

# University of Connecticut Health Center

## Master Plan



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## **Executive Summary**

### **1.1. Prologue**

The University of Connecticut-Health Center (UCHC) Master Plan was developed to guide the physical development on the Farmington campus for the next ten years. During the preceding years the health care system has been subject to a number of challenges. Among these are reductions in federal funding and increased competition from larger for-profit and not-for-profit hospitals.

During the same period, the research profile of the School of Medicine has grown, and the Dental School is recognized as the best in the country for the strength of its basic science based program and research active faculty.

### **1.2. Process**

The primary purpose of the Campus Master Plan is to guide the physical development of the campus in supporting the evolution of programs as they change and grow during the next decade.

#### *Step 1: Leadership Interviews*

The project team interviewed the leadership of the Health Center including representatives of the hospital and schools. These interviews focused on the deficiencies, strategic plan, and vision for the Health Center.

#### *Step 2: Site and Facility Assessment*

An assessment of the existing facilities and site was undertaken to establish a base line for the development of the master plan. This involved interviews with the facilities staff, review of documentation, and observation tours of the site and facilities. The intent of this effort is to identify:

- Constraints to current patterns of use
- Constraints to expansion
- Confirmation of current capital renewal plans

#### *Step 3: Development of Space Assessment*

A series of questionnaires and interviews were held over a 3-month period with the majority of operating units within Health Center. A comprehensive space program was developed from this information. This plan is in two parts. First is a space plan to support the services and programs as they are in 2002. It reflects any deficiencies or surpluses in the existing facilities or on the site. The second part of the space plan is to project the required space needs for the future to support the strategic plan of the Health Center.

*Step 4: Identification of Issues*

As a result of the Interviews, Facilities Assessment and Space Program a comprehensive list of issues was developed and reviewed with the Health Center Leadership. These reviews allowed the documentation of planning assumptions to be expressed in the Campus Master Plan.

*Step 5: Master Plan*

The Master Plan takes the form of an Illustrated Master Plan, Space Program, and recommendations for implementation of projects and processes over the next ten years.

**1.3. Guiding Principles**

- Protect and improve the campus environment
- Provide for improvements in patient care facilities
- Ensure the quality of educational programs and allow for their evolution
- Provide for increases for research activity
- Accommodate increases in ambulatory care
- Foster efficient utilization of facilities

**1.4. Key Findings**

- The existing hilltop buildings are in good repair.
- The Dowling buildings will require replacement in the next few years. Significant investment will be required to continue long-term use.
- Landscape quality of the campus continues to be good but is threatened by encroaching residential development and insufficient investment.
- A new research building will be required in the near term if recruitment and research funding patterns continue at projected levels.
- The Hospital has fewer private rooms than current competitive models.
- There are options for improving the quality of inpatient facilities through reconfigurations and/or additions.
- Zoning of development on the campus should guide long-term land use questions.
- Space management policies and procedures should be developed to document and rationalize allocation decisions.
- Additional parking will be required to support any further development on the campus after the Ambulatory Surgery Center. Additional parking can be provided on site in structures or off site with the expansion of the current shuttle system.
- Improvements to student life will improve the competitiveness of the Schools.
- Research animal facilities are currently under utilized.
- Building L will continue to be a significant facility resource for the foreseeable future.
- The Buildings 1 through 26 (temporary metal buildings) are approaching the end of their useful lives. The evacuation and demolition of these temporary buildings will be required to allow the redevelopment of the area for ambulatory care.
- The landscaping of the Farmington Avenue entrance and the main road to the hilltop retains the original character of the site.



- The landscaping of the ring road and the Middle Road entrance is undeveloped.
- The academic entrance would be improved through the use of less paving and more landscaping.
- Acquisition of adjacent properties will become critical to the institution's future.

### **1.5. Recommendations**

- Adopt campus development zones
- Develop additional ambulatory care capacity
- Expand infrastructure, including parking, to support new construction and changes in use
- Improve student environment
- Acquire additional property
- Establish vigorous and effective space management procedures
- Improve landscaping through additional plantings and maintain forested campus image
- Recapture educational space previously converted to other uses
- Provide additional research space
- Undertake a study of research animal facilities requirements
- Increase number of private patient rooms
- Renovation Building L to modernize its mechanical and electrical systems and improve space utilization as provided in the 21<sup>st</sup> Century UConn plan

### **1.6. Master Plan**



## **2. Analysis**

### **2.1 Health Center Campus**

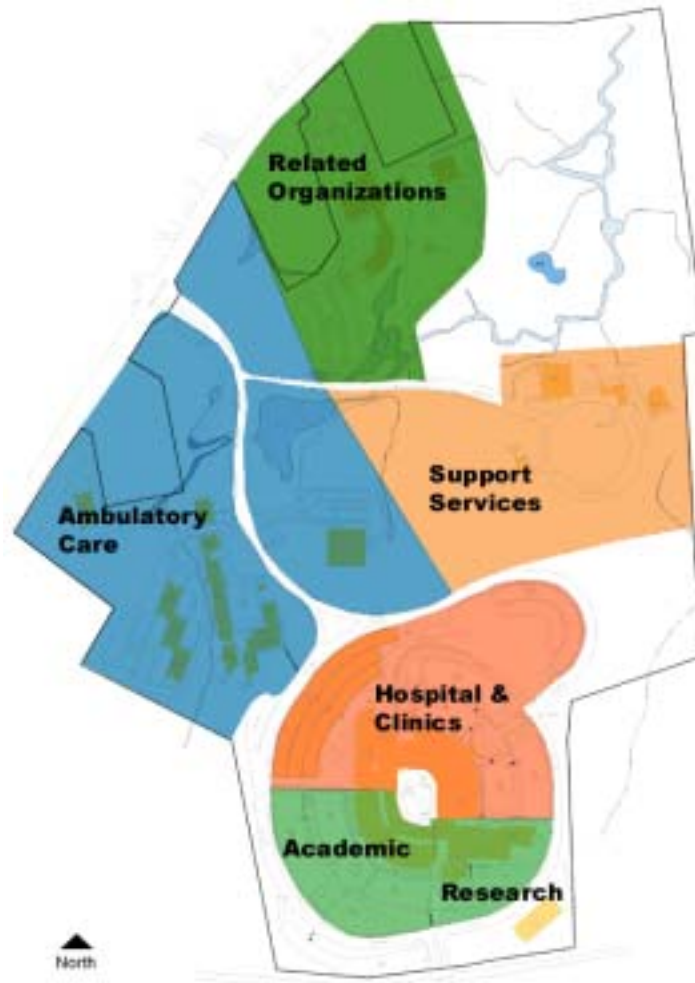
#### **2.1.1. Campus Zoning**

*Analysis:* The initial development of the campus presented a well-defined zoning on the hilltop into areas devoted to patient care and education. Over the last few years it has become more difficult to maintain these relationships. Two current examples speak to the question. The proposed Ambulatory Surgery Center (ASC) should be located in a zone that is supported by easy patient access. This led to the recommendation to build the ASC in a “non-hilltop” location and establish a zone reserved for ambulatory care. At the same time, the State of Connecticut, Department of Public Health (DPH) expressed interest in locating a state laboratory building on the UCHC campus. A zone is proposed for the location of Related Organizations, such as the Medical Examiner and the DPH laboratory building.

