

# NEW RIVERVIEW HOSPITAL

PROVIDING A “LOW COST” HOSPITAL FOR DETROIT

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## THESIS ABSTRACT

What can you do with healthcare architecture that meets the demands for the present day? What are the trends within the healthcare field itself that will lead to a future model for healthcare architecture? Will the hospital of today, advanced as it may be, be completely different from the hospital of tomorrow? What is happening to older hospitals? Can they be reused to form the hospital of tomorrow or are they too obsolete to face such changes? What is happening to the hospitals of the inner cities across the United States? Mainly why are hospitals closing their services to the populations of people that they are there to serve? Who is most affected by these and other trends?

These topics are vast indeed, yet are all related to a specific problem that the healthcare industry is facing. To focus all the above questions into a logical article, intent on addressing one particular problem, one must step back and examine each question individually so that a final conclusion or solution may be reached. The problem that is intended on being addressed is that major hospitals are closing down within regions where the access to healthcare facilities is just as important as the quality of care received by a patient. These regions show explicit need for healthcare and these closings are typically occurring within major cities across the United States. The main cause behind these closings is simple, the hospitals are losing more money than they are making.

The healthcare profession is ever changing. It can be argued that no other profession has seen as much change in the last 200 years. With each new advance in medical science come unique changes in the very architecture of healthcare facilities. Architects are constantly adapting to these advances. One brief example involves miasma: the belief that stagnant air causes infection and illness in patients. Through experimentation with natural ventilation, healthcare workers found that patient infections and illnesses dropped. Therefore, architects began to incorporate this ventilation into healthcare buildings.

There are many general and specific ways that architects can meet the needs of the healthcare industry. In the book Crossing the Quality Chasm: A New Health System For the 21<sup>st</sup> Century, The

Institute of Medicine Committee on Quality Health Care in America states that healthcare should be safe, effective, patient-centered, timely, efficient and equitable. The role of the architect in this process is vital to meeting these requirements.

Architects must realize the important role they play in developing the Hospital of the 21<sup>st</sup> century. They cannot simply design for architecture's sake, but for the benefit of the industry itself, as well as for patients and employees. Architects should remember that the healthcare profession is always changing and that their designs need to be adaptive and always have room to grow, change, and be updated. Because healthcare markets are competitive and cutthroat, yet nonprofit, architects also need to consider their healthcare client's bottom line, striving to offer the best hospital that is affordable while saving the client money where possible. This can be done in many ways, such as using innovative design techniques that can reduce infections or injuries, or by using green design techniques to help reduce the life cycle cost of running a hospital. Yet green design should never be an end in and of itself, but should be used only when it can benefit the industry in some way. Of course, hospital designs should always be clean, cohesive, intelligent, and well organized. But architects can take their designs so much further by developing an understanding of patients. By looking through a patient's eyes, an architect can design the most stress free environment possible, which really helps the hospital become a thriving business within today's competitive market.

By designing for patients' sake, architects can make a difference in the everyday lives of people seeking wellness as well as the people providing their treatment.

## HEALTHCARE AIMS

In the book Crossing the Quality Chasm: A New Health System For the 21<sup>st</sup> Century, the Institute of Medicine Committee on Quality Health Care in America focuses in on the needs of the healthcare profession and focuses those needs on improving the overall quality of the experience of receiving and delivering that healthcare. The committee has identified six aims that they address as areas that need much improvement and they are (as from the book):

- *Safe* - avoiding injuries to patients from the care that is intended to help them.
- *Effective* - providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit (avoiding under-use and overuse, respectively).
- *Patient-centered* - providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions.
- *Timely* - reducing waits and sometimes harmful delays for both those who receive and those who give care.
- *Efficient* - avoiding waste, including waste of equipment, supplies, ideas, and energy.
- *Equitable* - providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status.

The constant drive for innovation and technology will have and is presently having impacts on quality expectations within healthcare environments. With each new innovation in healthcare design and advance in healthcare technology, the overall quality of healthcare received by a patient will begin to improve. The physical environment in which healthcare is received will inevitably begin to change along with these advances.

Improving the environment in which healthcare workers work in has a direct impact on the quality of care that those workers provide. In the research articles, “The Role of the Physical Environment in Promoting Health, Safety, and Effectiveness in the Healthcare Workplace” by Anjali Joseph Ph.D., and “Sound Control for Improved Outcomes in Healthcare Settings” by

Anjali Joseph Ph.D. and Roger Ulrich Ph.D., found a direct correlation between the physical environment along with other social and cultural factors and the effect that it has on the quality of care. These articles discuss factors such as: design techniques to reduce staff injuries, like installing lifts for bariatric patients and improvements in softer flooring material to reduce back stress and injury (Anjali pg.4); noise reduction techniques to reduce stress of both patient and provider, like designing single bed rooms or incorporating sound absorbing materials in construction (Anjali and Ulrich, pg.5); and utilizing design techniques that reduce costs, medical errors, and communication breakdowns, like bringing staff and supplies closer to the patient to reduce hunting and gathering time for resources (Anjali pg.7) and by providing areas in which promote a team care atmosphere (Anjali pg.8). These simple yet profound innovations in design will help solve quality expectations by promoting an overall improvement in the “health, safety, effectiveness and satisfaction of the healthcare team (Anjali pg.1)”, which will in turn increase the quality of care received by patients. These techniques help to reduce the costs associated with healthcare and increases staff retention, which promotes patient satisfaction.

The conclusion of these two articles will allow for even further design flexibility within healthcare architecture in which comfort and hospitality will be the main aims for future research and development. These two research articles will have the most profound impact on the inpatient environment because constant care is needed in an inpatient area and the studies mainly focus on ways to reduce staff stress which in turn increases the quality of care received. These techniques, when applied to outpatient facilities, will also increase the quality of care received for many of the same reasons, mainly the reduction of stress on the worker who will be in the facilities for most of his or her entire shift.

There are a vast amount of technological advances that are presently being investigated to help solve some of the quality expectations for healthcare. Some current investigations are looking at the use of robotics, sensors and imaging to help increase the quality of healthcare received.

Robotics holds a key to the future of qualitative improvements to both healthcare environments and to quality of care. Robotics will begin to become more integrated into the

workforce and will assist in mundane tasks like paperwork and pharmaceutical deployment. These beginning phases of robotics use will free up the time that a human worker needs to spend on such tasks and will therefore allow the worker to deliver a higher quality of care to the patient because more attention can be provided to the patient. But these effects can go beyond mundane tasks. At the Detroit Medical Center and other hospitals across the United States and United Kingdom, robots are being tested that allow a doctor to effectively be in two places at once (Emery). These robots, coined robo-docs or “remote presence” doctors (RP for short), allow a doctor from a remote location to make his medical rounds at a hospital even though something might be preventing him to physically be present, such as an important conference, a private practice and so on. This solution will essentially allow a doctor to share his or her professional advice while simultaneously meeting the multi-task requirements that is expected of doctors.

‘This is a revolutionary concept which opens new avenues for telemedicine research and integrates technology with healthcare at a grass roots level, increasing the interface between patients, clinicians and teaching staff,’ said Sir Ara Darzi (Emery).

An important note, the use of a RP robot will not replace the physical presence of a doctor on the medical floor, it will only enhance and support the ability of a doctor to accomplish his or her many tasks that need to be accomplished daily.

Another use of robotics is being researched in the field of physical and occupational therapy, and will thus impact the environments and quality of care received by a patient. An article in the Journal of Rehabilitation Research and Development titled, “Human Centered Robots Applied to Gait Training and Assessment” by Robert Reiner Dr-Ing, Lars Lürenberger Dr rer nat, and Gery Colombo Ph.D, have been researching ways to increase the duration and number of therapeutic sessions that a patient receives while also reducing the number of therapists required by each patient (Reiner, Lürenberger, and Colombo pg.679).

The possibilities that robotics has for solving the quality problem for healthcare are endless. If you can take these two ideas of robotics use and apply them to other areas of medicine, then a broader picture of the future of healthcare environments can be seen. The effects that robotics will have on an inpatient basis will help to facilitate an environment where communication and

information dispensing solutions will help to increase the quality of care that a patient receives. The effects that robotics will have on an outpatient basis will be that access to healthcare facilities will become more available in remote locations because of the growing use of telecommunications and robotics. Robotics will also help to alleviate some the costs involved with healthcare by reducing the amount of nursing staff and doctors needed, which is a benefit when you look at the nursing and doctor shortage.

Sensors that track a patient's vital signs at all times will be able to alert staff of any problems immediately and will help staff to know precisely what the problem is in one readout of the machine. The possibilities for increasing the quality of care for diagnostics in the case of sensory equipment are endless. With further advances in sensory machinery the spaces needed for diagnostics should begin to become smaller and smaller. Imagine if you will, the space that a hand held device would require that could scan your body and tell you what the health problem is. It could just be a room that is designed like a doctor's office. This sounds like science fiction, but the technology is not that far off. A brief look at another way in which sensors can help improve the quality of care received is in the field of wayfinding. Imagine being an elderly patient with poor vision or a visually impaired patient that needs to find your way around a large hospital like Beaumont. In an article titled "A Haptic Glove as a Tactile-Vision Sensory Substitution for Wayfinding", a team of researchers at the School of Engineering, University of Guelph, Ontario, Canada, took a look at a handheld sensor that can assist the visually impaired patient in wayfinding. With a technology like this, the need for a nurse or an escort will be reduced to only patients requiring wheelchair assistance. This will save both time and money for a hospital and thus can spend more of its resources in the areas of care. The impact on such wayfinding sensors will be most felt in tertiary and quaternary hospital facilities, where wayfinding becomes a problem for patients.

Digitization of images will help doctors and hospitals to send and receive information in a more organized and efficient manner, so collaboration and more precise diagnosis on specific patients will increase and thus the quality of healthcare received will increase. Eventually a large database could be created with specific past problems that have occurred in patients which could

be readily available to other physicians as well as to medical students.

‘I suspect that in 100 years, three-dimensional imaging —CAT scans, magnetic resonance, three-dimensional ultrasound —is going to be huge. And we are going to have very sophisticated noninvasive techniques, which will be cheap, low-risk, efficient, easily performed, easily interpreted, and accessible to everybody. X-rays and radiation will not disappear completely, but we will have found ways to use lower doses of radiation. There will be more directed imaging designed to specifically identify disease processes, or directed therapies that go right to the tumor or lesion rather than imaging that only shows a global view of the patient. The equipment will be small enough and affordable enough that there can be more imaging centers. You will also be able to consult experts by sending images electronically.’ Says Jocelyn Chertoff, M.D., a gastrointestinal radiologist, and an associate professor of radiology and of obstetrics and gynecology. (Carter).

The effect on the improvement of imagery and diagnostics will be beneficial to the patient because the patient can go to a local outpatient center and be diagnosed. They then can, if their diagnosis is severe, be transferred to a larger hospital. The larger hospital will already have that patients information waiting for them, which will reduce the wait time at diagnostic machinery at the larger hospital and a procedure can get underway even faster.

It is important to consider how architecture fits into the picture of achieving some of the aims outlined above. Architects can influence how organizations, clinicians and patients act and interact with each other in regards to each of these aims.

## ROLE OF THE ARCHITECT

When the issue of delivering safety through architecture arises, it is important to always think logically and intelligently when designing for the healthcare profession. 44,000 to 98,000 people a year die due to preventable medical errors (Reiling, 67). Simple steps in material selection and technology research can equip the architect with the means to decrease very costly staff infections. Examples of this idea are: bacteria absorbing paints, bacteria resistant patient screened partitions, and placing sanitary wash sinks on the exterior of patients' rooms. When a patient becomes infected it is the hospital's fault and a patient's length of stay increases as a result. A secondary result is that a hospital will lose money treating these preventable infections. When the length of stay for a patient increases, hospitals lose money through treating the staff infection, and that money could be better used treating other patients and so on. The architect can also seek to educate their client on So architects can play an important role at helping the hospital to create safe environments, and thus raise both the quality of care and money saved.

As far as the effective aim, described under healthcare aims, is concerned, architects can play a strong role in helping a hospital decide what exactly it needs. In the beginning stages of planning a hospital, the architect should use the available demographics to help the hospital decide what type of programmed spaces should be located within that particular hospital. For example, if a city's population is 50% 65 and older, 35% between the ages of 18 and 65, and 15% from birth to 18, then that hospital would be most effective and most profitable if it was geared towards the 65 and older group. This means, that in this example, greater concern for comfort, wayfinding and ease of handicapped access should be the main driving design factors. Architects should organize the floor plan of a hospital in the most effective way as to maximize the ease of use. For example, when dealing with a typical elderly patient, it would not make sense to have the patient wander throughout the entire hospital to reach a waiting room only to have that patient traverse the entire hospital again to reach a diagnostic room. Instead, have the waiting room easily accessed via parking lot or drop off zone, with the diagnostic room that caters mostly to the elderly right next store. This would prevent confusion and would cater most effectively to an elderly patient's needs.

Also to help the healthcare profession meet this aim, an architect can develop future projections of where the hospital could likely expand in anticipation of future needs. This way, steps can already be in place to guide the hospital in the right direction to become even more effective as time goes on.

The role of the architect in delivering patient-centered healthcare can be attributed to providing a place for the healing process to take place in. Along with the effective aim as discussed above, patient-centered architecture involves delivering healthcare that is sensitive of the, “patients’ cultural traditions, their personal preferences and values, their family situations, and their lifestyles. It makes the patient and their loved ones an integral part of the care team who collaborate with health care professionals in making clinical decisions (IHI.org).” Ways in which an architect can facilitate this idea into the architecture of the healthcare environment is to allocate extra space in a patient’s room to allow for a family to gather or even stay the night, to provide an area for a visiting family to carry out religious needs and to provide gift shops, flower shops, and coffee shops or diners to cater to the visiting family.

To help the healthcare profession deliver more timely care to those in need, the architect can play an important role here too. When designing a facility to be more time efficient and to help reduce waiting times, the architect can specify hands free communications for the healthcare facilities employees. This will allow staff to communicate with other staff while maintaining their current course of action and without the need to stop and touch the device, such as with a cell phone or pager. This process is being used and tested at Gottlieb Memorial Hospital in Illinois. Here, the hospital hopes to, “Eliminate communication methods that are not time efficient,” and to, “Replace time spent waiting for communication to occur, such as walking to a location or waiting on hold on a telephone, with a simple, easy-to use communication device (Clark).” Since there is significant infrastructure requirements that are needed for such an undertaking, that if an architect plans ahead for this then the best results of a system like this can be attained.

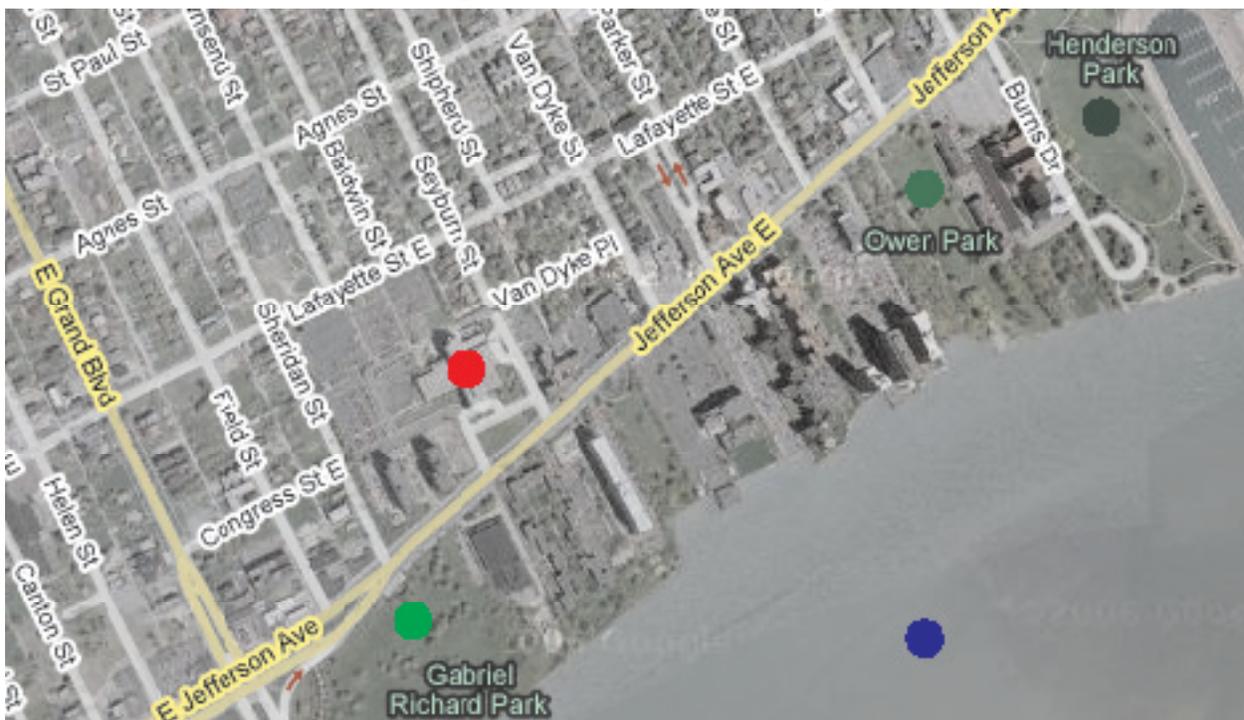
In order for the healthcare profession to meet their aims at becoming more efficient, the architect should help their client realize the value of their resources at hand. This could include

recommendations of newer technologies that may be more costly up front, but will pay off over time. The architect can also help their client to plan for spaces that encourage group collaboration, so that ideas can be shared more easily and can be incorporated into the workforce.

There are many things an architect can do for a healthcare client to provide the very best environment in which to practice healthcare. This field is rapidly growing and always changing, so if an architect sticks to a few key ideas then a profound impact can be had. The architect should advise their client on current trends associated to the architectural end of healthcare and to keep their clients informed on what is or is not working with other healthcare facilities. Along with this, the architect should help to provide in depth analysis for their client on ways to improve or ways to lead within the healthcare profession. Being able to deliver affordable and accurate help to their client can help decrease the bottom line for their client and can help to keep hospitals in vital or strategic areas open to serve the population. Probably the most important thing an architect can help to provide is to know the aims of the healthcare profession as a whole. They need to know and realize that these aims are to increase the overall quality of care that a patient receives, because the patient is the cornerstone of their business.

**BRIEF HISTORY:  
ST. JOHN'S DETROIT RIVERVIEW HOSPITAL**

Aren't hospitals intended on helping the poor, the sick, and the meager and aren't hospitals not for profit? Yes, but hospitals are also businesses. Businesses provide livelihoods for their employees, so when a hospital is in the business of loosing money, then these livelihoods become harder to provide. What about hospitals that are striving? What makes them a better hospital than those that are circling the drain of bankruptcy? In one word: demographics. To focus this answer to the state of Michigan, look at the city of Royal Oak where the very successful Beaumont Hospital is located and compare it to the main subject of this entire article, Detroit, at the location of St. John's Detroit Riverview Hospital (The red dot in the image below).



To compare the two demographically speaking, first look at the median household income using the 2000 census. Detroit reports at \$29,526 whereas Royal Oak reports at \$68,109. These two numbers hold significant meaning when dealing with what kind of healthcare a patient can receive. Chances are that an average patient living in Royal Oak will receive the very best treatment that their hospital, in this case Beaumont hospital, can provide because they can afford to pay the high costs associated with healthcare treatment. Now that average patient living in Detroit will use up most of their income paying for that same healthcare bill and will have to scrape by for the

rest of the year. To look at the extreme cases, like at the St. John's Detroit Riverview Hospital, where 9 out of 10 patients are on Medicaid (for the indigent) or Medicare (for the elderly) and the rest are mainly uninsured (Anstett), it is easy to see why inner city hospitals across the country are struggling.



The average reimbursement rate for hospitals for Medicare patients is 92 cents for every dollar spent providing healthcare and for Medicaid it is lower at 87 cents per dollar (Gustafson). So, for example look at those 9 patients with insurance at Riverview. We will say 5 are on Medicaid and 4 are on Medicare. Riverview Hospital is loosing 8 cents per patient on Medicare, times 4 patients, which is 32 cents and 13 cents per patient on Medicaid, times 5 patients, which is 65 cents. The remaining 1 out of 10 patients are uninsured, so the hospital looses 1 whole dollar on treatment. Adding this up, the loss is 1.97\$ for ten patients or 19.7 cents loss per patient! So from a business standpoint this is a horrible practice and amounts to the huge losses that St. John's Detroit Riverview Hospital has been facing. In 2006, Riverview Hospital had a deficit of 9.5 million dollars and was expecting to close the 2007-year with a 23 million dollar deficit (Gustafson).

The impact that the closing of St. John's Detroit Riverview Hospital can be felt in all facets of life within Detroit. Since its closing in 2007, nearly 1,500 full time jobs will have been lost, and of those 85% have been placed in contingent positions in other locations with no benefits, pensions,

and lower pay (Bukowski). So employees that have built up tenure have to start over at ground zero and accept new hire payment. The other hospitals in the Detroit area, there will be 6 left after the closing, are feeling the effects of this hospitals closing as well. Henry Ford Health System has reported that the volume of emergency room patients have risen 15 percent and the Detroit Medical Center has felt a 20-25% increase within 60 days (Crain Communications Inc.). Lastly, the most impact will be placed on the healthcare consumer. Since most of the patients at Riverview are elderly or indigent, access is a huge problem. Riverview used to run a service for patients who could not afford personal transportation or had to rely on the poor public transportation system that Detroit offers. The old service would come to the patient's doorstep and would physically pick them up and drive them to the hospital. Now that this hospital is closed they have to figure out a way to get to the hospital to receive care, and the closest hospital to Riverview is roughly 5 miles away.

Now, after the closing, the Riverview Hospital will slowly become an abandoned building pending a lawsuit or two. The





Karmonos cancer Institute was going to buy and transform this hospital into a facility devoted exclusively to cancer patients, but this was blocked by a lawsuit filed by the Detroit Medical Center, citing that this move was breaking numerous contractual obligations. Meanwhile, St. John's have cut their losses and are undertaking building a new, \$224 million, 200 bed hospital in Novi (Bogle).



## THESIS POSITION

There is a definite need within the surrounding Detroit community to help keep the doors open at St. John's Detroit Riverview Hospital. However, at this hospital there is a problem from a business standpoint: there is no return on healthcare dollars spent treating patients, only a loss. This raises the dilemma: how do you provide needed healthcare to a community that is indigent and elderly while maintaining a sustainable business that can survive? There is a way, and it is through adapting and streamlining the existing Riverview Hospital into a "low cost" hospital. A "low cost" hospital incorporates three basic principles: a "leaning" physical flow, building for energy efficiency and automating for productivity (Health Care Advisory Board 69).

"Lean is a growth strategy, a survival strategy, and an improvement strategy. The goal of lean, first and foremost, is to provide value to the patient/customer and in so doing eliminate the delays, overcrowding, and frustration associated with the existing care delivery system. Lean creates a better working environment where what is supposed to happen does happen, on time, every time. It allows clinicians to spend more of their time caring for patients and improves the quality of care these patients receive. A lean organization values its employees and encourages their involvement in organizational initiatives. This, in turn, sustains hospital-wide quality improvements. (a. Ziedel 15)"

The lean strategy is adopted from the Toyota Production System, which has been used to essentially provide the best quality with what is available. Japan was in a horrible situation after World War II and much of their country was left devastated. Japan garnered a reputation for producing cheap and shoddy products in an attempt to create an economy for their country. It wasn't until Toyota realized that in order to compete in a world market that they started to truly examine their productions and to utilize that which was at hand. Toyota formulated what is today known as the Toyota Production System (TPS), which has become accepted as a worldwide model for improving the manufacturing and service industry for years. "The basic underlying concept of TPS was to eliminate any operations that did not add value to the company's product or service from the standpoint of the final customer (a. Zidel 2)." The values within a hospital setting that patients may look for are things like: comfort, quality of care, efficiency, and being discharged in a timely manner.

The proposal for this project is to use the lean model to cut back some of the programs

offered at Riverview Hospital and to reorganize what is already there into an efficient healthcare machine. This includes cutting back on certain programs that used to be offered and emphasizing the necessities of this hospital. With cutting edge hospitals like the Henry Ford Health System or the Detroit Medical Center in proximity to Riverview Hospital, certain services really shouldn't be offered at Riverview like cancer treatment or transplants. Instead, Riverview should focus most of its efforts on its emergent care, obstetrics, diabetes, and ambulatory care. This way it can play to the need of the community and still be a viable business. Other ways in which to maximize efficiency is to provide architectural and managerial solutions to the workplace like minimizing travel distance for staff, creating a patient intake center that handles all aspects of admissions, creating separate entrances for scheduled and unscheduled visits, and providing a more organized floor plan that flows logically.

The top two floors of the existing Riverview Hospital will be developed into modular lease-able office space where businesses can conduct their day-to-day activities. These businesses will contribute a rent based on the size of the space that is leased from the hospital, so in an essence the hospital will be making secondary income to help their overall business stay afloat. These lease-able spaces will be easily accessible through a new entrance and will be designed in a matter as to attract businesses. Once this hospital begins to thrive and more room is needed for expansion, the hospital can begin to reclaim or purchase back this space at a later date.

When building for energy efficiency, investments in green design techniques will have cost reducing long-term effects. Part of the proposal for the revamping of Riverview Hospital is to take a green design approach to help reduce the dependency of this building on natural resources. This proposal will utilize techniques to reduce reliance on the power grid through the use of photovoltaic panels, wind turbines and other energy efficient systems. On the interior, energy saving investments will include low-e glazing and natural heating and cooling techniques, as well as low flow toilet fixtures. On the exterior, permeable paving that captures and filters water as well as cisterns that capture roof runoff water will help reduce water dependency. All of these techniques will help to reduce the overall cost to upkeep this building and a sustainable equilibrium will be reached.

When automating for productivity the idea of technology comes into play. By installing and utilizing state of the art robotics and automations less staff will be needed to carry out mundane or time intensive tasks. Yes, this means that some people will be out of a job, but this is needed in order for the hospital to remain open and to remain viable. Positions that can either be reduced or erased are staff such as: the Pharmacist and the Pharmacy Technician by installing a Pharmacy Robot, which is a stationary robot that can store and retrieve medications; the Lab Supervisor and the Lab Technician by installing a Lab Automation, which are stationary devices that prepare, analyze and store lab samples; and by utilizing Courier Robots, which are mobile robots that transport supplies and other items throughout the hospital, which will impact the Pharmacist, Pharmacy Technician, Supply Technician and Nurse (Health Care Advisory Board 76). Perhaps where the largest downsizing will take place is in the back office where FTE's, medical records, accounting records and purchasing records are stored. Doing this means running on a paperless single solution IT system that can be incorporated throughout the entire hospital, which will run off of one single database. This will reduce the hospital's need to keep staff which book keep the gigantic mess that is the hospital records.

Transforming the St. John's Detroit Riverview Hospital into a "low cost" hospital will have positive impacts on the current and future generations of Detroit. There is expressed need for this hospital to remain open and by rethinking and redesigning this facility it can remain open. If this basic guideline is followed and money that would be spent elsewhere would be invested back into this hospital to become updated, then this will become a viable business that serves the communities needs once again.

**PRECEDENT STUDY:  
INSEL UNIVERSITY HOSPITAL-INO, BERN SWITZERLAND**

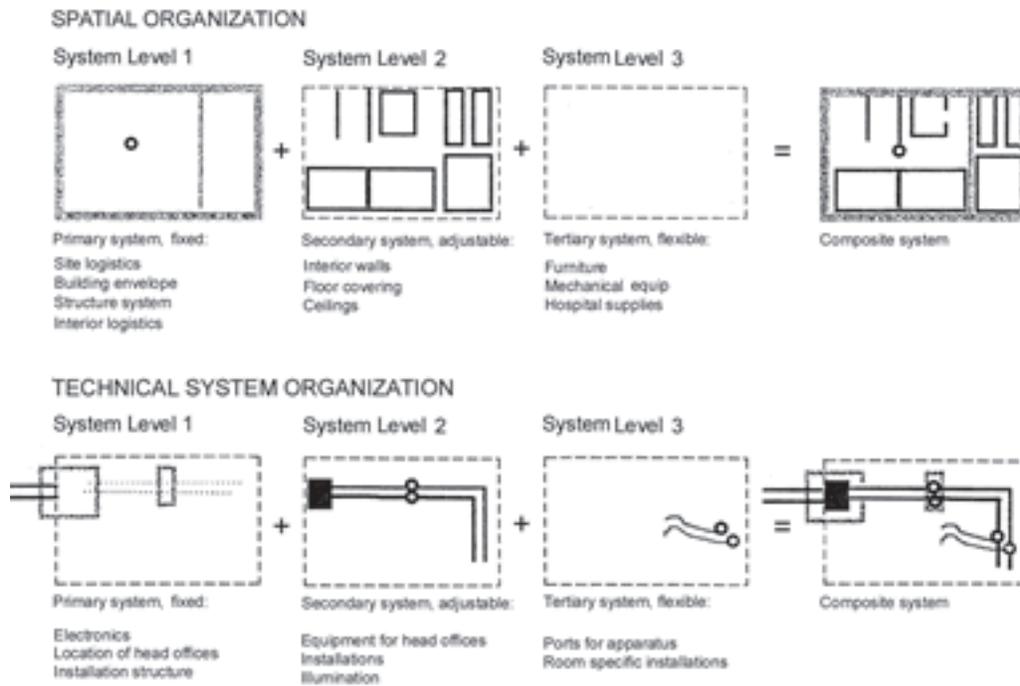
In Bern, Switzerland, the Insel University Hospital will be constructing an innovative medical facility called INO. This project is significant in that the owner and his management team have realized that the medical industry is always in a state of flux and are approaching this building with a like fashion. Knowing that healthcare facilities programs inevitably change, they are taking an “open building” theory and approach, which is a first for a healthcare facility. “Open building” is a practice of, “design and construction according to analysis of both current requirements and provision for unknown future uses and technical upgrading. (American Institute of Architects).” The most important thing to understand is that these buildings, “are not tightly integrated with programs of use-they are not defined ‘functionally.’ They are ‘open’ buildings, sustainable in the large sense because they can accommodate change (American Institute of Architects).”

This new hospital is for intensive care, emergent care, and surgery. The Canton Bern Building Department, headed by architect Urs Hettich, realized that with each passing year on the project new medical procedures and technologies were being discovered and used in other hospitals. These changes made it so difficult for the team to fix a problem with the program, that they decided, which was a revolutionary idea, to design this building consisting of three separate parts based on expected life span. The three parts are: the primary system, which will span roughly 100 years; the secondary system, which is designed for 20 years; and the tertiary system, which will last between 5 and 10 years. This will allow for the building to be a living organism onto itself. The main functions of this building will be incorporated into the primary system, which will have room for some flexibility in the secondary system and will allow for this hospital to follow current healthcare trends in the short-term tertiary system.

A highlight of the primary system is providing a relatively open space divided up into departments. One interesting fact is the placement of areas within each structural bay where there is no reinforcing in the concrete slab. This will allow for future adaptation and ease of punching through the slab without worry of disrupting the structural integrity of the system. “This offers the possibility of vertical penetrations at any location in the floor plate for vertical circulation,

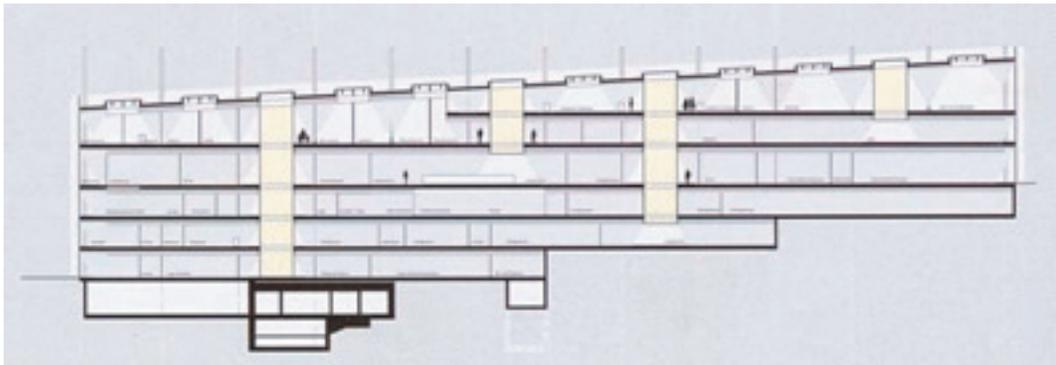
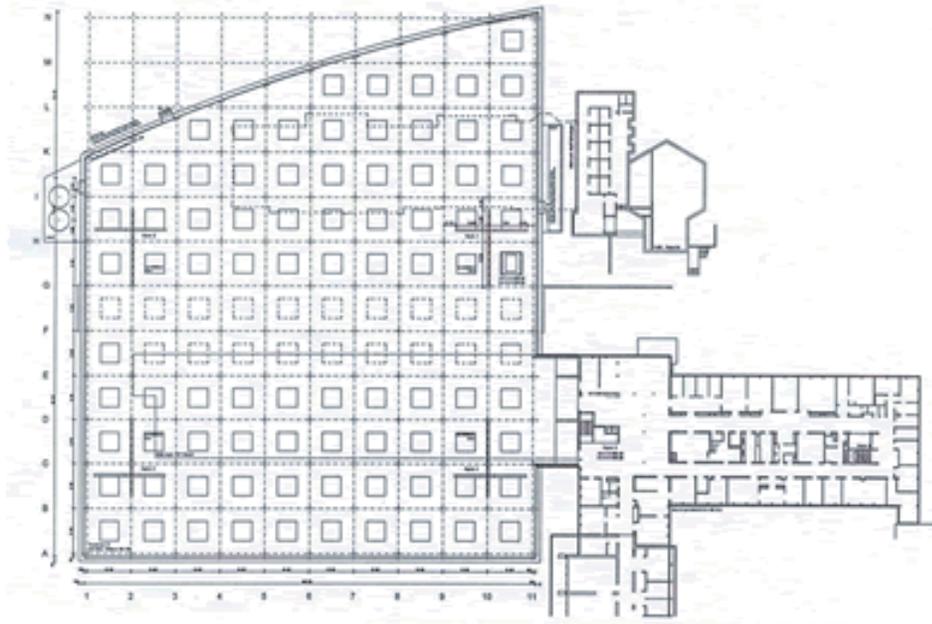
mechanical systems, or light shafts (American Institute of Architects).”

