

# KAMUZU CENTRAL HOSPITAL PLANNING FRAMEWORK

## PERMEABILITY THROUGH THE NEW CIVIC FRONT

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**Kamuzu Central Hospital Planning Framework  
Permeability Through a New Civic Front**

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**THESIS STATEMENT**

Our conceptual approach to this project revolves around the idea of permeability, the state or quality of a membrane that allows things to pass through it. By controlling the degree of permeability across the site, we encourage organized program and circulation to mitigate the current levels of congestion. To do so, we have established both membranes, which control access, and barriers, which prevent access, in our framework plan.



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The campus of Kamuzu Central Hospital in Lilongwe, Malawi is a complex, disorganized collection of decades of development and expansion. The site responds mostly to short-term issues and growth is considered for immediate needs rather than long-term goals, a method of planning that is common and expected given the circumstances of the region and the hospital itself. Strained resources, staff restrictions, and a population with significant rates of medical complications have all become factors in the resultant campus that exists today. Our design criteria was developed through a variety of research inputs such as emergency care, specific user group circulation, and stormwater management. Initial concepts led to a framework proposal for the future development of KCH. Our conceptual approach to this project revolves around the idea of permeability, the state or quality of a membrane that allows things to pass through it. By controlling the degree of permeability across the site, we encourage organized program and circulation to mitigate the current levels of congestion. To do so, we have established both membranes, which control access, and barriers, which prevent access, in our framework plan. The new civic front of the hospital, composed of a main entrance and emergency department, serves as a membrane that quickly assesses incoming people and filters them into several groups: outpatients, inpatients, staff, and guardians. They are then directed through the corridor that will best fit their needs, each of which is separated by barriers in the forms of buildings and strategic landscape design. This method will improve the entry sequence, programmatic organization, and pedestrian and vehicular circulation of the hospital, therefore improving the overall efficiency and experience of the campus.

Patients enter the hospital in one of three ways: by pedestrian path, by car or bus, or by ambulance. The civic front is organized to accommodate people entering the hospital through either the main entrance or the emergency department from multiple angles. Terraced parking fits into the natural slope of the landscape inside a loop that stretches to the emergency entrance to accommodate patient drop-off. The edge of the road is marked by a large public stair to control the points at which pedestrians are crossing the street. Across the civic front, strategic landscaping techniques provide barriers between different spaces. These barriers aim to separate pedestrian and vehicular traffic in order to enhance the visual and auditory experience and ensure the safety of pedestrians. They also help to manage stormwater across the site, especially during times of heavy rainfall which are common in Malawi. Finally, they work to balance out the addition of hardscapes to maintain a suitable habitat for native organisms. Covered walkways lead patients and guardians toward the building and connect to overhangs of varying depths. The materiality of the overhangs and the ground are consistent throughout the campus and communicate that the space is either for walking or gathering. Pedestrian circulation is problematic on the hospital campus as overlap between staff and guardians results in a chaotic environment. Therefore, each corridor has been designed specifically for their intended user groups to encourage a higher level of organization. The outpatient corridor is located adjacent to buildings such as radiology and pharmacy to keep short-term patients from wandering further into the hospital. It is designed to keep people moving but allows room for seating for those waiting to be evaluated. The high-risk corridor encourages speed

and efficiency for staff and patients moving between programs such as the ED, surgery, and ICU. This corridor offers no seating to deter guardians from gathering and causing congestion. The staff corridor is located between the ED, surgery, and inpatient wards. The seating, landscaping, and intimate scale are designed to promote privacy and better the mental health of workers on campus. Lastly, the guardian corridor allows for many shaded gathering spaces and immediate access to inpatient, maternity, and pediatric wards, as well as guardian facilities on the far end of the corridor. Controlling the degree of permeability throughout the hospital campus mitigates the primary issue of congestion on the site above all else, which is crucial because in this context, improvements in design could save lives. Overall, our project aims to maintain the proper balance between the efficiency needed to run a hospital and the experience necessary for staff and guardians to provide adequate care and most importantly, for patients to heal.

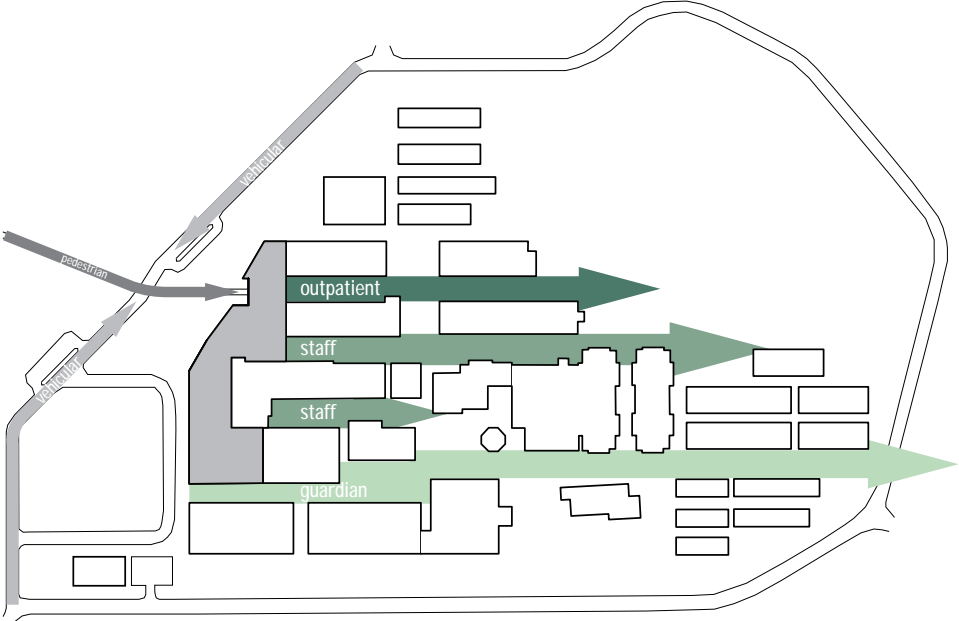


*The new civic front of the hospital, composed of a main entrance and emergency department, serves as a membrane that quickly assesses incoming people and filters them into several groups: outpatients, inpatients, staff, and guardians.*

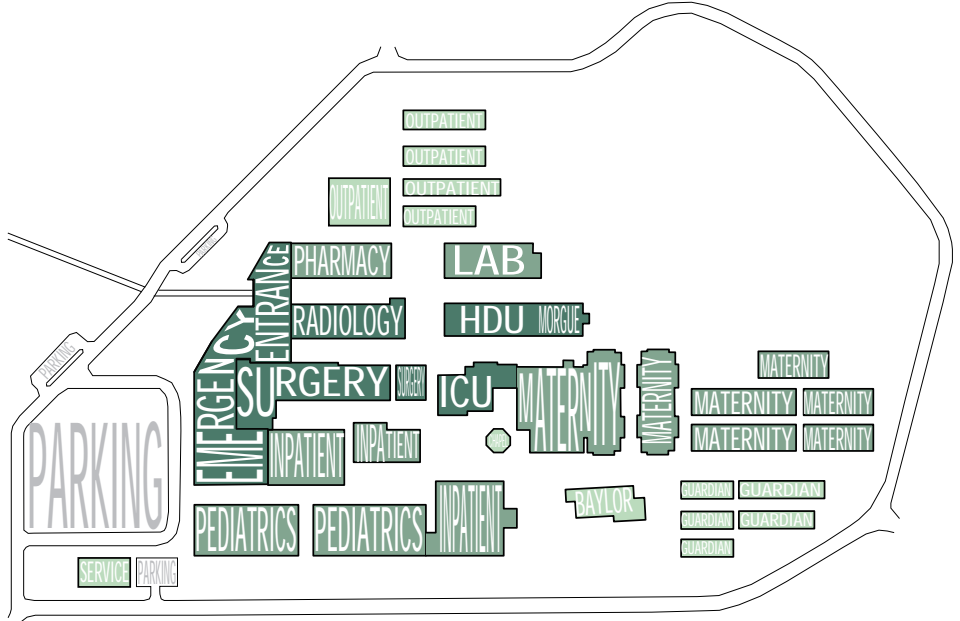
WEDNESDAYS EYE CLINIC 1:30 PM-4:30 PM  
 ANTERATAL CLINIC 1:30 PM-4:30 PM  
 TUESDAYS SURGICAL CLINIC 10:00 AM-12:00 NOON  
 GYNAECOLOGY CLINIC 1:30 PM-4:30 PM  
 FRIDAYS UNDER FIVE (U/S) CLINIC 1:30 PM-4:30 PM