The zones are defined areas that are most appropriate for the designated units. This does not mean that there is no mixing of uses, or that the boundaries are sacred. It does mean, that the rationale for mixed use should be support for the critical missions of the institution, rather than an expedient measure to resolve a need today, while compromising the future.

In an institution such as UCHC, land use decisions have long-term consequences. For example, the temporary buildings that were so essential to the initial development of the Health Center have become impediments to other development in that location due to a continuing pattern of reinvestment. This pattern will need to continue, until the current uses end or are relocated. Such transitions are not unusual. The definition of the zones allows campus decision-makers to consider the long-term use while making the necessary decisions for the life of the institution today.

In the existing buildings, the definition of zones is more complex. In particular, Building L has a layering of uses that serves the needs of education and research in the variety appropriate for schools of medicine and dental medicine. The simplicity of the diagram is not intended to imply rigid relocations. However, as new research facilities and research related renovations are implemented; it seems logical to cluster them to the southeast.



*Recommendation:*

The proposed zoning diagram should be adopted by the institution and become part of the discussion when considering changes in building and land use.

### **2.1.2. Improved Ambulatory Care Settings**

*Analysis:* Starting in the early 1980's with outpatient surgeries the trend has been a steady move towards more ambulatory care/outpatient services. On your campus we are assuming an annual increase of 6-7% in these services.

*Recommendations:* One of the most important outcomes of this study will be to initiate the development of the Ambulatory Care Zone at the lower campus. This will provide better patient accessibility, ease parking demand on the upper campus, off load a percentage of workload volume in the hospital and clinics to allow for important inpatient services, and more flexibility for future research growth on the campus.

### **2.1.3. Additional Parking**

*Analysis:* The campus is adequately served by a mix of surface parking, structured parking, and on-campus shuttle system. However, there is little residual capacity to accommodate increased demand. For example, the proposed Ambulatory Surgery Center will require additional surface spaces on site and utilization of the shuttle lot. The proposed addition of the Connecticut Department of Public Health Laboratory will exhaust the campus parking supply. Additional demands can best be accommodated in additional structured parking since there are essentially no opportunities for additional surface parking.

*Recommendation:* As provided in 21<sup>st</sup> Century UConn, approximately 700 additional parking spaces should be provided by:

- 1) Adding approximately 400 spaces to the existing structure on the hilltop. *(The ability to do this has been verified through structural analysis.)*
- 2) Construction of a parking structure with at least 300 spaces in the area of the temporary buildings (1-7 and related structures).
- 3) Construction of additional spaces to support the ambulatory care zone. The size of this structure will depend on the extent of ambulatory care space.

#### 2.1.4. Improved Student Environment

*Student Center: Analysis:* The original development of the UCHC Campus did not include some of the amenities that exist on the Storrs campus for students. As the recruiting for top student has become more competitive in the last 10 to 15 years the need for amenities outside a great curriculum are become important. While there are no living quarters on this campus many to the student spend long hours here and feel the need for some services that are not provided at this time. These could all be housed in a Student Center setting.

*Recommendation:* Develop a Student Center in or adjacent to the main building to support the needs of the student. Access to the Ground and Main floors would provide the best support for the students.

*Fitness Center: Analysis:* While running the hills around the campus would be a great exercise routine, today a Fitness Center has become almost an expected amenity. They are in hotels and motels for business travelers and our places of work. This has become a norm more than an amenity today.

*Recommendation:* Placing this in the Student Center would create a strong statement in support of the student body at UCHC.

*Bookstore: Analysis:* The bookstore is located close to the library, but is quite small and has poor visibility. In addition, it is not able to expand in its present location.

*Recommendation:* As with the Fitness Center, the bookstore could be located in the Student Center and have more of a retail image.

*Retail: Analysis:* The bookstore is the only retail space today associated with the academic part of the campus.

*Recommendation:* A Student Center would provide opportunities for retail spaces such as food service alternatives, supplies, and copy center.

#### 2.1.5. Long-term Property Acquisition

*Analysis:* Several changes in recent years suggest the need for the Health Center to acquire additional property. The first lies in the increasing importance of ambulatory care to the educational and service missions of the institution and the limitations of current facilities and property configuration to support improved ambulatory care. In addition, there is increasing development surrounding the Health Center, in particular, the encroachment of residential units.

*Recommendation:* To protect the long-term ability of the institution to respond to changes in healthcare delivery, and evolution of its research mission, UCHC should acquire adjacent property. This is considered essential to the institution's long-range future.

### **2.1.6. Improved Space Allocation Procedures**

*Analysis: Existing Conditions.* The existing space allocation system lacks the formality that most institutions find useful. This informality is expressed to four ways. First, there is standard for the allocation of space, second, there is no reliable database, third, the documentation and review of space allocation proposals is fragmented, and fourth, authority for space allocation is unclear.

*Organization.* The most successful models for decision making within an academic setting revolve around a committee that is delegated the authority and the responsibility to allocate and reallocate space. The chair of such a "Space Committee" can be an administrator with participation by leaders of the Hospital and academic program leader, typically the research vice president. The latter position since research and research-related endeavors are frequently the most variable and urgent of space needs. Facilities officers, planners, and others are generally staff to the committee with designated responsibilities for maintaining the agendas, documenting and implementing decisions and reviewing requests. The review of requests usually includes the development and comparison of options. In addition, it is frequently appropriate for the Committee to hear directly from the individual or group requesting space. Such events are on an invitation basis, as may facilitate the work of the Committee.

*Space Allocation Standards:* The space allocation model developed for UCHC is based on typical space standards. This model was used to identify allocations, by unit, that warrants additional study as described in Section 3. Facility Utilization.

In addition to traditional allocation methods based on staffing, many institutions have also incorporated productivity measures into their administration of space. This is particularly true for allocations of research space. The typical measure is the value of direct research support (excluding indirect costs) per net square foot of research space (lab and laboratory support). Threshold values range from \$200 to \$300 per net square foot. UCHC should evaluate the productivity of its research allocations on an annual basis. Overtime, the institution should develop threshold values that are appropriate for the specific needs of UCHC.

*Data Base.* The accuracy of the space allocation database is essential to sound space planning. Over the last several years, the UCHC database has become inaccurate as space was reallocated, but not documented with the existing inventory system. Further complicating this situation are the changes in the names or designations of departments and other organizing units. These problems are not unique to UCHC, but a sound space management system must be based on accurate information that can be shared and reviewed in a consistent manner. The responsibility for such a function can be vested in an individual operating unit that is responsible to the Space Committee.