The design process and theory behind this hospital is revolutionizing the way architects are thinking about healthcare architecture. There is no better way to go about designing and building a hospital in such a way that it will remain fluid and dynamic, that embraces change rather than remaining stagnant.



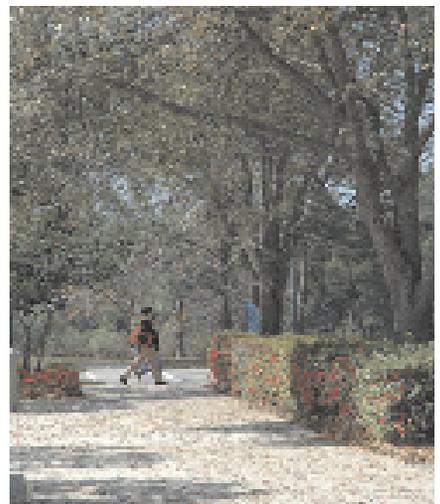
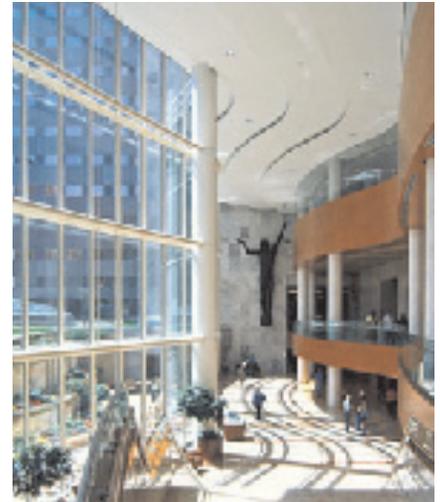
**ORGANIZATION OF DESIGN ON LEVELS  
INO HOSPITAL . BERN , SWITZERLAND**





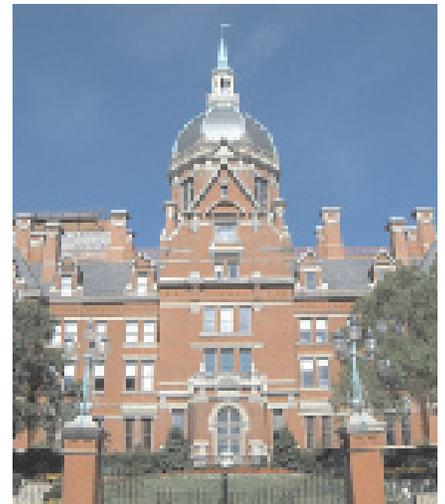
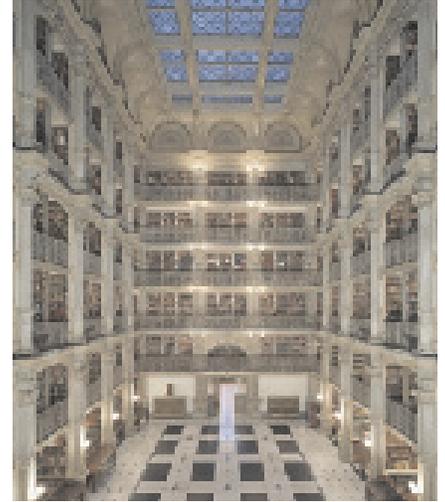
### *Mayo Clinic - Rochester Minnesota*

- Uses a simple model for their floor plans.
- Team care attitude, from understanding to prognosis.
- Architecture: smart design that breeds teamwork. The layout is patients come in on one side, doctors' offices and nurses on the other and they meet in the middle.
- \$100,000's of dollars go into the development of healthcare architecture and experimentation.



### ***Johns Hopkins - Baltimore Maryland***

- One of the best hospitals in the world.
- Worth mentioning because they were the first to establish education into the healthcare process.
- Worth looking at their mission because they strive to provide the best care, have the best physicians, and have the highest quality of care.



## Site Analysis

One important item that relates to the thesis is the *Cultural Data, Site and Adjacent Land* because this is the section where it describes the resident and using population of the hospital. It talks about observing the number, composition, pattern of change, social structure, ties, institutions, economic status, role, organization, leadership, and political participation. These things are the most important part when observing the program for a hospital, how it will receive funding, who will use it, how they will get there, etc.

One thing that doesn't apply to the thesis is the *Topography* of the site because the site is flat, with no elevation change save for the slope of the parking surface. The only contours that occur on the site are very, very small and the one thing worth looking at from this checkpoint is circulation possibilities, and access points to the site itself. The *Topography* is the least important aspect on the site because of its flatness, but it is still an important aspect as far as a site analysis is concerned.

The existing site has adjacencies to land that border the riverfront. This brings up the notion of the important views that the site has to offer: views to both the Detroit River and to the downtown Detroit area where the Renaissance Center is located on the Southern facing façade; and excellent views to the Detroit River on the Northern facing façade.

The site's landscaping is impeccable, and has many different types of coniferous and deciduous trees as well as many different types of flowers. The sidewalks and roads are in good condition.



## CODE REVIEW SUMMARY

### **300. USE OR OCCUPANCY**

308.3 I-2: Hospital

### **400. SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY**

407.5 Automatic sprinkler system: *Smoke compartments containing patient sleeping units shall be equipped through out with an automatic fire sprinkler system in accordance with Section 903.3.1.1. The smoke compartments shall be equipped with approved quick response or residential sprinklers in accordance with Section 903.3.2.*

### **500. GENERAL BUILDING HEIGHT AND AREA**

503 Table Height for 1A Construction: Unlimited  
Table Area for 1A Construction: Unlimited

504.2 Height Modification for Sprinkle System: Not Applicable (Unlimited Area by Table 503)

506 Area Modifications Increase: Not Applicable (Unlimited Area by Table 503)

### **600. TYPES OF CONSTRUCTION**

602.2 Construction Type 1A: Noncombustible Materials  
Structural Frame: 3 hours  
Bearing Walls: Exterior: 3 hours, Interior: 3 hours  
Nonbearing Walls and Partitions: Exterior: 3 hours <5', 2 hours <10'  
Nonbearing Walls and Partitions: Interior: 0 hours  
Floor Construction: 2 hours  
Roof Construction: 1½ hour

### **700. FIRE-RESISTANCE-RATED CONSTRUCTION**

707.2 Shaft enclosure required: *Openings through a floor/ceiling assembly shall be protected by a shaft enclosure complying with this section.*

707.2 Shaft Enclosure Exception: *A shaft enclosure is not required in a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 for an escalator opening or stairway which is not a portion of the means of egress protected according to Item 2.1 or 2.2:*

707.4 Fire resistance rating: *Shaft enclosures shall have a fire resistance rating of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the shaft enclosure shall include any basements but not any mezzanines. Shaft enclosures shall be constructed as fire barriers in accordance with Section 706. Shaft enclosures shall have a fire resistance rating not less than the floor assembly penetrated, but need not exceed 2 hours.*

### **800. INTERIOR FINISHES**

803.5 Vertical Exits and Exit Passageways: Class B  
Exit Access Corridors and other Exit ways: Class B  
Rooms and Enclosed Spaces: Class B  
*Class B: Flame spread 26-75; smoke-developed 0-450.*

### **900. FIRE PROTECTION SYSTEMS**

903.2.5 Group I: *An automatic sprinkler system shall be provided through out buildings with a Group I fire area.*

See 407.5 above for additional requirements.

905.3.1 Standpipe System: Class 1 Standpipe

907.2.6 Fire Alarms: Manual and Automatic installed, as well as automatic smoke detection systems

909 Smoke Control systems required

### **1000. MEANS OF EGRESS**

1008.1 Doors: Clear opening of 32", maximum swing one leaf: 48", for moving beds: 41.5", minimum height: 80"

1015.1 Exit travel distance with sprinkler system: 200'

1016.1 Corridors: Outpatient: minimum 72", used: 8'-0" unless noted otherwise

**SCHEMATIC DESIGN:  
PROGRAMED SPACES**

***Building One***

**Basement**

Employee Facilities: 6,615  
Food Service Area: 10,395  
Linens/Housekeeping: 4,815  
Materials Management: 8,300  
Mechanical/Electrical: 26,925  
Morgue: 1,690  
Support Services: 10,285

**First Floor**

Administration: 1,255  
Admitting: 1,170  
Blood Bank: 810  
Cafeteria: 5,875  
Diagnostics/Radiology: 11,410  
Doctor's Offices: 7,030  
Emergency: 10,690  
Florist: 965  
Gift Shop: 965  
Lab Services: 2,325  
Pharmacy: 1,755  
Toilet: 700  
Toilet: 700  
Women's Services: 13,300

**Second Floor**

Ambulatory Care: 5,910  
Diabetes Services: 14,125  
Doctor's Offices: 4,460  
ICU/CCU: 9,885  
Post-Op Area: 4,530  
Pre-Op Area: 4,445  
Surgery: 12,800

**Third Floor**

Medical/Surgical: 17,440

**Fourth Floor**

Medical/Surgical: 17,440

**Fifth Floor**

Medical/Surgical: 17,440  
Therapy (Occupational/Physical): 4,890

**Sixth Floor**

Leased Space: 17,440

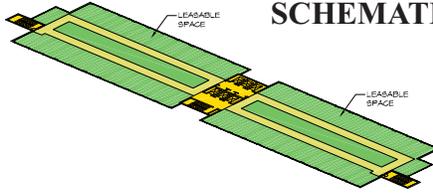
**Seventh Floor**

Leased Space: 17,440

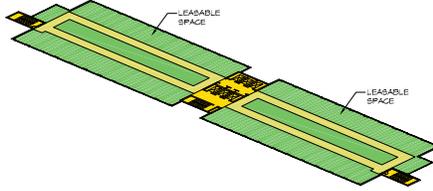
TOTAL: 271,780 sq.ft.

# SCHEMATIC DESIGN:

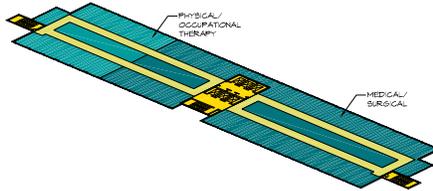
SEVENTH FLOOR



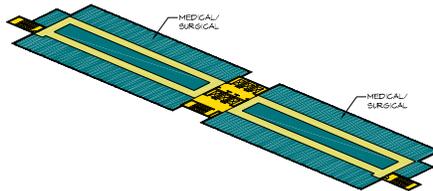
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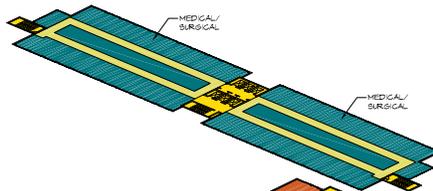
FIFTH FLOOR



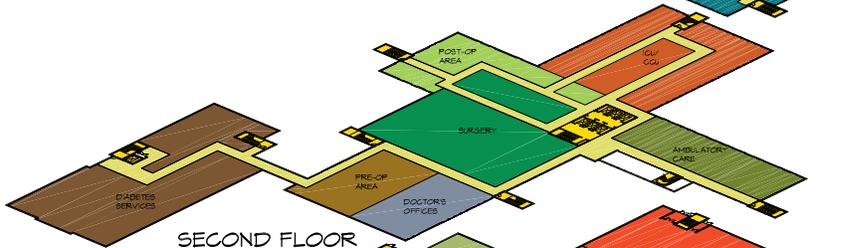
FOURTH FLOOR



THIRD FLOOR



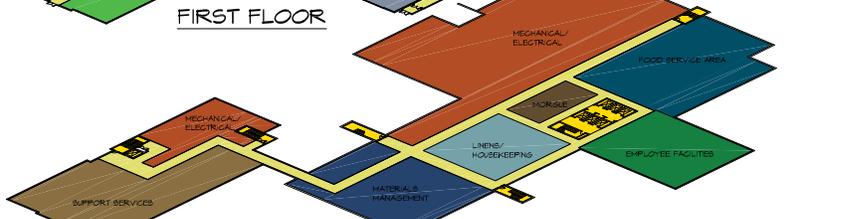
SECOND FLOOR



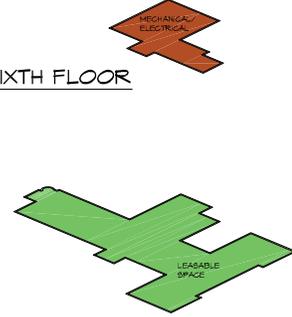
FIRST FLOOR



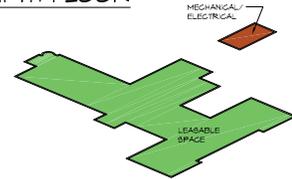
BASEMENT PLAN



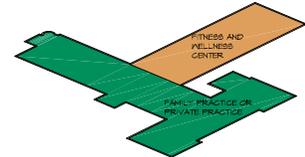
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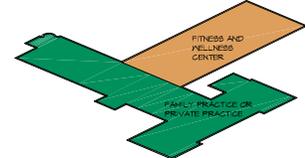
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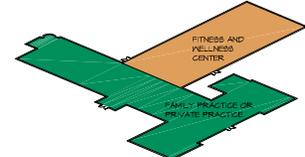
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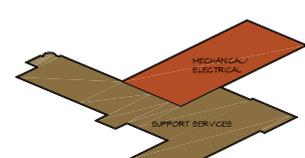
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SECOND FLOOR



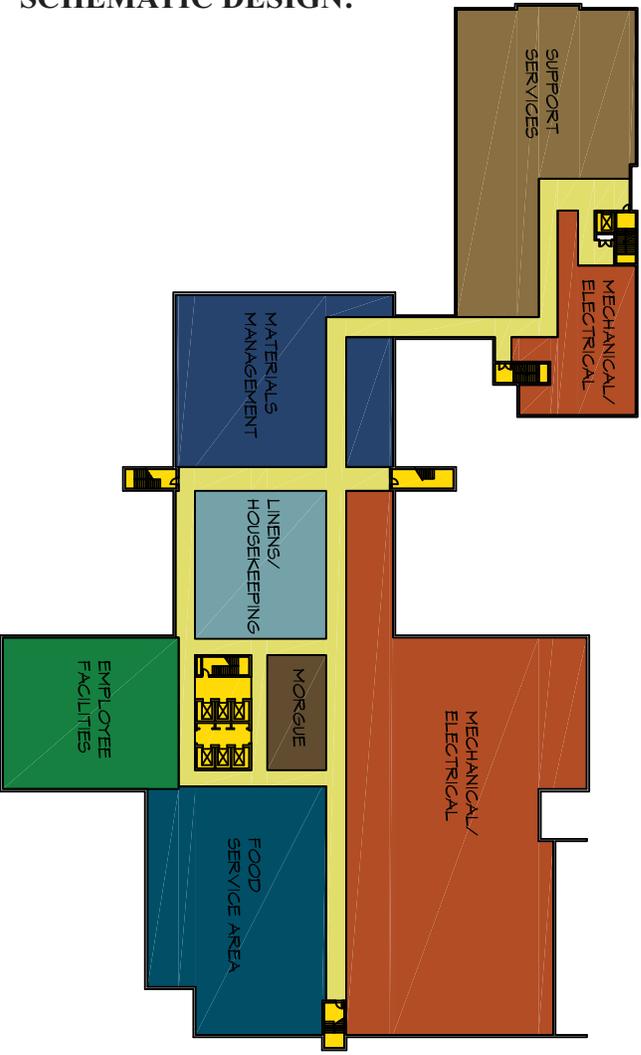
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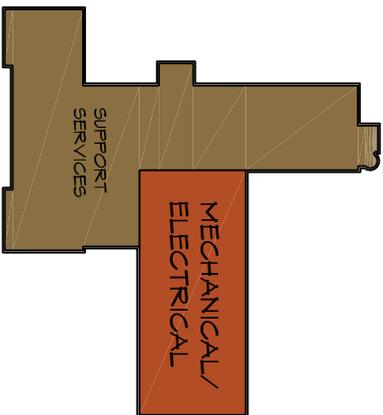
BASEMENT PLAN



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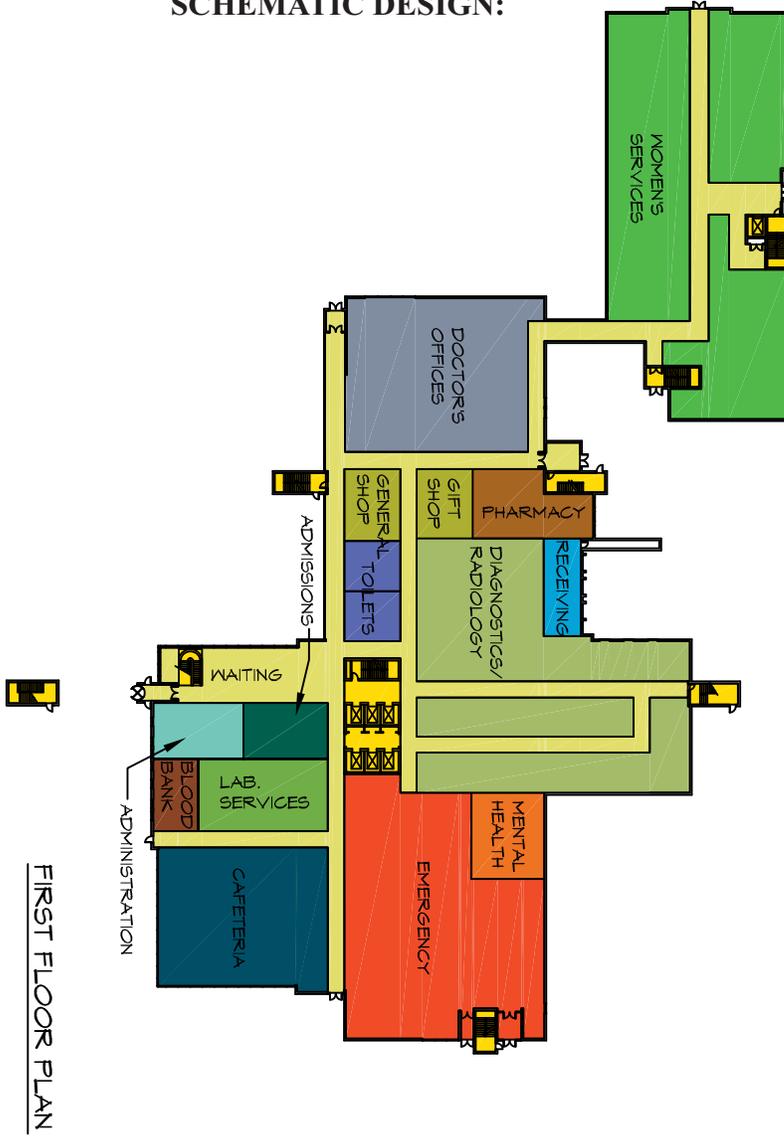
BASEMENT PLAN



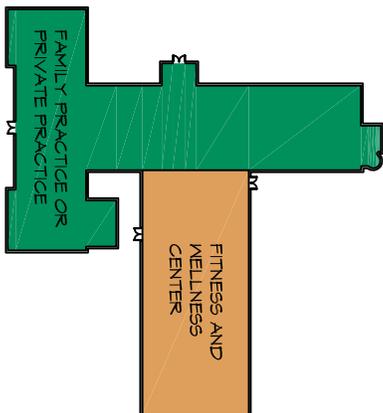
RIVERVIEW HOSPITAL

7733 E JEFFERSON AVE  
DETROIT, MI 48214

**SCHEMATIC DESIGN:**



FIRST FLOOR PLAN

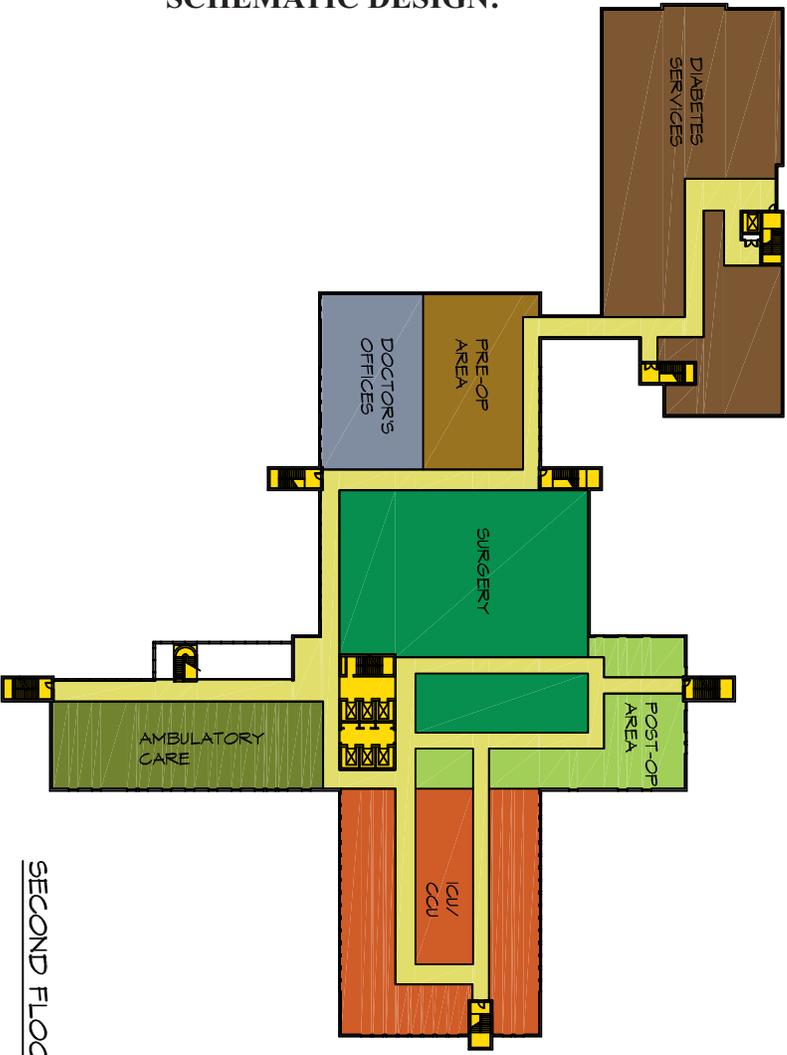


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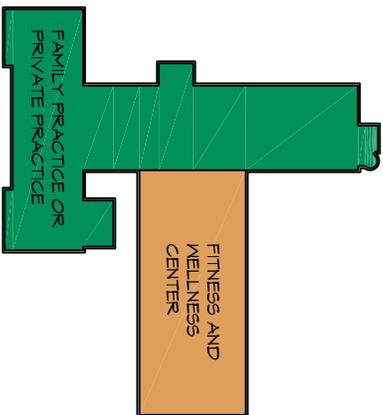
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DETROIT, MI 48214

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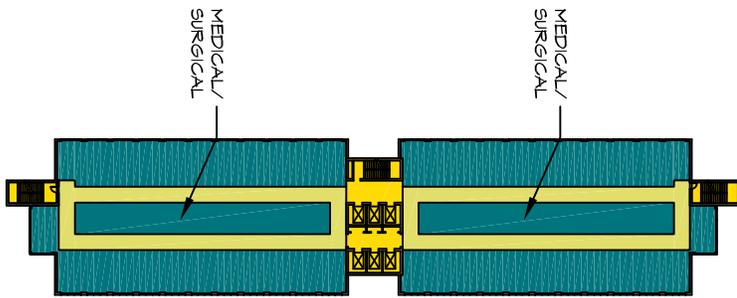
SECOND FLOOR PLAN



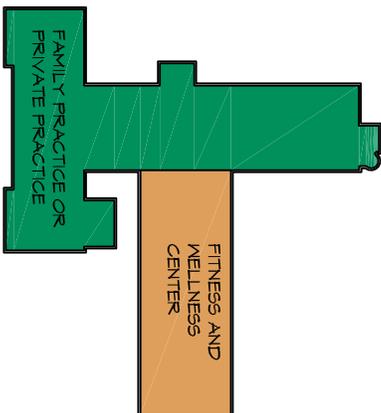
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DETROIT, MI 48214

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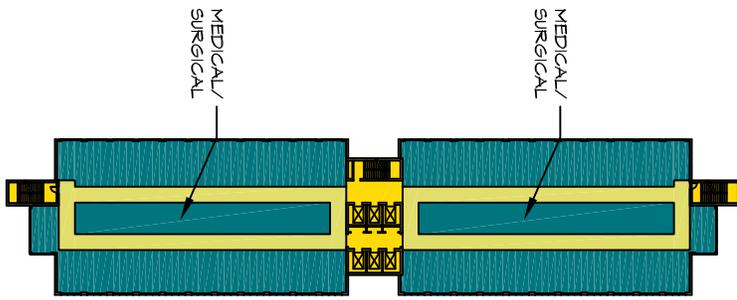


THIRD FLOOR PLAN

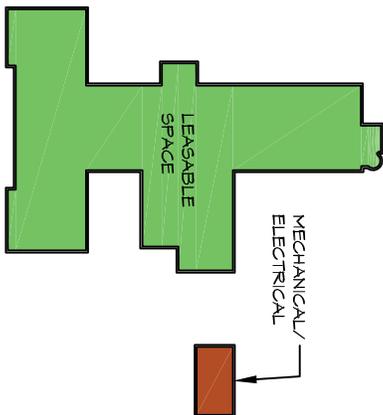


RIVERVIEW HOSPITAL  
7733 E JEFFERSON AVE  
DETROIT, MI 48214

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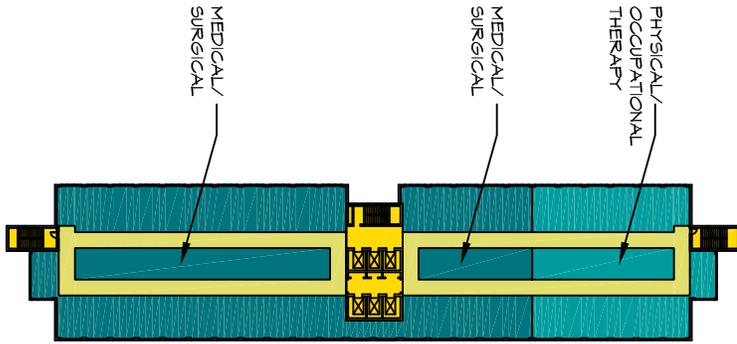


FOURTH FLOOR PLAN

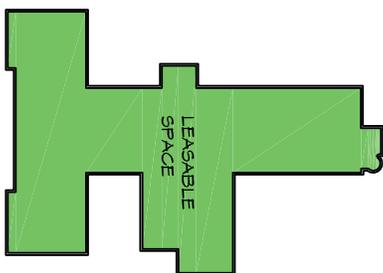


RIVERVIEW HOSPITAL  
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DETROIT, MI 48214

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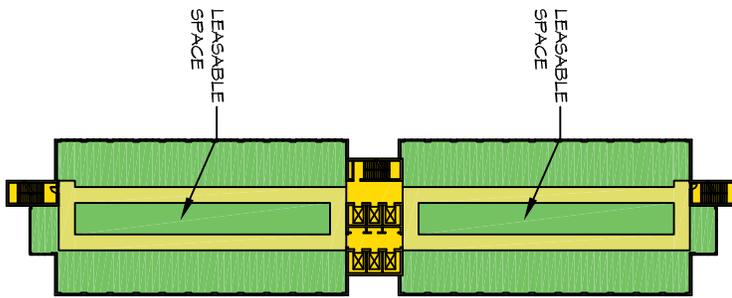
FIFTH FLOOR PLAN



RIVERVIEW HOSPITAL

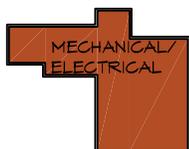
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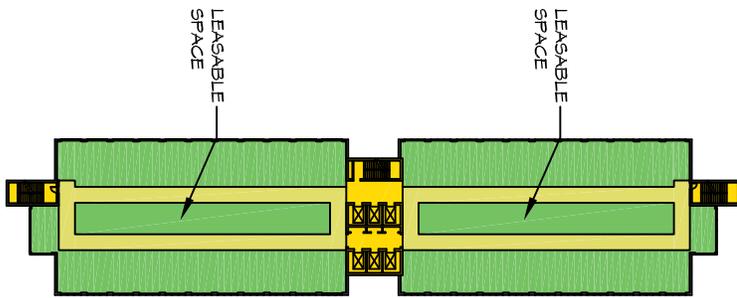


SIXTH FLOOR PLAN

RIVERVIEW HOSPITAL  
7733 E JEFFERSON AVE  
DETROIT, MI 48214



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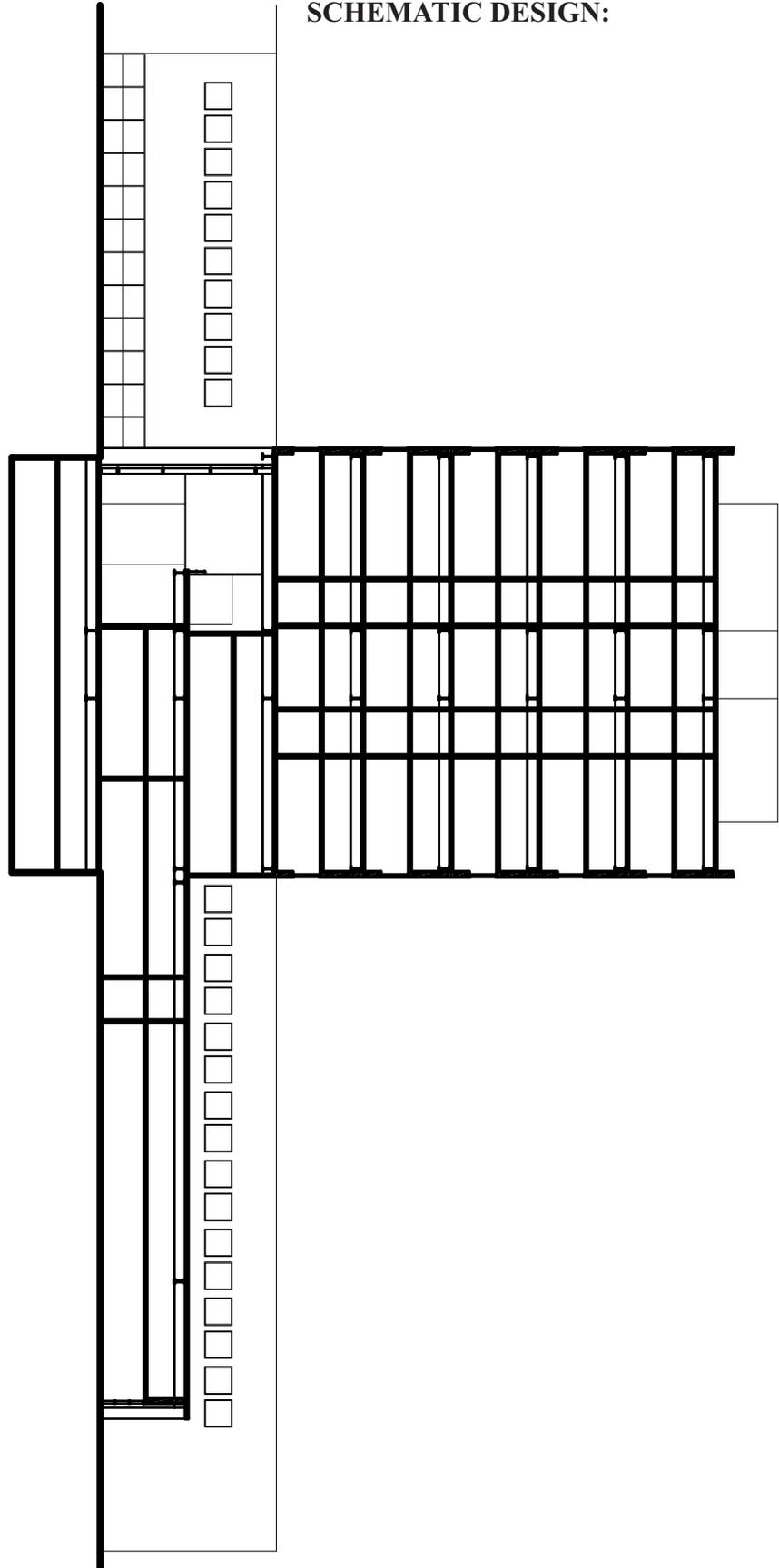