02 CONCEPTUAL RATIONALE

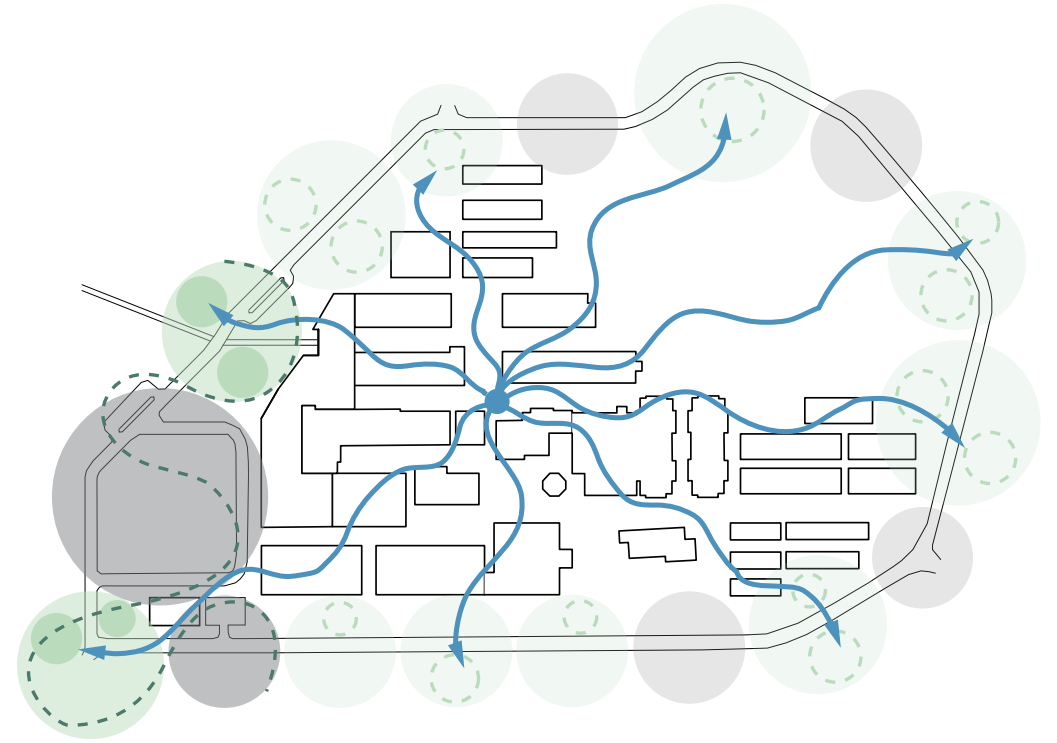
In designing a new civic front for the hospital, the goal was also to construct a hierarchy that could start to determine further development for the hospital. The following diagrams illustrate our concept and its relation to the rest of the hospital.



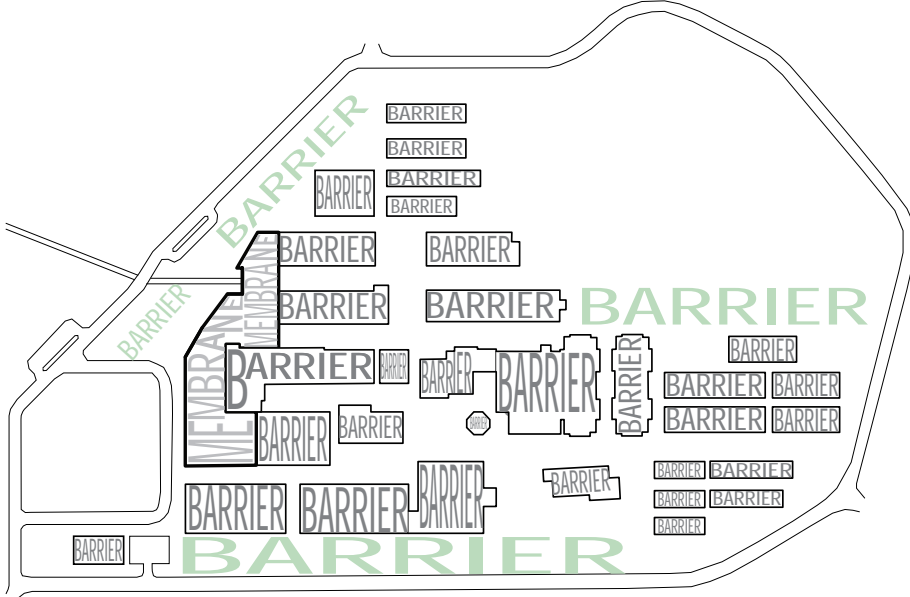
CORRIDORS



PROGRAM ADJACENCIES



STORMWATER CONCEPT



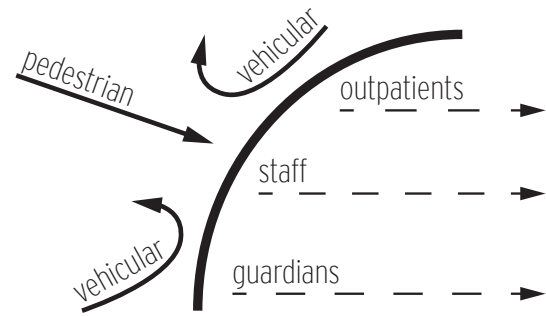
MEMBRANES & BARRIERS

Investigations into permeability and membranes required an understanding of existing site conditions and green barriers. The resultant strategy acknowledged existing context and buildings.

Permeability is the state or quality of a material or membrane that permits it to allow things to pass through it. By controlling the degree of permeability across multiple planes throughout the site, we can encourage organized program and circulation to mitigate the current levels of congestion. To do so, we have established both membranes -- that control access -- and barriers -- that prevent access -- in our framework plan.

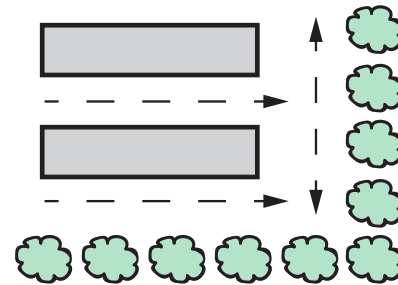
**Membranes**

Current conditions allow pedestrian and vehicular traffic to move freely throughout the site, creating congestion that hinders both efficiency and experience. Establishing a membrane for people to pass through can organize circulation by user group.

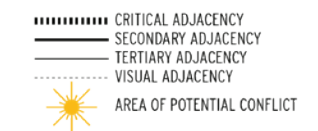
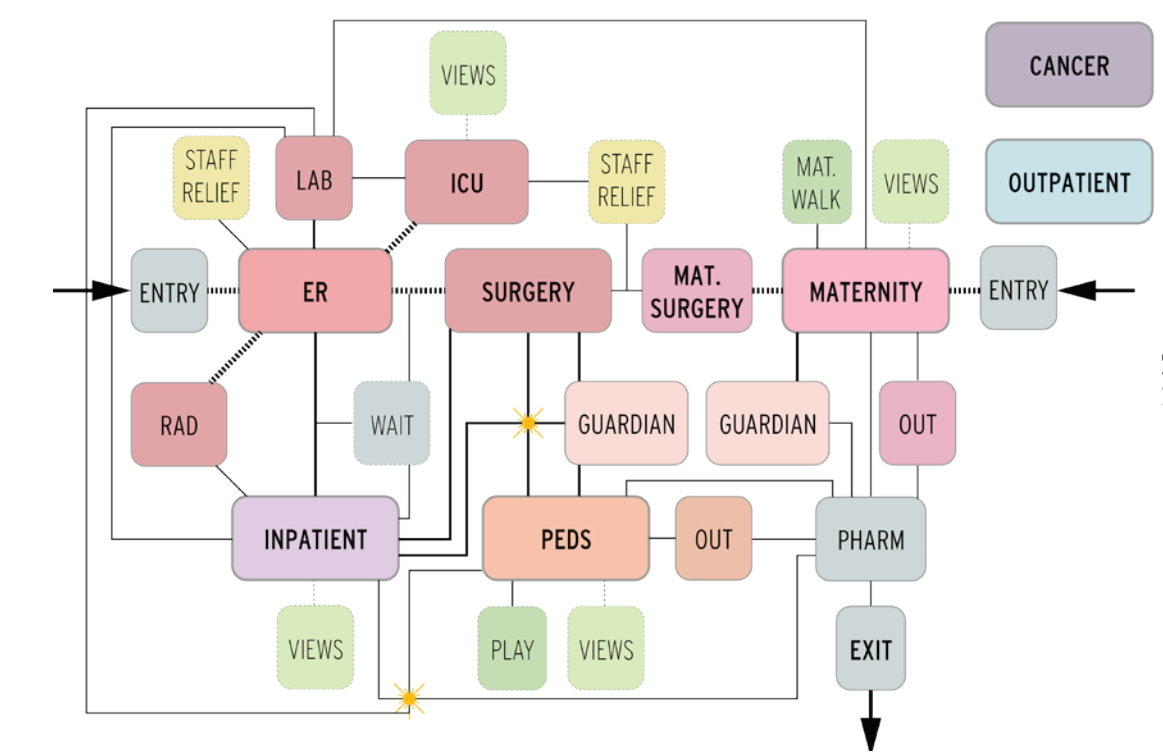
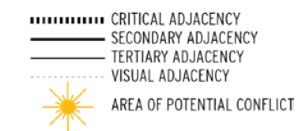
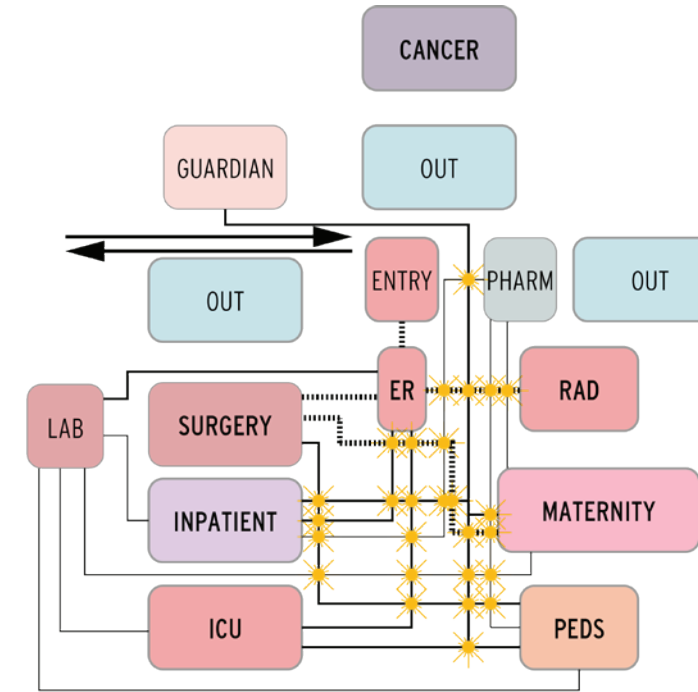


**Barriers**

Barriers currently exist only in the form of physical buildings. In addition, we can use green barriers to separate program while maintaining a positive experiential quality and response to the environment.