*Staff.* The staff can be located in a various places within the organization. It is not unusual for there to be individuals within a number of units serving as staff to the Space Committee. The key issue is communication among the group and their ability to effectively create and review proposals in order to solve problems in a timely way. Given the critical needs of UCHC in this area, it is likely that additional staff will be required.

*Recommendation:* A Space Committee be formally delegated authority for space allocation. The Space Committee should meet bi-weekly. This schedule allows for the timely response to future faculty recruitments or other ongoing issues. Upon occasion, decisions are required on a crisis basis. Initially, as a Space Committee organizes everything will be a crisis, but over time, true crises will be seen against the backdrop of normal evolution of the institution.

Inaccuracies of the inventory system should be corrected. Accuracy should be maintained, and verified not less than annually. This will require dedicated staff.

There will be some issues that the Space Committee cannot solve. These will require intervention or involvement of the chief executive. This is always an option, as it should be, but having a formal process with the following steps should minimize the need for such an appeal.

1. Adopting a space allocation standard. (The criteria within the UCHC space models as documented in Section 3: Facilities Utilization are recommended, and should be augmented by productivity measures.)
2. Documenting a request for space (new or reallocation of existing)
3. Reviewing the request, identifying and evaluating options
4. Reaching consensus and documenting a decision
5. Facilitating implementation
6. Documenting implementation in the space inventory and related database

#### **2.1.7. Landscape Improvements**

*Analysis:* The campus has retained primary aspects of the initial elements of its founding. The wooded approach from Farmington Avenue, establishes a special sense of place for UCHC. However, other areas of the campus landscaping have suffered from neglect or insufficient investment.

*Recommendation:* Both the approaches from Farmington Avenue and Middle Road should be strengthened, particularly with the planting of trees on the hilltop road. Existing wooded area at the Farmington Avenue should be retained.

## **2.2. Medical School**

*Analysis:* The School of Medicine encompasses education, research, and service activities at the Farmington campus and at clinical outreach programs in the region and state of Connecticut.

The medical school curriculum is a four-year model, emphasizing early entry into patient care activities and also emphasizing group, problem-based learning. The current medical school class size is 80 students. The first two years of the curriculum focus on basic science education. Although clinical education experience is provided during this period, the bulk of the clinical experience is in the third and fourth years. The School also offered Ph.D. graduate research degrees and a masters program in Public Health. The enrollment in the Ph.D. programs total approximately 100 students. The School is organized into 24 departments and centers. The larger departments, including Medicine and Physiology, are further divided into sub-specialty areas. Faculty members for the basic science departments are housed at the Farmington site. Clinical faculty utilizes office, hospital, and clinic spaces on the campus, in nearby leased clinical space and at other sites in Hartford and the state.

Facilities for the school are spread across several buildings at the Farmington campus, with the core of the didactic teaching and research space in the L and E buildings. Space utilized by the School on the campus includes over 433,000 net assignable square feet (excluding clinics). Almost forty percent of this space is utilized for biomedical research activities (174,000 NASF), a quarter of the space is assigned for office and office support, 21,000 NASF in teaching laboratories and classrooms and the balance in support services.

The assessment of existing facilities was undertaken using visual observation, interviews, and comparisons to industry benchmarks through the use of space planning criteria. Existing space allocations and faculty counts were collected and integrated into a planning model which applied the space guidelines to estimate current space needs for administrative and research space.

The space devoted to the educational mission has evolved over the life of the institution. For example, the recent renovation of the multi-disciplinary laboratories is cited as working well with the current curriculum. However, the proposed technological upgrade of the major teaching spaces is long overdue. In addition, since the original development of the School, it has been necessary to reallocate educational space in Building A to accommodate other required functions including faculty offices, research and research support spaces. These reallocations compromise both the quality and quantity of space available for educational uses. Particular requirements include small classrooms to allow more effective scheduling methods and student study space.

*Recommendation:* Recapture additional educational space within Building A. This can be accomplished in two ways. First, as utilization of space within the complex is studied, the recapture of space within Building A should be included in the list of considerations. Second, it will be directly possible to relocate non-educational units as additional research space is provided, and Building L is renovated for more non-laboratory uses, such as offices that have been developed within Building A. The quantity of educational space required should be based on current and projected requirements, at the time that renovations within Building L are being developed.

*Recommendation:* Continue the planned upgrading of teaching spaces. The two existing lecture halls have sufficient seating capacity for the combined Medical and Dental school basic science classes but are in need of renovations to meet contemporary computer and communications technology. The multi-disciplinary laboratories were recently renovated and are working well for the current curriculum. There are logistical issues related to the use of teaching laboratories for gross anatomy relative to the transport of cadavers, preparation of the laboratory space, and isolation of these labs from public traffic.

*Recommendation:* Maintain current complement of administrative space. Administrative offices and conference space were also assessed as adequate for existing programs. A significant number of offices are assigned to emeritus faculty, constraining the ability of the School to house new recruits. Centralization of office workspace for emeritus faculty would free individual offices and potentially provide support services for the faculty.

*Recommendation:* Re-evaluate space needs if changes in programs or enrollment are contemplated. This analysis of future space needs is based on a stable medical school class size, continuation of the current curriculum model, and significant growth in research activities. No major structural change to the School is anticipated, with the possible exception of the Public Health program, which may evolve into a separate school in the future.

*Recommendation:* Increase research space as detailed in 2.2.1. Projected increases in researchers over the next decade include 40 faculty requiring wet lab research space and 10 researchers utilizing computer or other “dry” laboratory space. Each wet lab researcher is assumed to generate sufficient research grants to support an average of five research scientists, graduate students or technicians. This growth will exceed the capacity of the existing research laboratories.

### **2.2.1. Additional Research Space**

*Analysis:* Continued recruitment of research active faculty (both to replace retirees and additions to faculty size) as well as expanding success of the programs of existing research active faculty, will require additional research space. Institutional plans call for the addition of as many as 10 research active faculty per year for the next 5 years. The space model projects approximately 55,000 square feet of laboratory space to support these new hires (8 of whom are assumed to be wet laboratory based).

The projected recruitments are in addition to replacement of retirements and other faculty departures. It is reasonable to assume that replacement faculty will have more research activity. This circumstance was accommodated in the space needs models by increasing the current staffing ratios in appropriate departments.

The incremental fit-out of Building E has allowed the institution to keep pace with recruitment and program expansions. Analysis of current space allocations indicates limited opportunity to accommodate additional research activity without a new facility. Further, the space provided by the lower research campus (Buildings 1-7 and related structures) will require partial replacement when that site is redeveloped.

*Recommendation:* Current research projections support approximately 55,000 net square feet of office, laboratory, and laboratory support space. However, land use should be considered in sizing such a building. As outlined below, it is recommended to follow a pattern similar to Building E. That is, build a building to fully utilize the site and of a floor plate that is efficient for the intended use of wet laboratories. Such a building would be from 150,000 to 200,000 gross square feet.