SEVENTH FLOOR PLAN

RIVERVIEW HOSPITAL

7733 E. JEFFERSON AVE  
DETROIT, MI 48214

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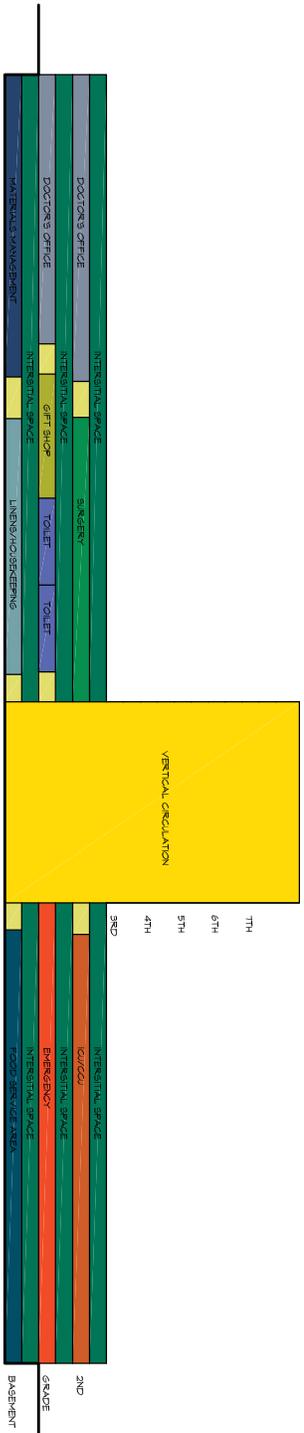


**SECTION**

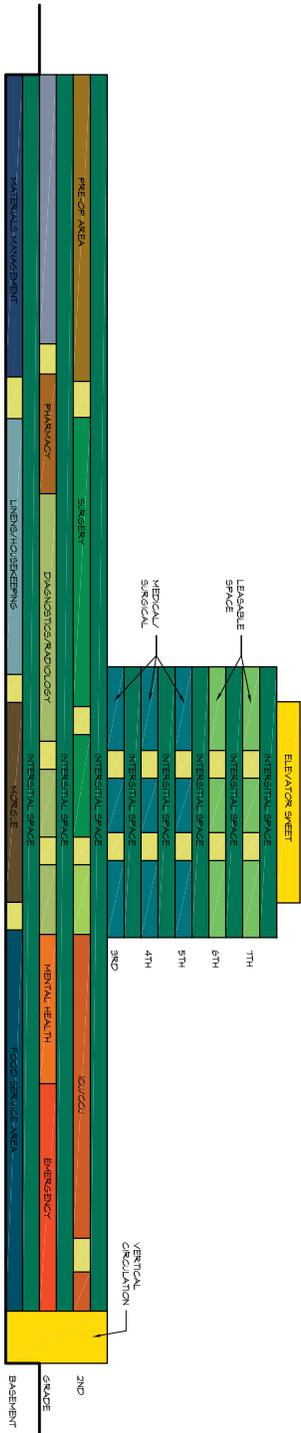
**RIVERVIEW HOSPITAL**

7733 E JEFFERSON AVE  
DETROIT, MI 48214

# SCHEMATIC DESIGN:



STACK DIAGRAM

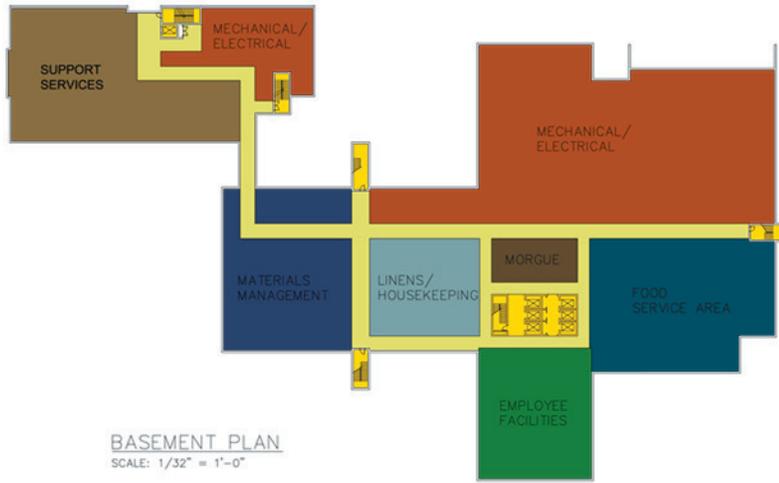


STACK DIAGRAM

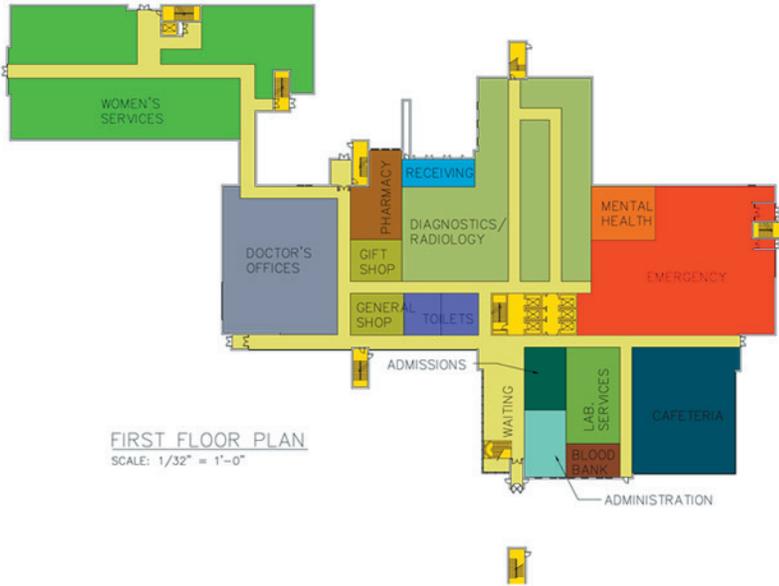
**RIVERVIEW HOSPITAL**  
 7733 E JEFFERSON AVE  
 DETROIT, MI 48214

NEW RIVER VIEW HOSPITAL

DESIGN DEVELOPMENT:



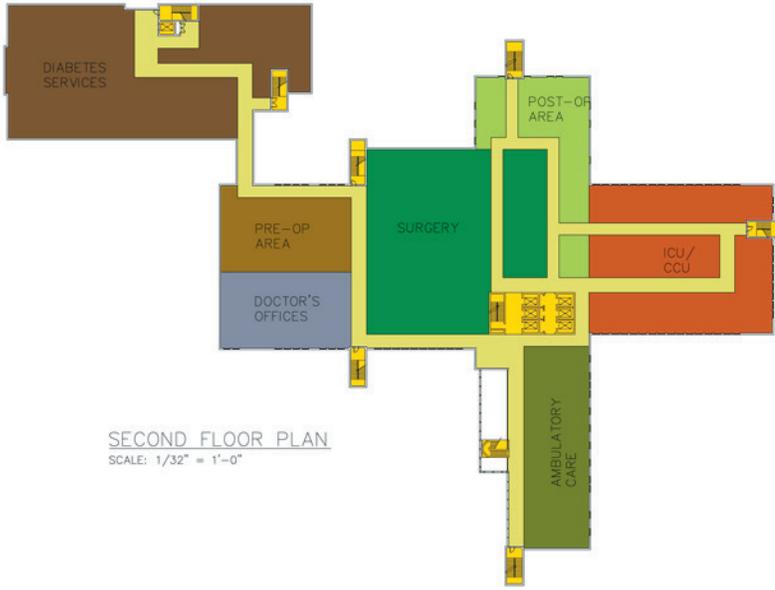
BASEMENT PLAN  
SCALE: 1/32" = 1'-0"



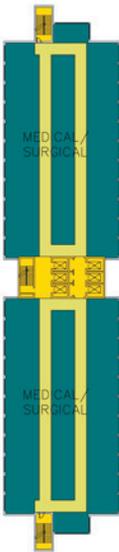
FIRST FLOOR PLAN  
SCALE: 1/32" = 1'-0"



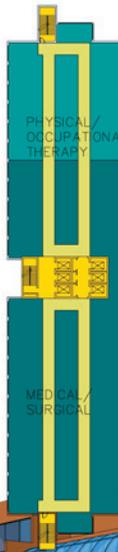
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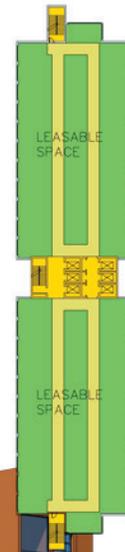
SECOND FLOOR PLAN  
SCALE: 1/32" = 1'-0"



THIRD & FOURTH FLOOR PLAN  
SCALE: 1/32" = 1'-0"



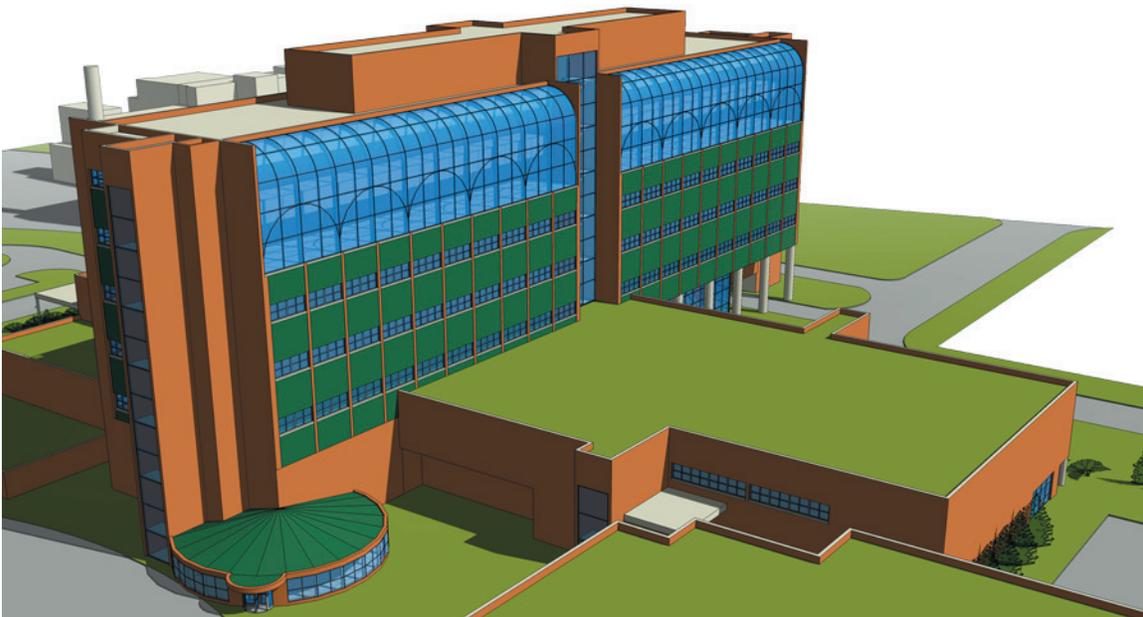
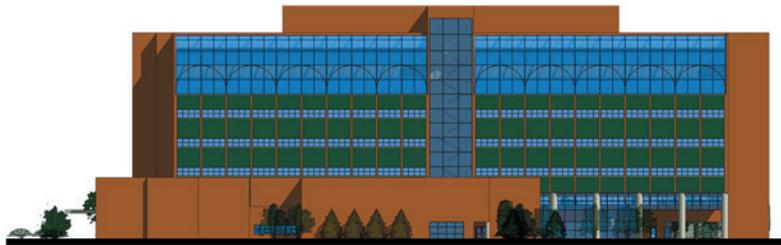
FIFTH FLOOR PLAN  
SCALE: 1/32" = 1'-0"



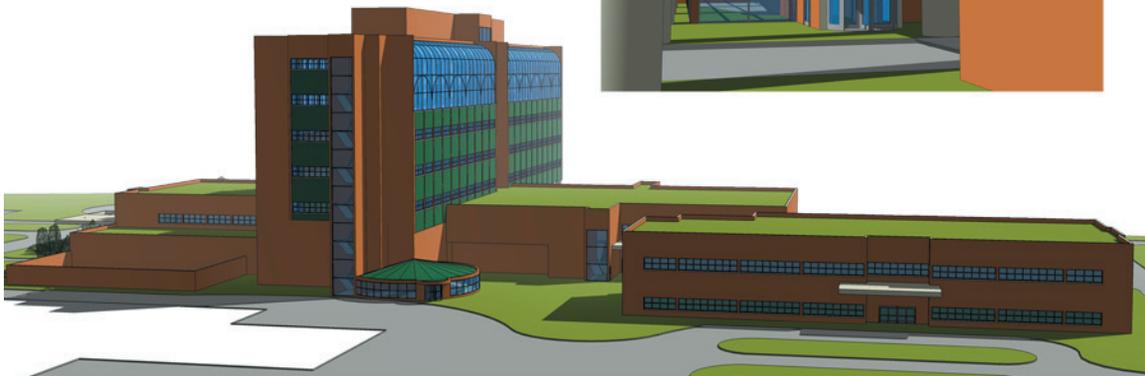
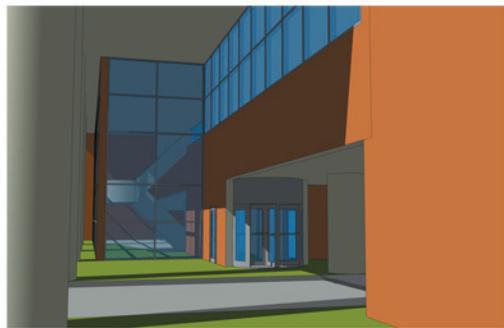
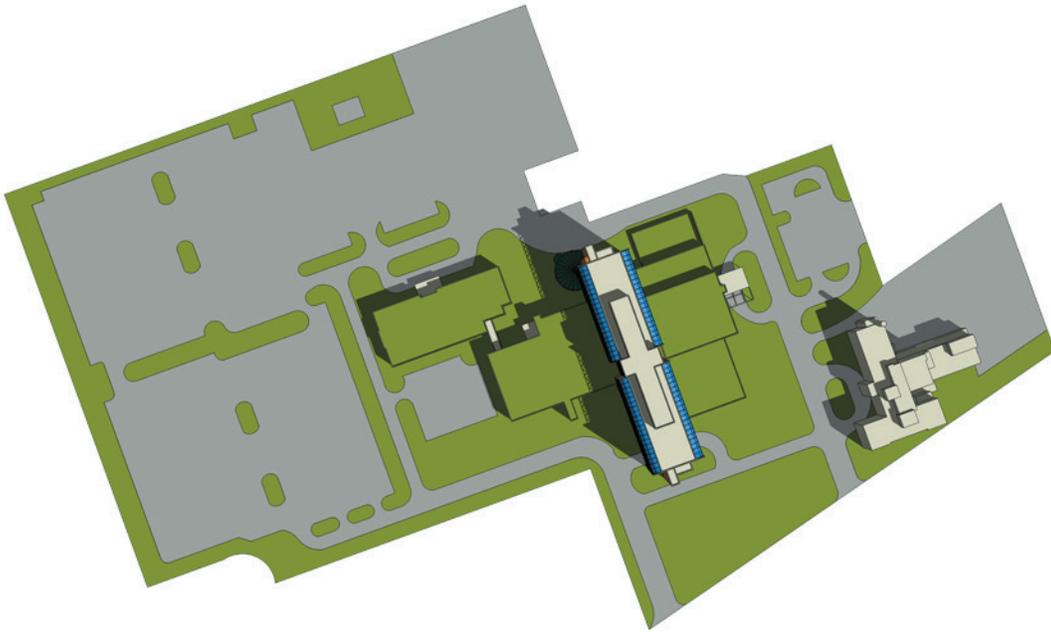
SIXTH & SEVENTH FLOOR PLAN  
SCALE: 1/32" = 1'-0"



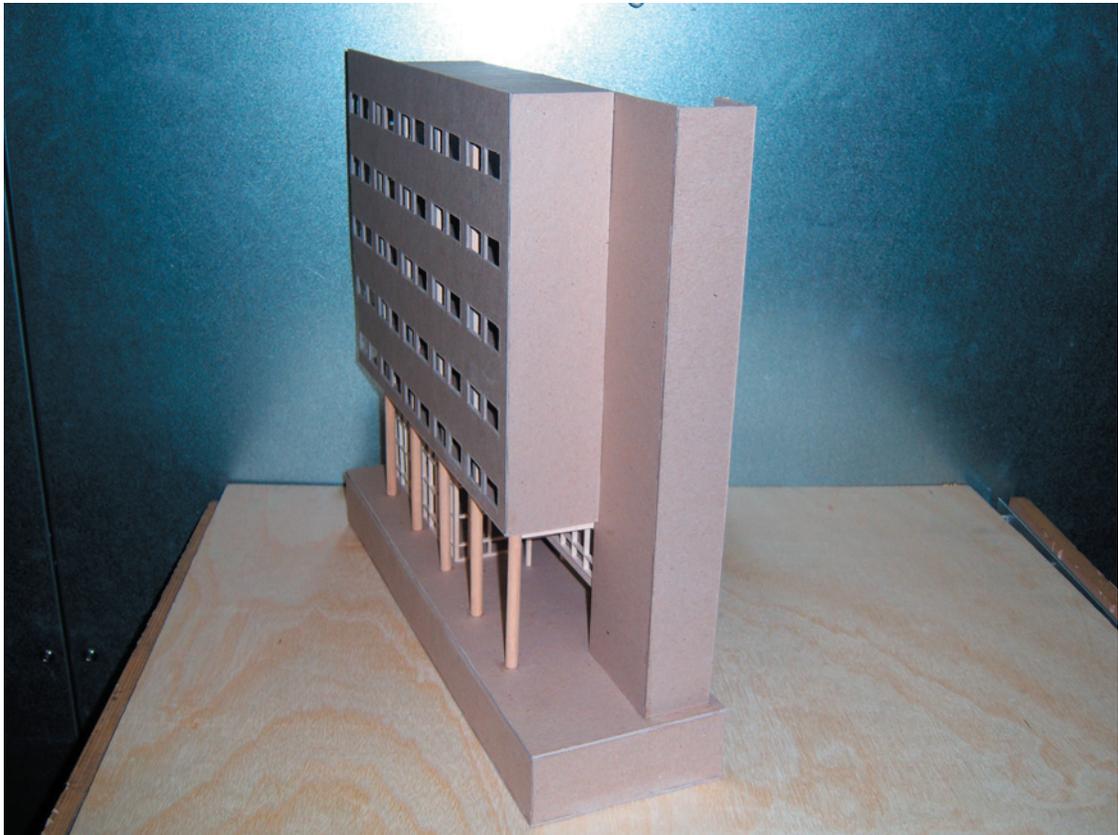
## DESIGN DEVELOPMENT:



**DESIGN DEVELOPMENT:**



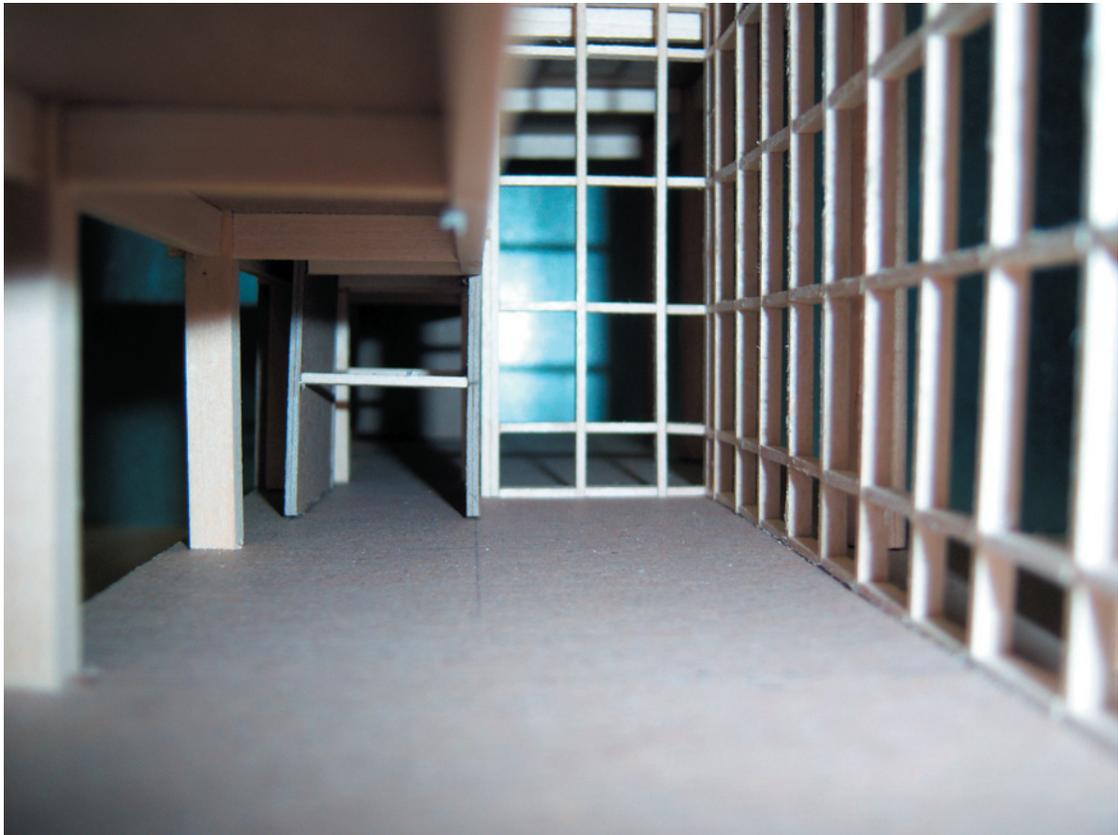
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**DESIGN DEVELOPMENT:**



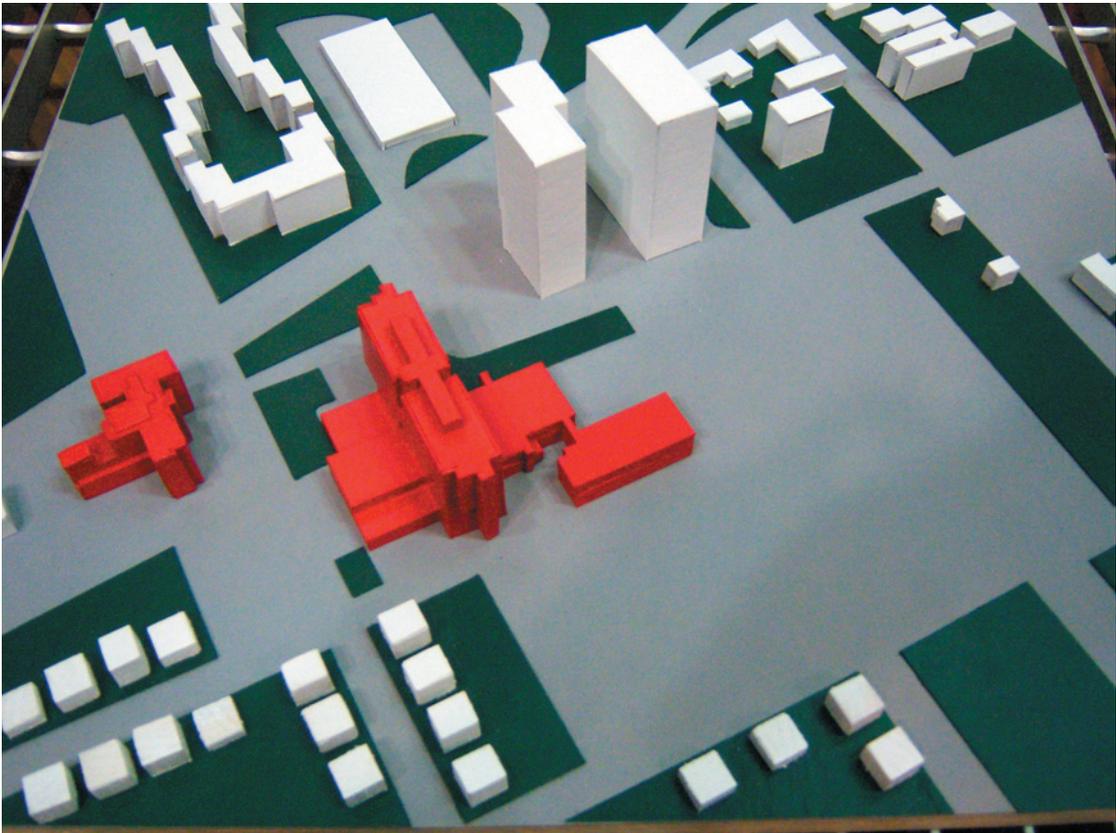
DESIGN DEVELOPMENT

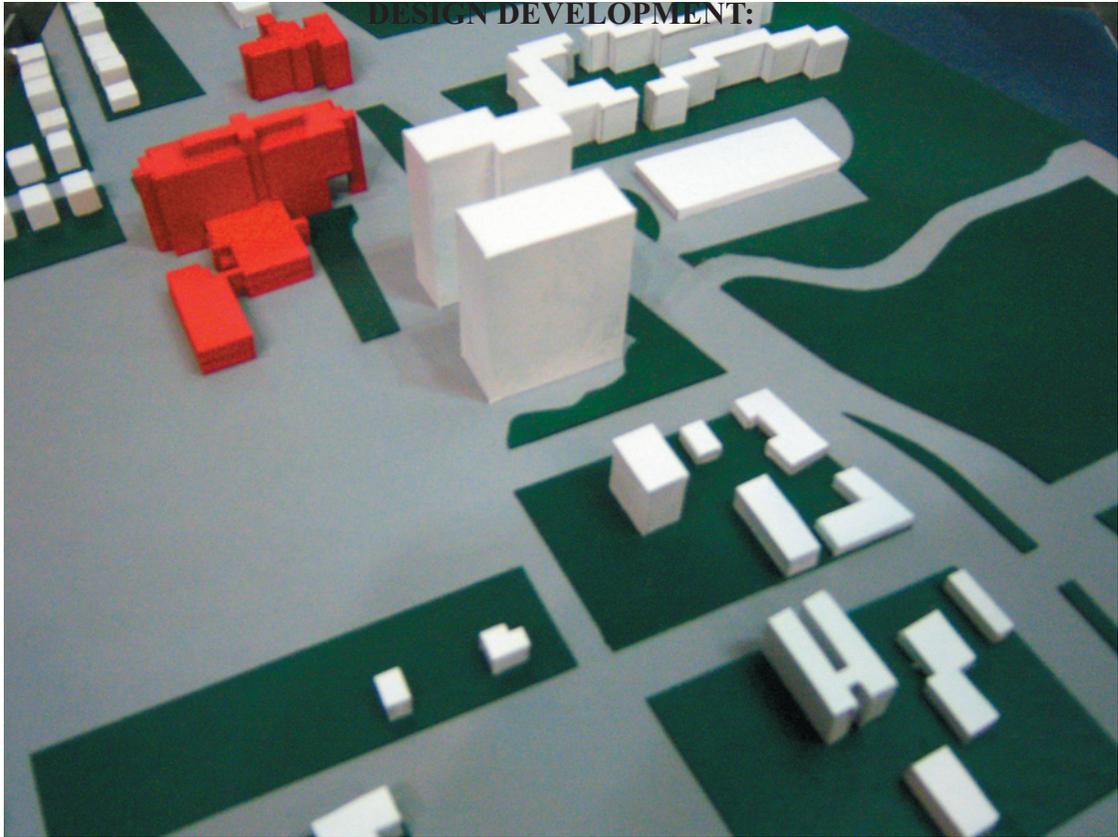


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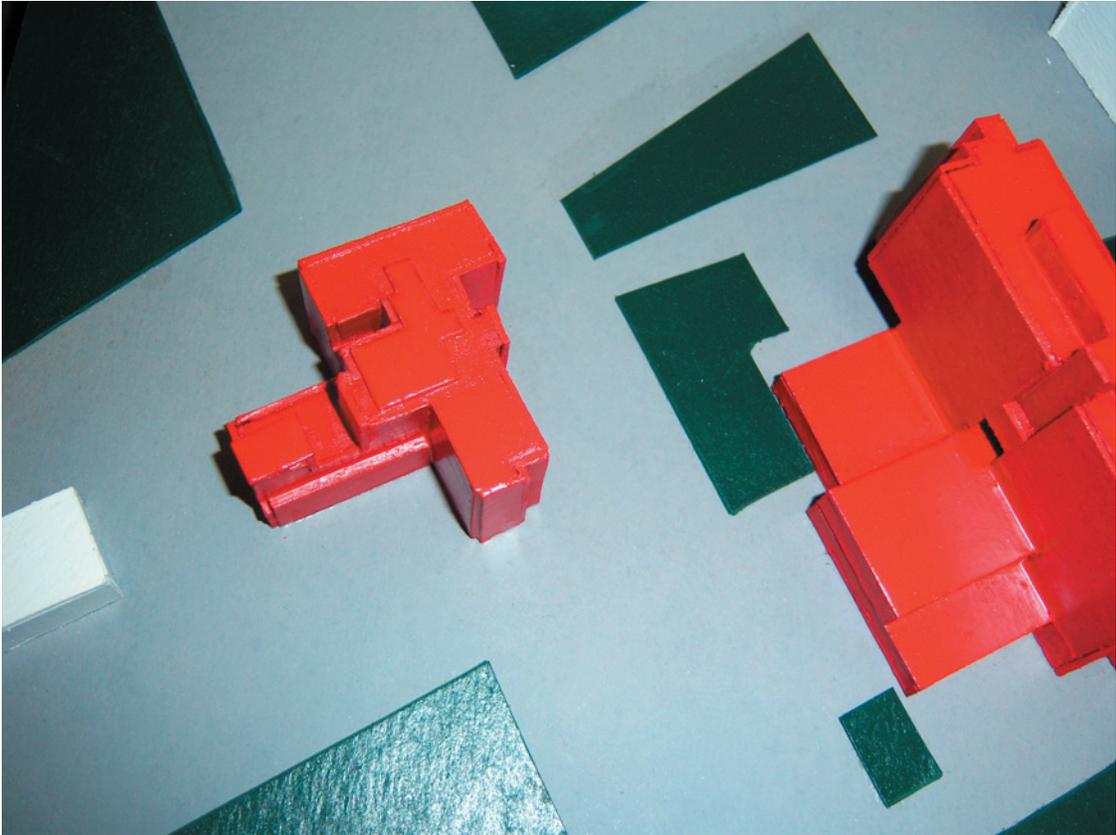
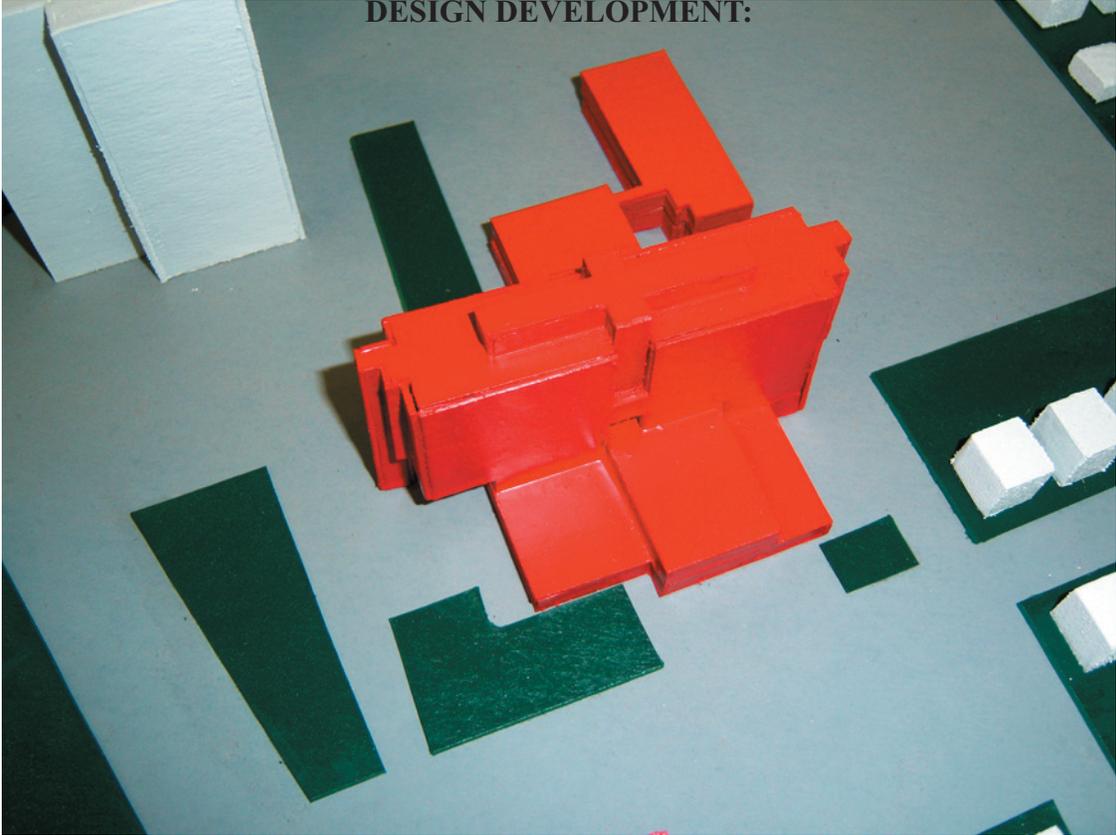


DESIGN DEVELOPMENT:





DESIGN DEVELOPMENT:



DETROIT RIVERVIEW HOSPITAL

FINAL PROJECT:



LOCATION MAP  
SCALE: 1" = 500'-0"



VIEW ACROSS  
JEFFERSON AVE.



