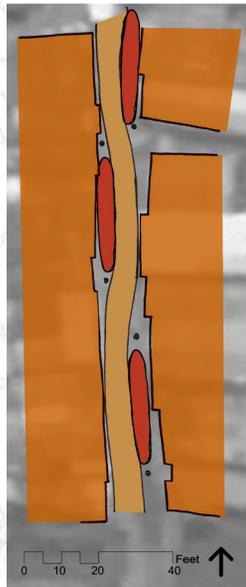


These concepts for the open area played around with placement of different areas that could serve the community and the school children. The final concept balances spaces for the community and the school.

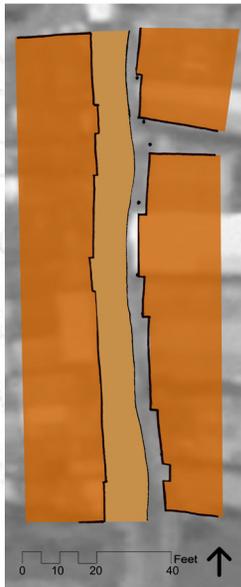
MAXIMIZE WALKWAY



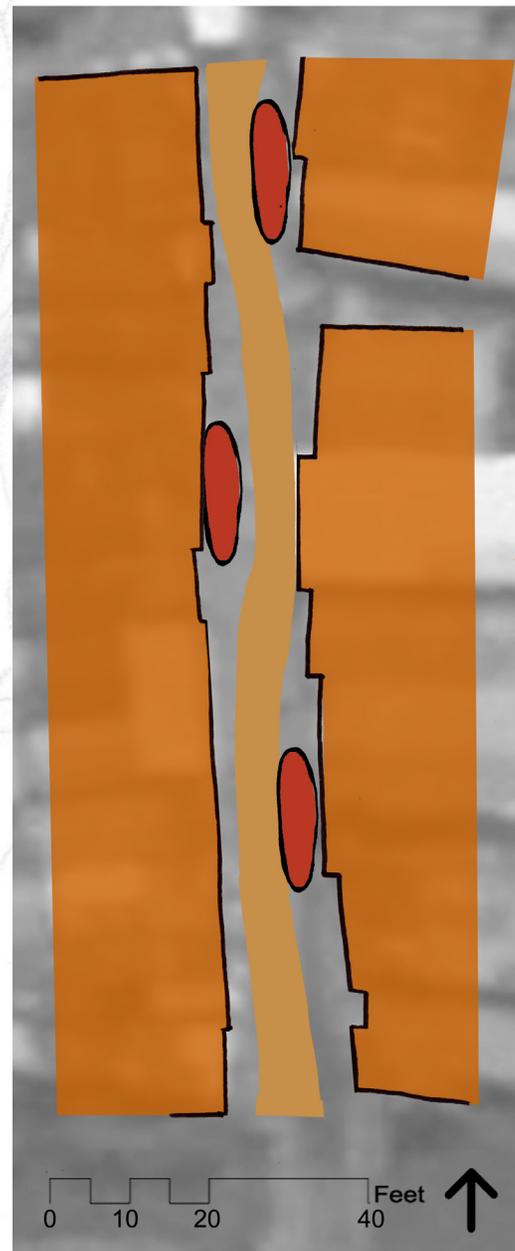
MAXIMIZE PARKING



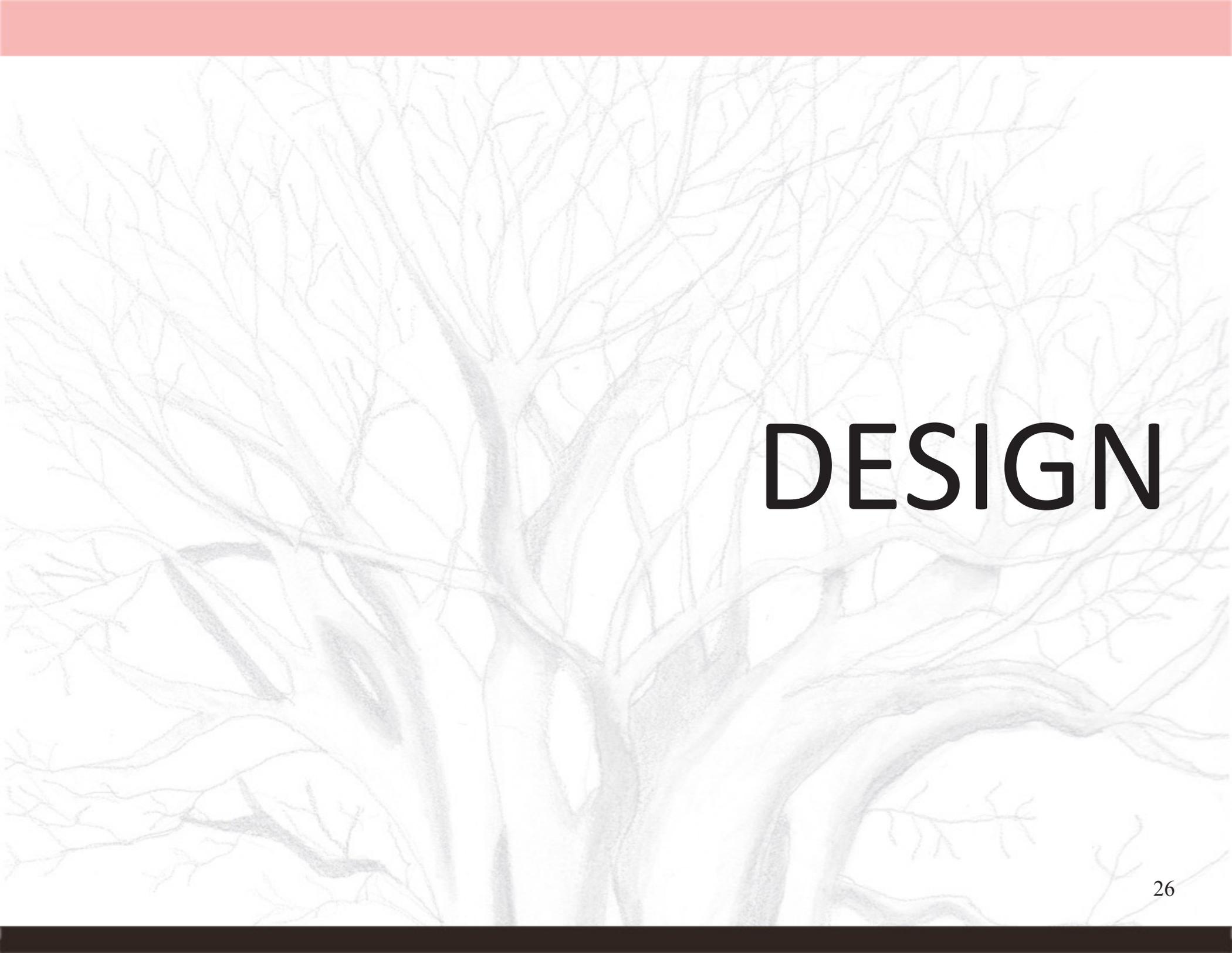
ONE SIDED WALKWAY



MAXIMIZE WALKWAY

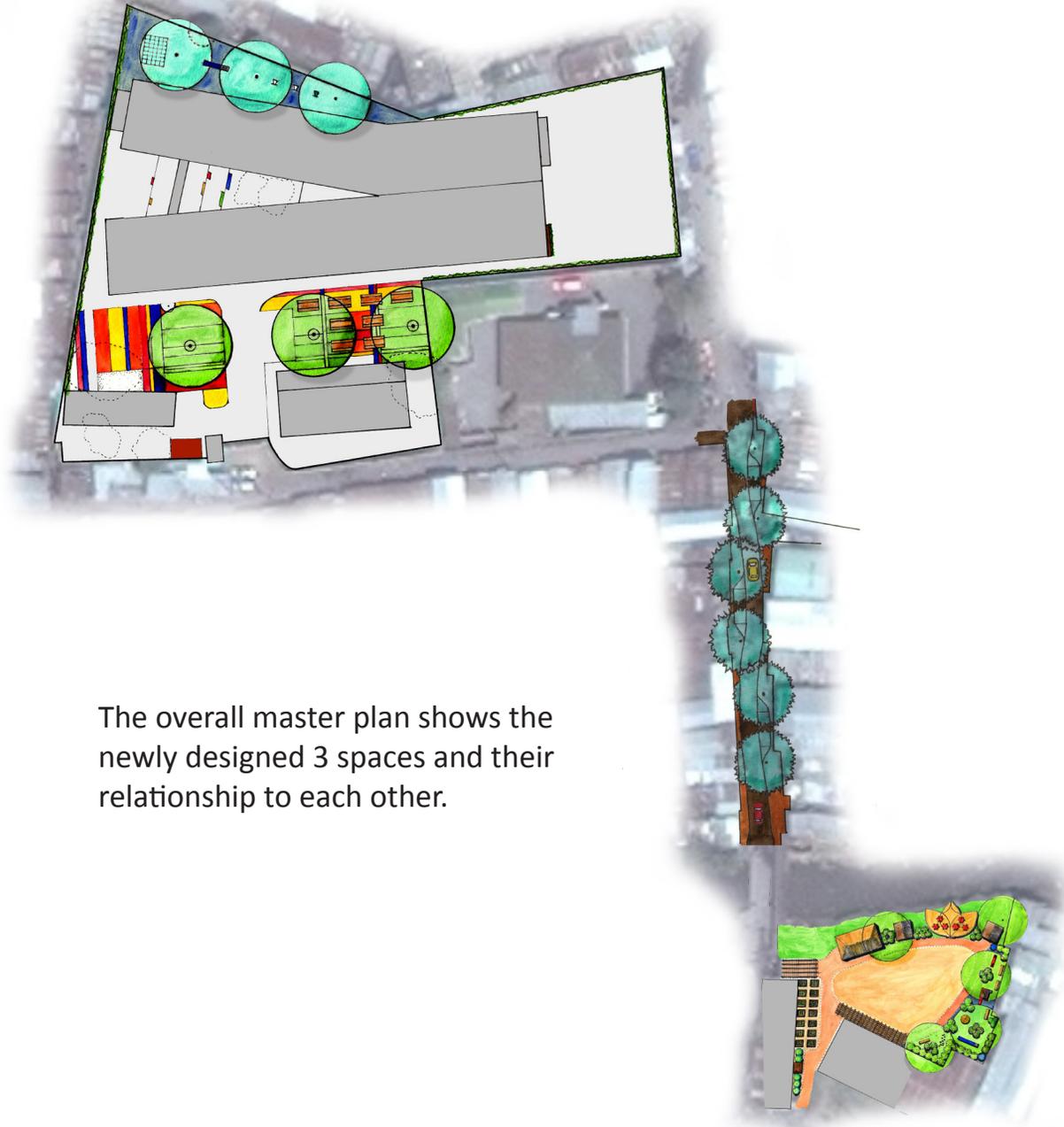


These road concepts are inspired by the concept of “woonerf streets” and different ways that they can be arranged. The