In particular, it is recommended that any building on the hilltop be of the maximum height for the site. In most cases, this will be approximately 10 stories plus appropriate basement levels. An efficient footprint for a functional research facility would be approximately 15 - 20,000 gross square feet. Therefore, a research building of at least 150,000 gross square feet is recommended. The earliest anticipated occupancy of a new research building is 2006. As a result there will be demand for a number of interim measures.

The projected increase in research will eventually create pressures on animal holding space in the CLAC service. The vertical distribution of holding rooms and the current underutilization of the transgenic animal holding facility should be further evaluated to determine if better utilization of the transgenic space can be achieved by conversion of segments of this service to general animal holding functions. One possible use of the existing CLAC tower may be for research support space. The capability to expand the existing CLAC space should be considered in conjunction with future expansion of research space.

### **2.3. School of Dental Medicine**

*Analysis:* The School of Dental Medicine provides a four-year degree program and a post-graduate program. The School is currently ranked as one of the top programs in the nation, based on graduating student test scores. The current class size is 40 students per year. During the first two years students focus on basic sciences and clinical skills development, taking many of the same classes as the medical students. The third and fourth years of the curriculum focus on clinical skills based on the clinics located in the C-building at the Farmington campus.

As with the School of Medicine, existing space was evaluated through physical inspection, interviews, and analysis based on application of the same space criteria. Existing classroom and teaching laboratory space is appropriate for the class size and curriculum model. Evaluation of departmental space revealed that there is a slight surplus of research space. It is anticipated that the growth of the faculty in the Center for Biomaterials

will utilize much of this excess research space. No significant deficits were identified in the quantity of space utilized by the School.

Almost half (45,000 NASF) of the space current assigned to the School of Dental Medicine (103,000 NASF) is used for dental clinics. Clinical experience is centered in seven teaching clinics located on Level 1 of the C-Building, and an Oral Surgery Clinic. The School is evaluating a potential curriculum change that would rotate fourth year students into private practice settings throughout the community. Anticipated growth in the post-graduate fellowship training programs will create demand for any vacated clinic space on the campus.

The faculty clinic, located on the Main level of the C-Building, provides a base for private practice and is also linked to clinical research activities in the School. Relocation of this clinic to a separate, on-campus, outpatient location is an option that should be evaluated.

*Recommendation:* Maintain the state quo and continue the periodic evaluation of space utilization. If anticipated new hires are not achieved, some research space will be available for reallocation.

## **2.4. John Dempsey Hospital (JDH)**

### **2.4.1. More Private Patient Rooms**

*Analysis:* When the existing bed tower was built in the 1970's the double patient rooms were the norm and a ratio of nurse to patient were in the range of 1:4 or 1:6. Today the nursing shortage is driving the ratios toward 1:8 and either support staff or the family is now performing some of the services that use to be performed by the nurse. Today we are seeing the desire for all single patient rooms with space in the room for the family, "Family Centered Care". These two trends are in many ways heading in opposite directions. The room layout for a typical floor at JDH is mostly double rooms with a few singles creating on original bed count of 27-29 / floor. Today most of the double rooms are used as singles creating fewer beds on a floor. The toilet rooms in all the patient rooms are of a minimum size and do not meet the ADA standard of today.

These nursing units are designed around a central nursing station on a raised platform. This lay out is poorly designed to meet today's technology and operational requirements. The remaining support for the unit is off the corridors connecting the unit to the elevator core, requiring the staff to leave the central area to get supplies. To help relieve this problem storage carts are now parked in the circulation areas of the unit.

Only levels 3,4,6,and 7 can maximize the use of the beds today. The other floors have program requirements that limit their ability to increase their bed count and provide the required support space in an appropriate location.

*Options:* Zone A: The goal of this option is to consider at providing an all-single room environment to maximize the available number of licensed beds. Construction of new square footage in Zone A would allow for the development of 34-36 beds per floor on levels 1-3. Relocation of the behavioral and prison bed to the top 3 levels would move these patients out of the typical inpatient flow through the hospital and allow for development of better support space for these services.

Zone B: The goal of this option is to provide a contemporary floor plate for patient rooms. Allowing for more efficient staffing. The original plan for the hospital provided the opportunity to develop a second patient tower. Subsequent construction of the Canzonetti Building has maintained this option by providing structural capacity for vertical expansion. A new tower in this zone would have a floor plate accommodating approximately 32 beds per floor. The recommended number of beds per floor is based on current staffing ratios as well as the desirability of moving toward as many single patient rooms as practical. Such a tower could be structured for future growth to accommodate possible changes in licensed capacity. The existing tower would be used for specialty bed units such as CMHC and Psychiatry.

Zone C: The goal of this option is to all incremental growth toward an all-single room environment while maximizing the available number of licensed beds. As new and more appropriate laboratory space is built on the campus the Lab space in Building L will become available for other uses. This space could be redeveloped into additional patient bed units, as it becomes available. This would need to be implemented from the top down for reasons of system and construction phasing.

The existing patient tower (Building H) would be updated to all single patient rooms on Levels 4-7 with 18 beds/floor. Developing a 16-bed unit in Building L on Floors 5,6, and 7 would give a total of 34 beds on those floors. Support for these nursing units would be located at the 2 nursing stations and the area between the two units.

#### **2.4.2. Behavioral Beds**

*Analysis:* The Behavioral Beds are located in typical inpatient units with required support spaces being assigned to existing patient rooms with little renovation. This is inefficient and a poor use of these spaces.

*Recommendations:* The first option is to leave the General Psych unit on the First Floor, but redesign the area for fewer beds (15) and develop better support space. Then move the Geriatric Beds (8) to the Second Floor and add General Psych beds (7) to the unit with similar support as on the First Floor allowing some flexibility in these two programs.

The second option is to move the General Psych and Geriatric Beds to Floors Six and Seven. This would allow for renovation those area to better support this program and have the other bed units on the lower floors that could be expanded with new construction to increase there size to 34-36 beds. See 2.4.1 for this layout.

#### **2.4.3. Emergency**

*Analysis:* The location of Emergency is well planed in its relationship to Imaging and the Surgery department. Today Emergency consists of 12 existing treatment rooms in approximately 7,300 DGSF. With the number of visits that are now being seen in the department we would recommend 22 treatment rooms be available to keep the wait times down to the national standards. This would require at least 8,400 to 11,300 DGSF. Current renovation plans for the department should satisfy these concerns.

*Recommendations:* The increasing volumes of ED visits at UCHC are consistent with national trends. At the same time, expansion through relocation would be very difficult because of the Emergency's Department's required relationships to Imaging and Surgery. One option to find the additional square footage required is to continue expansion to the north. This will have limitations due to the site and existing restraints. Another option is to find space in an adjacent area. This could be done by relocation the GI/ID/Urology Clinics (4,000 DGSF) to new space in the Ambulatory Care zone of the campus and expanding Emergency into this location developing approximately 11,300 DGSF.