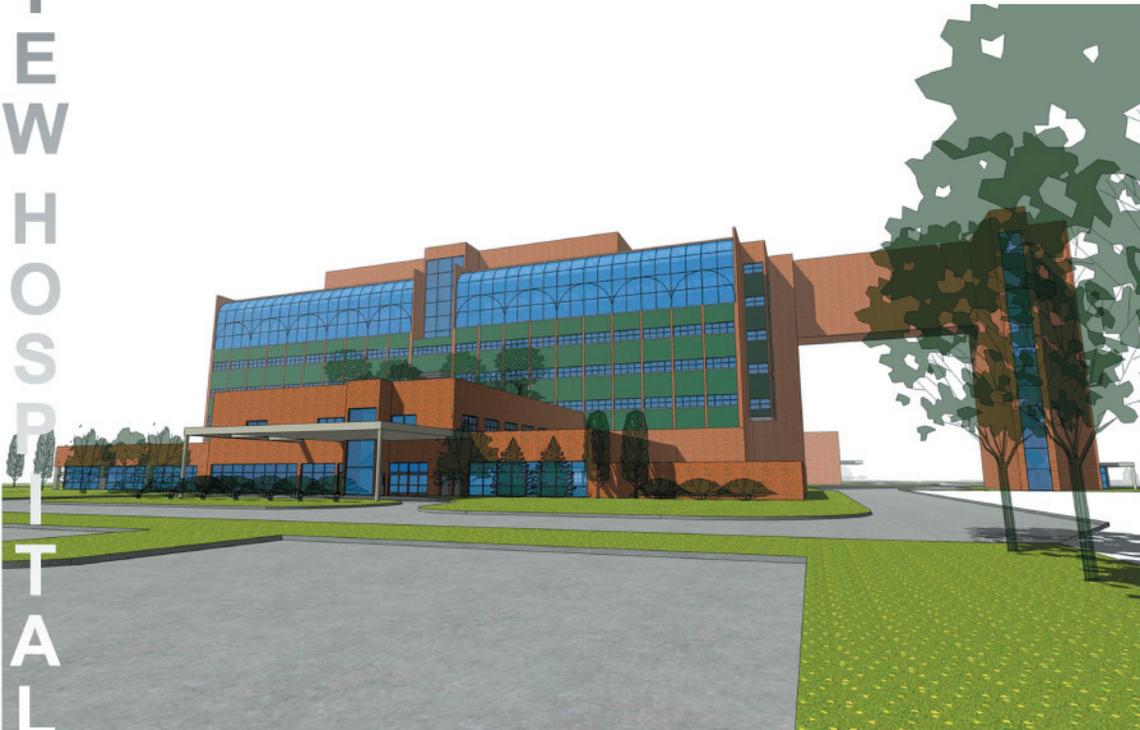
VIEW OF DROP  
OFF AREA



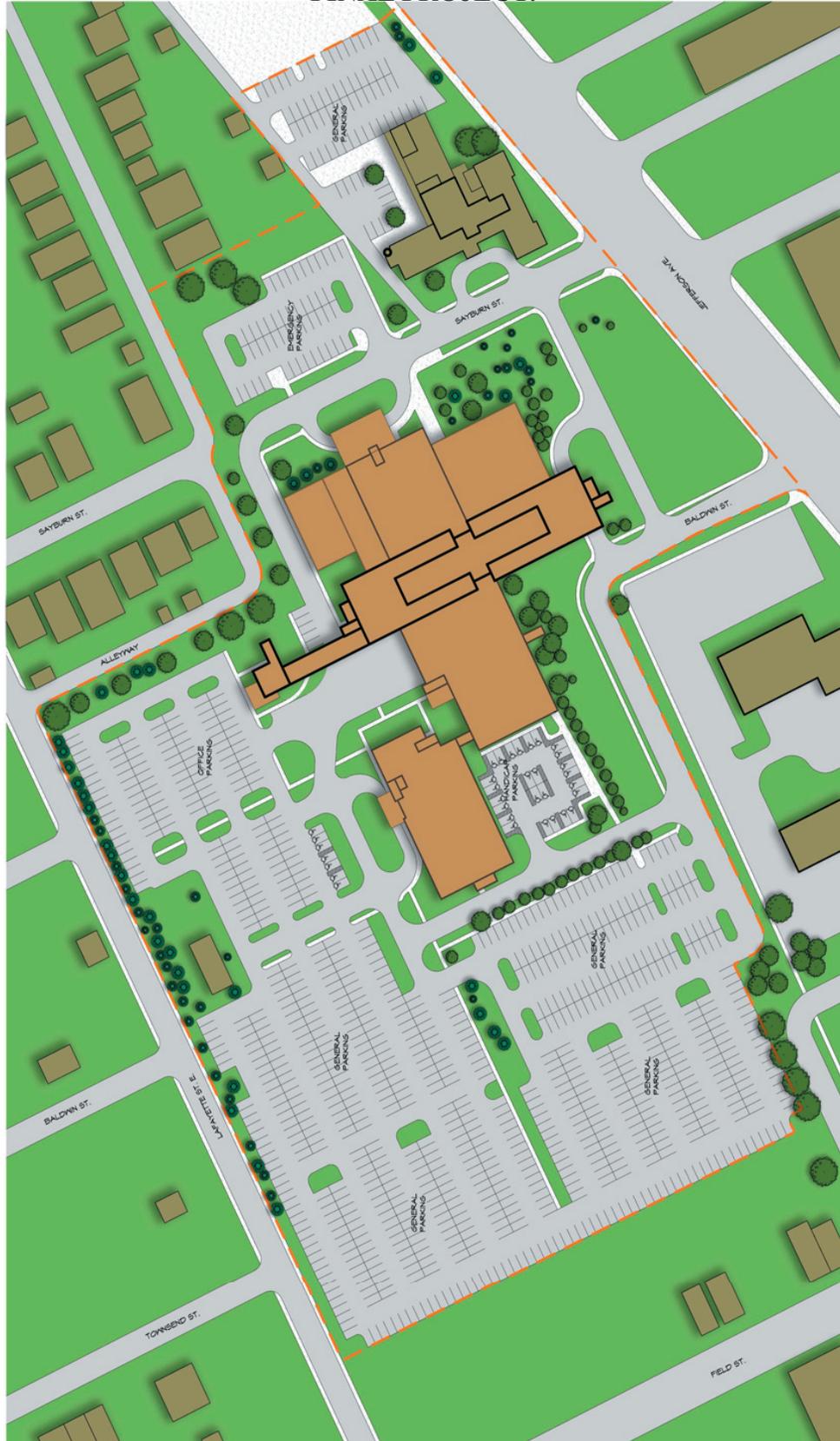
VIEW OF EMERGENCY  
ENTRANCE



VIEW OF PRIVATE  
PRACTICE ENTRANCE



**FINAL PROJECT:**



## PROGRAMED SPACES TABLE OF CONTENTS:

### **Basement: 52**

Communications: 53  
Food Service Department: 53  
Electrical: 54  
Linen Processing: 54  
Locker Room, Men's: 55  
Locker Room, Women's: 55  
Lounge: 56  
Materials Management: 57  
Mechanical: 58  
Morgue: 58  
Pool: 59  
Storage/Warehouse: 59

### **First Floor: 60**

Administration: 61  
Cafeteria: 61  
Emergency Department: 63  
Gift Shop: 64  
Laboratory: 65  
Leased Space Lobby: 65  
Library/Research Center: 66  
Pharmacy: 67  
Radiology Department: 68  
Registration: 70  
Shipping/Receiving: 71  
Women's Services Department: 71

### **Second Floor: 73**

Ambulatory Care: 74  
Diabetes Services: 75  
Intensive Care Unit: 76  
Lounge: 77  
Medical Offices: 78  
Second Floor Lobby: 79  
Surgery Department: 79

### **Third Floor: 86**

Healing Gardens/Roof Access: 83  
Lounge: 83  
Medical/Surgical Nursing Unit: 83

### **Fourth Floor: 86**

Lounge: 87  
Medical/Surgical Nursing Unit: 87

**Fifth Floor: 89**

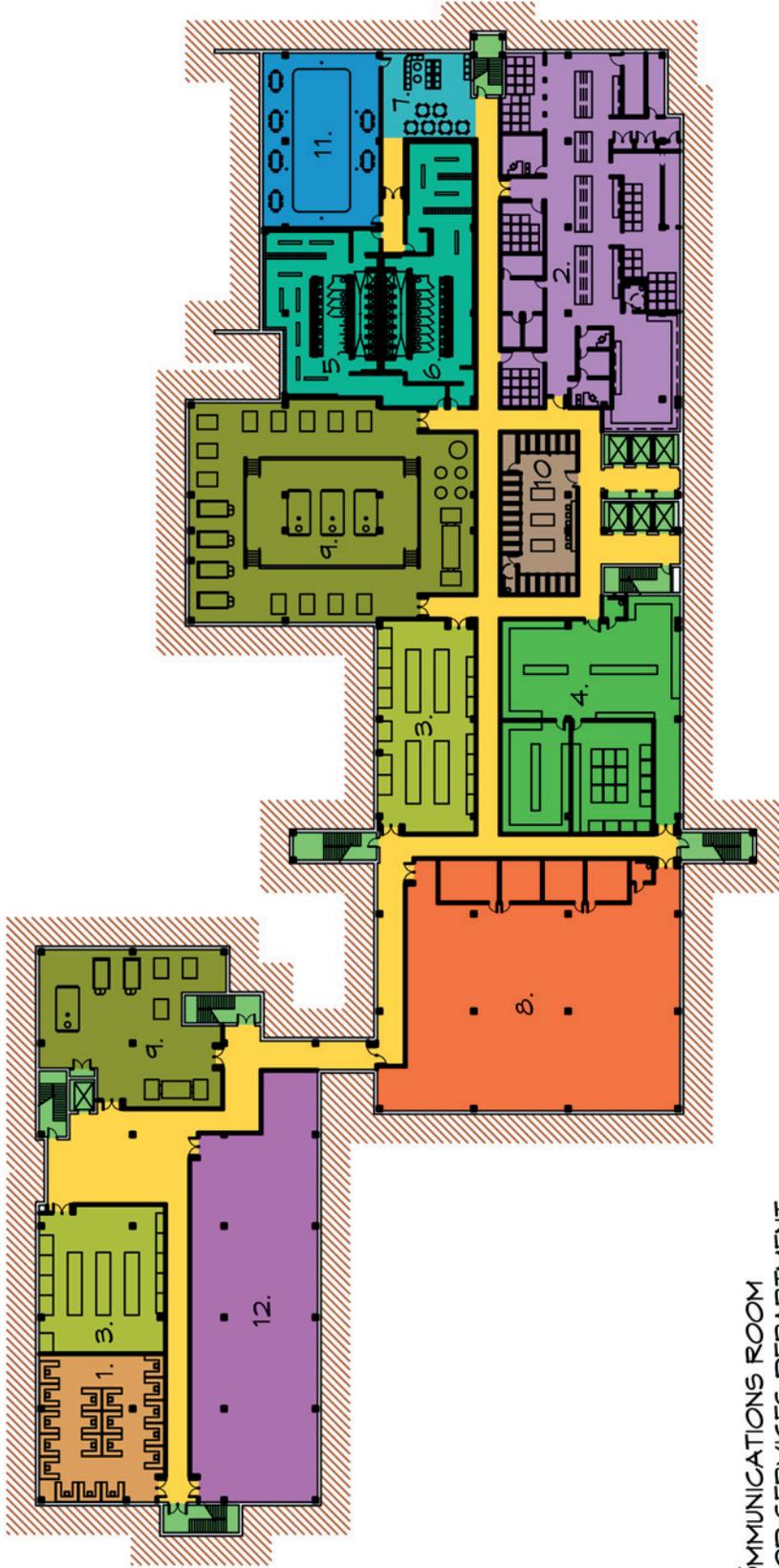
Lounge: 90  
Medical/Surgical Nursing Unit: 90  
Therapy (Occupational/Physical): 90

**Sixth Floor: 92**

Leased Space: 93

**Seventh Floor: 94**

Leased Space: 95



- LEGEND**
- 1. COMMUNICATIONS ROOM
  - 2. FOOD SERVICES DEPARTMENT
  - 3. ELECTRICAL ROOM
  - 4. LINEN PROCESSING
  - 5. LOCKER ROOM, MEN'S
  - 6. LOCKER ROOM, WOMEN'S
  - 7. LOUNGE
  - 8. MATERIALS MANAGEMENT
  - 9. MECHANICAL ROOM
  - 10. MORGUE
  - 11. POOL
  - 12. STORAGE/WAREHOUSE



**BASEMENT FLOOR PLAN**  
 SCALE: 1/64" = 1'-0"

# DETROIT RIVERVIEW HOSPITAL DETAILED PROGRAM

## BASEMENT FLOOR

### 1. Communications Room

*Purpose/use:* General hospital telecommunications.

*Size:* 2,250 feet<sup>2</sup>

*Activities:* Handles general communications to and from hospital as well as within the hospital.

*Adjacencies/spatial relationships:* North of the Storage/Warehouse and West of the Electrical Room.

*Equipment/furnishings:* Desks, telephones, printers, fax machines, chairs, and computers.

### 2. Food Services Department

*Purpose/use:* This department prepares, stores, and cleans food carts that will be distributed throughout the hospital to the various patient rooms and nourishment rooms.

*Size:* 7,805 feet<sup>2</sup>

*Activities:* Food storage, food preparation, food processing, food transportation, cart storage and processing.

*Adjacencies/spatial relationships:* Adjacent to the main circulation core space, to the East of the morgue and to the South of the Locker Rooms.

*Equipment/furnishings:* Counter tops, upper and lower cabinets, fridges, freezers, dishwashers, sinks, carts, desks, chairs, cart sterilizer automaton, walk in cooler, walk in freezer, and toilet.

#### 2.A. Cart Cleaning/Processing

*Purpose/use:* Clean and sterilize food carts for next use.

#### 2.B. Cart Storage Areas, Cold

*Purpose/use:* Storage area for clean carts.

#### 2.C. Cart Storage Areas, Warm (2)

*Purpose/use:* Storage area for carts that are ready to be delivered.

#### 2.D. Dry Food Storage Areas (5)

*Purpose/use:* Storage for dry foods and canned foods.

#### 2.E. Food Prep Area (2)

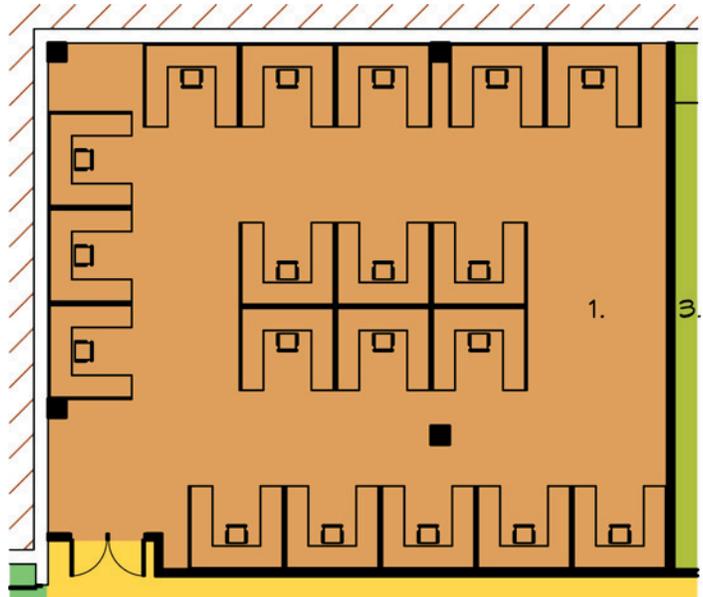
*Purpose/use:* Areas to prepare meals for the food carts.

#### 2.F. Offices (3)

*Purpose/use:* Management/administration office space.

#### 2.G. Storage

*Purpose/use:* General storage.



**2.H. Toilet, ADA Unisex**

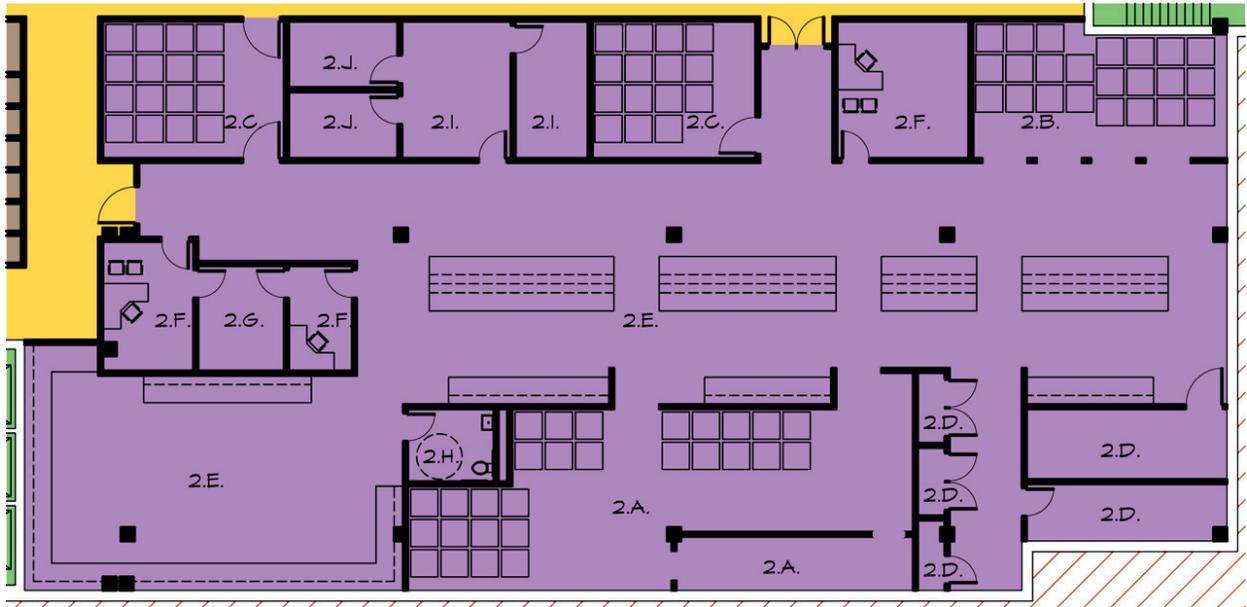
*Purpose/use:* Toilet access for occupants.

**2.I. Walk in Coolers (2)**

*Purpose/use:* Storage for food that needs to be cold.

**2.J. Walk in Freezers (2)**

*Purpose/use:* Storage for food that needs to be frozen.



**3. Electrical Rooms (2)**

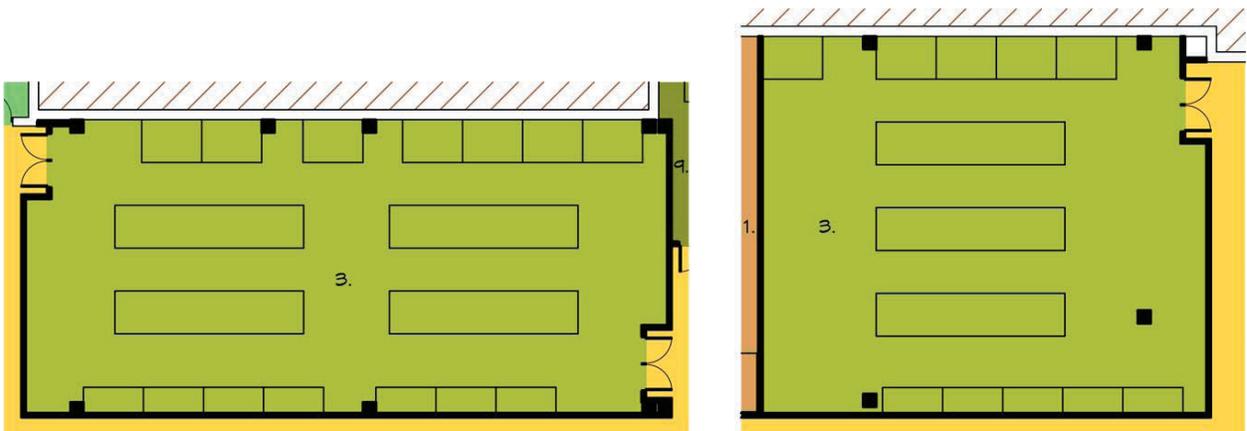
*Purpose/use:* Handles electrical needs of the hospital.

*Size:* 4,750 feet<sup>2</sup> (combined)

*Activities:* Maintenance and monitoring.

*Adjacencies/spatial relationships:* Next to Mechanical Rooms.

*Equipment/furnishings:* Electrical equipment such as: transformers, circuit breakers, meters, etc.



**4. Linen Processing**

*Purpose/use:* Laundry and linens distribution for hospital.

*Size:* 4,895 feet<sup>2</sup>

*Activities:* Processing soiled linens into clean linens.

*Adjacencies/spatial relationships:* Next to vertical circulation core, South of Electrical Room, East of Materials Management, West of Morgue.

*Equipment/furnishings:* Electrical equipment such as: transformers, circuit breakers, meters, etc.

**4.A. Clean Work Room/Clean Storage**

*Purpose/use:* Set up clean linens on carts for distribution throughout hospital.

**4.B. Laundry Room**

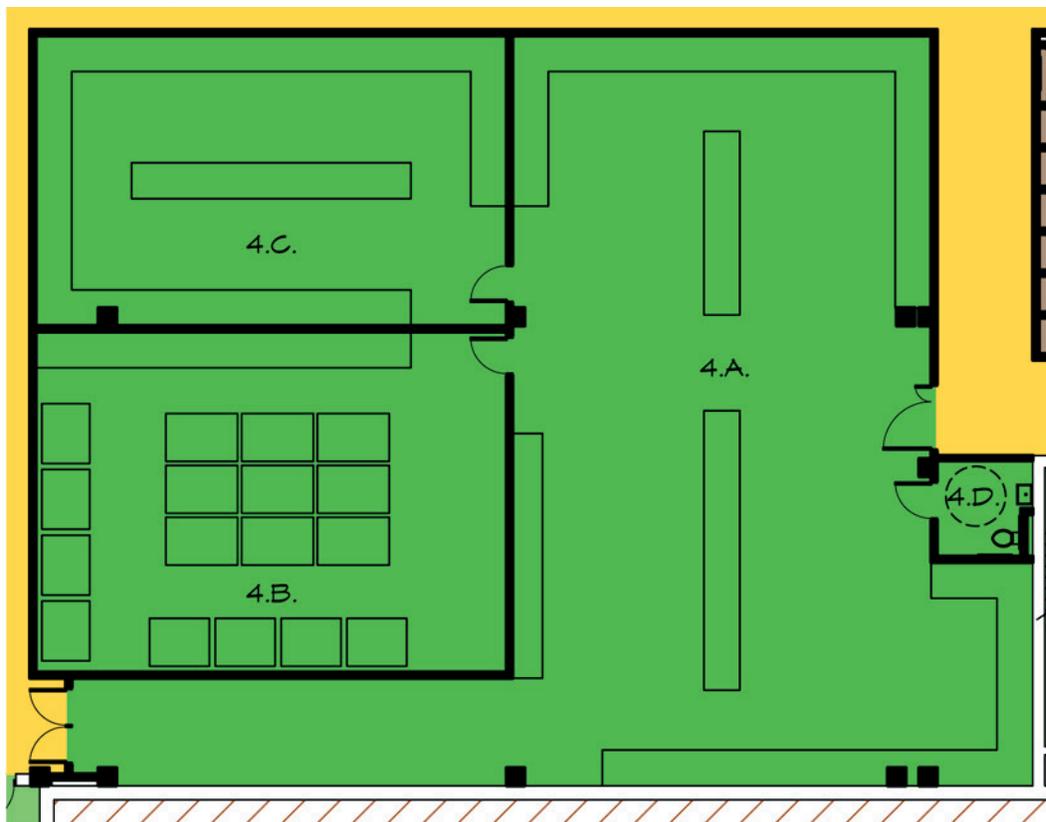
*Purpose/use:* Wash and dry soiled linens for future use.

**4.C. Main Work Room**

*Purpose/use:* Sorting linens out and general work area.

**4.D. Toilet, ADA Unisex**

*Purpose/use:* Toilet access for occupants.



**5. Locker Room Men's**

*Purpose/use:* Provide a space for employee's to change from street clothes into scrubs.

*Size:* 4,990 feet<sup>2</sup> (total combined with women's)

*Activities:* Shower, change, toilet, hygiene.

*Adjacencies/spatial relationships:* West of Pool, North of Women's Locker, East of Mechanical Room

*Equipment/furnishings:* Lockers, showers, toilets, benches sinks, counters

**6. Locker Room Women's**

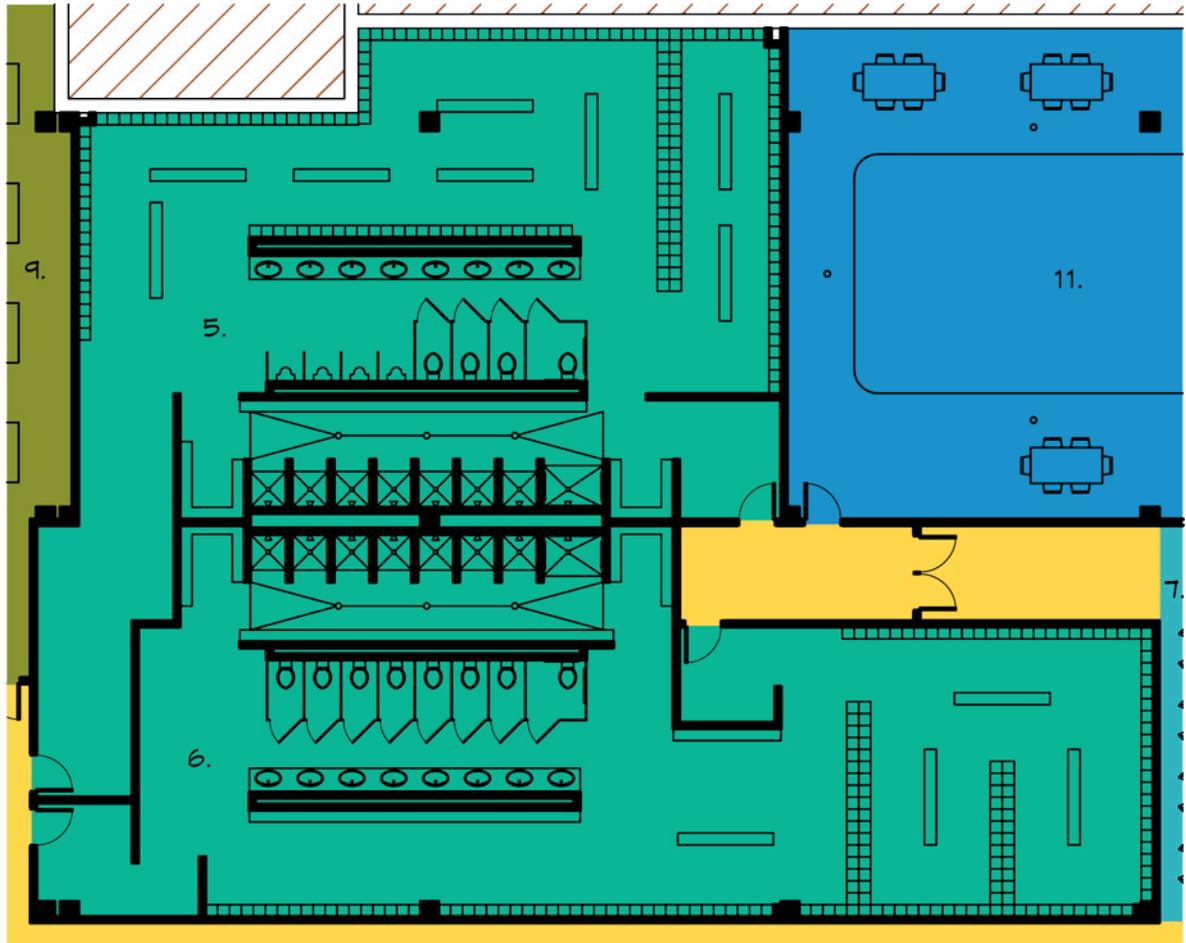
*Purpose/use:* Provide a space for employee's to change from street clothes into scrubs.

*Size:* 4,990 feet<sup>2</sup> (total combined with men's)

*Activities:* Shower, change, toilet, hygiene.

*Adjacencies/spatial relationships:* West of Pool, South of Men's Locker, East of Mechanical Room

*Equipment/furnishings:* Lockers, showers, toilets, benches sinks, counters



### 7. Lounge

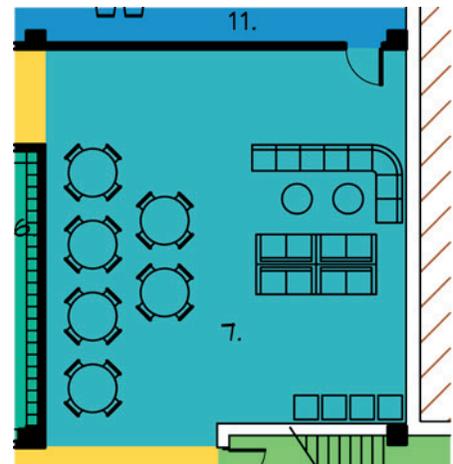
*Purpose/use:* Provide a space for employee's to socialize, rest, and eat.

*Size:* 970 feet<sup>2</sup>

*Activities:* Lounge, socialize, eat, and rest.

*Adjacencies/spatial relationships:* South of Pool, East of Lockers, North of Food Services Department

*Equipment/furnishings:* Sofas, tables, chairs, vending machines



## 8. Materials Management

*Purpose/use:* An area to store medical materials, equipment, and supplies.

*Size:* 8,550 feet<sup>2</sup>

*Activities:* Storage of medical materials, equipment, and supplies, and distribution of these supplies to the rest of the hospital.

*Adjacencies/spatial relationships:* West of Linen Processing and Electrical Room.

*Equipment/furnishings:* Sofas, tables, chairs, vending machines

### 8.A. Hazardous Materials Storage

*Purpose/use:* Storage of Materials that are hazardous to humans.

### 8.B. Main Storage Room

*Purpose/use:* Main area for materials storage.

### 8.C. Medical Gas Storage

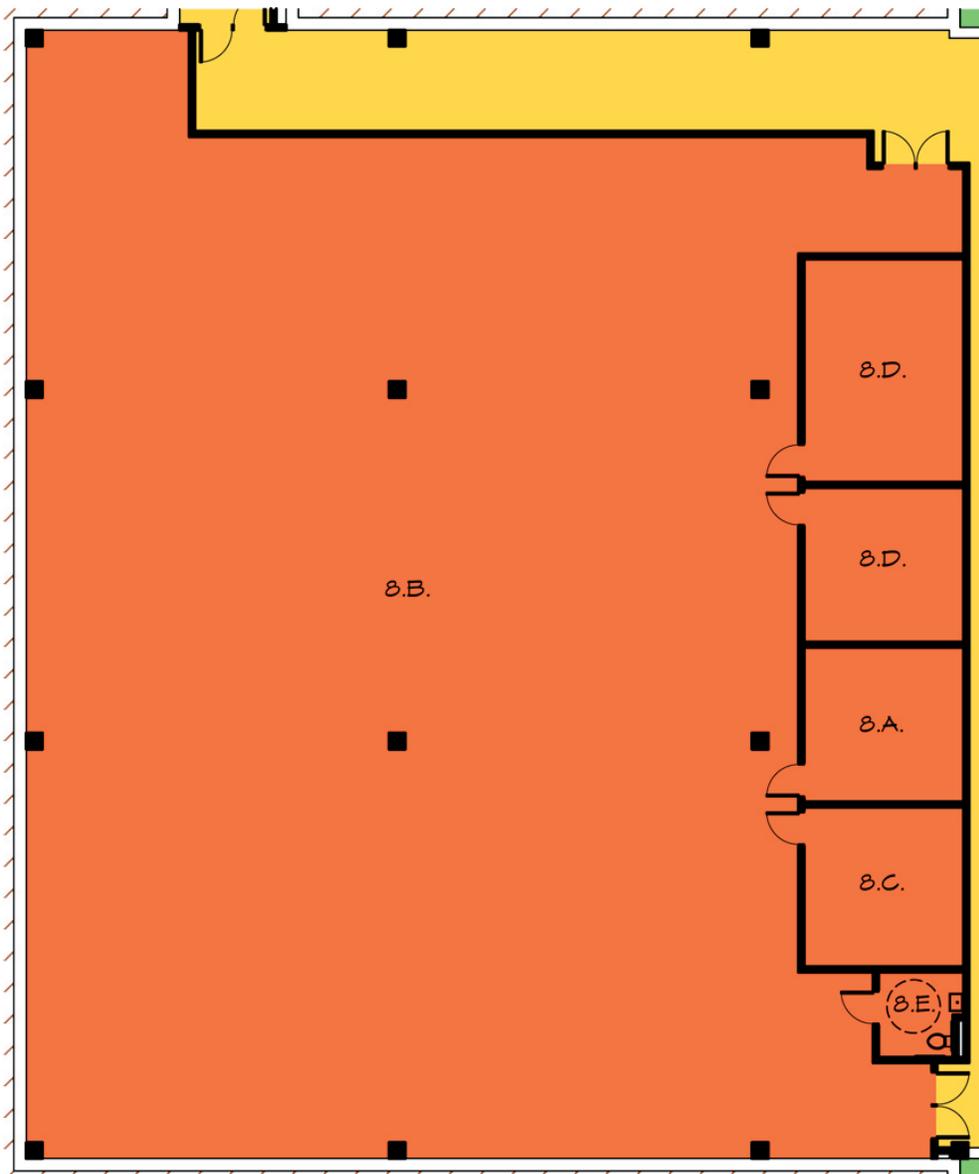
*Purpose/use:* Storage for various medical gasses.