ovals represent parking and the brown is the road. The remaining space would then be designated as a pedestrian walkway. The final concept shows a one way street with 3 parking spots for cars to pull off to let other cars pass.



DESIGN

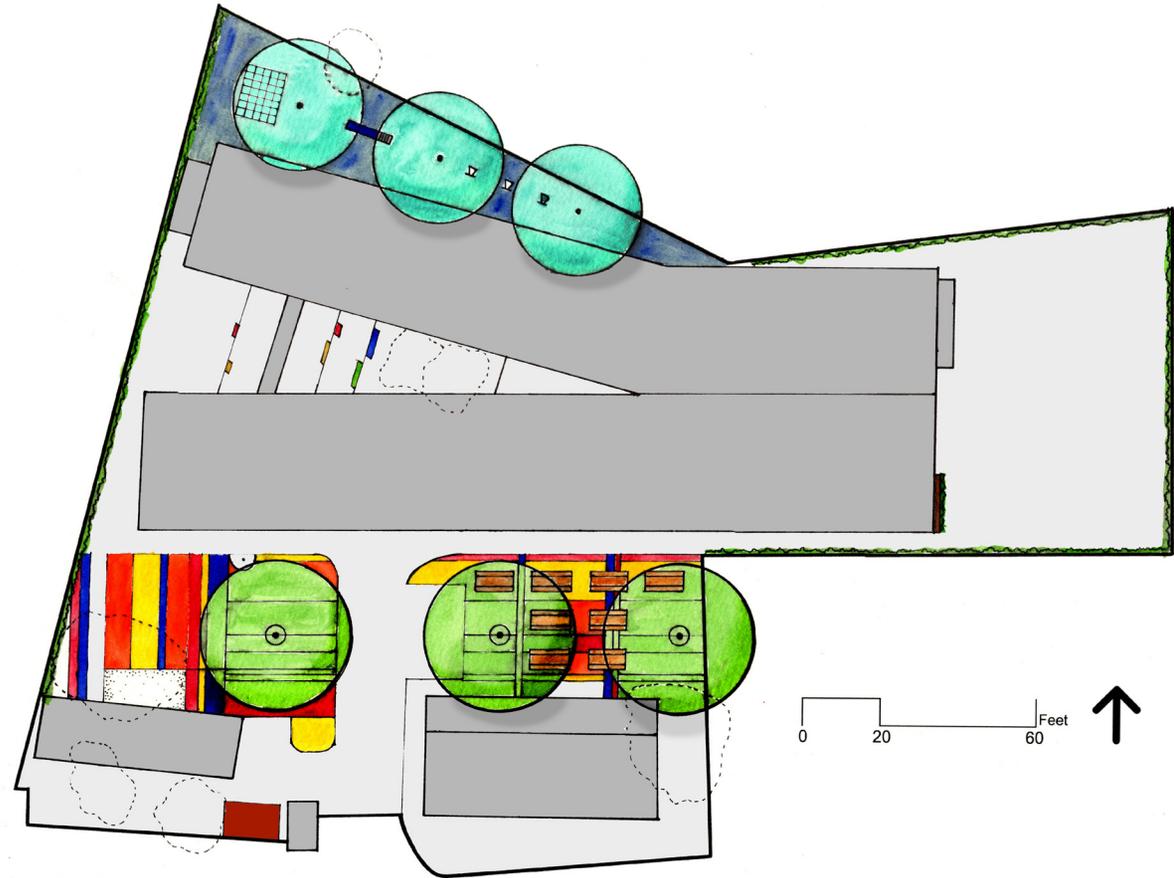
OVERALL MASTER PLAN:



The overall master plan shows the newly designed 3 spaces and their relationship to each other.

3 PART MASTER PLANS:

The school re-design incorporated a new shaded playground at the back of the school for the younger children, a courtyard with hanging banners that showcases students' work, and a plaza at the entrance. The plaza has picnic benches on the side, in front of the kitchen to accommodate more student seating. The 3 car parking is still maintained and the opposite side is left for an open play area and will also serve as a large assembly area. Both areas are shaded with trees to maintain a good microclimate. The inspiration for the colors came from the colors of the local fabric and art.



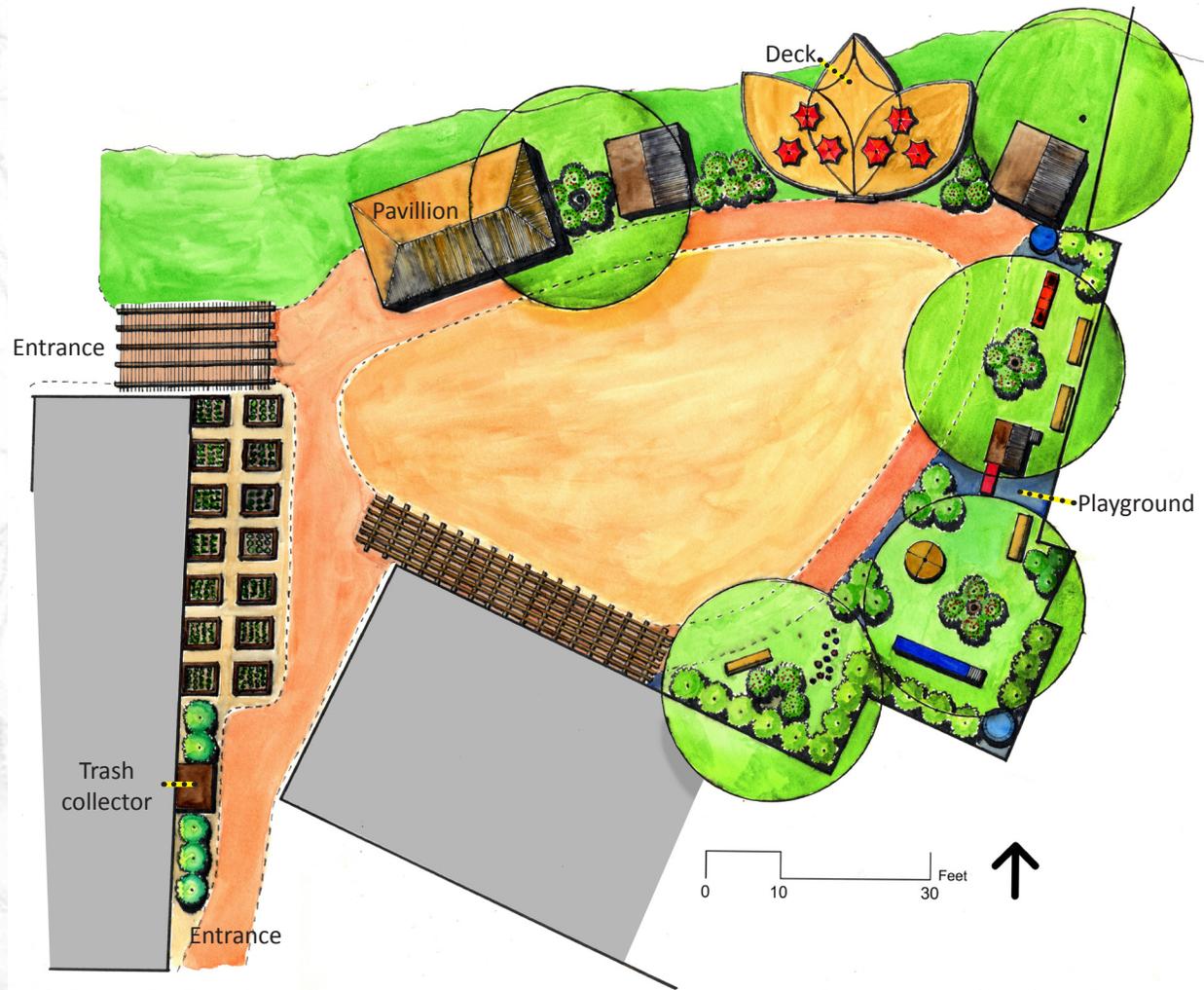
Plaza inspiration

School Master Plan



Trellis entry way