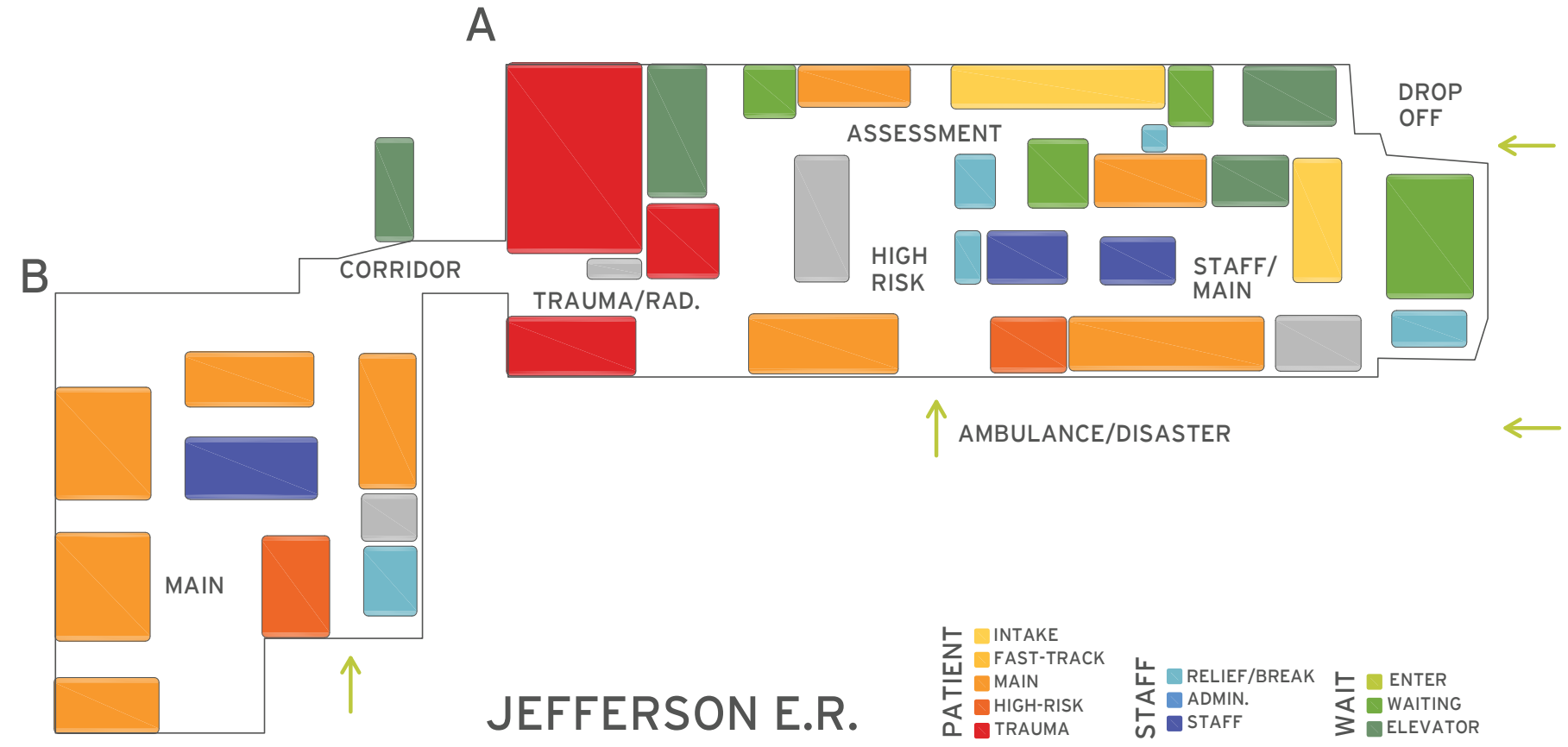


Program adjacencies were actively considered as circulation was developed. The final design clusters program types to increase efficiency.



SITE INVENTORY AND ANALYSIS

Considerations into emergency and trauma services had to be modeled after accepted methods yet also be contextual. The following diagrams were based on an analysis of a typical emergency room, These diagrams influenced Emergency Department placement and adjacencies within the larger scheme.

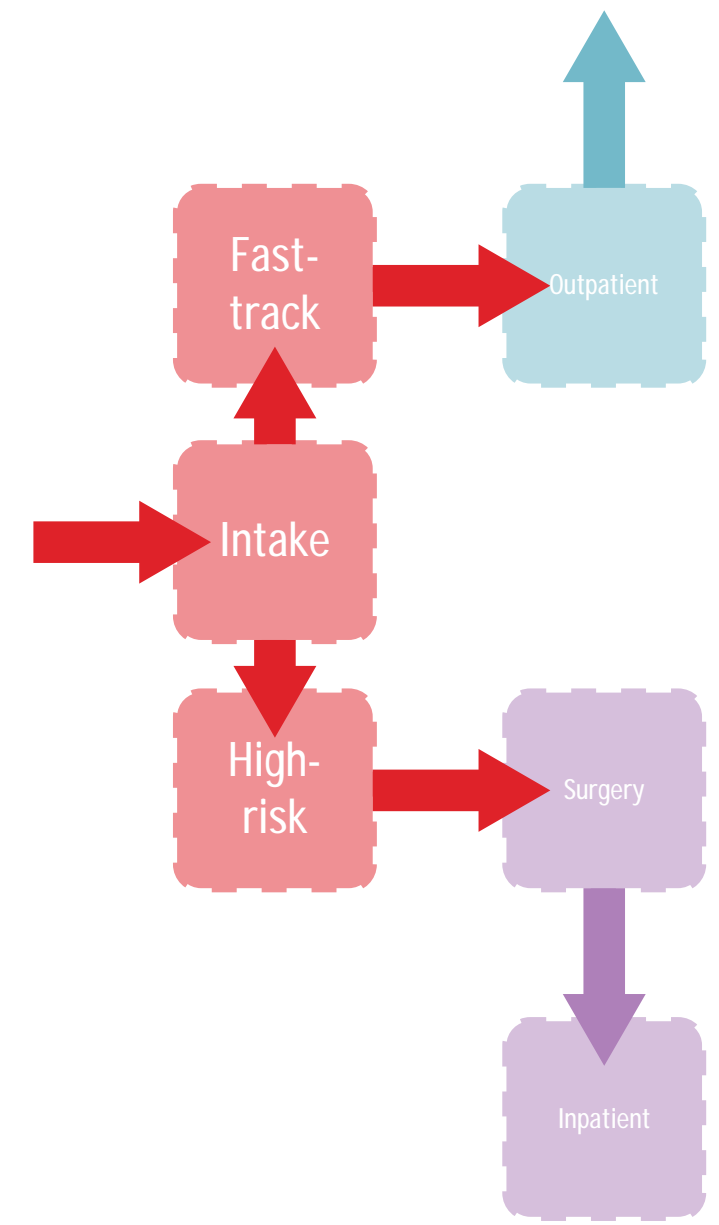


Emergency Breakdown

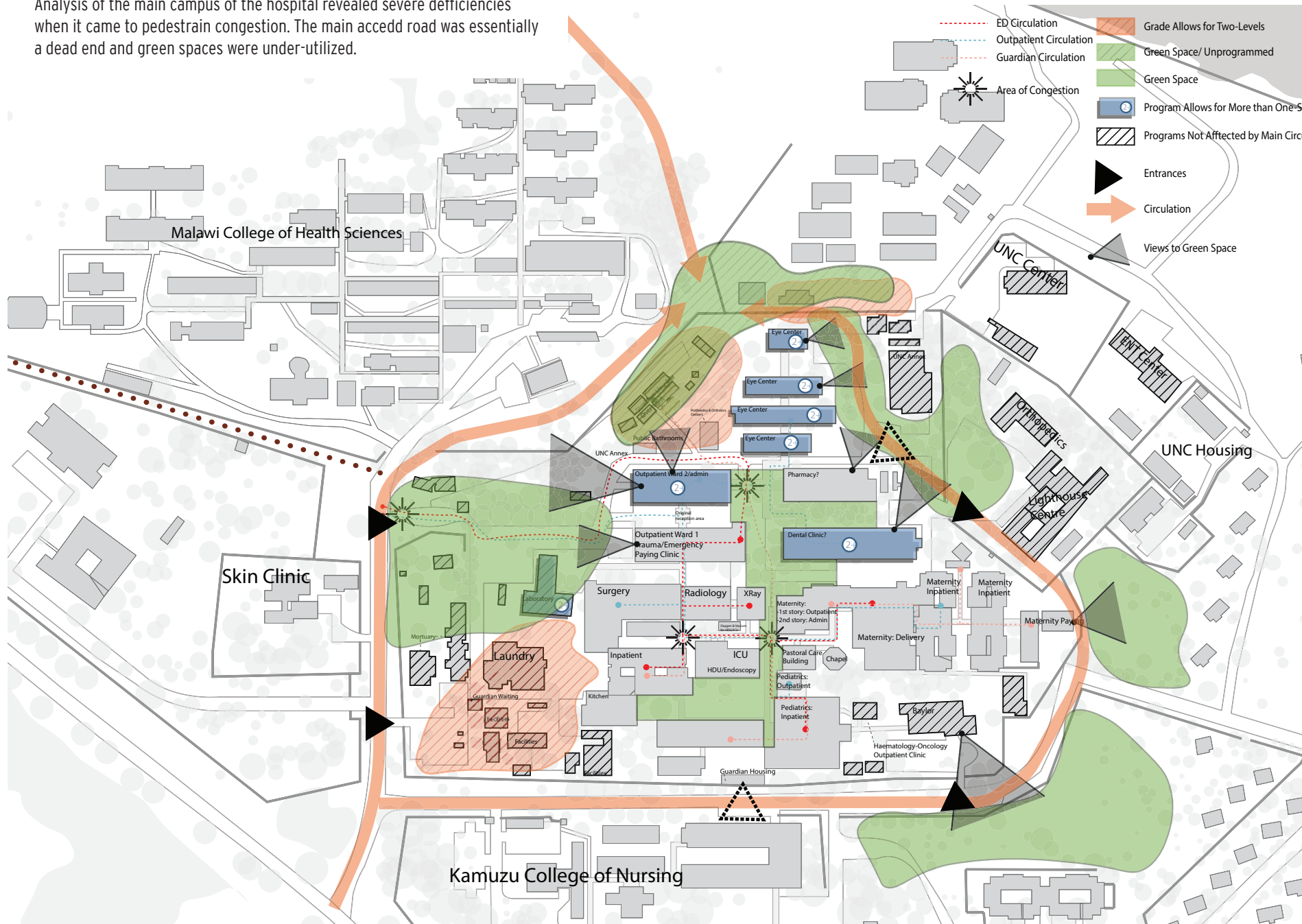
Intake consists of an early evaluation system by which physicians quickly determine the needs of the patient, reducing wait times. This functions primarily as a transitional space.