### 8.D. Offices (2)

*Purpose/use:* Office space for managers/administration.

### 8.E. Toilet, ADA Unisex

*Purpose/use:* Toilet access for occupants.



## 9. Mechanical Rooms (2)

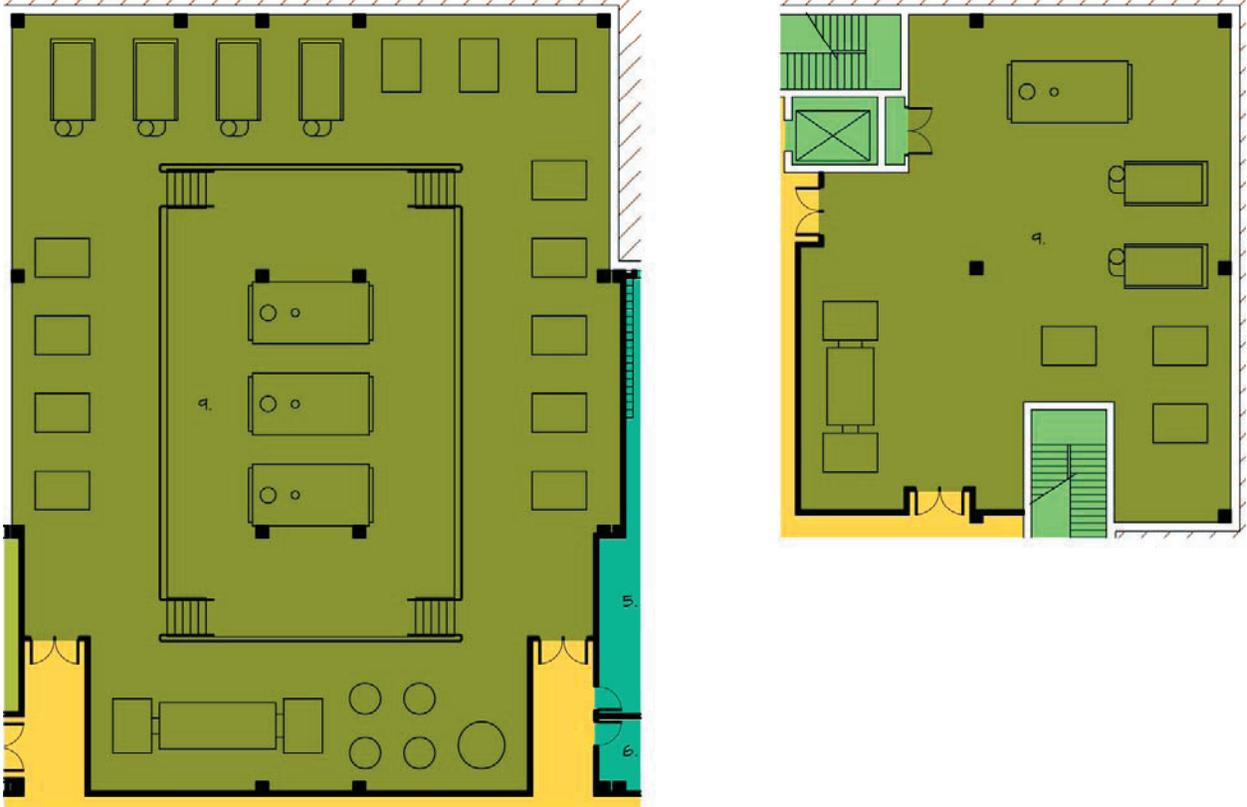
*Purpose/use:* Handles mechanical needs of the hospital.

*Size:* 10,395 feet<sup>2</sup> (combined)

*Activities:* Maintenance and monitoring.

*Adjacencies/spatial relationships:* Next to Electrical Rooms.

*Equipment/furnishings:* Mechanical equipment such as: boilers, chillers, fans, etc.



## 10. Morgue

*Purpose/use:* Area to perform autopsies and store deceased human bodies.

*Size:* 1,500 feet<sup>2</sup>

*Activities:* Autopsies and storage of deceased human bodies.

*Adjacencies/spatial relationships:* North of vertical circulation core, South of Mechanical Room, East of Linens Processing, West of Food Services Department.

*Equipment/furnishings:* Autopsy tables, deceased human storage coolers, desk, chairs, cabinets, sinks, toilet.

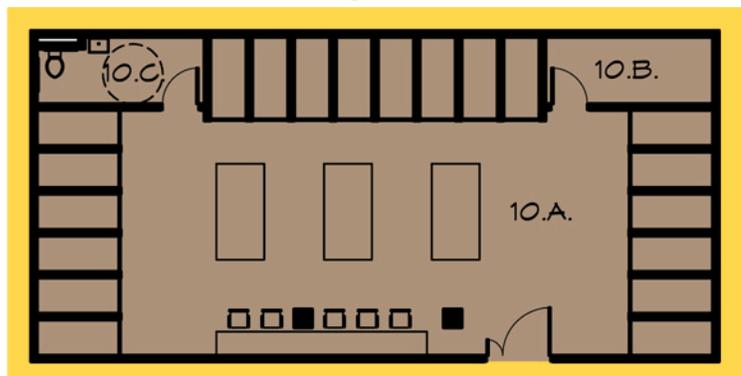
### 10.A. Main Work Room

*Purpose/use:* Area to perform autopsies and store deceased human bodies.

### 10.B. Storage

*Purpose/use:* Area to store any equipment or medical supplies.

### 10.C. Toilet, ADA Unisex



*Purpose/use:* Toilet access for occupants.

### 11. Pool

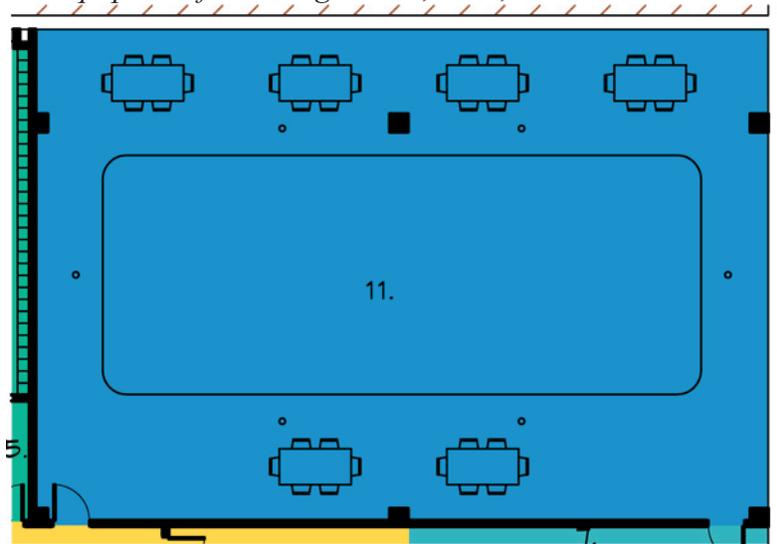
*Purpose/use:* Area for employees to unwind and socialize or work out.

*Size:* 2,515 feet<sup>2</sup>

*Activities:* Swimming.

*Adjacencies/spatial relationships:* North of vertical Lounge, East of Locker Rooms.

*Equipment/furnishings:* Pool, table, chairs



### 12. Storage/Warehouse

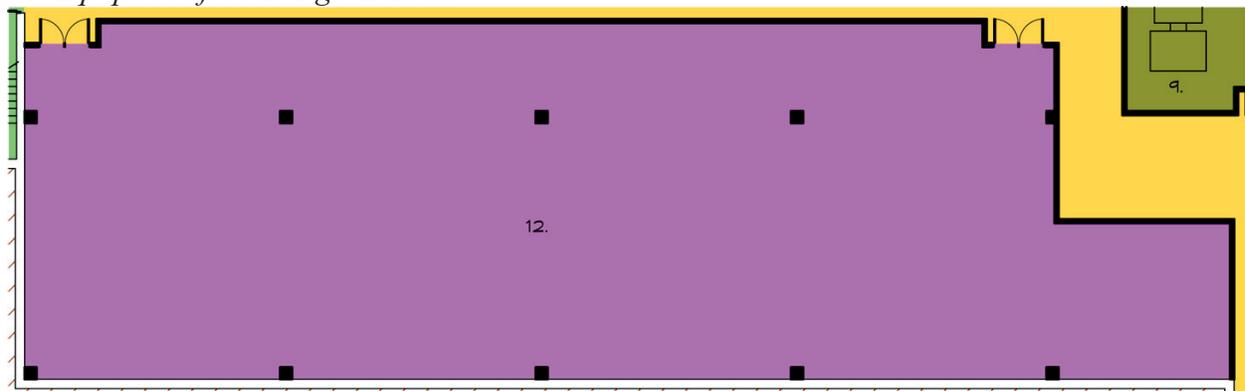
*Purpose/use:* Large area for storage of multiple items.

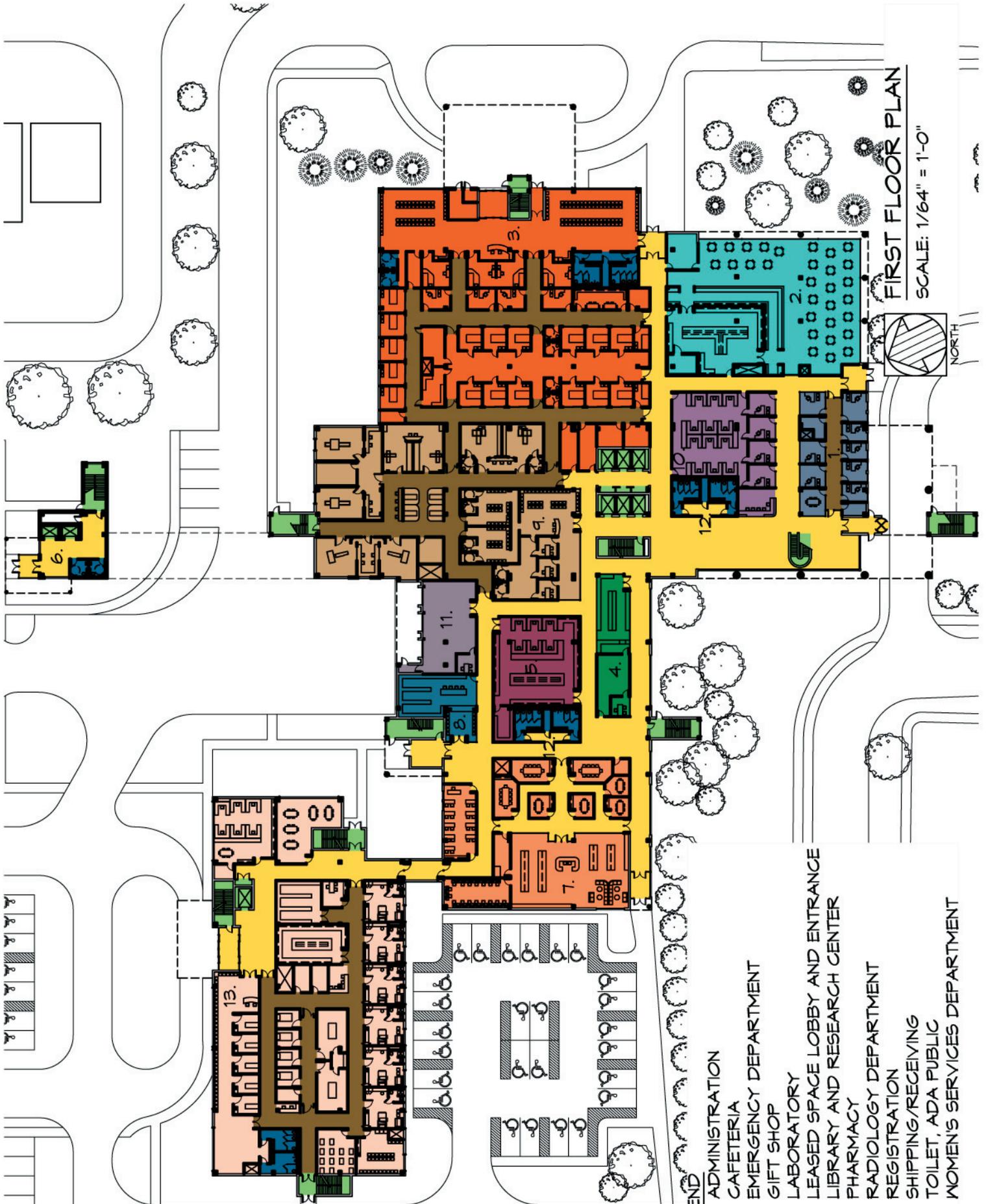
*Size:* 6,120 feet<sup>2</sup>

*Activities:* Storage.

*Adjacencies/spatial relationships:* South of Communications and Electrical Room.

*Equipment/furnishings:* Palettes





FIRST FLOOR PLAN  
SCALE: 1/64" = 1'-0"



- LEGEND**
- 1. ADMINISTRATION
  - 2. CAFETERIA
  - 3. EMERGENCY DEPARTMENT
  - 4. GIFT SHOP
  - 5. LABORATORY
  - 6. LEASED SPACE LOBBY AND ENTRANCE
  - 7. LIBRARY AND RESEARCH CENTER
  - 8. PHARMACY
  - 9. RADIOLOGY DEPARTMENT
  - 10. REGISTRATION
  - 11. SHIPPING/RECEIVING
  - 12. TOILET, ADA PUBLIC
  - 13. WOMEN'S SERVICES DEPARTMENT

## FIRST FLOOR

### 1. Administration

*Purpose/use:* Office areas for hospital administration.

*Size:* 2,170 feet<sup>2</sup>

*Activities:* Day to day operations of the hospital.

*Adjacencies/spatial relationships:* Off of the main Valet/Drop Off entrance, East of the Main Lobby, South of the Registration Area, and West of the Cafeteria.

*Equipment/furnishings:* Desks, tables, chairs, computers.

#### 1.A. Conference Room

*Purpose/use:* Area for the computer servers.

#### 1.B. Control Room

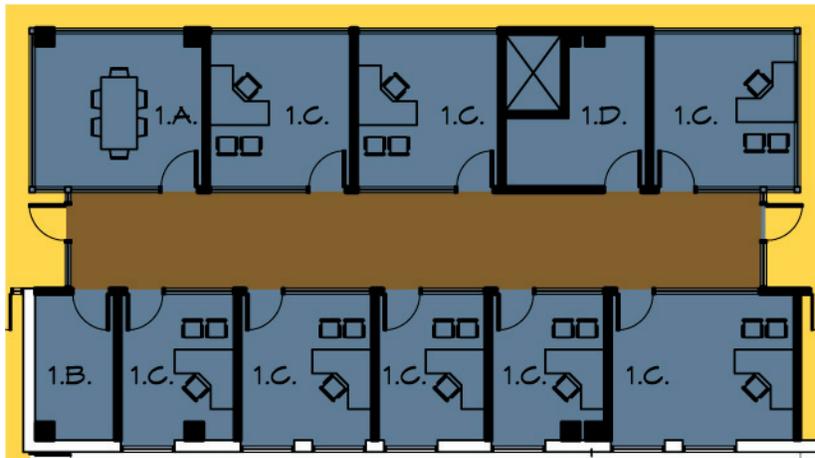
*Purpose/use:* Area for the computer servers.

#### 1.C. Offices (8)

*Purpose/use:* Office space for the hospital administrators.

#### 1.D. Storage

*Purpose/use:* Storage room.



### 2. Cafeteria

*Purpose/use:* Area for staff and visitors to dine.

*Size:* 6,985 feet<sup>2</sup>

*Activities:* Food prep, food service, socializing, and dining.

*Adjacencies/spatial relationships:* South of the Emergency Room, East of the Registration and Administration Areas.

*Equipment/furnishings:* Upper and lower cabinets, food display cases, tables, chairs, garbage receptacles, cash registers, garage doors.

#### 2.A. Dining Room

*Purpose/use:* Area for staff and visitors to dine.

#### 2.B. Garbage Storage

*Purpose/use:* Area to store garbage until the Cafeteria closes for the day.

#### 2.C. Kitchen

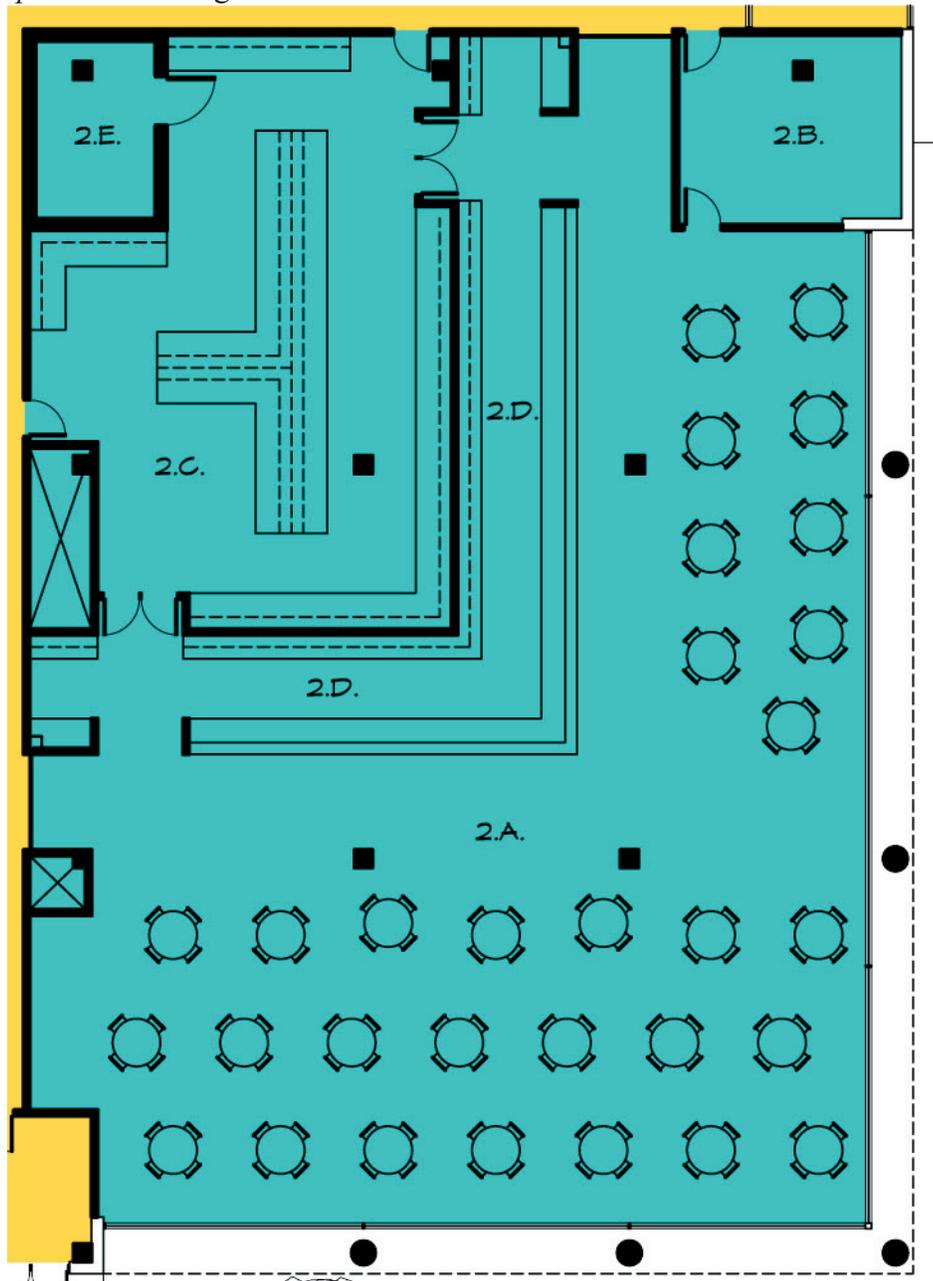
*Purpose/use:* Area to prep meals.

#### 2.D. Service Area

*Purpose/use:* Area to service meals to patrons.

**2.E. Walk in Cooler**

*Purpose/use:* Storage for food that needs to be cold.



### **3. Emergency Department**

*Purpose/use:* Area that is staffed and equipped for the reception and treatment of persons with conditions (as illness or trauma) requiring immediate medical care.

*Size:* 16,850 feet<sup>2</sup>

*Activities:* Waiting, registration, and treatment.

*Adjacencies/spatial relationships:* Off of the Emergency Department entrance, North of the Cafeteria, and East of the Radiology Department.

*Equipment/furnishings:* Beds, toilets, chairs, tables, desks, vending machines, upper and lower cabinets.

#### **3.A. Emergency Patient Rooms, Adult (12)**

*Purpose/use:* Rooms to treat adult patients.

#### **3.B. Emergency Patient Rooms, Pediatrics (5)**

*Purpose/use:* Rooms to treat pediatric patients.

#### **3.C. General Storage (3)**

*Purpose/use:* Storage Rooms.

#### **3.D. Janitor's Closet (3)**

*Purpose/use:* Area for janitor to store equipment.

#### **3.E. Main Work Room**

*Purpose/use:* Main room where nurses and physicians meet and work.

#### **3.F. Pharmacy**

*Purpose/use:* Medication storage.

#### **3.G. Receptionist**

*Purpose/use:* Meets and greets emergent patients and admits them to triage.

#### **3.H. Registration Rooms (4)**

*Purpose/use:* Rooms where patients register their information with the hospital.

#### **3.I. Resuscitation**

*Purpose/use:* Area where supplies for resuscitation of patients are stored.

#### **3.J. Utility Room, Clean Linen**

*Purpose/use:* Area where clean linens are distributed to patient rooms.

#### **3.K. Utility Room, Soiled Linen**

*Purpose/use:* Area where soiled linens, bedpans, and bio-hazardous materials are stored for future cleaning.

#### **3.L. Toilet, ADA Unisex (6)**

*Purpose/use:* Toilet access for occupants.

#### **3.M. Toilet, ADA Public (2) (Men's and Women's)**

*Purpose/use:* Toilet access for occupants.

#### **3.N. Triage Rooms (4)**

*Purpose/use:* Area to sort patients according to the urgency of their need for care.

#### **3.O. Vending Machine Areas (2)**

*Purpose/use:* Vending food and beverages.

#### **3.P. Waiting Area, General**

*Purpose/use:* Area for emergent patients, families and friends to wait for treatment.

#### **3.Q. Waiting Area, Pediatrics**

*Purpose/use:* Area for emergent pediatric patients, families and friends to wait for treatment.

#### **3.R. EMS Courtesy Room**

*Purpose/use:* Area for EMS workers to take a break and have coffee.

### **3.S. EMS Decontamination Room**

*Purpose/use:* Area for EMS workers to scrub down in case there was a hazardous materials event.



### **4. Gift Shop**

*Purpose/use:* Store where visitors can buy flowers, cards and other general items.

*Size:* 1,275 feet<sup>2</sup>

*Activities:* Shopping.

*Adjacencies/spatial relationships:* South of Laboratory and East of Library, West of vertical circulation core.

*Equipment/furnishings:* Shelving, desks, chairs, cashiers, merchandise.

#### **4.A. General Store & Cashier**

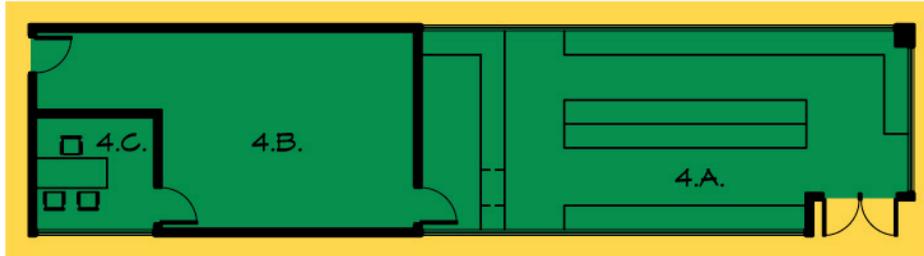
*Purpose/use:* Store where visitors can buy flowers, cards and other general items.

#### **4.B. Merchandise Stockroom**

*Purpose/use:* Area to store merchandise.

**4.C. Office**

*Purpose/use:* Office for store manager.



**5. Laboratory**

*Purpose/use:* Area that is equipped for testing and analysis of specimens.

*Size:* 2,265 feet<sup>2</sup>

*Activities:* Shopping.

*Adjacencies/spatial relationships:* South of Laboratory and East of Library, West of vertical circulation core.

*Equipment/furnishings:* Shelving, desks, chairs, cashiers, merchandise.

**5.A. Blood Work Area and Equipment Room**

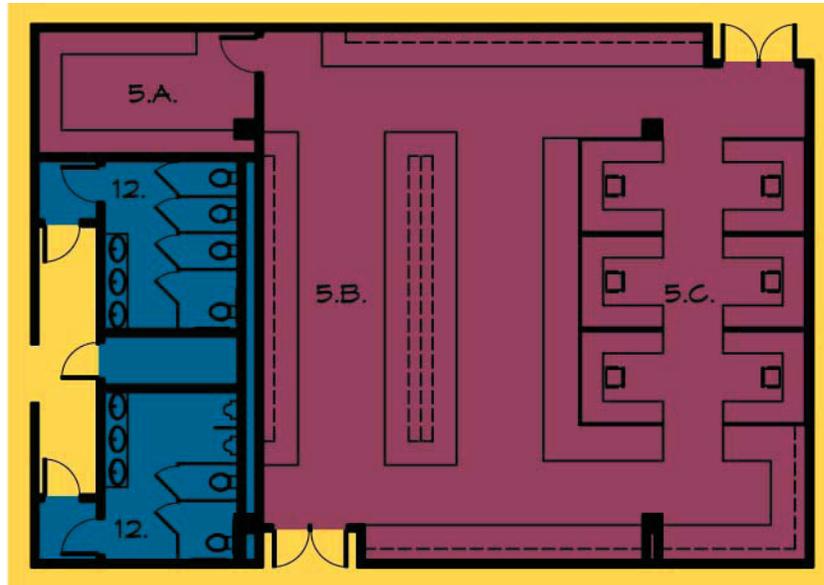
*Purpose/use:* Area for blood work to be processed and stored for use by staff.

**5.B. Laboratory Equipment Area**

*Purpose/use:* Area for other tests to be administered for use by staff.

**5.C. Office Area**

*Purpose/use:* Office for Lab workers.



**6. Leased Space Lobby and Entrance**

*Purpose/use:* Space to wait for elevators.

*Size:* 930 feet<sup>2</sup>

*Activities:* Circulation.

*Adjacencies/spatial relationships:* Off of parking for the office space.

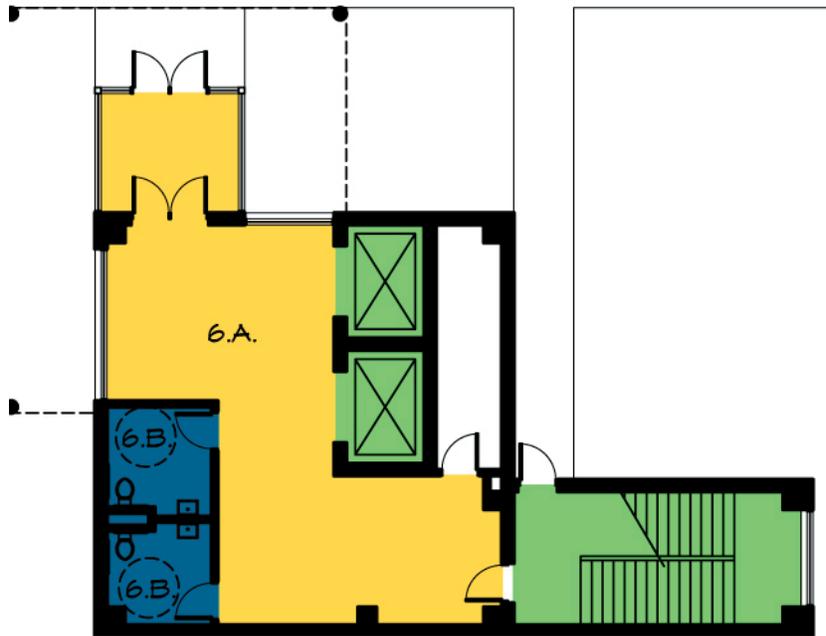
*Equipment/furnishings:* Toilets, sinks.

**6.A. Lobby**

*Purpose/use:* Space to wait for elevators.

**6.B. Toilet, ADA Unisex (2)**

*Purpose/use:* Toilet access for occupants.



**7. Library and Research Center**

*Purpose/use:* Area for patients and staff to do personal research and to learn about important topics.

*Size:* 6,975 feet<sup>2</sup>

*Activities:* Research, computer access, study, conference and seminars.

*Adjacencies/spatial relationships:* Off of handicap parking West of the Laboratory and public Toilet rooms.

*Equipment/furnishings:* Shelves, books, sofas, tables, chairs, desks, computers.

**7.A. Classroom**

*Purpose/use:* Area for various departments to come and hold information seminars for staff and patients.

**7.B. Computer Lab**

*Purpose/use:* Area for patients and staff to research.

**7.C. Conference Room (3)**

*Purpose/use:* Area for collaboration of staff.

**7.D. Janitor's Closet**

*Purpose/use:* Area for janitor to store equipment.

**7.E. Librarian's Office**

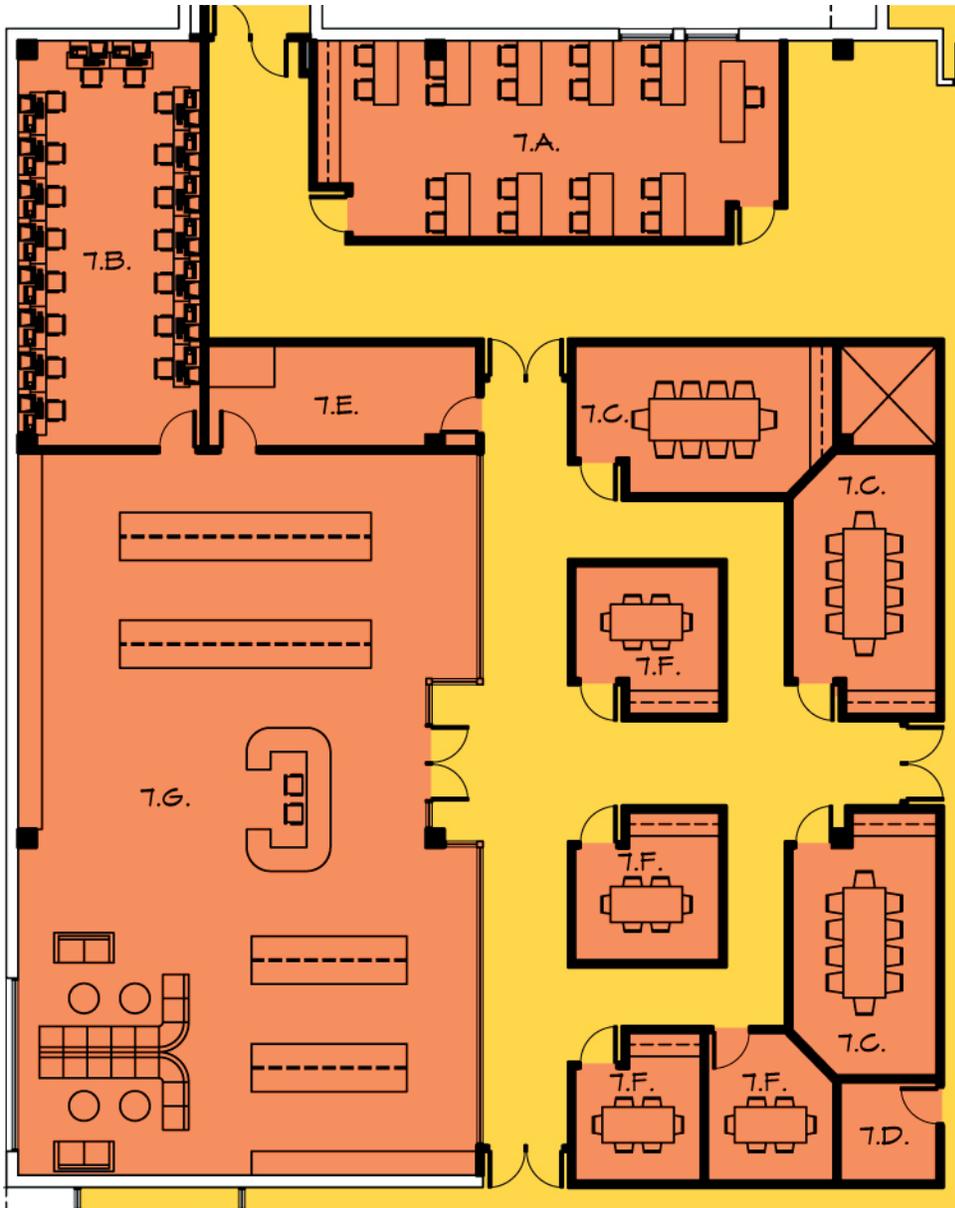
*Purpose/use:* Office space for Librarians.