The open area design incorporated spaces for children and older residents to enjoy. For the children, a playground was designed under shade trees at the edge of the site, there is a pavillion that serves as an outdoor classroom and there is an open play area in the middle. For the older residents, a pavillion also serves as a meeting place, two sheds/stores are provided, a deck for social interaction and a community garden. In addition to the previous spaces, two trellis structures were also designed. Bench seating was provided in the playground area.



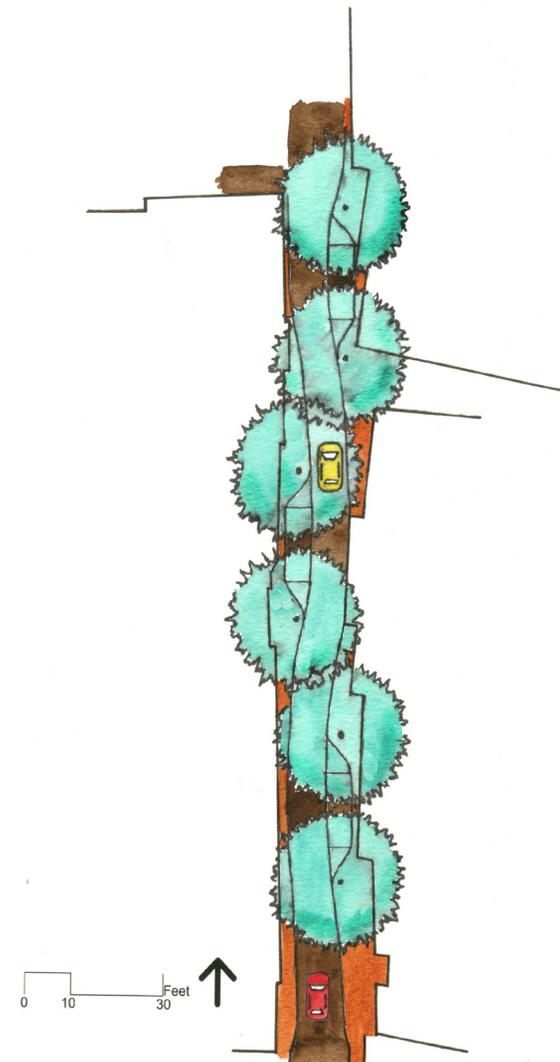
Open Area Master Plan

The deck design inspiration came from the shield that appears on the Kenyan flag. It is also supposed to resemble the profile of a flower.

The road design modeled after a woonerf street is a one way street that is 9 feet wide with three parking spaces for cars to pull off to. The spacing allows for trees to be planted for a good microclimate and allows for plenty of walking space for pedestrians.