#### **2.4.4. Imaging**

*Analysis:* The present location of the imaging works very well for the Emergency Department and Inpatient requirements. Its location does have some problems with supporting its outpatient clients. The existing department gross square footage does meet the standers for it's present workload, but this will change as the Emergency Department increases in size and capacity. The department is presently landlocked by nutrition, emergency, and the configuration of the existing building.

*Recommendations:* Looking at the continuing move of services to an outpatient setting one way to help take the work load off of the existing imaging department is to develop an outpatient imaging center in the Ambulatory Care Zone of the campus. This is already being started with the development of the *Musculoskeletal Institute*.

#### **2.4.5. Surgery Suite**

*Analysis:* The Surgery Suite is located with strong vertical connections to Emergency, Imaging, and patient beds making it work well as an inpatient operation. When it became required to provide outpatient surgery services on the campus some compromises where required to be made.

A new entry had to be developed and the original pre-op and recovery where designed on the inpatient model. There are currently 9 ORs with a tenth in construction.

*Recommendations:* The development of the Ambulatory Surgery Center on the lower campus will relocate a major portion of the outpatient workload. This should allow for the existing DGSF to be redeveloped into an efficient and flexible surgery suite.

#### **2.4.6. Pharmacy**

*Analysis:* The location of the Pharmacy works well in its ability to support the requirements of the Medical Center. The recent addition of adjacent area has satisfied current needs. It is more compartmentalized than desired.

*Recommendations:* Keep pharmacy in its present location and update the interior layout to develop a more flexible work area.

#### **2.4.7. Clinical Lab**

*Analysis:* The lab is located on the Second Floor of the C-building and has good access from the clinics below and the inpatient bed tower. It doesn't work as well for a reference lab for off or lower campus clinics. The major problem with the space is that it is not configuring for today's clinical lab work. All of the different functions are divided into there own rooms; today these functions work best in large open spaces. This allows for better communication and flexibility in how the processes work and it allows for integration of new equipment as it become available.

*Recommendations:* Clinical labs do not have to be located in the hospital. However, unless there is a demand for this space, it is recommended that the lab remain. As circumstances permit, the lab configuration may be changed to a more ideal model.

### **2.5. Administrative/Support Staff**

*Analysis:* Much of the staff has already been consolidated into the Administrative Support Building (ASB). Other locations on the lower campus with staff are in temporary buildings and the first level of the Dowlings. The ASB is a building designed for this purpose and has worked well. It is full now and has little flexibility left in it. On site parking is not adequate for staff and minimal for client parking. (The building could be outfitted for clinic space.) The remaining administrative/support staff is located in temporary buildings, First Floor of the Dowlings, and in the main building on the upper campus. The spaces in the temporary building and the Dowling are not adequate for the work that is being performed in

them, they have inadequate mechanical systems support or are over crowded and have little staff amenities. Most of the spaces in the main building on the upper campus are well placed in the building for their function. Some could be relocated to the off campus to free up space for more clinic or lab support. Most of these services are not required to be located in the main building or even on the upper or lower campus.

*Recommendations:* An office building could be developed in the support zone of the lower campus or even off campus to house much of the administrative/support services. If it were located off campus it should be fairly close because there is interaction between these services and university staff. An off site location could help with some of the parking issues, and provide a space with more staff amenities like a cafeteria.

## **2.6. Miscellaneous**

### **2.6.1. Laboratories in Building L**

*Analysis:* The floor plan of Building L limits its effective utilization for laboratory uses. The narrow floor plate and curved form of Building L allows only small research laboratory modules. Contemporary “open laboratory” layouts provide opportunities for more effective utilization of research space. Further contemporary laboratory planning provides a higher ratio of laboratory support space to and research support space than can be accommodated in Building L.

*Recommendation:* Despite these limitations, Building L is well maintained and appropriate for renovation to extend its useful life. Further, use of Building L will be key to interim research allocations prior to the development of the next research building. In implementing renovations, it is recommended that to the maximum extent, non-wet laboratory be developed within the building. However, this space will continue to be an appropriate location for laboratory support space.

### **2.6.2. Dowling Buildings**

*Analysis:* The two Dowling buildings were constructed in 1982 and have approximately 89,000 net square feet. Originally parking was provided under the structures; but parking under the South building has been enclosed. Uses of this area are mostly hospital administration. The buildings were designed around a typical 1980's medical office building model. The buildings are approaching the end of their useful lives. Their continued use will require extensive investment with little return. See the Facilities Assessment Report for further details.

*Recommendation:* UCHC should plan to provide a contemporary ambulatory care facility. The Master Plan shows the capacity of the Ambulatory Care Zone. As this plan develops the Dowlings will eventually need to be abandoned and removed in support of the final master plan for this area.

### **2.6.3. Lower Research Campus (Buildings 1-7 and related structures)**

*Analysis:* See the Site and Facilities Assessment Report for an analysis of the condition of these structures. The buildings themselves have served their purpose far beyond being used as the original structures on the campus while the main building was under construction on the hill. Presently they are serving a wide variety of research programs.

*Recommendation:* As with the Dowlings, the temporary buildings need to be abandoned and removed as the Ambulatory Care Zone is developed. The uses that now have space in these buildings should be relocated off-campus or to space in the appropriate zone of the campus.

### **2.6.4. Space Allocation for Emeritus Faculty**

*Analysis:* As demand for space has increased, it has become increasingly important to reallocate space that is no longer being used by faculty members who were once more active. The tradition of the University provides for the accommodation of emeritus faculty. Unfortunately, the only options currently available generally leave emeritus faculty members in a portion of the space they once used more intensively. This lead to inefficient utilization of existing space.

*Recommendation:* Consistent with the need to achieve productive use of space, a small portion of space in Building L will allow the development on an Emeritus area. With the allocation of approximately 140 square feet per emeritus faculty, it will be possible to improve space utilization.

### **2.6.5. Musculoskeletal Institute**

*Analysis:* Strategic plans developed in 2000 identified four signature programs to further the capabilities of the Health Center. These included a Musculoskeletal Institute in which a number of programs with the Center could be organized. At the same time, proposals were advanced to develop an ambulatory surgery center to further the provision of ambulatory care on the campus.

*Recommendation:* Several sites were considered for what came to be a 98,000 square foot building to accommodate the initial phase of the Musculoskeletal Institute and Farmington Surgery Center. The area adjacent to the Administrative Services Building (D) was identified. This project will allow the continued development of ambulatory care in the near term. Longer-term expansion of ambulatory care will require relocation of the activities housed in the existing lower research campus buildings (1-7).

### **3. Facility Utilization**

#### **3.1. Introduction**

Estimates of space needs in clinical and academic areas are based, wherever possible, on models designed to apply accepted utilization targets to existing and projected activity. For the clinical services, models for each major component (inpatient beds, clinics, surgery, imaging, etc.) were integrated into consolidated estimates of space requirements. Predictors of space varied for each component. The key predictor of space is patient days and the targeted average utilization goals. Diagnostic and treatment service workloads, (imaging exams, surgical cases) or workstations (laboratory workstations, pharmacy picking stations) served as the driver of space needs.