**7.F. Private Study (4)**

*Purpose/use:* Area for quiet study.

**7.G. Library**

*Purpose/use:* Book storage.



## 8. Pharmacy

*Purpose/use:* Area where medicines are dispensed to patrons.

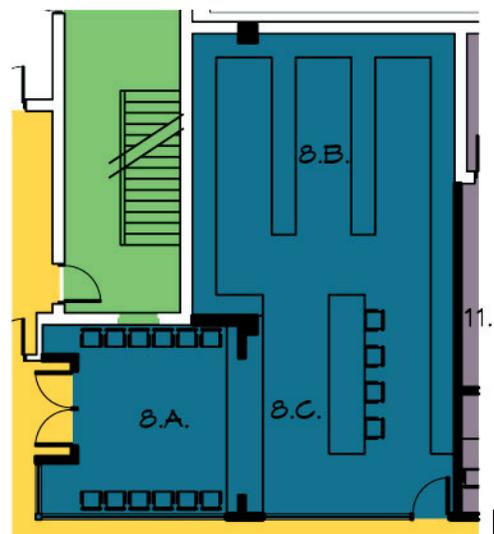
*Size:* 1,075 feet<sup>2</sup>

*Activities:* Sorting of medicines, waiting, and purchasing of prescriptions.

*Adjacencies/spatial relationships:* North of the Laboratory, West of Shipping/Receiving.

*Equipment/furnishings:* Shelves, desks, pharmacy equipment, chairs, cash register.

**8.A. Waiting Area/Cashier**



*Purpose/use:* Area for patrons to wait for prescribed medications.

**8.B. Pharmacy Automation Area**

*Purpose/use:* Area where prescriptions are stored.

**8.C. Pharmacy Work Area**

*Purpose/use:* Area where medications are made, put together and stored in the pharmacy machine.

**9. Radiology Department**

*Purpose/use:* Spaces and suites that organize clinical modalities in a manner that allows clinicians to determine a condition or disease efficiently and safely.

*Size:* 10,700 feet<sup>2</sup>

*Activities:* Diagnosis of conditions and diseases, waiting, and gowning of patients.

*Adjacencies/spatial relationships:* West of Emergency Department, East of Laboratory.

*Equipment/furnishings:* CT machines, MRI machines, Fluoroscopy machines, X-ray machines, toilets, desks, chairs, sinks, computers.

**9.A. Computed Tomography (CT) Control Room**

*Purpose/use:* Area where technician runs the CT machine.

**9.B. Computed Tomography (CT) Rooms (2)**

*Purpose/use:* Area where patient interacts with the CT machine.

**9.C. CT and MRI Prep Areas**

*Purpose/use:* Area where patients are given radioactive dye so that it may show up in the images created by the machines.

**9.D. Fluoroscopy Rooms (2)**

*Purpose/use:* Area where patient interacts with the fluoroscopy machine.

**9.E. Fluoroscopy ADA Toilet Rooms (2)**

*Purpose/use:* Special toilet room where patients can use to dispose of the radioactive dye in their blood stream.

**9.F. Gowning Area, Men's**

*Purpose/use:* Area where men change into hospital gowns, and wait.

**9.G. Gowning Area, Women's**

*Purpose/use:* Area where women change into hospital gowns, and wait.

**9.H. Greeter's Station**

*Purpose/use:* Reception area where the greeter meets and assists guests to registration.

**9.I. Magnetic Resonance Imaging (MRI) Control Room**

*Purpose/use:* Area where technician runs the MRI machine.

**9.J. Magnetic Resonance Imaging (MRI) Equipment Room**

*Purpose/use:* Equipment room for large MRI machine.

**9.K. Magnetic Resonance Imaging (MRI) Rooms (2)**

*Purpose/use:* Area where patient interacts with the CT machine.

**9.L. Main Work Room**

*Purpose/use:* Office area for Radiology Department.

**9.M. Nurse/Technician Station**

*Purpose/use:* Small work station for nurses/technicians.

**9.N. Registration Rooms (3)**

*Purpose/use:* Rooms where patients register with the hospital.

**9.O. Storage**

*Purpose/use:* General storage area.

**9.P. Toilet, ADA Unisex (4)**

*Purpose/use:* Toilet access for occupants.

**9.Q. Waiting Area**

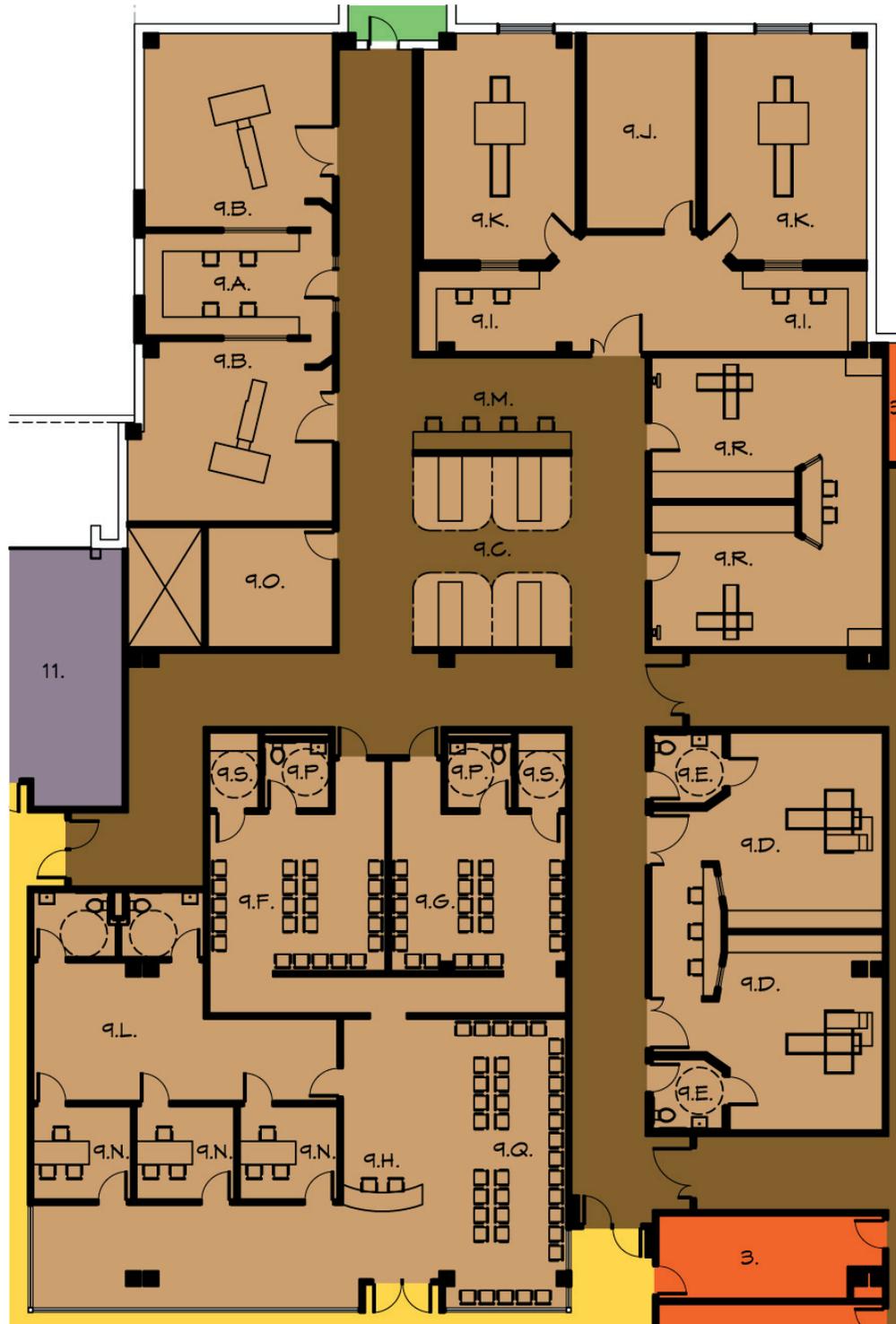
*Purpose/use:* Area for patients, families and friends to wait for diagnosis.

**9.R. X-Ray Rooms (2)**

*Purpose/use:* Area where patient interacts with the X-Ray machine.

**9.S. Changing Rooms (2)**

*Purpose/use:* Patients change from street clothes into gowns.



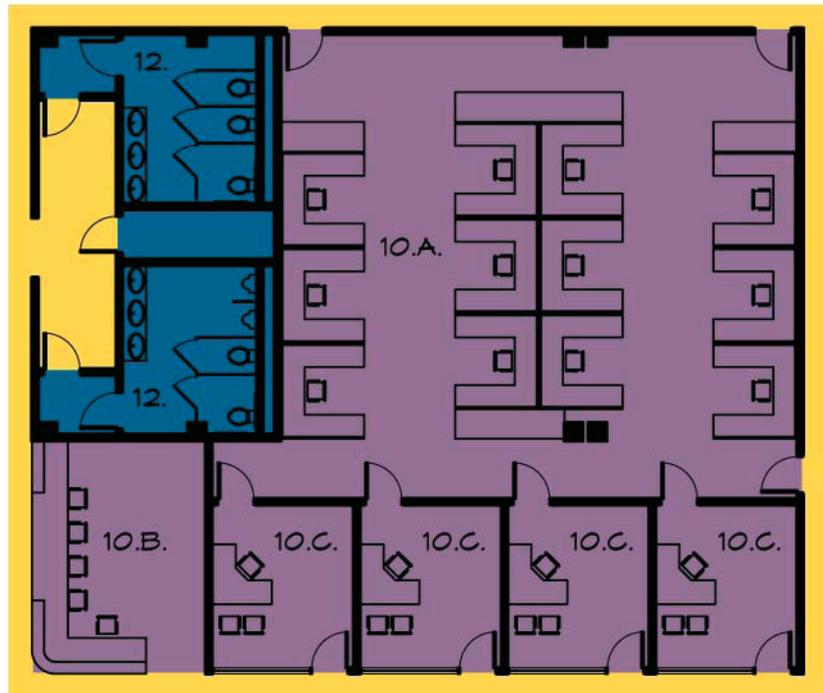
## 10. Registration

*Purpose/use:* Area where new/incoming patients check in and register with the hospital and then are helped to other parts of the hospital based on the patients needs. This is also where patients that have scheduled appointments register and check in.

*Size:* 2,765 feet<sup>2</sup>

*Activities:* Waiting, registration, and orientation of the patient.

*Adjacencies/spatial relationships:* Off of the main valet/drop off entrance, North of Administration and West of the Cafeteria.



*Equipment/furnishings:* Desks, chair, cubicles, computers, printers, fax machines, tables.

### 10.A. Office Area/Main Work Room

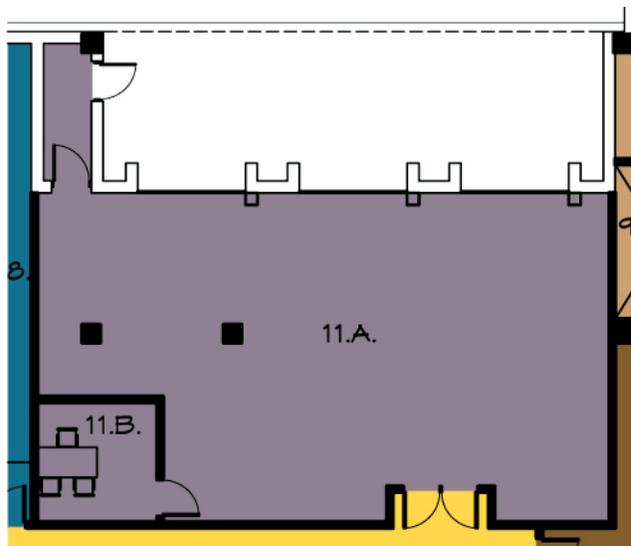
*Purpose/use:* Office area for Registration employees.

### 10.B. Receptionist/Greeter Station

*Purpose/use:* Reception area where the greeter meets and assists guests to registration.

### 10.C. Registration Rooms (3)

*Purpose/use:* Rooms where patients register with the hospital.



## 11. Shipping/Receiving

*Purpose/use:* Main shipping and receiving station of the hospital.

*Size:* 1,365 feet<sup>2</sup>

*Activities:* Shipping, receiving, loading, unloading, storage.

*Adjacencies/spatial relationships:* North of the Laboratory, East of the Pharmacy, West of the Radiology Department, off of the service entrance.

*Equipment/furnishings:* Palettes, desk, chairs, computer.

### 11.A. Office

*Purpose/use:* Office for shipping/receiving manager.

### 11.B. Warehouse/Storage/Receiving Area

*Purpose/use:* Area where cargo is loaded, unloaded, and stored.

**12. Toilet, ADA Public (2) (Men's and Women's)**

*Purpose/use:* Toilet access for occupants and janitors closet.

**13. Women's Services Department**

*Purpose/use:* Portion of the hospital that deals with gynecological examinations, handles labor, delivery, recovery and postpartum phases of pregnancy.

*Size:* 16,850 feet<sup>2</sup>

*Activities:* Examinations, births, surgery, patient monitoring and administration.

*Adjacencies/spatial relationships:* Located in the Northern most part of the hospital.

*Equipment/furnishings:* Desks, chair, cubicles, computers, printers, fax machines, tables, beds, toilets, sinks, counters, upper and lower cabinets, basins, children's toys.

**13.A. Labor, Delivery and Recovery Patient Rooms (4)**

*Purpose/use:* Patient rooms where expecting mothers labor, give birth and recover in.

**13.B. Caesarian/Complication Surgery Rooms (2)**

*Purpose/use:* Surgical rooms where emergency operations or caesarian sections occur.

**13.C. Caesarian/Complication Scrub Station**

*Purpose/use:* Area where surgeons prepare for surgery.

**13.D. Children's Play Area**

*Purpose/use:* Play area for patients children.

**13.E. Exam Rooms (5)**

*Purpose/use:* Patient rooms where check ups and examinations occur in.

**13.F. Janitor's Closet**

*Purpose/use:* Area for janitor to store equipment.

**13.G. Main Work Room**

*Purpose/use:* Office area for Women's Services Department.

**13.H. Nursery Room**

*Purpose/use:* Area where newborns are cared for.

**13.I. Nurse's Station (2)**

*Purpose/use:* Workstations for nurses/technicians.

**13.J. Office Area**

*Purpose/use:* Office area for Women's Services Department.

**13.K. Office**

*Purpose/use:* Office area for nurse manager.

**13.L. Pharmacy**

*Purpose/use:* Medication storage.

**13.M. Receptionist/Greeter Station**

*Purpose/use:* Reception area where the greeter meets and assists guests to registration.

**13.N. Postpartum Rooms (6)**

*Purpose/use:* Areas where mothers stay for a minimum of 48 hours to be observed and monitored.

**13.O. Utility Room, Clean Linen**

*Purpose/use:* Area where clean linens are distributed to patient rooms.

**13.P. Utility Room, Soiled Linen**

*Purpose/use:* Area where soiled linens, bedpans, and bio-hazardous materials are stored for future cleaning.

**13.Q. Staff Break Room**

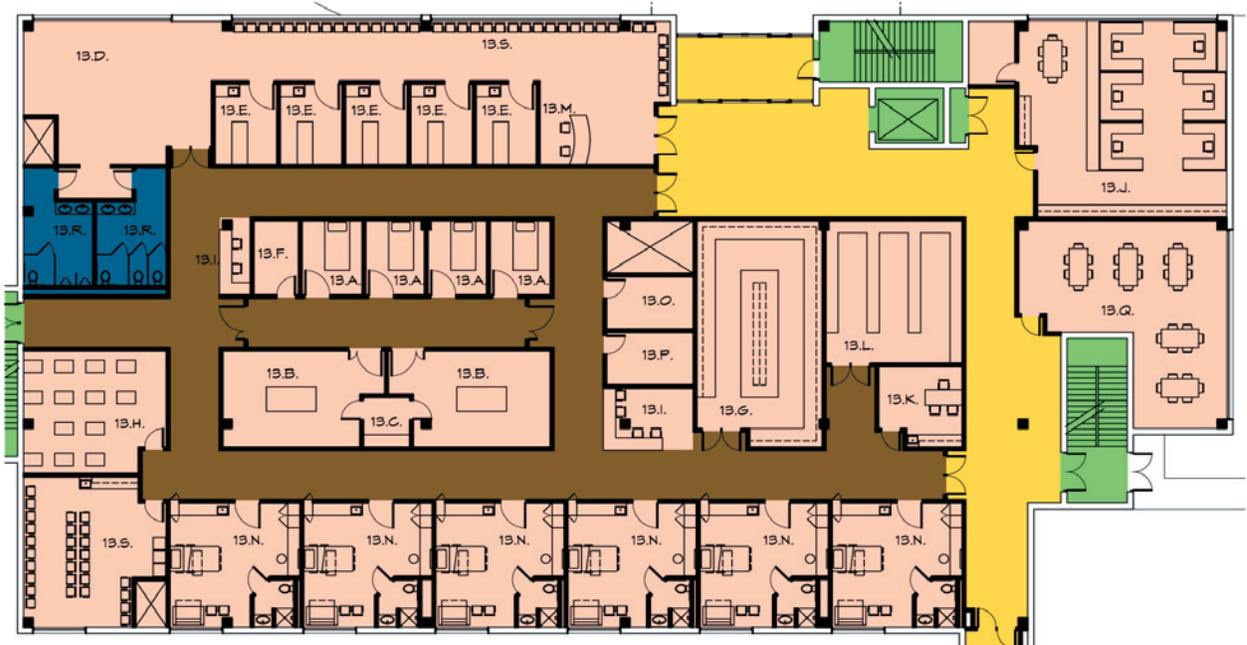
*Purpose/use:* Area for staff to come to take breaks or relax.

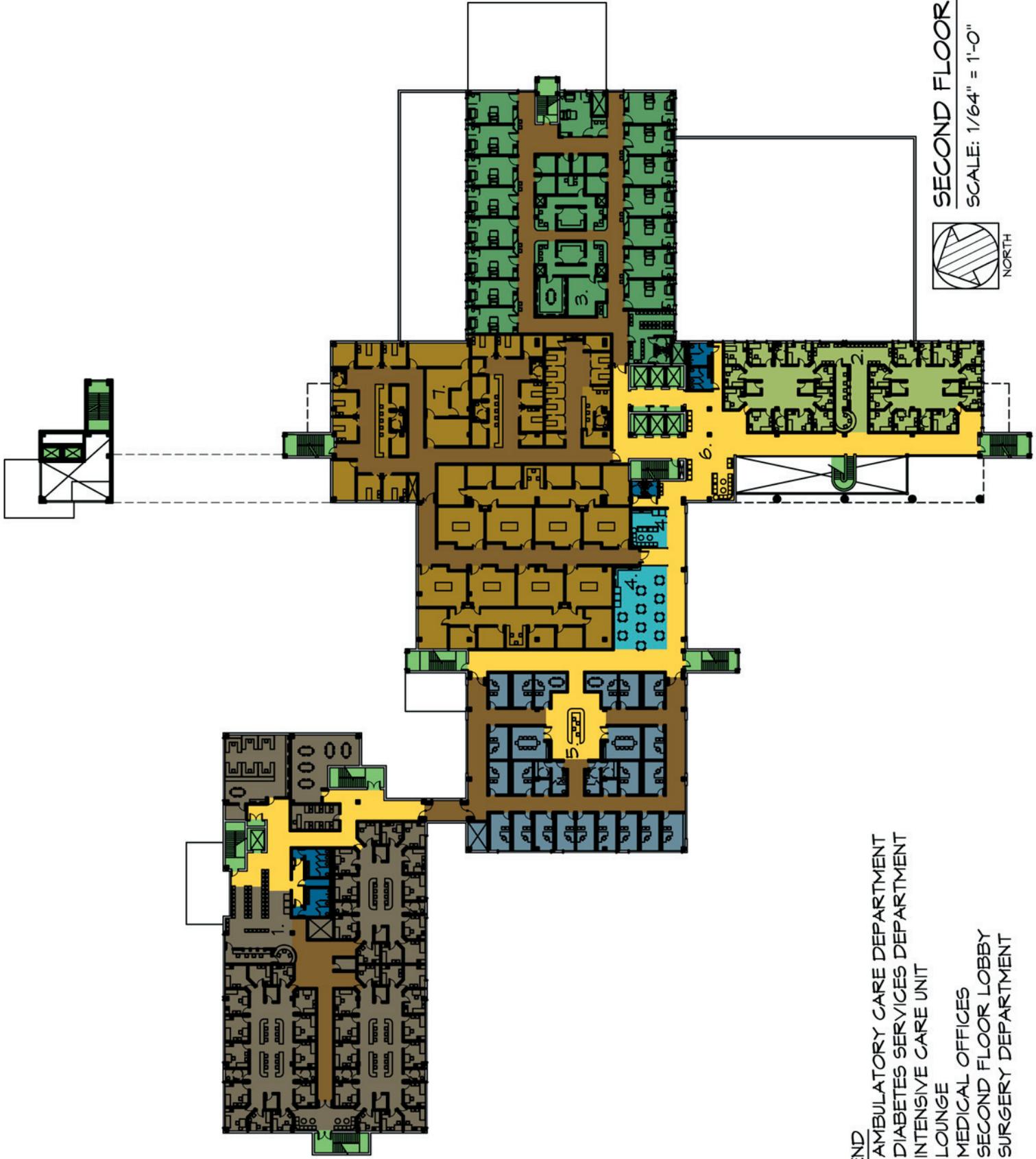
**13.R. Toilet, ADA Public (2) (Men's and Women's)**

*Purpose/use:* Toilet access for occupants.

**13.S. Waiting Area, General**

*Purpose/use:* Area for patients, families and friends to wait for service.





**SECOND FLOOR PLAN**  
 SCALE: 1/64" = 1'-0"



- LEGEND**
- 1. AMBULATORY CARE DEPARTMENT
  - 2. DIABETES SERVICES DEPARTMENT
  - 3. INTENSIVE CARE UNIT
  - 4. LOUNGE
  - 5. MEDICAL OFFICES
  - 6. SECOND FLOOR LOBBY
  - 7. SURGERY DEPARTMENT

## SECOND FLOOR

### 1. Ambulatory Care Department

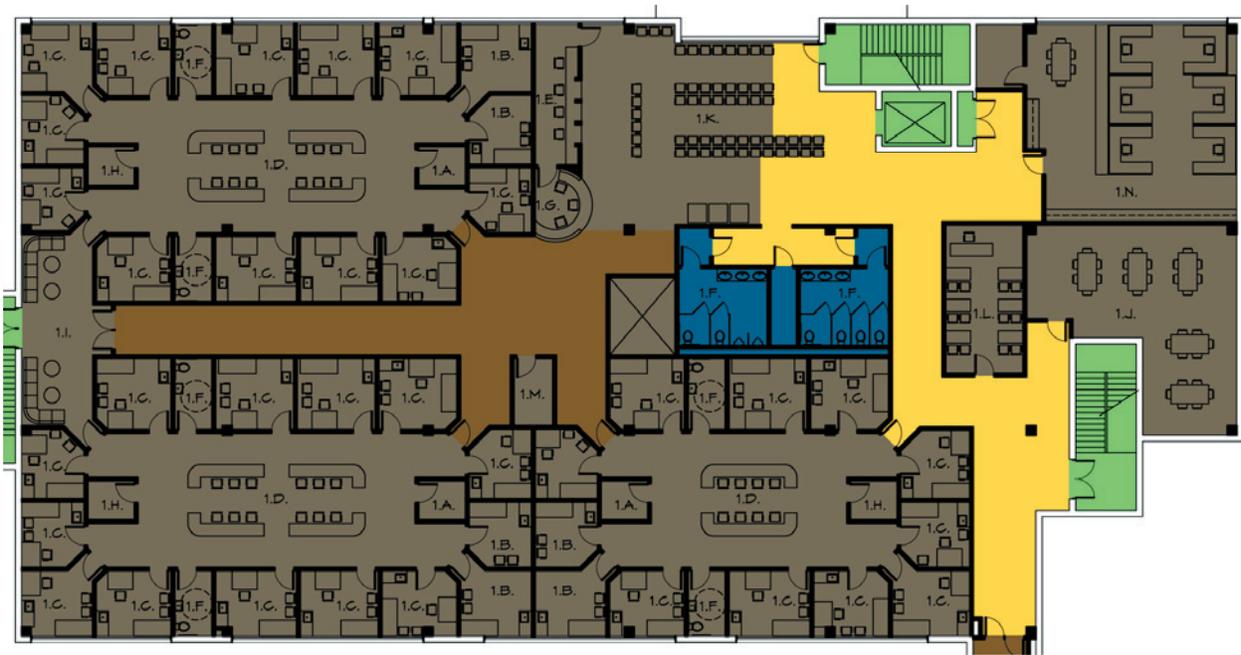
*Purpose/use:* Medical center where the patients are treated on an outpatient basis.

*Size:* 15,415 feet<sup>2</sup>

*Activities:* Examinations, non-invasive surgery, patient monitoring, administration, vision services, and prescriptions.

*Adjacencies/spatial relationships:* Located in the Northern most part of the hospital.

*Equipment/furnishings:* Desks, chair, cubicles, computers, printers, fax machines, tables, beds, toilets, sinks, counters, upper and lower cabinets.



#### **1.A. Blood Work Room**

*Purpose/use:* Room for blood work to be processed and stored for use by staff.

#### **1.B. Dialysis Room**

*Purpose/use:* Room where an emergency dialysis procedure occurs.

#### **1.C. Exam/Treatment Rooms (40)**

*Purpose/use:* Room where a physician can examine and treat patients for various ailments.

#### **1.D. Nurse's Station**

*Purpose/use:* Workstations for nurses/technicians.

#### **1.E. Office Area/Clerk Area**

*Purpose/use:* Area where patients can handle their bills and a place where staff work and also register with the hospital.

#### **1.F. Toilet, ADA Unisex (8)**

*Purpose/use:* Toilet access for occupants.

#### **1.G. Receptionist Area**

*Purpose/use:* Reception area where the greeter meets and assists guests to registration.

#### **1.H. Storage (4)**

*Purpose/use:* General storage area.

**1.I. Staff Lounge**

*Purpose/use:* Area for staff to come to take breaks or relax.

**1.J. Staff Breakroom**

*Purpose/use:* Area for staff to come to take breaks or relax.

**1.K. Waiting, General**

*Purpose/use:* Area for patients, families and friends to wait for service.

**1.L. Classroom**

*Purpose/use:* Area for various departments to come and hold information seminars for staff and patients.

**1.M. Janitor's Closet**

*Purpose/use:* Area for janitor to store equipment.

**1.N. Office Area**

*Purpose/use:* Office area for Ambulatory Care Department.

**2. Diabetes Services Department**

*Purpose/use:* Medical center where the patients are treated on an outpatient basis and focuses on diabetes and dialysis.

*Size:* 5,270feet<sup>2</sup>

*Activities:* Examinations, and dialysis.

*Adjacencies/spatial relationships:* Located above the valet/drop off entrance of the hospital, South of the Surgery Department and ICU.

*Equipment/furnishings:* Desks, chairs, computers, printers, fax machines, beds, toilets, sinks, counters, upper and lower cabinets.

**2.A. Blood Work Room**

*Purpose/use:* Room for blood work to be processed and stored for use by staff.

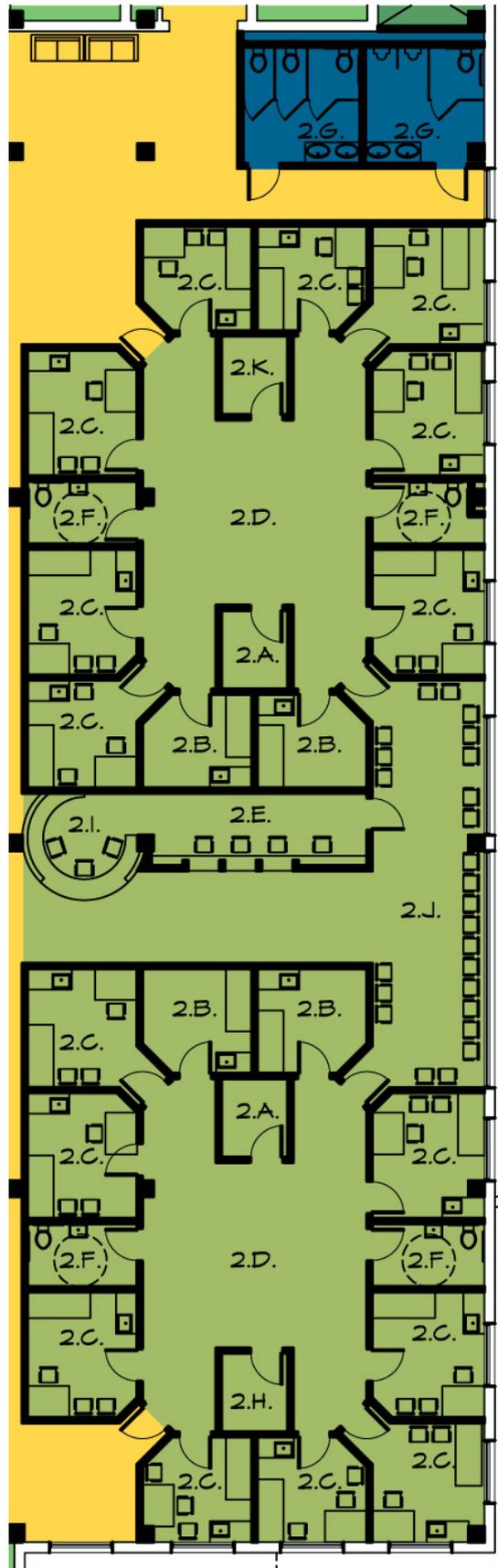
**2.B. Dialysis Room**

*Purpose/use:* Room where an emergency dialysis procedure occurs.

**2.C. Exam/Treatment Rooms (6)**

*Purpose/use:* Room where a physician can examine and treat patients for diabetes.

**2.D. Nurse's Station**



*Purpose/use:* Workstations for nurses/technicians.

**2.E. Office Area/Clerk Area**

*Purpose/use:* Area where patients can handle their bills and a place where staff work and also register with the hospital.

**2.F. Toilet, ADA Public (2) (Men's and Women's)**

*Purpose/use:* Toilet access for occupants.

**2.G. Toilet, ADA Unisex (4)**

*Purpose/use:* Toilet access for occupants.

**2.H. Janitor's Closets (2)**

*Purpose/use:* Area for janitor to store equipment.

**2.I. Receptionist Area**

*Purpose/use:* Reception area where the greeter meets and assists guests to registration.

**2.J. Waiting, General**

*Purpose/use:* Area for patients, families and friends to wait for service.

**2.K. Storage**

*Purpose/use:* Room for general storage.

**3. Intensive Care Unit**

*Purpose/use:* Advanced medical facilities and services that meet very ill patients needs.

*Size:* 12,170 feet<sup>2</sup>

*Activities:* Monitoring, recuperation, treatment, and healing.

*Adjacencies/spatial relationships:* East of Surgery Department.

*Equipment/furnishings:* Desks, chairs, computers, printers, fax machines, beds, patient care modules, toilets, sinks, counters, upper and lower cabinets.

**3.A. Equipment Storage**

*Purpose/use:* Area to store resuscitation equipment.

**3.B. Intensive Care Patient Room (16)**

*Purpose/use:* Patient room set up for decentralized nursing stations for constant observation.

**3.C. Main Work Room**

*Purpose/use:* Work area for ICU.

**3.D. Pharmacy**

*Purpose/use:* Medication storage.

**3.E. Nourishment**

*Purpose/use:* Storage of food and hospital food carts.

**3.F. Nurse's Station (4)**

*Purpose/use:* Workstations for nurses/technicians.

**3.G. Nurse's Observation Station (15)**

*Purpose/use:* Decentralized workstations for constant patient observation.

**3.H. Office**

*Purpose/use:* Office area for nurse manager.

**3.I. Registration**

*Purpose/use:* Area where patients are checked in with the hospital.

**3.J. Respiration Therapy Cleaning**

*Purpose/use:* Area where intubation devices are cleaned and sterilized for re-use.

**3.K. Respiration Therapy Storage Room**

*Purpose/use:* Area where intubation devices are stored after cleaning.

**3.L. Janitor's Closet**

*Purpose/use:* Area for janitor to store equipment.

**3.M. Toilet, ADA Unisex (3)**

*Purpose/use:* Toilet access for occupants.