Woonerf street inspiration



Road Master Plan

SECTIONS:



Section showing school playground.



Section showing school plaza with bench seating on right side and open area on the other.



Section showing open area pavillion, shed/store, and deck.



Section showing open area live fascine (erosion control using plant roots) and childrens playground.



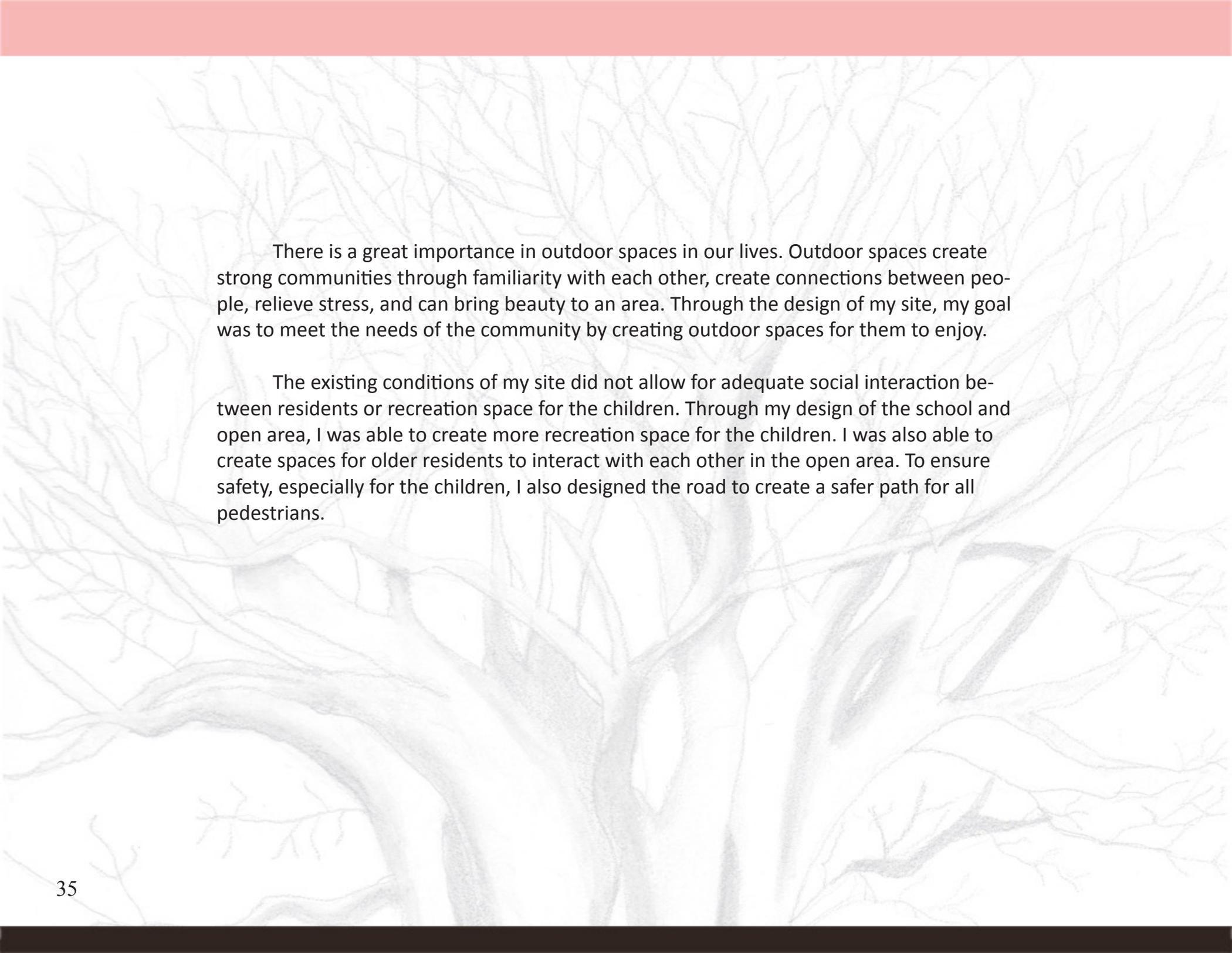
Section showing road as it slopes down to the river.



This road sketch shows an idea of what the road would look like. Bollards would be placed at certain parts along the road to prevent cars from driving on the pedestrian walkway.