The values of this type of modeling are to provide a consistent measure for the assessment of space utilization, as well as an assessment of the implications of changes in programs or demand.

#### **3.2. Methodology**

Data utilized for these models are based on 2001 annual statistics. For some services, the required model data was not regularly maintained, requiring best judgment estimates. Maintenance and refinement of workload data, particular for ambulatory care activities, is recommended.

A similar approach for the School of Medicine and Dental Medicine focused on the count of staff as the primary forecasting element of space, as described in Section 2 of this report. During the development of space models for the Schools of Medicine and Dental Medicine, discrepancies in the existing space inventory and space allocations were identified. The integration and verification staffing counts and space allocations are critical for the success of these models.

#### **3.3. Key Observations: School of Medicine**

The analysis of projected space needs for the School of Medicine is provided on the following figure. For the purposes of this study clinic space, which is managed by the School of Medicine, is included in the clinical space needs assessment of the John Dempsey Hospital, and is excluded from this academic space needs analysis. As previously noted, limitations of the inventory of existing space assignments limited the comparison of existing space by component to the projected space needs.

Analysis of existing research space utilization indicates the overall adequacy for current demand. The School is aggressively recruiting faculty for several of the research centers, which should fully utilize space currently assigned to these programs. As demand increases, it will be necessary to increase laboratory and office space. In particular, a key driver for the anticipated growth in overall departmental research space needs is the projected increase of 50 research

faculty and associated research scientists, technicians, graduate students, and visiting faculty.

It should be noted that the floor plan of L building limits effective utilization. Building L allows only small research laboratory modules. Contemporary “open laboratory” layouts provide opportunities for more effective utilization of research space. Further contemporary laboratory planning provides a higher ratio of laboratory support space to and research support space than can be accommodated in Building L.

As with many medical schools, the need for conference rooms was frequently identified as a need. Method for centralizing scheduling of department conference rooms should be evaluated to assure effective utilization of existing space.

The recently remodel multi-purpose teaching laboratories appear to be effectively utilized throughout the years. Classroom and lecture halls also appear effectively utilized but will require upgrading to meet accessibility standards and to utilize new computerized teaching methods.

### **3.4 Key Observations: School of Dental Medicine**

The projected net assignable square foot space requirements for the School of Dental Medicine are provided in the following figure.

Analysis of the School elements indicates that current space allocations for all components are within the estimated space projections. Research space is not fully utilized at this time. Recruitments in the Center for Biomaterials are anticipated to increase research space utilization, resulting in an approximate balance between available space and demand. Reassignment of underutilized departmental research space will be required to accommodate these recruitments.

### **3.5 Key Observations: Hospital**

The analysis of projected space needs for the John Dempsey Hospital and related clinic functions located on the campus are summarized in the following figure. As documented in this report, many areas fall below space estimates for contemporary facilities. Existing space allocations for other departments fall within the estimated space needs but are poorly organized, resulting inefficient utilization of space and staff.

Existing space needs were within the boundaries of projected space needs for many of the departments. Notable exceptions, where the existing space was significantly outside the boundaries of estimated space needs include:

- Utilization of exam rooms in Dermatology, Cardio-pulmonary, ENT, Surgery, and Oncology clinics are at capacity.
- The goal of relocating Orthopedics clinics back on the campus will require at least 14 exam rooms and support spaces.
- The Emergency services is anticipated to be 40% below projected space needs unless current plans to expand the service are implemented.
- The gross area per bed for medical surgical units is significantly below norms for contemporary hospital. Our model estimates that at least 76 beds will be required for the medical/surgical (including the prison unit) services, 68 ICU and NICU beds, 15 OB/gyn, and 23 behavioral service beds.
- The utilization of operating rooms is approaching capacity. Current proposals to develop an ambulatory surgery facility will provide an opportunity to decompress the utilization of existing operating room. The linkage of inpatient cases and resulting bed utilization will need to be monitored to assure that sufficient acute and critical care bed capacity is available.
- Inefficient configuration of several services is not reflected the model of future space needs. Without redesign the clinical laboratory, NICU, and Women's service will have space needs above the estimates provided.
- Unique programs in adult behavioral day care, alcohol research outpatient services, and the prison service where estimated based on interviews the analysis of existing space. Industry benchmarks for these services were not available.

Significant shortfalls in the “quality of life” elements were identified during the planning process. Space needs for many of these components, such as the bookstore, student lounges, and fitness center, were estimated based on benchmark comparisons to other medical center.

#### **4. Facility Assessment**

##### **4.1. Objectives and Process**

The objectives of the Facility Assessment Report were to evaluate the capacity condition and configuration of the major infrastructure systems supporting the UCHC complex and identify the major deficiencies that will limit planning and/or require major capital investment to rectify. This broad overview of approximately 2 million square feet of building area was based on interviews with the Facility Department staff, visual observations from a two-day building survey and cursory review of the original construction documents.

The Building Evaluations, included in an appendix to the report, provide a summary in tabular form of the size, age, and type of major building systems for each individual Upper Campus and Lower Campus building. These findings are

integrated into the conceptual planning process to help determine the highest and best use of the existing building areas. A summary of these findings follows.

Although the buildings have received regular preventative and predictive maintenance, numerous large-scale mechanical, electrical, and piping (MEP) issues are developing due to the age of the facility and increasing functional demands. Resolution of these issues will require wholesale revitalization of the MEP infrastructure within 10 to 20 years. The temptation will be to defer the big infrastructure investment and focus on architectural layout changes with only incidental fix-it-when-it-breaks capital renewal for the MEP infrastructure. The need is to plan for infrastructure revitalization as part of ongoing programmatic revitalization. The implication is that major projects need to be planned, not just limited projects executed on a grant-by-grant basis.

MEMP systems' are built upon out dated criteria and concepts. For demanding program functions this means that the building response has been either a) incremental construction of special systems for small-scale applications, or b) work around. The limitations will require a continuation of relatively expensive localized projects, or major revitalization to create a modern flexible facility

Detailed project descriptions are not possible based on this report, however, this assessment validates the need for consistent investments in capital renewal. The most commonly used benchmark is 1.5% of replacement cost. For example, the approximately 2 million square feet of campus might have a replacement value of more than \$500 million. An annual capital renewal allocation of \$7.5 million would be consistent with comparable facilities and the structure of 21<sup>st</sup> Century UConn.

## **4.2. Assessment Summary**

### Mechanical Systems

- Chilled water systems operate near capacity during peak demands.
- HVAC system capacities are marginal when compared to the required demand in many of the large, core medical and laboratory research functions.
- Aging equipment, in particular, airside equipment, will inflate to potential failures causing extended service outages without deferred maintenance investments.
- Core program functions are operating below today's standards for HVAC in regards to energy efficiency and modularity of equipment for redundant capacities.