If the patient can be treated quickly, they are sent to Fast-track where they can easily circulate through the outpatient section of the site and exit the hospital campus efficiently.

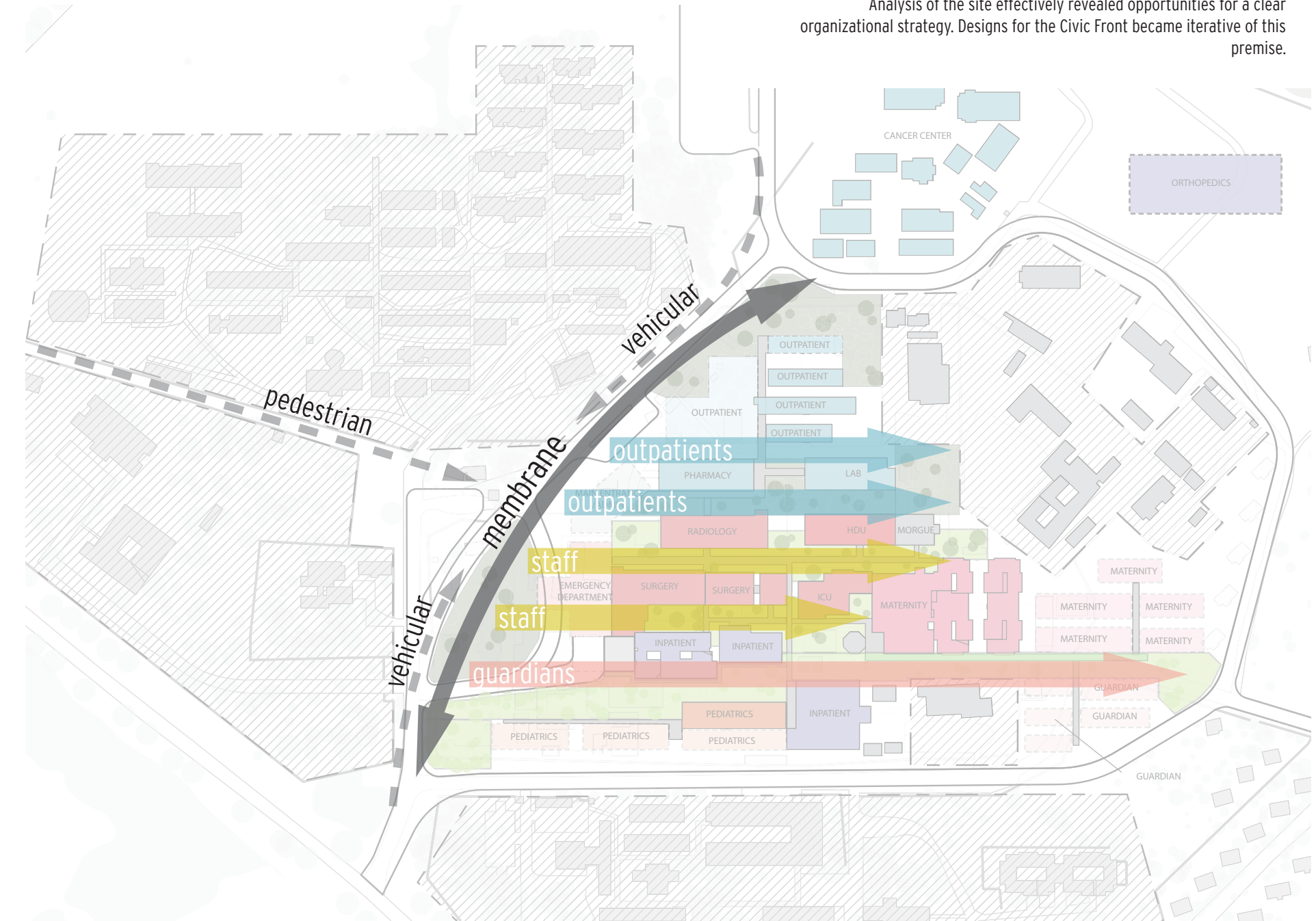
If the patient is in need of more serious intervention or a longer hospital stay, they move into the High-risk section of the Emergency department, immediately adjacent to surgery facilities and the inpatient ward.



Analysis of the main campus of the hospital revealed severe deficiencies when it came to pedestrian congestion. The main access road was essentially a dead end and green spaces were under-utilized.



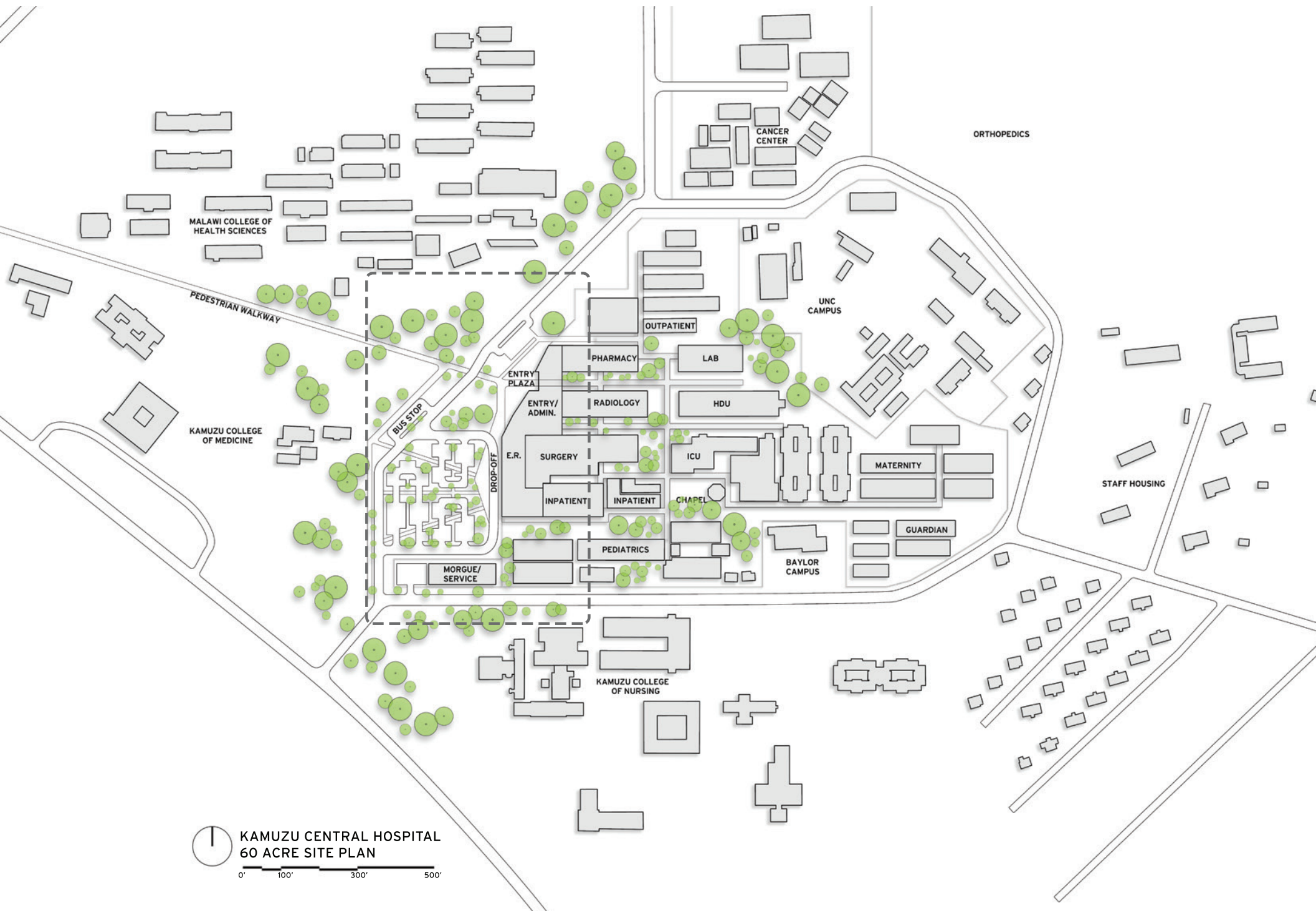
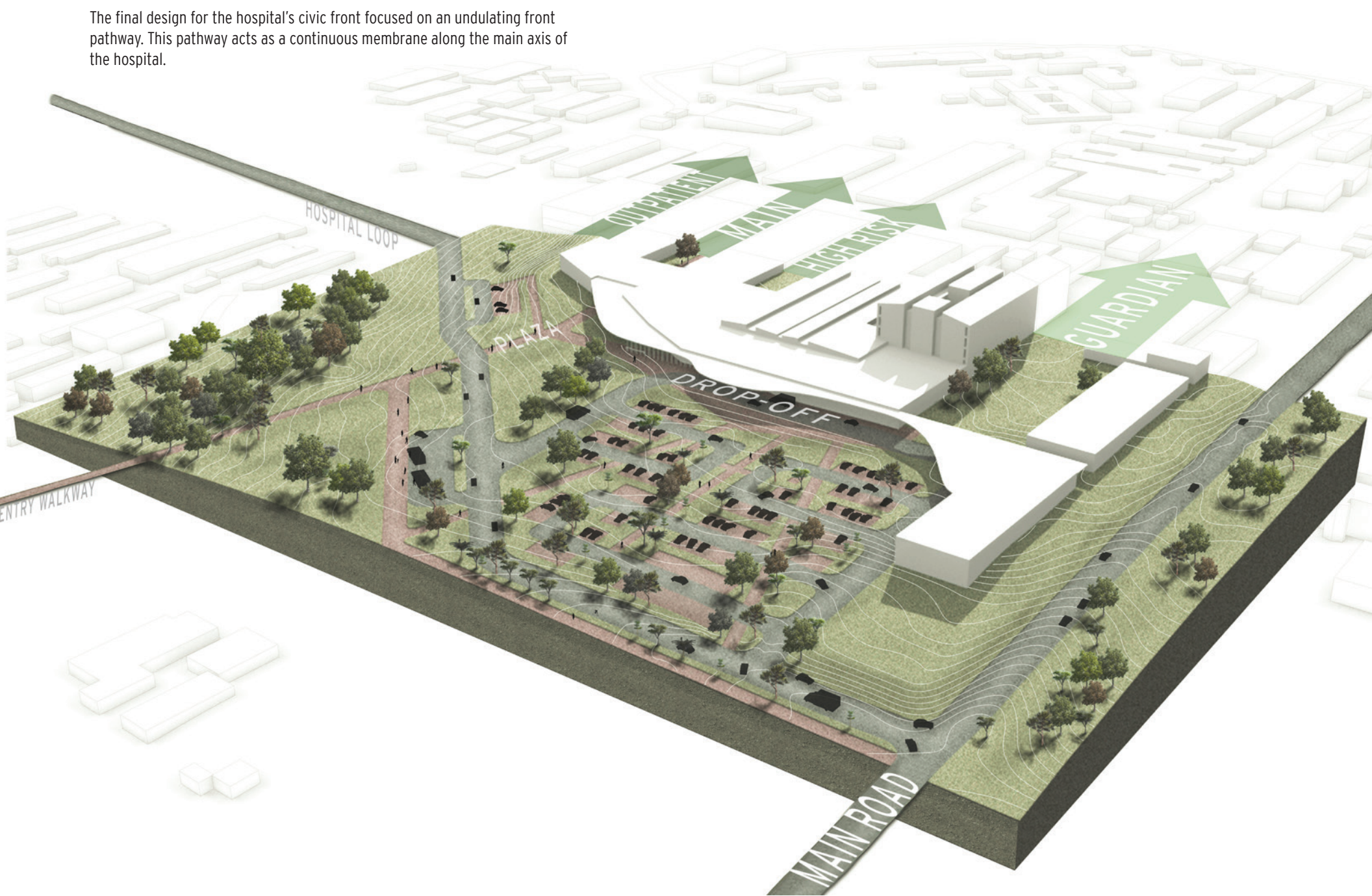
Analysis of the site effectively revealed opportunities for a clear organizational strategy. Designs for the Civic Front became iterative of this premise.