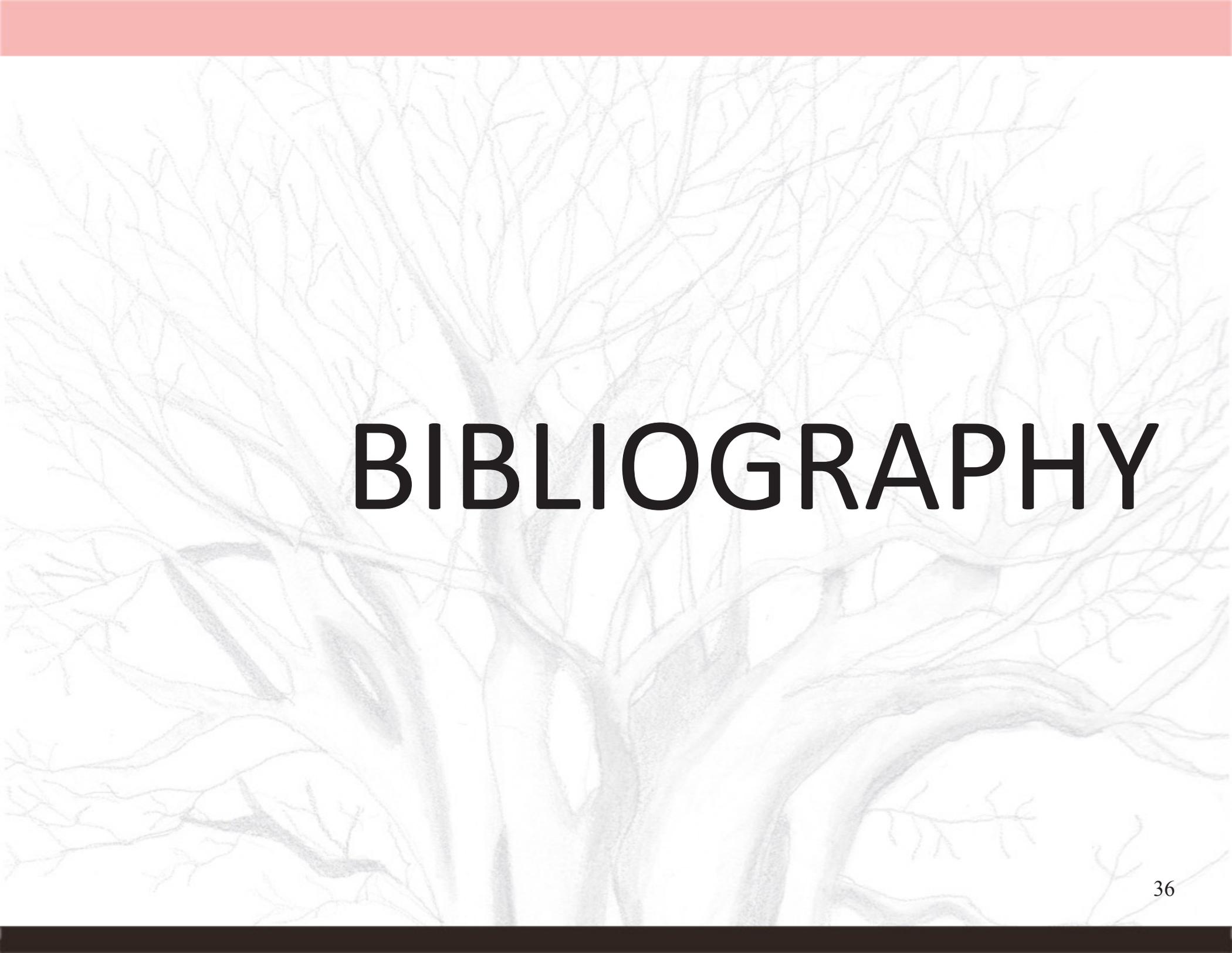


CONCLUSION



There is a great importance in outdoor spaces in our lives. Outdoor spaces create strong communities through familiarity with each other, create connections between people, relieve stress, and can bring beauty to an area. Through the design of my site, my goal was to meet the needs of the community by creating outdoor spaces for them to enjoy.

The existing conditions of my site did not allow for adequate social interaction between residents or recreation space for the children. Through my design of the school and open area, I was able to create more recreation space for the children. I was also able to create spaces for older residents to interact with each other in the open area. To ensure safety, especially for the children, I also designed the road to create a safer path for all pedestrians.



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