### Electrical Systems

- Though the capacities are available, design configurations limit expandability of systems.
- Original pieces of equipment are at the end of their useful life to the point of immediate capital renewal need.

### Architectural Systems

- Overall appearance of facility is dated with many of the original finishes apparent in labs, classrooms, and hospital rooms. Many of the building finishes are over 25 years old, worn, and in need of replacement.
- Many upper campus buildings were designed over 25 years ago for specific functions and programs. Original layouts of laboratories, classrooms, and patient areas may not easily accommodate current program and equipment requirements without major renovation of both general layouts and infrastructure.
- ADA upgrades have been completed in some buildings used for labs are in marginal condition and inadequate for University level research and development facilities. Some of these buildings are also under utilized with minimal research activity or simply vacant.
- The Dowling Buildings are in particularly poor repair and should be replaced, rather than renovated.

#### **4.3. Conclusion**

Detailed studies will be required to identify specific priorities, however, this assessment confirms the levels of capital replacement called for in 21<sup>st</sup> Century UConn.

## **5. Master Plan**

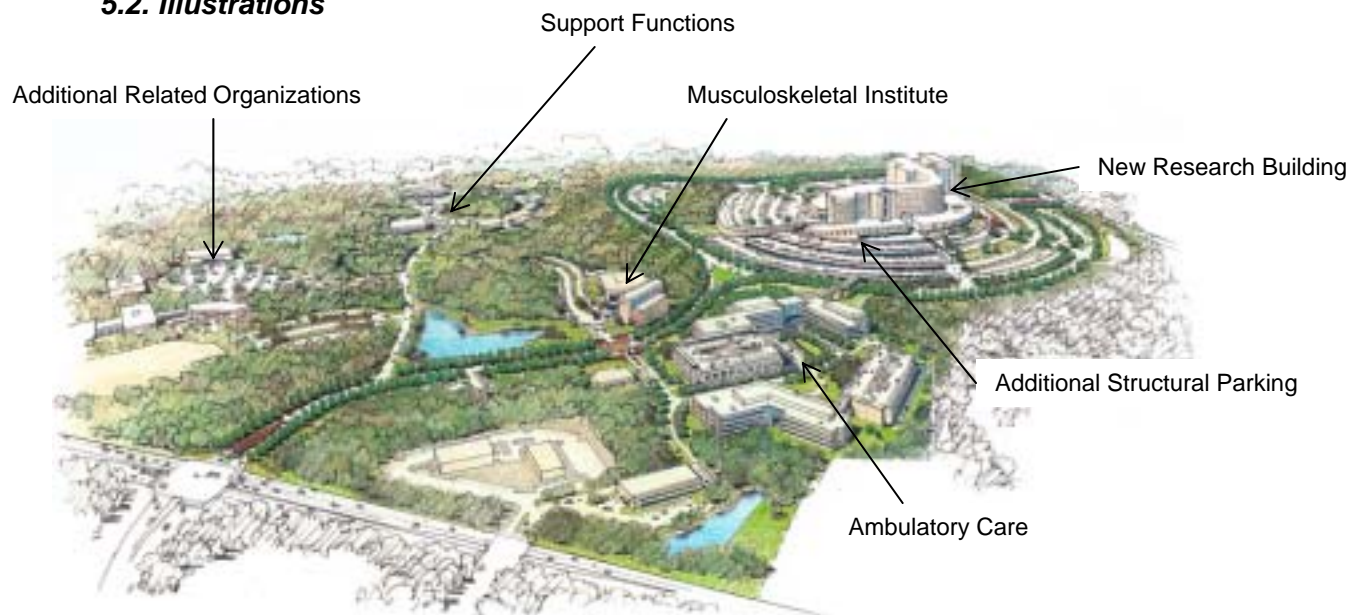
### **5.1. Introduction**

The principal planning challenges faced by the University of Connecticut Health Center are:

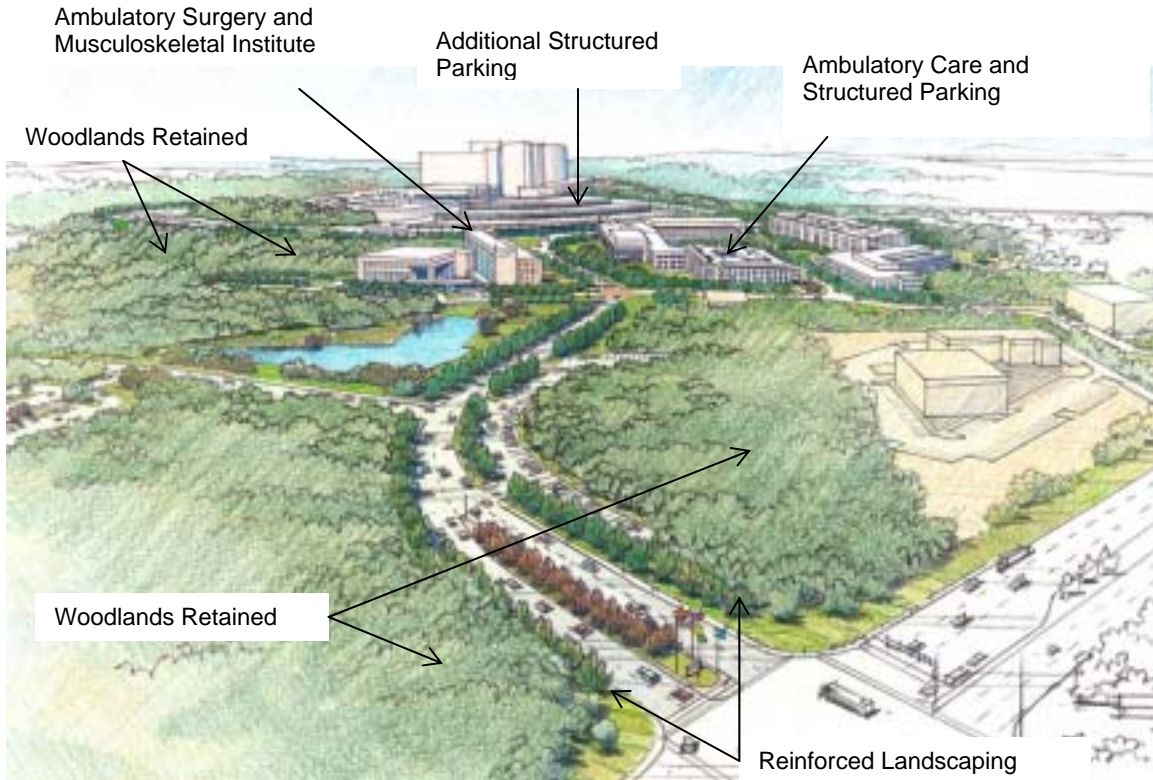
- The continued evolution of the Hospital in response to technological and market conditions
- The expansion of research and research support space
- Improved ambulatory care facilities
- Additional parking
- Accommodation of related organizations, and
- Improved campus landscaping

The Master Plan responds by designating zones of development, identifying building sites, recommending retention of woodlands, landscaping, and locating expansion of parking.