**3.N. Utility Room, Clean Linen**

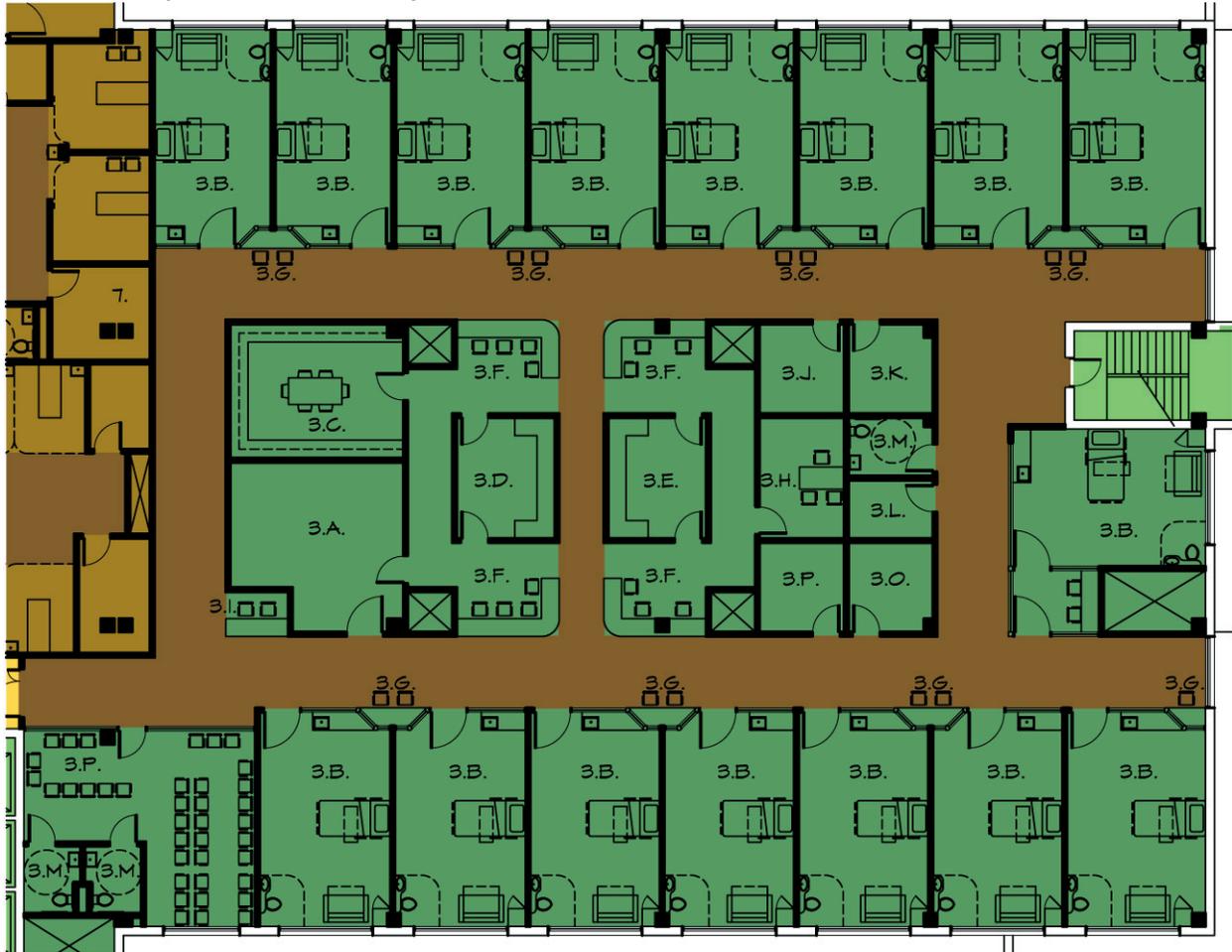
*Purpose/use:* Area where clean linens are distributed to patient rooms.

**3.O. Utility Room, Soiled Linen**

*Purpose/use:* Area where soiled linens, bedpans, and bio-hazardous materials are stored for future cleaning.

**3.P. Waiting, General**

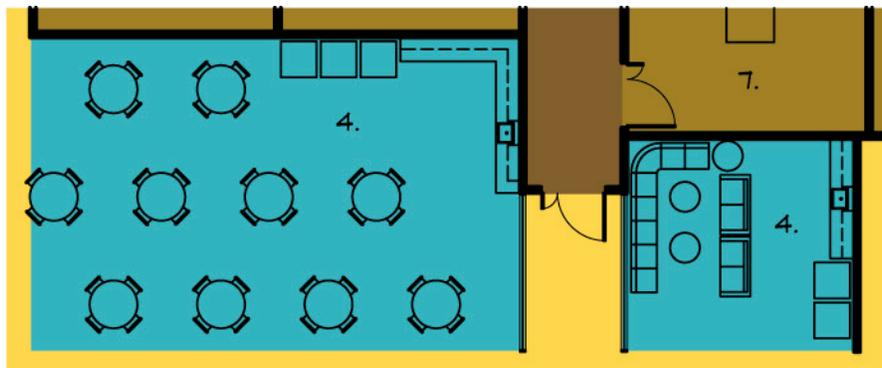
*Purpose/use:* Area for patients, families and friends to wait for service.



**4. Lounge (2)**

*Purpose/use:* Area where visitors can relax and socialize and wait for surgical outcomes.

*Size:* 1,160 feet<sup>2</sup>



*Activities:* Sitting, relaxing, and socializing.

*Adjacencies/spatial relationships:* South of vertical circulation core.

*Equipment/furnishings:* Sofas, tables.

## 5. Medical Offices

*Purpose/use:* Area where physicians, social workers, and other staff have their offices.

*Size:* 7,840 feet<sup>2</sup>

*Activities:* Office work, private appointments, and administration work.

*Adjacencies/spatial relationships:* West of Surgery Department.

*Equipment/furnishings:* Desks, tables, chairs, filing cabinets, sinks, toilets, benches, bookshelves.

### 5.A. Conference Room (2)

*Purpose/use:* Area for collaboration of staff.

### 5.B. Offices (21)

*Purpose/use:* Office area for various staff members.

### 5.C. Receptionist

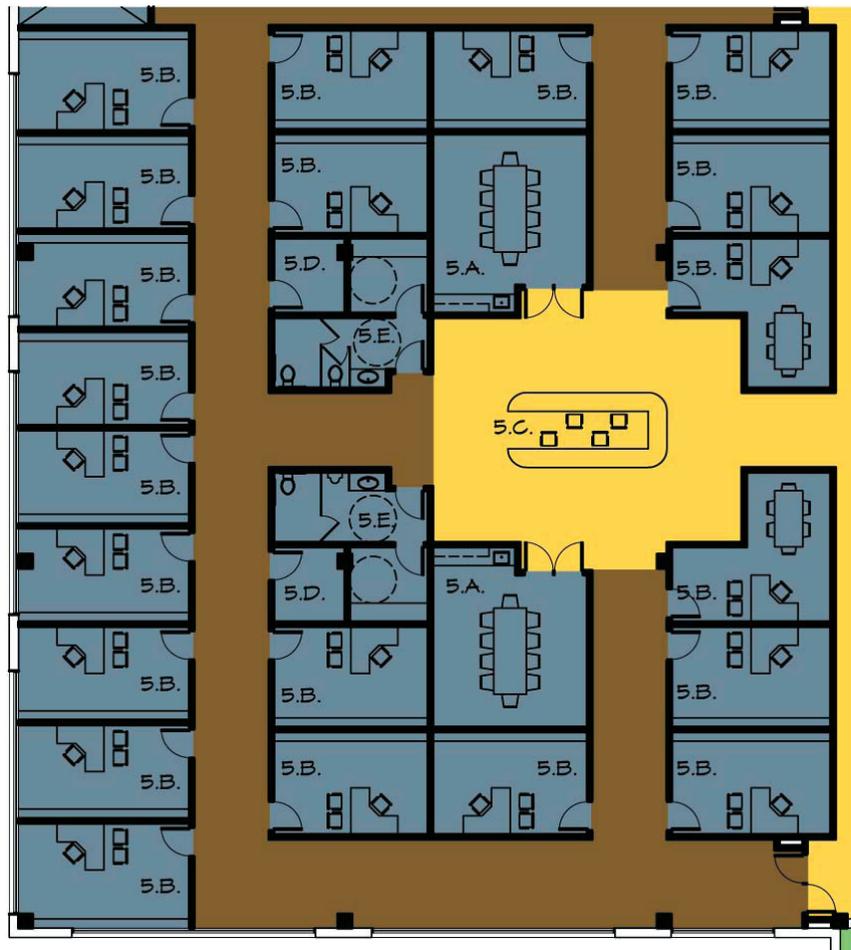
*Purpose/use:* Reception area where the secretary meets and greets visitors.

### 5.D. Storage

*Purpose/use:* General storage area.

### 5.E. Toilet, ADA Private and Changing Room (2) (Men's and Women's)

*Purpose/use:* Toilet access for occupants as well as private changing room for staff.



## 6. Second Floor Lobby

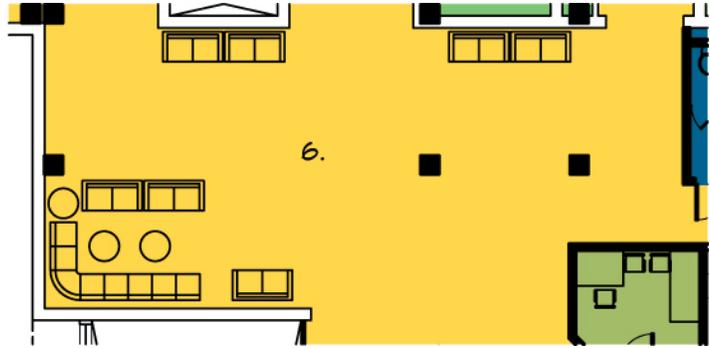
*Purpose/use:* Area where staff and visitors can relax and socialize.

*Size:* 1,430 feet<sup>2</sup> (combined)

*Activities:* Sitting, relaxing, eating, and socializing.

*Adjacencies/spatial relationships:* South of Surgery Department.

*Equipment/furnishings:* Sofas, tables, chairs, sink, toilets, vending machines.



## 7. Surgery Department

*Purpose/use:* Area where visitors can relax and socialize and wait for surgical outcomes.

*Size:* 18,220 feet<sup>2</sup>

*Activities:* Preparation, surgery, sedation, recovery, monitoring, and sterilizing.

*Adjacencies/spatial relationships:* East of Medical Offices and West of ICU.

*Equipment/furnishings:* Flash sterilizer, C-Arm X-ray machine, surgical carts, scrub sinks, beds, operating tables, ceiling mounted booms, desks, chairs, computers, expensive surgical equipment, hand washing sinks.

### 7.A. Equipment Storage

*Purpose/use:* Room to store surgical equipment.

### 7.B. Flash Sterilizer

*Purpose/use:* Room where flash sterilizer is located.

### 7.C. Janitor's Closet

*Purpose/use:* Area for janitor to store equipment.

### 7.D. Operating Rooms (8)

*Purpose/use:* Room where surgeons perform invasive or major surgeries in a sterile environment.

### 7.E. Phase 1 Recovery Patient Rooms (ceiling curtain divider) (7)

*Purpose/use:* Phase 1 Post anesthesia Care Unit (PACU) is a critical care area providing post anesthesia nursing care for patients immediately after operative and invasive procedures prior to discharge to the Phase II ambulatory setting, the in-patient surgical unit and the Intensive Care Unit.

### 7.F. Pre-Operation/Phase 2 Recovery Patient Rooms (10)

*Purpose/use:* Pre-Operation/Phase 2 Recovery patient rooms are for patients that are ambulatory and can usually go home after monitoring and observation. This space is also used for pre-operation preparation.

### 7.G. Nourishment

*Purpose/use:* Storage of food and hospital food carts.

### 7.H. Nurse's Station

*Purpose/use:* Workstations for nurses/technicians.

### 7.I. Patient Bed Alcove/C-Arm Storage

*Purpose/use:* Area to store a C-Arm x-ray machine or a patient bed.

### 7.J. Pharmacy

*Purpose/use:* Medication storage.

**7.K. Radiologist Work Area**

*Purpose/use:* Area where the radiologist works during and after surgical procedures.

**7.L. Scrub Stations (4)**

*Purpose/use:* Area where surgeons prepare for surgery.

**7.M. Sterile Storage**

*Purpose/use:* Area where sterile medical supplies are stored.

**7.N. Storage**

*Purpose/use:* General storage area.

**7.O. Surgical Case Cart, Decontamination Room**

*Purpose/use:* Area where surgical carts are mass cleaned.

**7.P. Surgical Case Cart, Sterile Processing Room**

*Purpose/use:* Area where surgical carts are processed and queued for sterilization.

**7.Q. Surgical Case Cart, Sterilizing Room**

*Purpose/use:* Area where surgical carts are sterilized.

**7.R. Surgical Case Cart, Storage**

*Purpose/use:* Area where surgical carts are stored.

**7.S. Toilet, ADA Unisex (5)**

*Purpose/use:* Toilet access for occupants.



**7.T. Utility Room, Clean Linen**

*Purpose/use:* Area where clean linens are distributed to patient rooms.

**7.U. Utility Room, Soiled Linen**

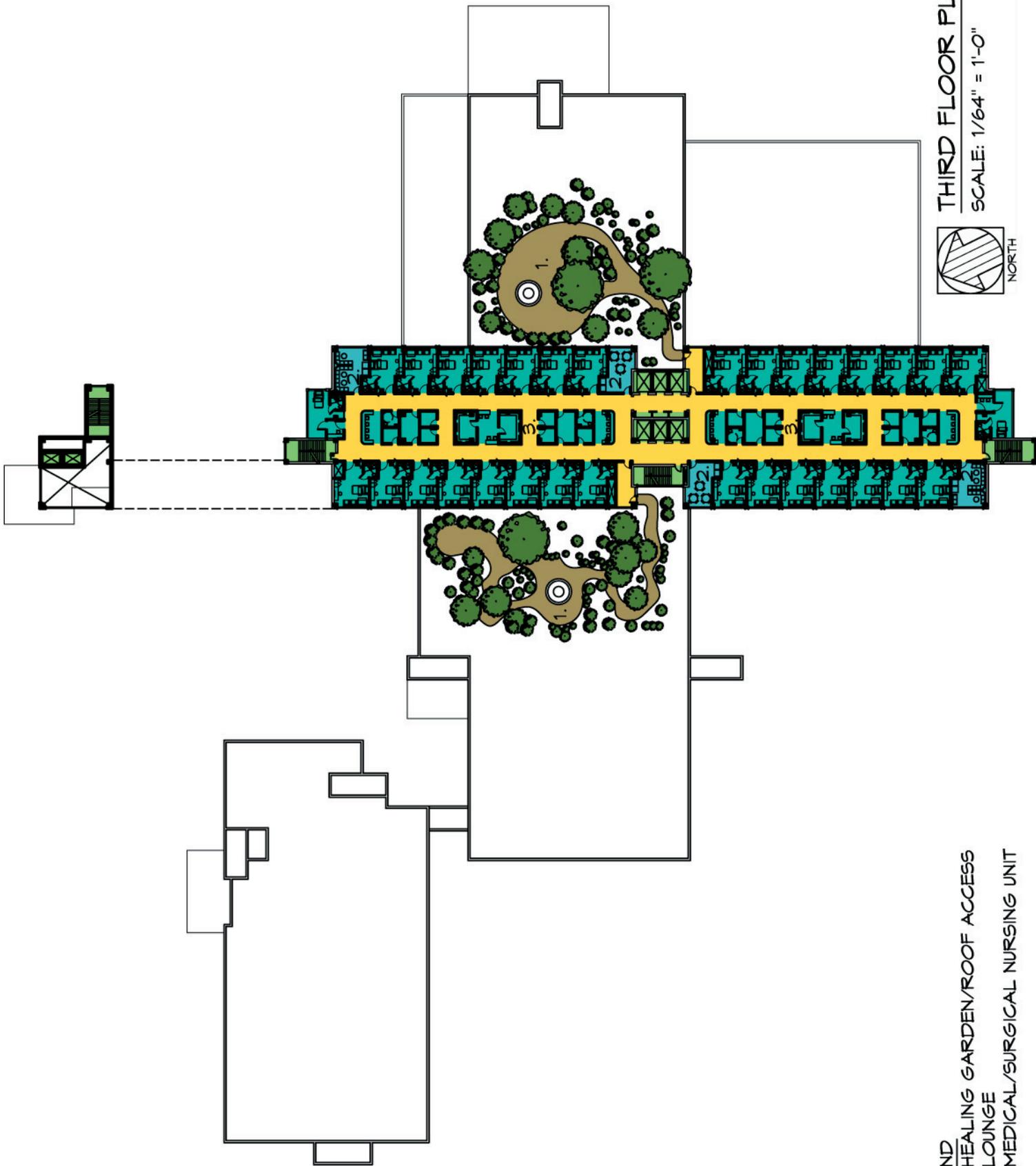
*Purpose/use:* Area where soiled linens, bedpans, and bio-hazardous materials are stored for future cleaning.

**7.V. Anesthesia Storage**

*Purpose/use:* Room where anesthesia gases are stored.

**7.W. Clean Surgical Case Cart Storage**

*Purpose /use:* Room where pre-prepped case carts are stored.



THIRD FLOOR PLAN  
SCALE: 1/64" = 1'-0"  
NORTH

LEGEND  
1. HEALING GARDEN/ROOF ACCESS  
2. LOUNGE  
3. MEDICAL/SURGICAL NURSING UNIT

## THIRD FLOOR

### 1. Healing Garden/Roof Access (2)

*Purpose/use:* Area where patients can go to relax and focus on healing.

*Size:* 18,220 feet<sup>2</sup>

*Activities:* Relaxation.

*Adjacencies/spatial relationships:* On the roof on either side of the nursing units.



### 2. Lounge (4)

*Purpose/use:* Area where visitors can relax and socialize and wait.

*Size:* 1,290 feet<sup>2</sup> (combined)

*Activities:* Sitting, relaxing, and socializing.

*Adjacencies/spatial relationships:* South of vertical circulation core.

*Equipment/furnishings:* Sofas, tables.

### 3. Medical/Surgical Nursing Unit

*Purpose/use:* Area where nurses treat patients of various ailments.

*Size:* 21,580 feet<sup>2</sup> (combined)

*Activities:* Monitoring, recuperation, treatment, and healing.

*Adjacencies/spatial relationships:* Entire 3<sup>rd</sup> floor (both sides).

*Equipment/furnishings:* Beds, sofas, desks, tables, cabinets (upper and lower), chairs, toilets, sinks, hand washing sinks.

**3.A. Medical/Surgical Nursing Room (30)**

*Purpose/use:* Patient rooms where patients can receive healing benefits from staff.

**3.B. Medical/Surgical Nursing Isolation Room (2)**

*Purpose/use:* Patient rooms where patients can receive healing benefits from staff, isolated from the rest of the unit through negative pressure. The isolation room is here in case a patient is contagious.

**3.C. Pharmacy**

*Purpose/use:* Medication storage.

**3.D. Nourishment**

*Purpose/use:* Storage of food and hospital food carts.

**3.E. Nurse's Station (4)**

*Purpose/use:* Workstations for nurses/technicians.

**3.F. Janitor's Closet**

*Purpose/use:* Area for janitor to store equipment.

**3.G. Storage (4)**

*Purpose/use:* General storage area.

**3.H. Toilet, ADA Unisex (4)**

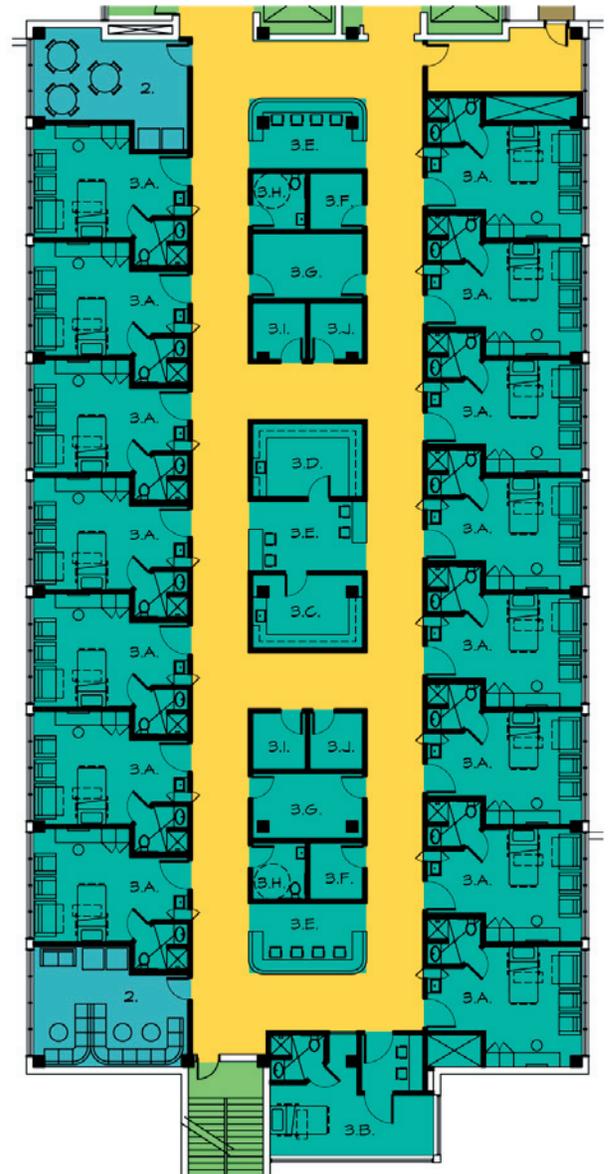
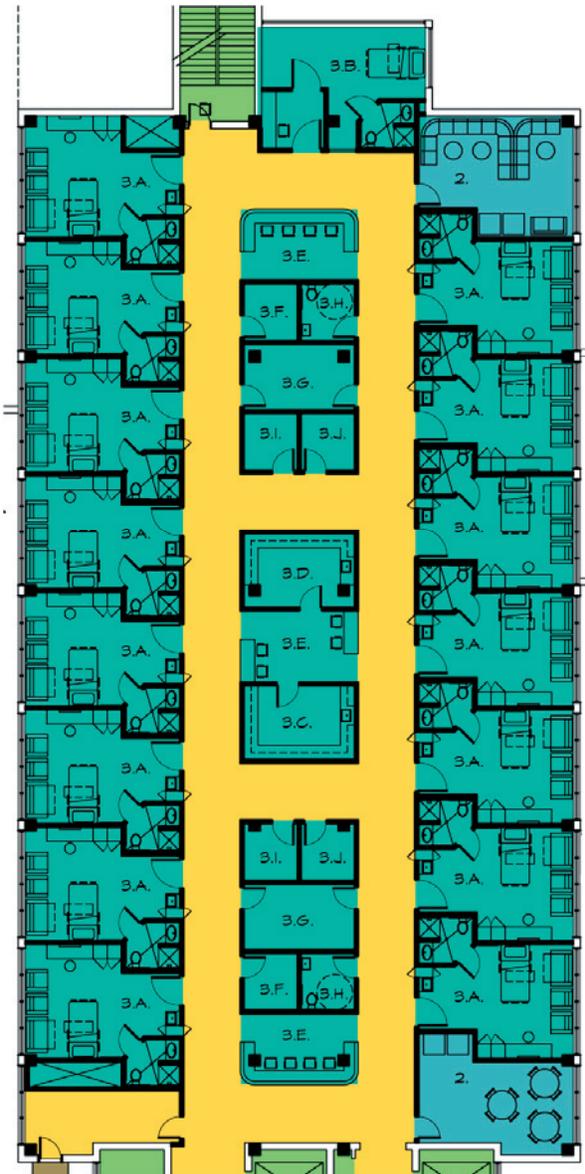
*Purpose/use:* Toilet access for occupants.

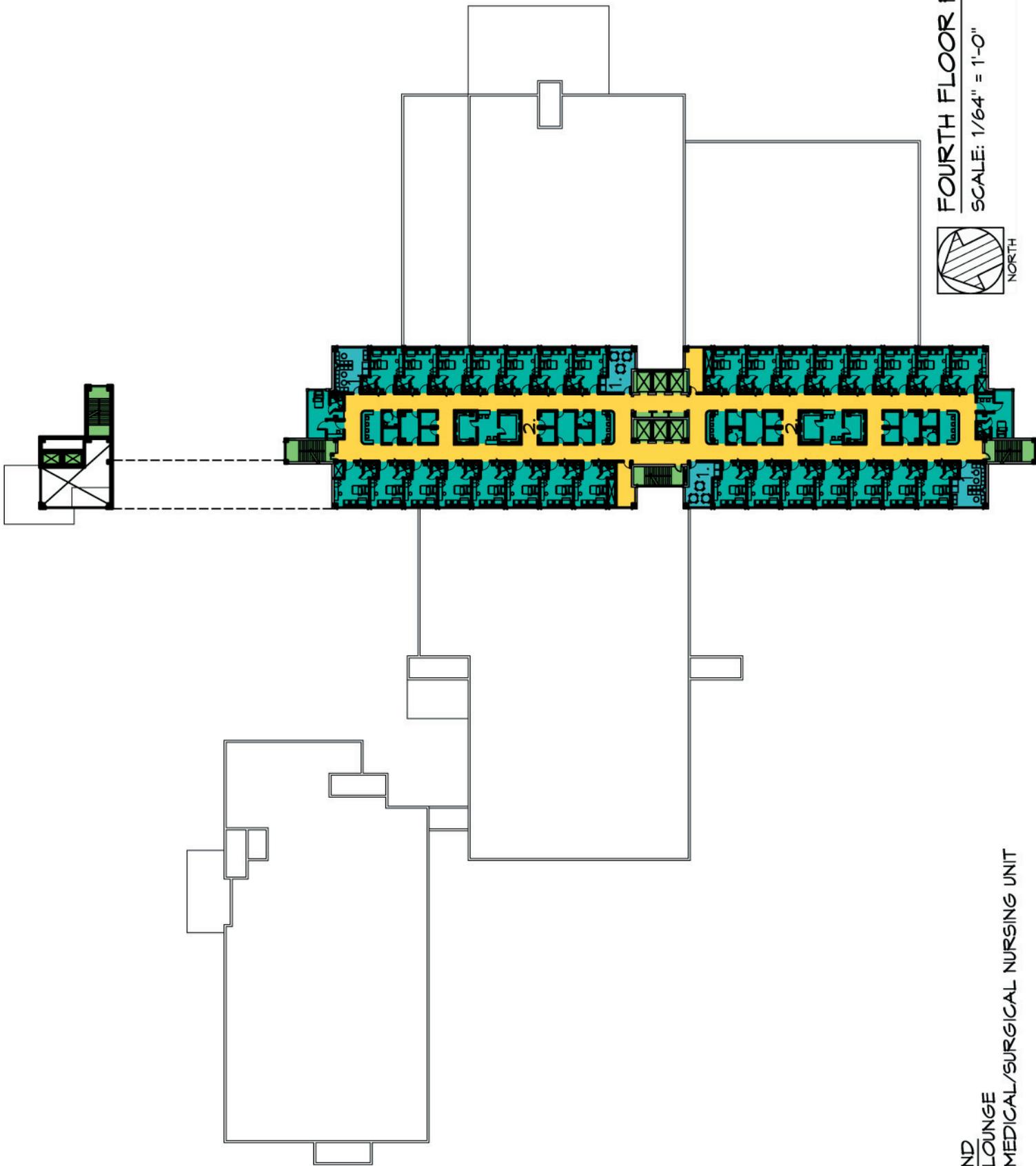
**3.I. Utility Room, Clean Linen (4)**

*Purpose/use:* Area where clean linens are distributed to patient rooms.

**3.J. Utility Room, Soiled Linen (4)**

*Purpose/use:* Area where soiled linens, bedpans, and bio-hazardous materials are stored for future cleaning.





**FOURTH FLOOR PLAN**  
SCALE: 1/64" = 1'-0"  
 NORTH

**LEGEND**  
1. LOUNGE  
2. MEDICAL/SURGICAL NURSING UNIT

## **FOURTH FLOOR**

### **1. Lounge (4)**

*Purpose/use:* Area where visitors can relax and socialize and wait.

*Size:* 1,290 feet<sup>2</sup> (combined)

*Activities:* Sitting, relaxing, and socializing.

*Adjacencies/spatial relationships:* South of vertical circulation core.

*Equipment/furnishings:* Sofas, tables.

### **2. Medical/Surgical Nursing Unit**

*Purpose/use:* Area where nurses treat patients of various ailments.

*Size:* 21,580 feet<sup>2</sup> (combined)

*Activities:* Monitoring, recuperation, treatment, and healing.

*Adjacencies/spatial relationships:* Entire 3<sup>rd</sup> floor (both sides).

*Equipment/furnishings:* Beds, sofas, desks, tables, cabinets (upper and lower), chairs, toilets, sinks, hand washing sinks.

#### **2.A. Medical/Surgical Nursing Room (30)**

*Purpose/use:* Patient rooms where patients can receive healing benefits from staff.

#### **2.B. Medical/Surgical Nursing Isolation Room (2)**

*Purpose/use:* Patient rooms where patients can receive healing benefits from staff, isolated from the rest of the unit through negative pressure. The isolation room is here in case a patient is contagious.

#### **2.C. Pharmacy**

*Purpose/use:* Medication storage.

#### **2.D. Nourishment**

*Purpose/use:* Storage of food and hospital food carts.

#### **2.E. Nurse's Station (4)**

*Purpose/use:* Workstations for nurses/technicians.

#### **2.F. Janitor's Closet**

*Purpose/use:* Area for janitor to store equipment.

#### **2.G. Storage (4)**

*Purpose/use:* General storage area.

#### **2.H. Toilet, ADA Unisex (4)**

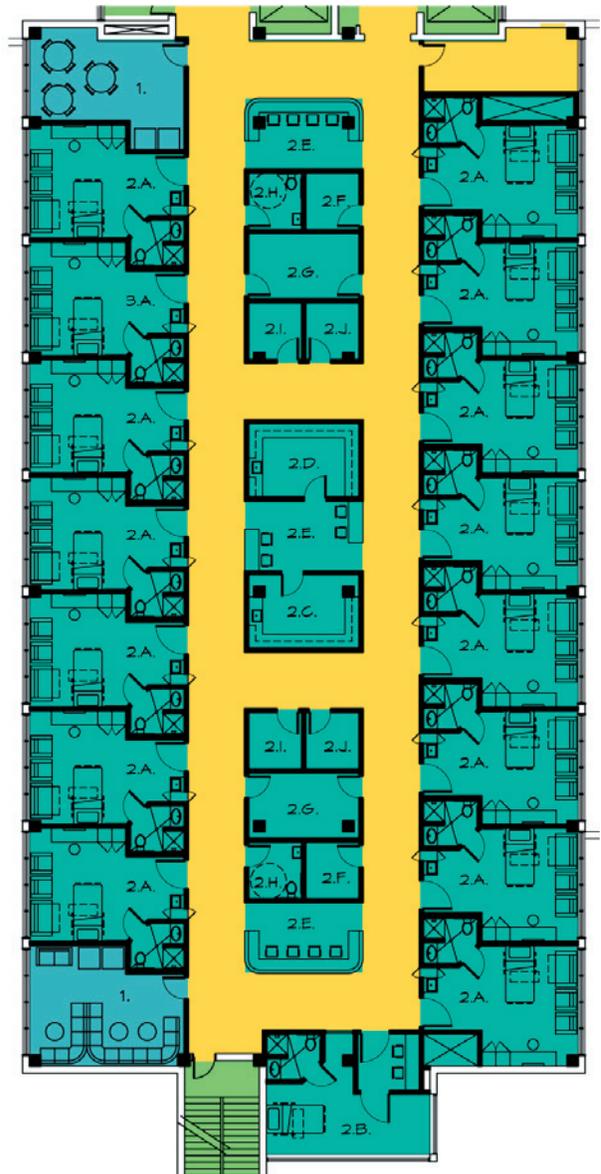
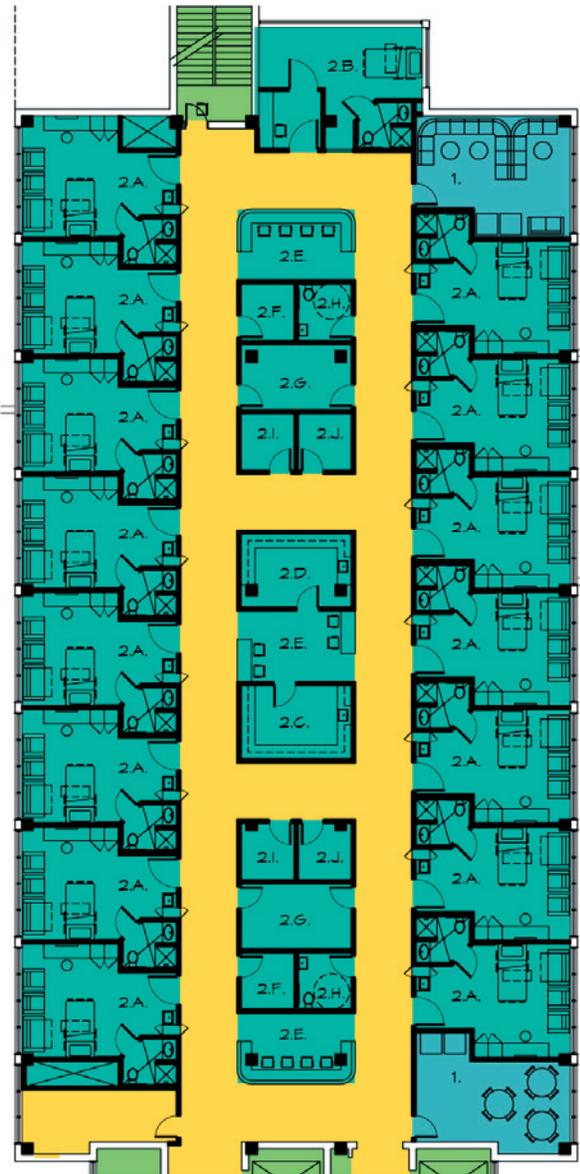
*Purpose/use:* Toilet access for occupants.