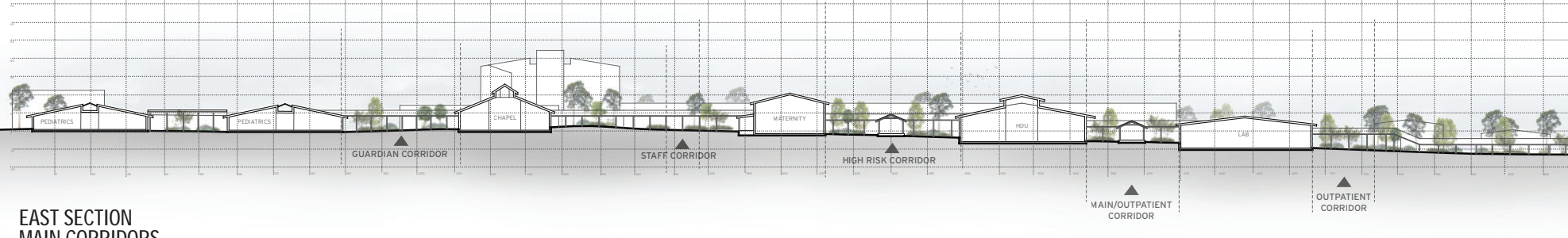


04 DESIGN CONCLUSIONS

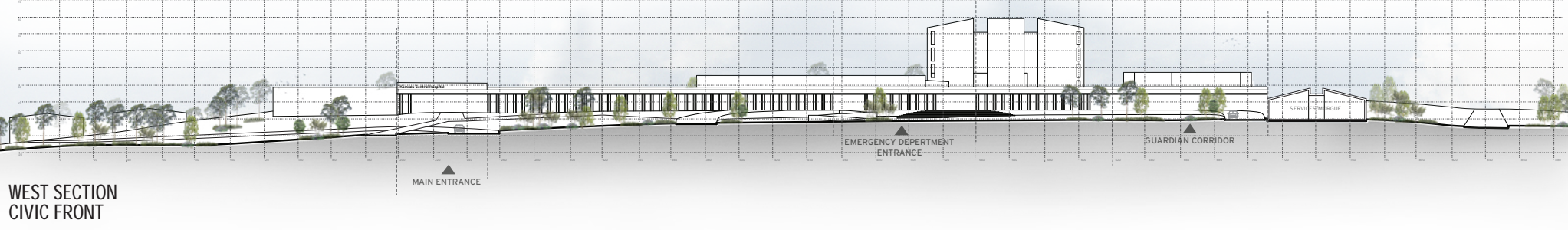
The final design for the hospital's civic front focused on an undulating front pathway. This pathway acts as a continuous membrane along the main axis of the hospital.



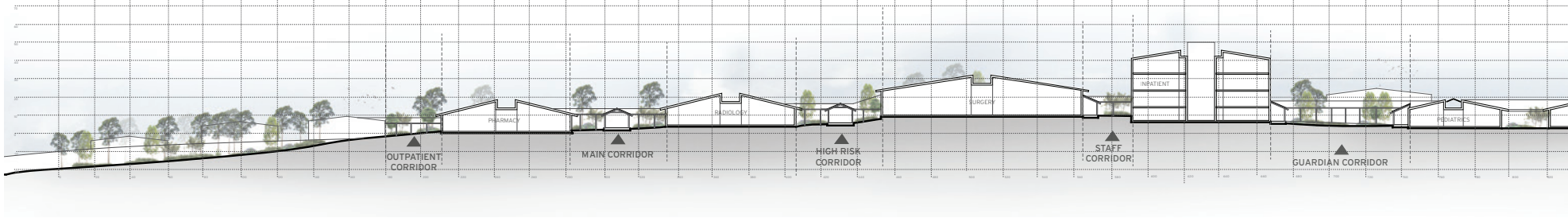
KAMUZU CENTRAL HOSPITAL  
60 ACRE SITE PLAN  
0' 100' 300' 500'