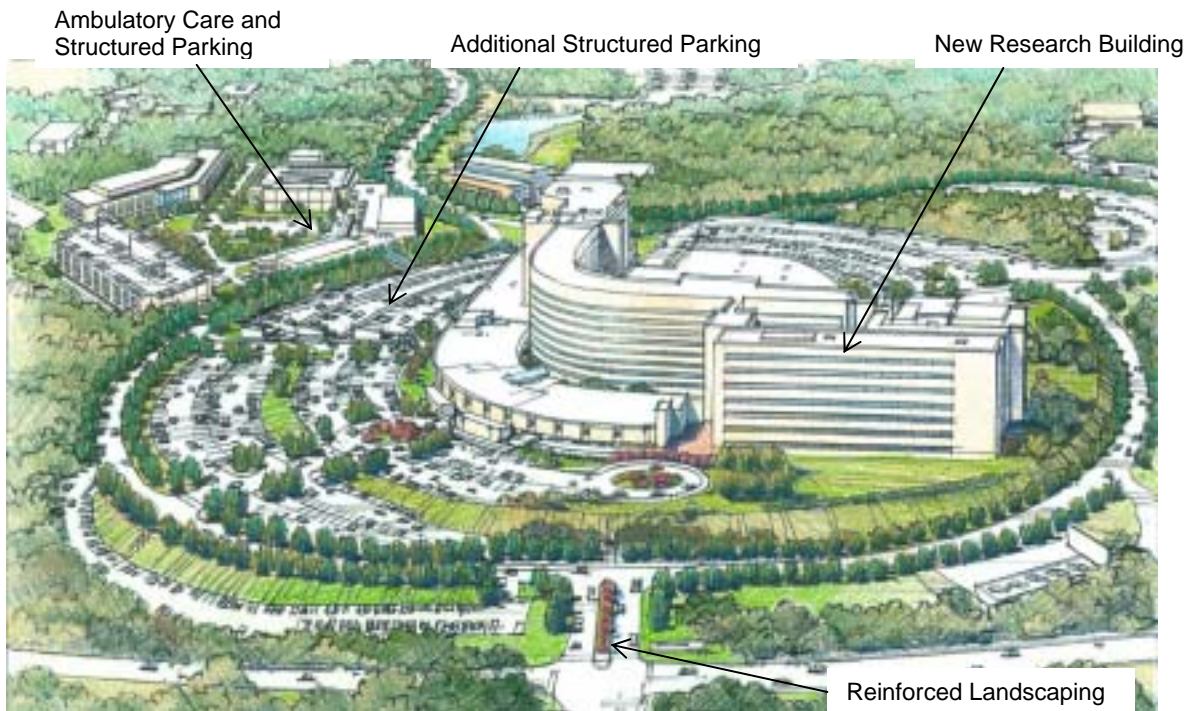
### **5.2. Illustrations**



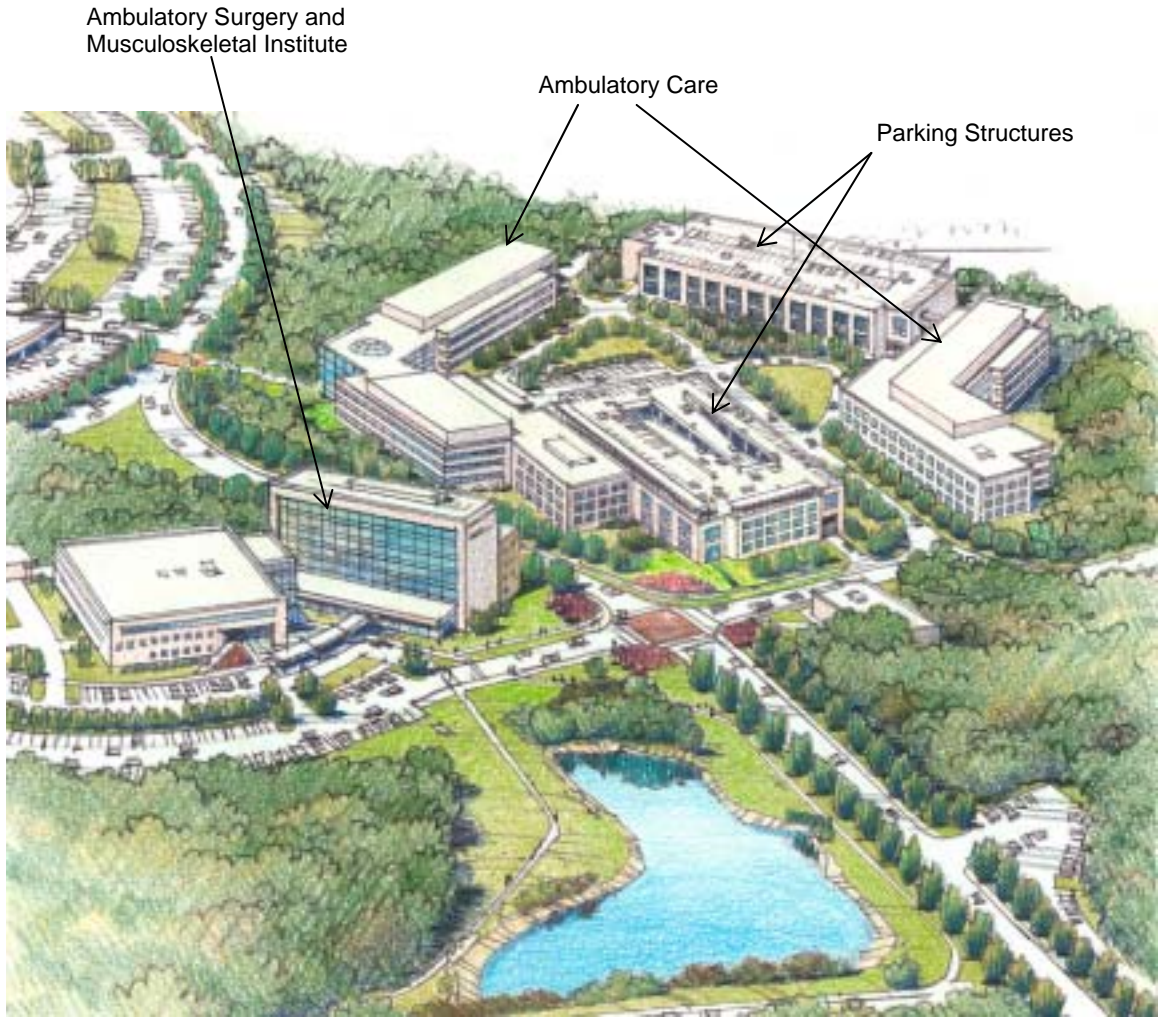
**Campus View**



- **North Entrance**



- **South Entrance and Research Addition**



- **Ambulatory Care**