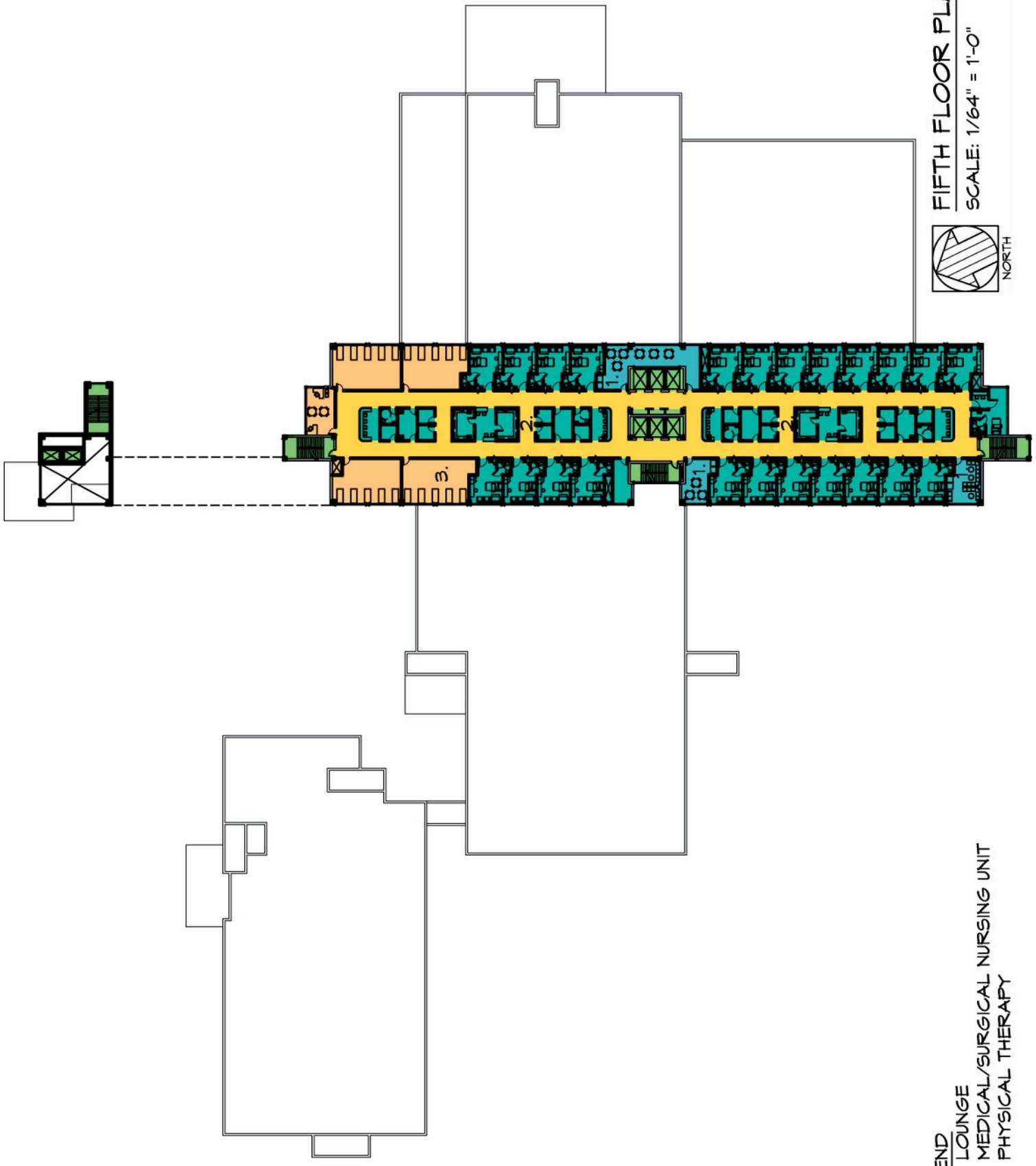
#### **2.I. Utility Room, Clean Linen (4)**

*Purpose/use:* Area where clean linens are distributed to patient rooms.

#### **2.J. Utility Room, Soiled Linen (4)**

*Purpose/use:* Area where soiled linens, bedpans, and bio-hazardous materials are stored for future cleaning.





FIFTH FLOOR PLAN  
 SCALE: 1/64" = 1'-0"



- LEGEND**
- 1. LOUNGE
  - 2. MEDICAL/SURGICAL NURSING UNIT
  - 3. PHYSICAL THERAPY

## **FIFTH FLOOR**

### **1. Lounge (4)**

*Purpose/use:* Area where visitors can relax and socialize and wait.

*Size:* 1,290 feet<sup>2</sup> (combined)

*Activities:* Sitting, relaxing, and socializing.

*Adjacencies/spatial relationships:* South of vertical circulation core.

*Equipment/furnishings:* Sofas, tables.

### **2. Medical/Surgical Nursing Unit**

*Purpose/use:* Area where nurses treat patients of various ailments.

*Size:* 17,110 feet<sup>2</sup> (combined)

*Activities:* Monitoring, recuperation, treatment, and healing.

*Adjacencies/spatial relationships:* Entire 3<sup>rd</sup> floor (both sides).

*Equipment/furnishings:* Beds, sofas, desks, tables, cabinets (upper and lower), chairs, toilets, sinks, hand washing sinks.

#### **2.A. Medical/Surgical Nursing Room (23)**

*Purpose/use:* Patient rooms where patients can receive healing benefits from staff.

#### **2.B. Medical/Surgical Nursing Isolation Room (2)**

*Purpose/use:* Patient rooms where patients can receive healing benefits from staff, isolated from the rest of the unit through negative pressure. The isolation room is here in case a patient is contagious.

#### **2.C. Pharmacy**

*Purpose/use:* Medication storage.

#### **2.D. Nourishment**

*Purpose/use:* Storage of food and hospital food carts.

#### **2.E. Nurse's Station (4)**

*Purpose/use:* Workstations for nurses/technicians.

#### **2.F. Janitor's Closet**

*Purpose/use:* Area for janitor to store equipment.

#### **2.G. Storage (4)**

*Purpose/use:* General storage area.

#### **2.H. Toilet, ADA Unisex (4)**

*Purpose/use:* Toilet access for occupants.

#### **2.I. Utility Room, Clean Linen (4)**

*Purpose/use:* Area where clean linens are distributed to patient rooms.

#### **2.J. Utility Room, Soiled Linen (4)**

*Purpose/use:* Area where soiled linens, bedpans, and bio-hazardous materials are stored for future cleaning.

### **3. Physical Therapy**

*Purpose/use:* Area where patients can go to recuperate and rehabilitate for discharge.

*Size:* 4,470 feet<sup>2</sup> (combined)

*Activities:* Physical rehab.

*Adjacencies/spatial relationships:* North of Medical/Surgical Nursing Unit.

*Equipment/furnishings:* Beds, work out equipment, desks, chairs, tables, computers.

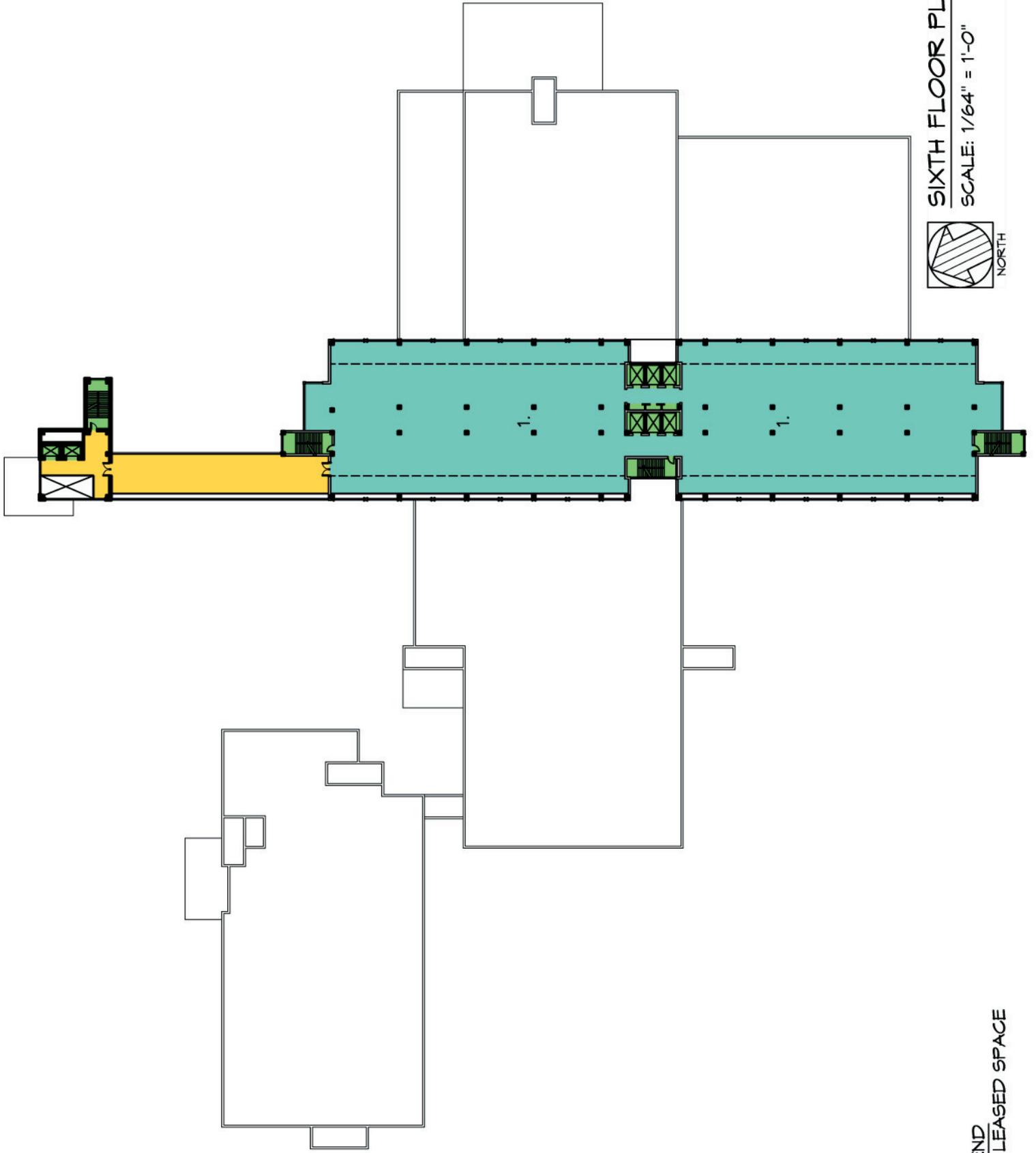
**3.A. Office**

*Purpose/use:* Office area for therapy staff members.

**3.B. Therapy Room**

*Purpose/use:* Room where physical rehabilitation occurs.





SIXTH FLOOR PLAN  
SCALE: 1/64" = 1'-0"  
NORTH

LEGEND  
1. LEASED SPACE

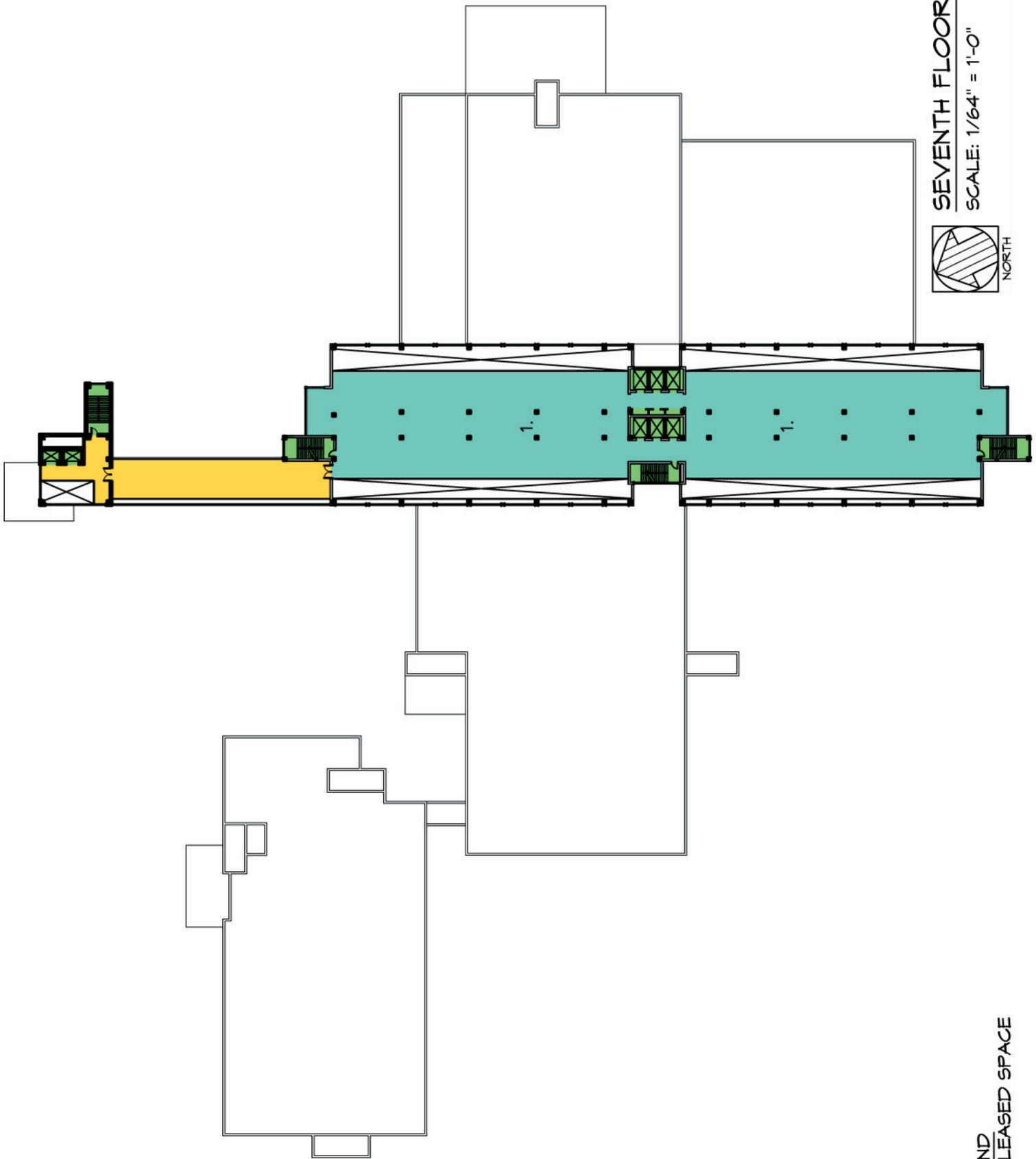
## ***SIXTH FLOOR***

### **1. Leased Space**

*Purpose/use:* Area in which future office space will be leased out so that the hospital can make extra money.

*Size:* 22,950 feet<sup>2</sup> (combined)

*Adjacencies/spatial relationships:* Entire floor.



SEVENTH FLOOR PLAN  
SCALE: 1/64" = 1'-0"



LEGEND  
1. LEASED SPACE

## ***SEVENTH FLOOR***

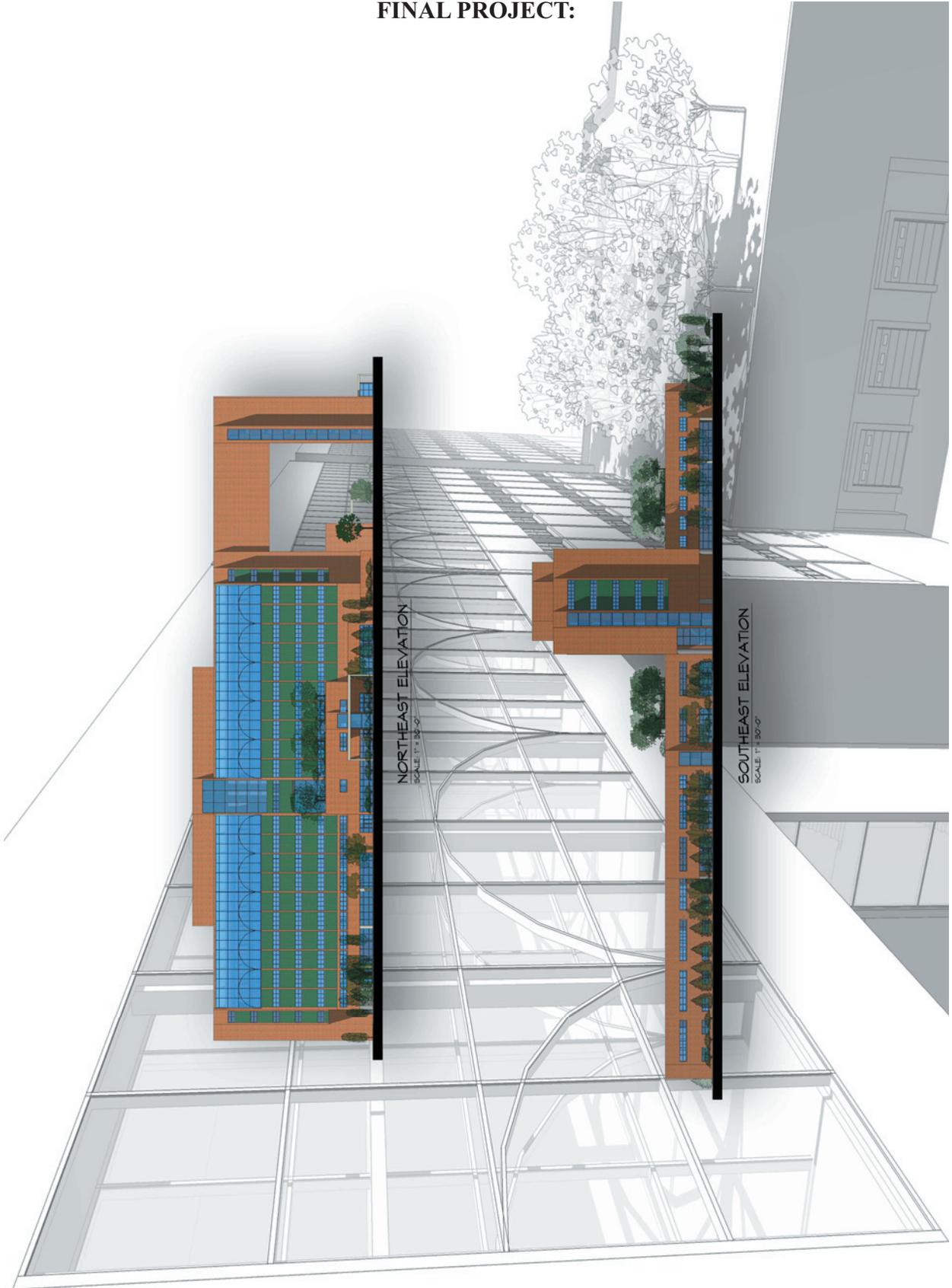
### **1. Leased Space**

*Purpose/use:* Area in which future office space will be leased out so that the hospital can make extra money.

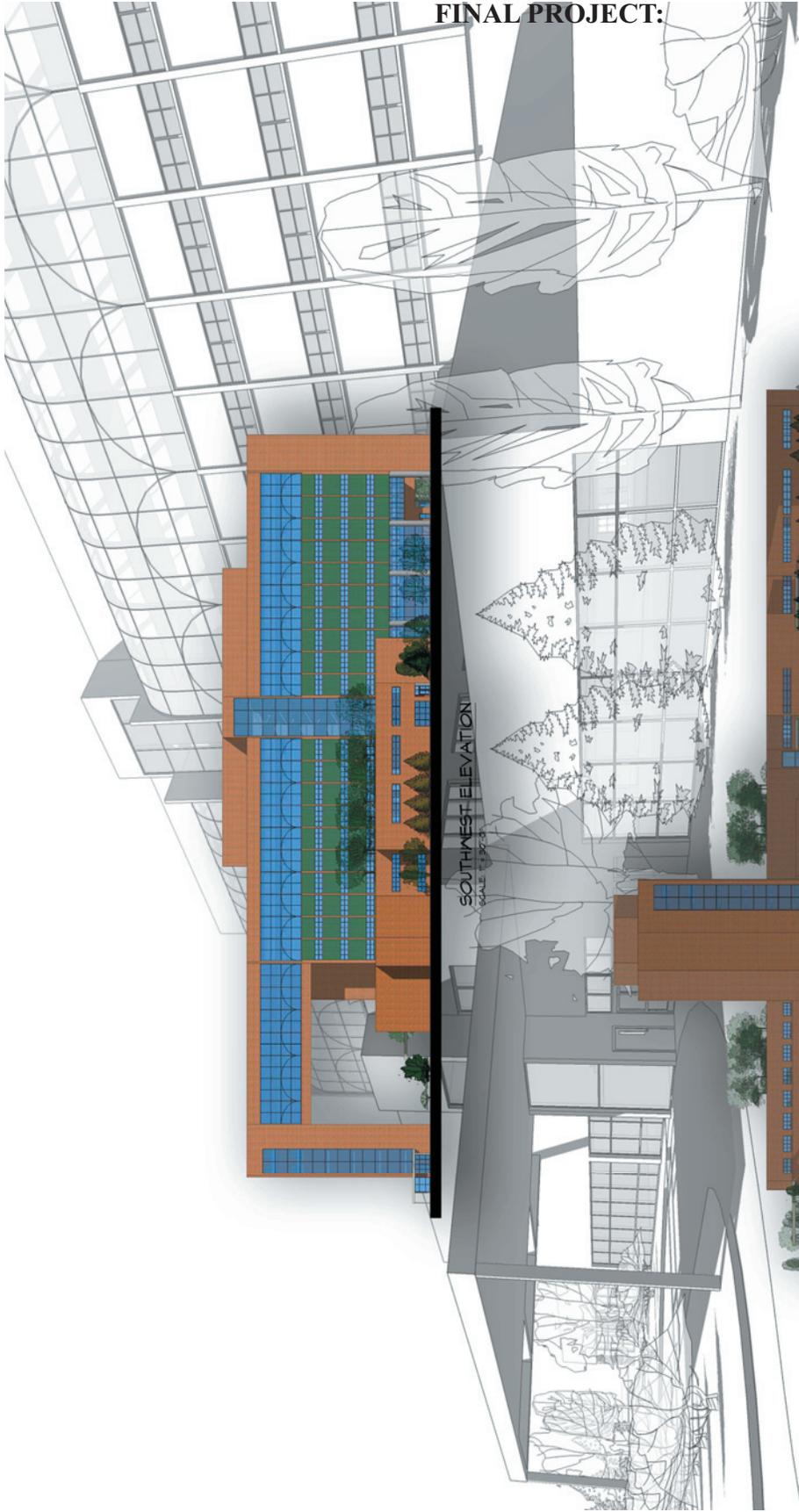
*Size:* 16,600 feet<sup>2</sup> (combined)

*Adjacencies/spatial relationships:* Entire floor.

**FINAL PROJECT:**



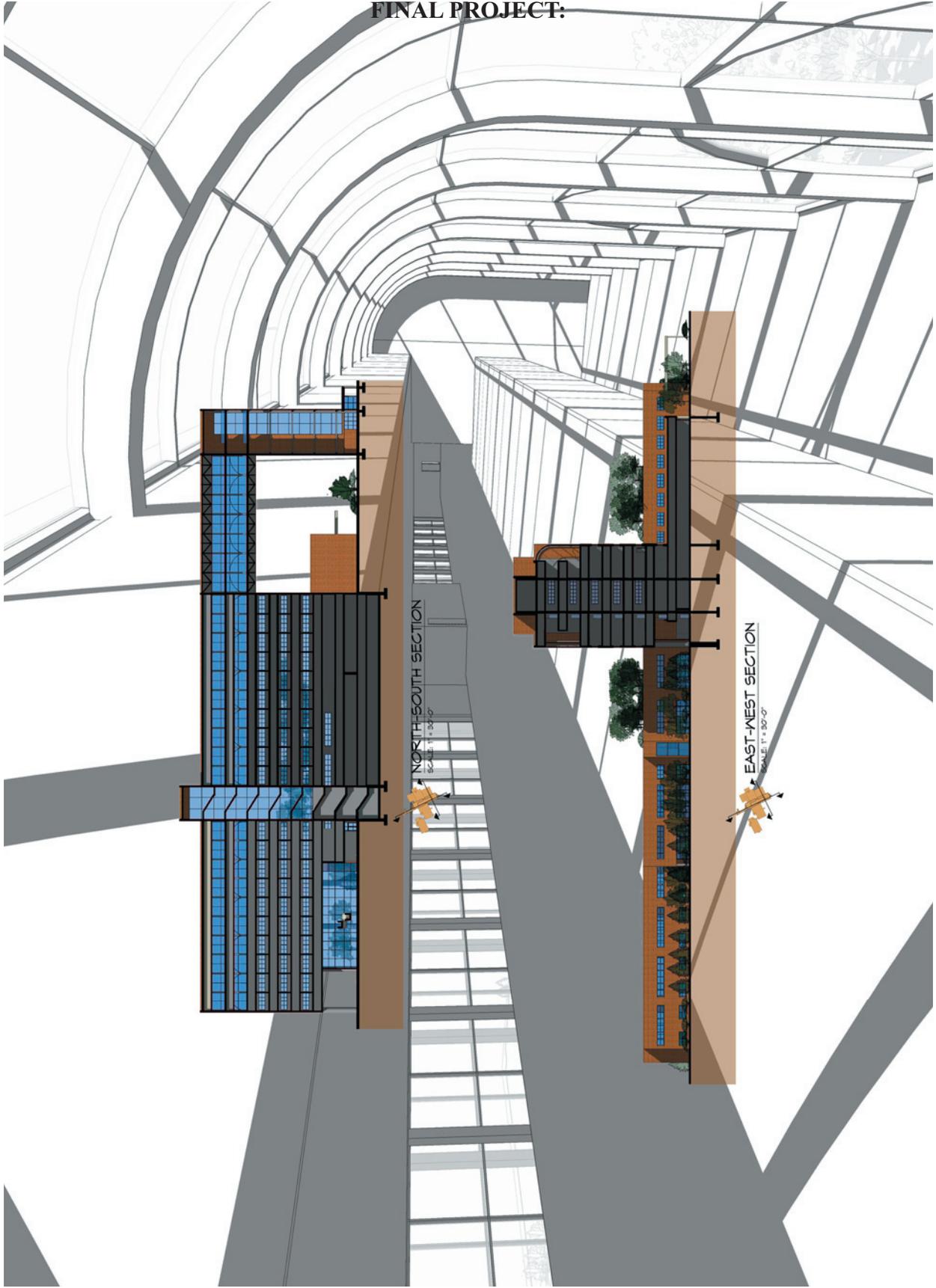
**FINAL PROJECT:**



SOUTHWEST ELEVATION  
SCALE 1" = 30'-0"

NORTHWEST ELEVATION  
SCALE 1" = 30'-0"

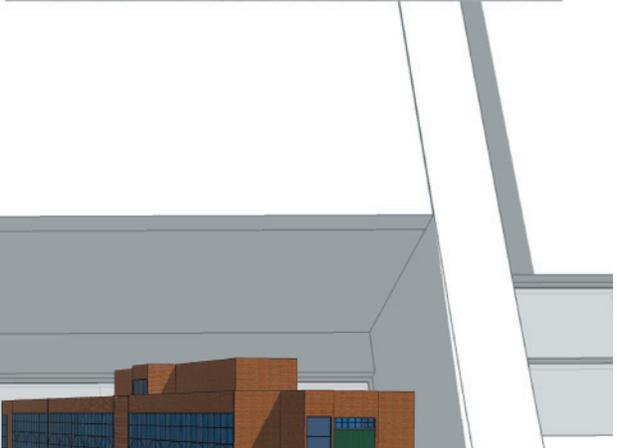
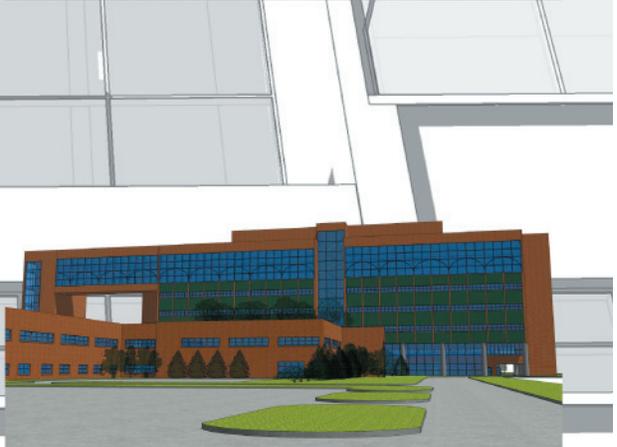
FINAL PROJECT:



NORTH-SOUTH SECTION  
SCALE: 1" = 32'-0"

EAST-WEST SECTION  
SCALE: 1" = 30'-0"

**FINAL PROJECT:**



## CONCLUSION

### *PROJECT*

- St. John's Detroit Riverview hospital, located off of Jefferson Ave., near Belle Isle.
- Project was chosen because this hospital is closing:
  - 1<sup>st</sup> and primary reason for closing: it is a business and is losing money.
    - 9 out of 10 patients are on Medicare and Medicaid.
    - The other 1 out of 10 is uninsured.
    - The existing hospital was losing ~20 cents per patient treated, so there is a lack of reimbursement.
    - All of these things force St. John's to close, while keeping in mind that a hospital is a business as well as a place of healing.
- What will happen?
  - There is a loss of nearly 1,500 full time jobs.
  - An increased stress and strain on remaining hospitals within the area (closest one is 5 miles away).
  - The healthcare consumer in the area will be out of necessary healthcare access.
  - The physical hospital will become abandoned pending some lawsuits:
    - The Karmonos cancer institute wanted to buy the property to transform it into a new cancer research facility, however this would break contractual obligations with the Detroit Medical Center, so the land will become vacant if nothing is done.

### *POSITION*

- The main question here is: how do you keep something that is vital to the community open that loses money through providing its main business function?
- Most of the research deals with ways of integrating certain tactics, if applied, will help keep hospitals within inner cities open.
  1. Streamlined services:
    - Keep to the basic services of a hospital for its scale: send off other cases to neighboring hospitals.
  2. Adapt a "low-cost" hospital approach:
    - Leaning physical flow of patients, materials, and resources. (Things like eliminating physical medical records, training staff to only use what is needed for treatment)
    - Building for energy efficiency.
    - Automating for productivity.
      - Replace, where appropriate, jobs that robotics and computers can accomplish
    - Maximize efficiency
  3. Realize the assets that are already in place.

### *EXECUTION*

- The thesis project focused on things like:
  1. The importance of the location of the hospital to the surrounding communities.

2. A de-emphasis on:
  - Procedures like cancer treatment, transplants, highly specialized medicine.
3. An emphasis on procedures that will most benefit the community:
  - Emergent care (emergency department)
  - Obstetrics & gynecology
  - Diabetes
  - Chronic illness for the aging Detroit community
  - Ambulatory care
  - Surgery
4. Maximized efficiency:
  - Reduce travel distances necessary by staff:
    - This reduces work related stress and injury by employees.
  - Focus on ergonomics:
    - Less bending and reaching for staff helps to alleviate work related stress and injury.
  - Use patient intake centers that can handle all manners of admissions into the hospital (emergency, scheduled, outpatient basis).
5. Alternate forms of capital generation:
  - The biggest idea is to allow the top two floors to be rented out as leased space to the hospital.
    - This area will be modular in design, so as to save cost.
    - A separate entrance will be provided.
    - This area will be recoverable in case the hospital wishes to expand, again playing off of the modularity of the space.
6. Energy efficiency to reduce life cycle costs (green design):
  - Reduce dependency on the grid through the use of photovoltaic panels.
  - Use double glazed, with high solar gain low e glass:
    - Increase in savings during heating seasons and cooling seasons.
  - Utilize natural heating and cooling
  - Utilize low flow fixtures
7. Utilization of robotics:
  - Pharmacy robotics:
    - Helps to reduce medical errors that may result in death.
    - Saves money in staffing costs.
  - Lab automation:
    - Can provide multi-tasked lab analysis and storage for medical use.
  - Courier robotics:
    - Help reduce steps needed by staff by using robots for mundane tasks.
  - Transfer of all physical medical records to electric records.
8. Ease of wayfinding (set up departments logically) and use of barrier free access everywhere.
9. Focus on a healing environment:
  - Patient rooms will use soft colors, natural wood finishes, and large open air views to the outside environment through the use of operable windows.

(Evidence based design of views to natural environment).

- Patient rooms will be insulated for noise reduction and stress reduction (Evidence based design on noise as number one deterrent to rest).
- Areas for family help in more ways than one:
  - Families help in care, which can reduce stress on staff.
  - Helps patient to be more relaxed and therefore heal faster.
  - Helps the quality of care a patient receives by staff:
    - Staff tend to act more appropriately when family is around, which lends itself to hospital savings in the form of lawsuits: a family member will be less likely to sue when they have observed their family member being treated properly.
- Radiology department rooms will incorporate cool colors that can calm patients and help them to relax in environments that can be scary and noisy.
- Healing garden for patients to use and be out in nature in an environment that is fostered towards healing.
- Use of inboard toilet model to maximize views to exterior. Toilets are also placed directly next to bed with handrails to minimize falls.

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