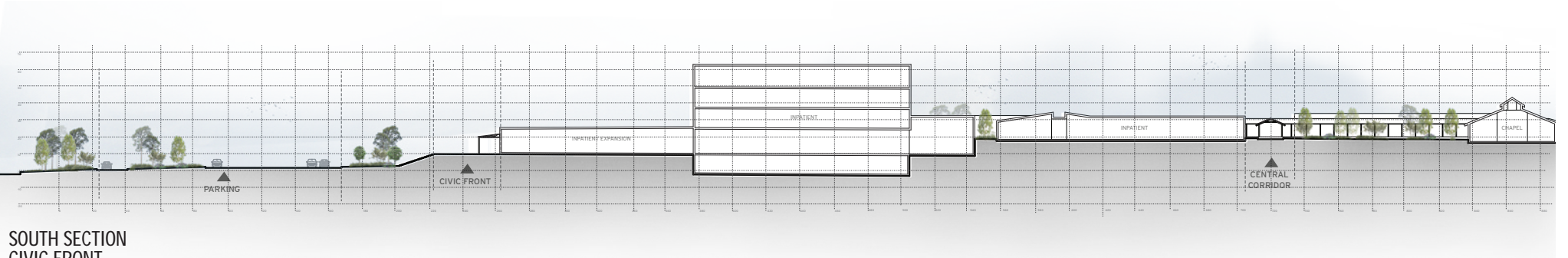
EAST SECTION  
MAIN CORRIDORS



WEST SECTION  
CIVIC FRONT



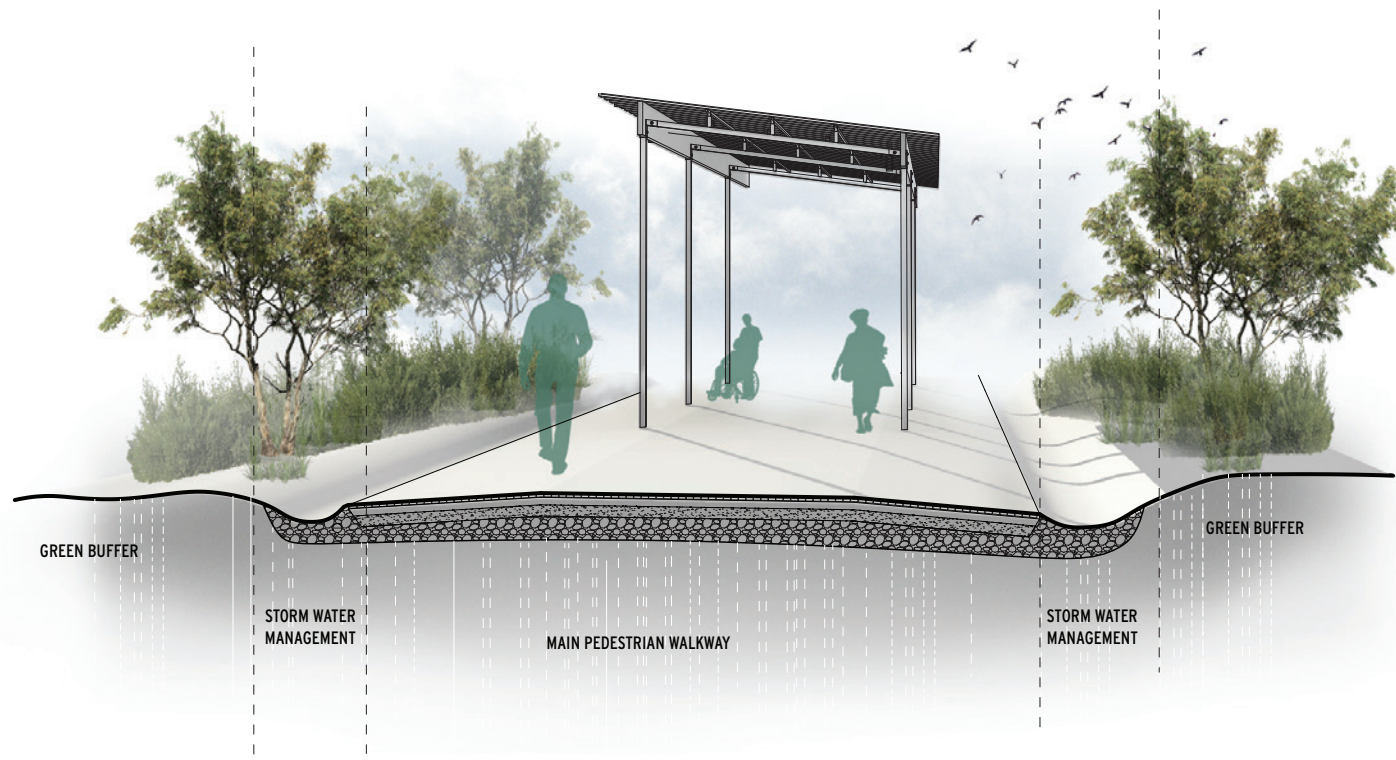
WEST SECTION  
MAIN CORRIDORS



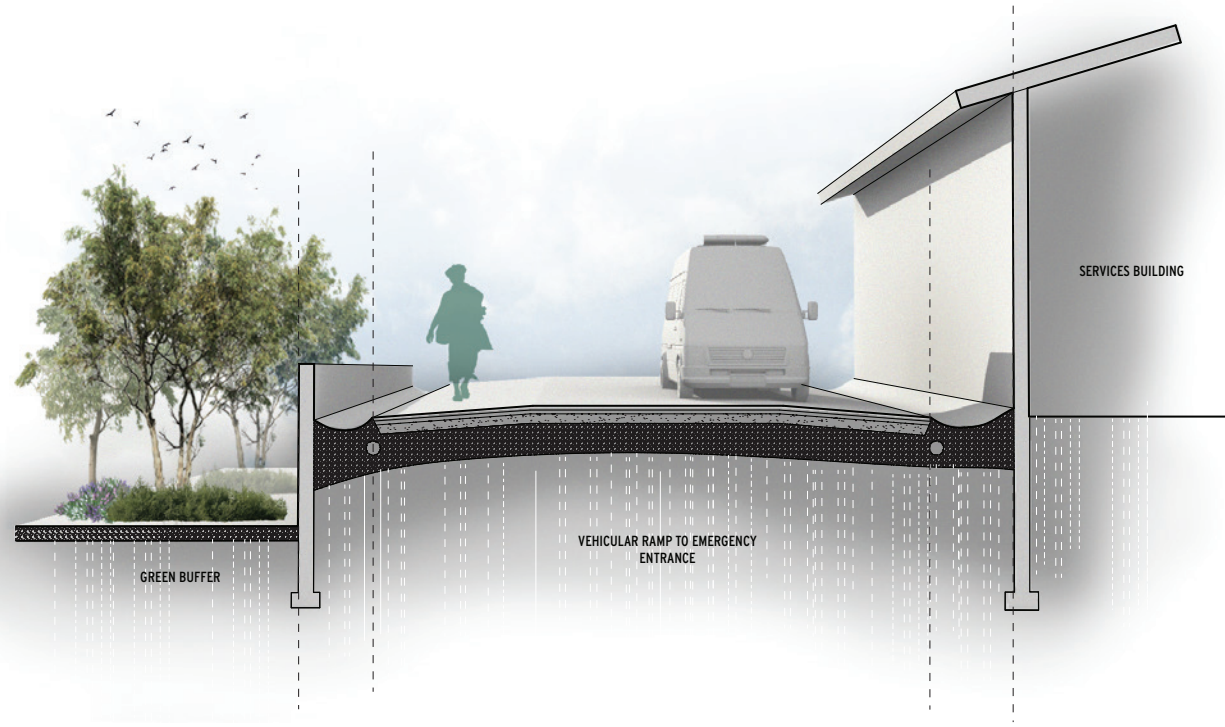
SOUTH SECTION  
CIVIC FRONT

04 DESIGN CONCLUSIONS

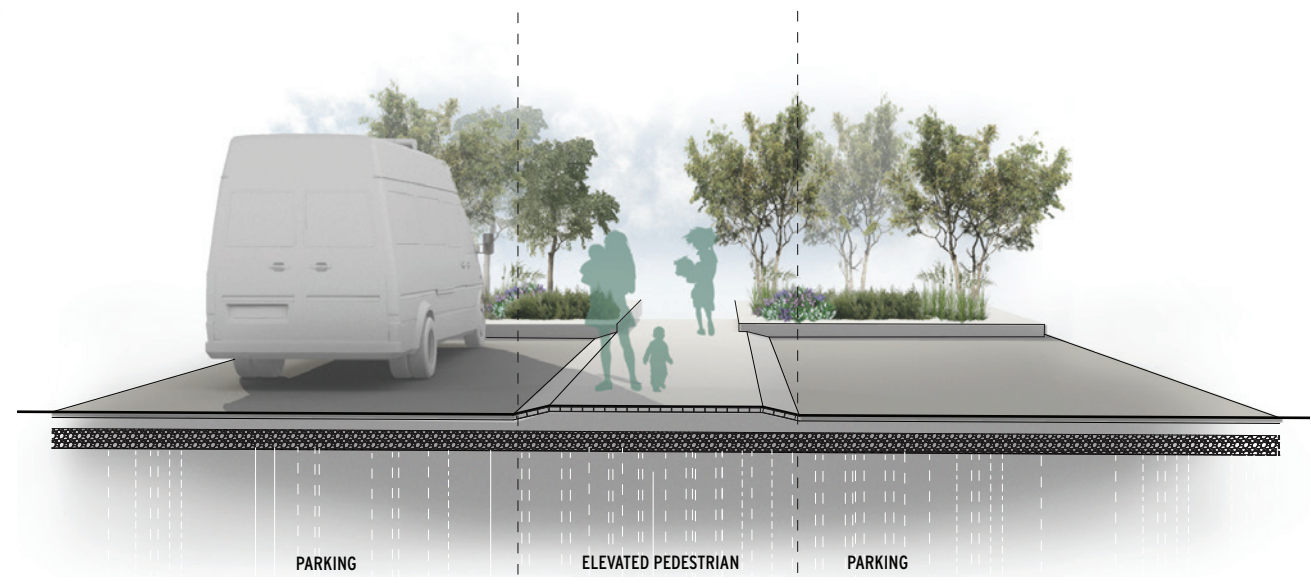
Aside from efficiency concerns and circulation, experiential factors were also considered. Corridors were designed to comfort patients, staff, and family. All interventions were meant to be performative and appealing.



PERSPECTIVE OF MAIN PEDESTRIAN PATHWAY



PERSPECTIVE OF EMERGENCY DEPARTMENT DRIVE



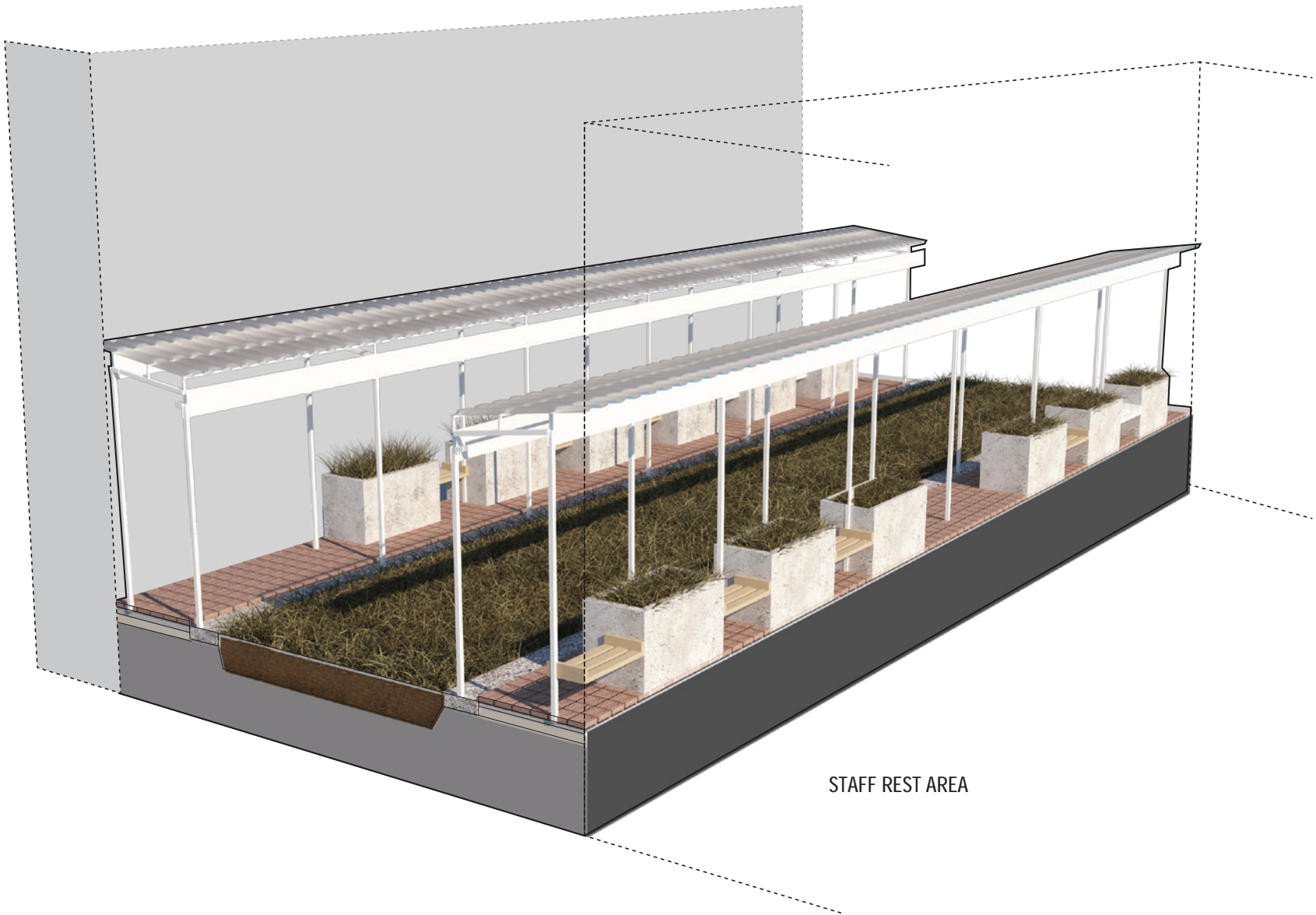
PERSPECTIVE OF PATHWAY THROUGH PARKING LOT



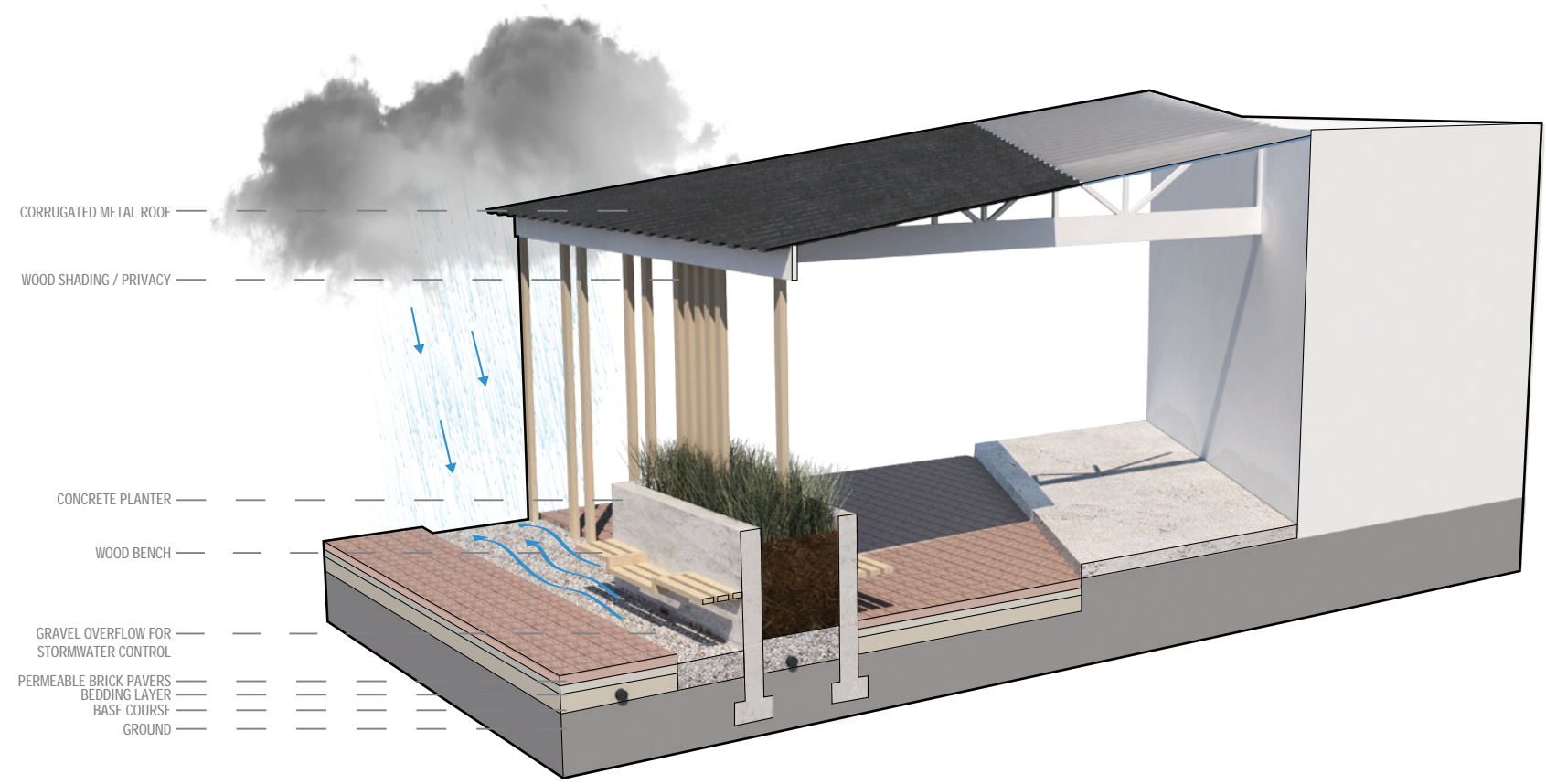
HIGH RISK CORRIDOR



GUARDIAN CORRIDOR



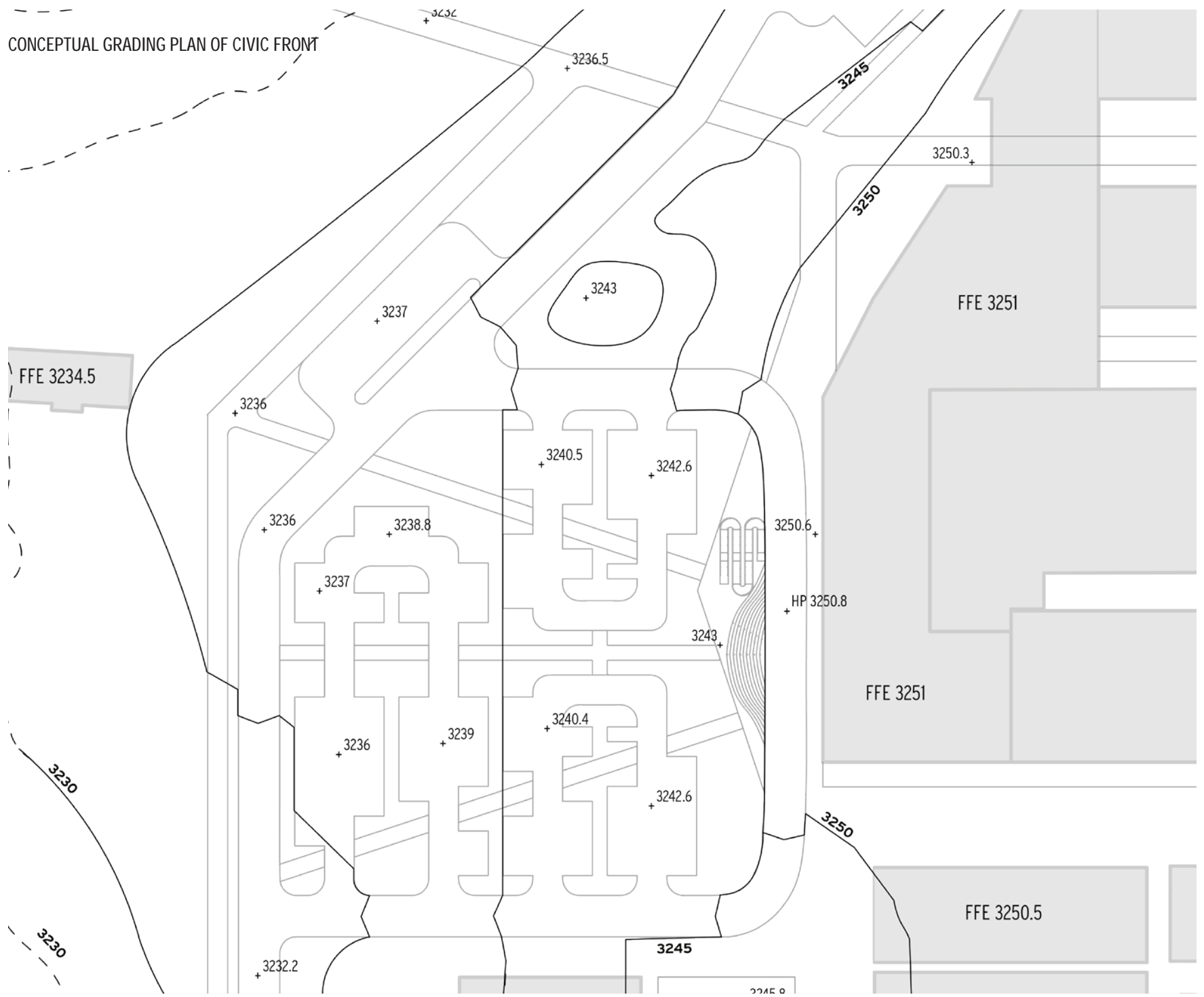
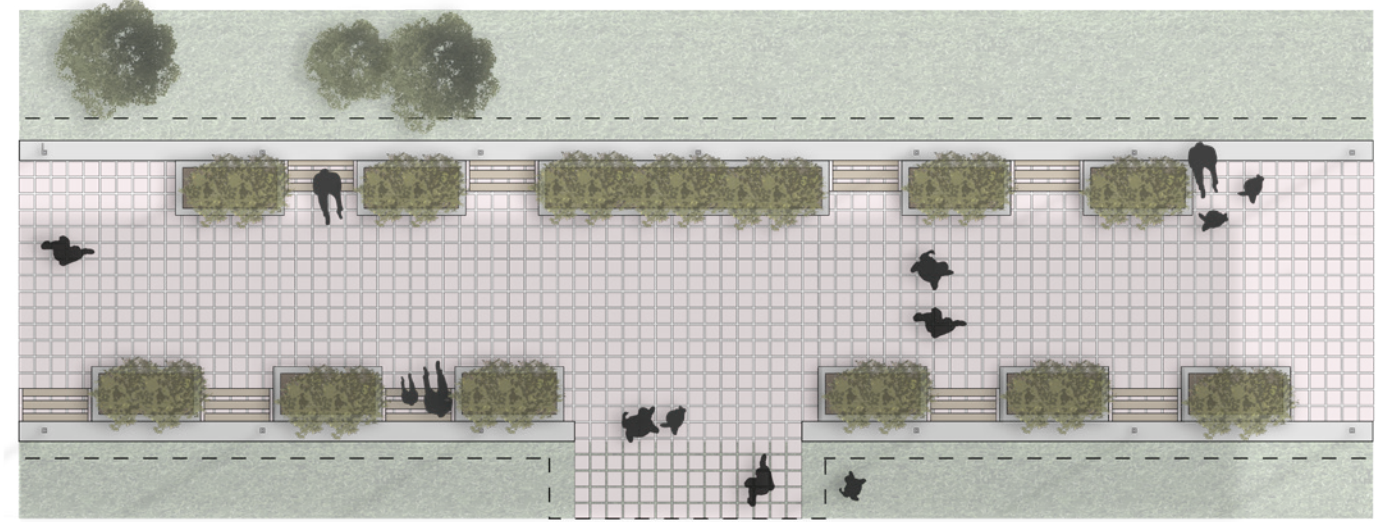
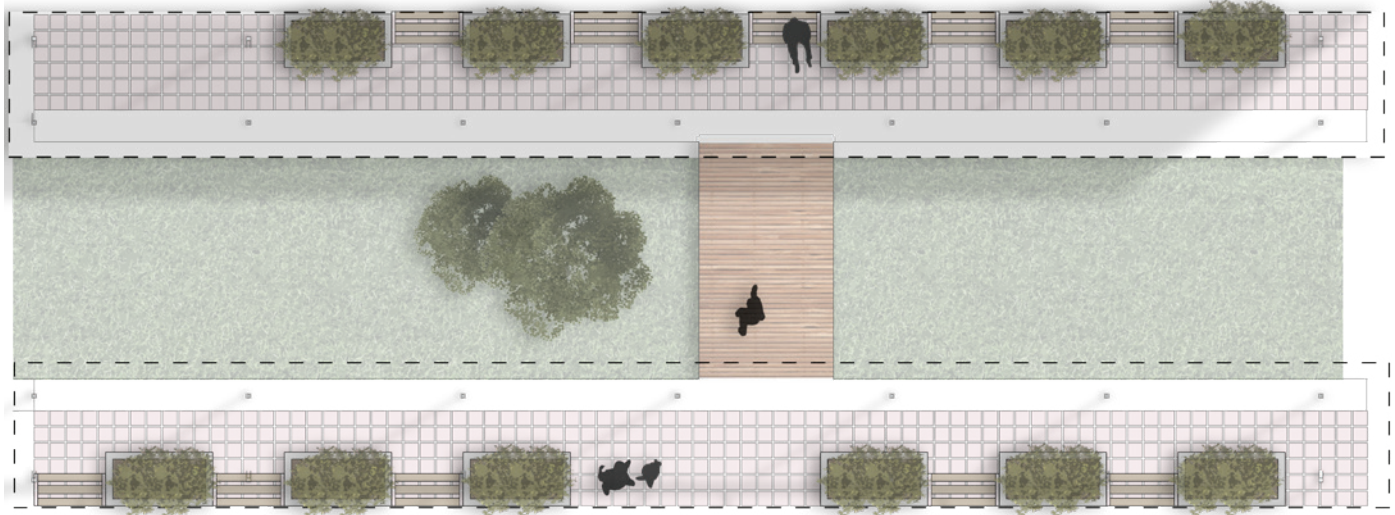
STAFF REST AREA



- CORRUGATED METAL ROOF
- WOOD SHADING / PRIVACY
- CONCRETE PLANTER
- WOOD BENCH
- GRAVEL OVERFLOW FOR STORMWATER CONTROL
- PERMEABLE BRICK PAVERS
- BEDDING LAYER
- BASE COURSE
- GROUND

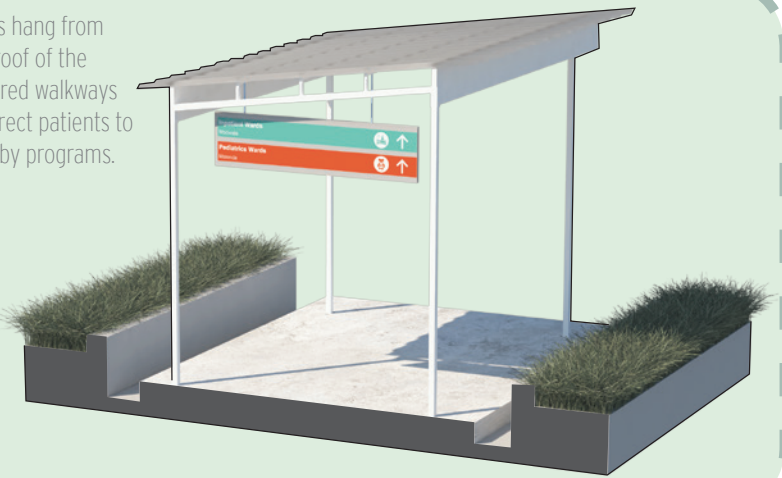
GATHERING SPACE ON CIVIC FRONT

Landscape design was based on making minimal changes to the existing environment, while still promoting storm water management and clear site access. Green space in corridors was based on their function and congestion



WAYFINDING 01

Signs hang from the roof of the covered walkways to direct patients to nearby programs.



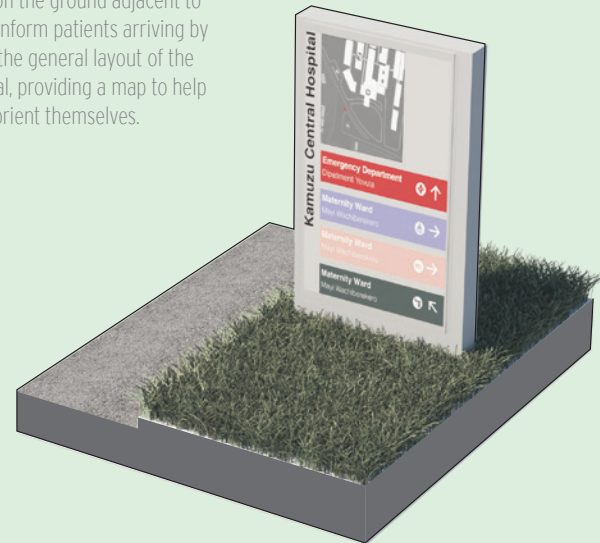
WAYFINDING 02

Signs with coordinated colors are placed by the entrances to each building so patients can identify that they have arrived at the correct location. The signs are written in several languages and include universal healthcare symbols.



WAYFINDING 03

Signs on the ground adjacent to roads inform patients arriving by car of the general layout of the hospital, providing a map to help them orient themselves.



PERSPECTIVE OF MAIN PEDESTRIAN ENTRANCE APPROACHING CIVIC FRONT



Our main intentions in this project were to encourage organized program and circulation to mitigate the current levels of congestion through a series of membranes and barriers. We felt that focusing on the civic front as a threshold to the rest of the site would create a trickle-down effect across the rest of the hospital behind it. Overall, our scheme of four corridors (outpatient, high-risk, private staff, and guardian) was successful in the way that it organized critical program adjacencies and allowed specific user groups to travel closest to the buildings that they need to access.

If we were to develop our scheme further, there are a few points that we would address based on our feedback. Firstly, while our four corridors were clearly organized, the North-South corridor that cuts through the center of the main campus could use some more development. Moving forward we would consider ways to ensure that people navigating through that corridor would not stray into the wrong path by accident through methods such as green barriers. In addition, we have some alterations and additions that we would consider making to the civic front. One critique of our scheme is that the procession to the emergency department makes it appear as though that is the main entrance to the hospital and that some patients or guardians may gather on the stair leading up to it. We could mitigate these problems by drawing more attention to the main entrance from

the perspective of the parking lot and continuing our designs of the seating elements adjacent to it. Finally, if we continued our progress we would extend the concept of permeability to the architecture itself. This could be achieved through the application of building materials of different transparencies to communicate whether the area welcomes people to pass through or blocks their movement. While we know there are aspects of our project that could be improved with more time, our group is generally satisfied with the point we reached with our scheme this semester and the feedback we received.



*We felt that focusing on the civic front as a threshold to the rest of the site would create a trickle-down effect across the rest of the hospital behind it.*



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\*All photographs of Kamuzu Central Hospital Courtesy of Christopher Harnish